An Analysis of the impact of Cross-Border Shopping:

The case of the Canadian-American Border

Gaetan Dormoy

Department of Economics

Queen's University

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I.   **Introduction**

This study uses cross-border travel data between the U.S. and Canada to estimate the effects of cross-border shopping on a range of U.S. retail industries situated near the border of Canada and the United States. When thinking about tourism, the primary purpose is usually associated with recreational activities. Visiting museum, beaches, national park or family are often the main reasons for crossing an international border. However, in addition to recreational purposes, shopping is another reason to travel across borders. An open question is how the flow of cross-border shopping affects the economic situation in the receiving country. Expenditures by cross-border shoppers may affect local business as well as government revenues and infrastructure developments.

When examining patterns of automobile travelers between Canada and the U.S., we see that the flow of travelers went through many changes since the 1980's. Figure 1 shows that the flow of Canadian travelers returning the same day from the U.S. (a common measure of cross-border shoppers) increased rapidly from 1986 to the beginning of the 1990's. It then slowed until the start of the century. This shopping is often motivated by price, quality, and variety differences across countries. Several studies have looked into motivations for cross-border shopping. For instance, Di Matteo (1993) as well as Di Matteo and Di Matteo (1993) showed that per capita income, the real exchange rate and taxation on goods and services are prime economic determinants of cross-border shopping.

This paper provides a quantitative analysis to determine if the flow of travelers returning to Canada from the U.S. the same day of their departure, has an impact on the number of establishments and the number on employees in retail industries in U.S. border counties. We examine the following industries: grocery stores, eating places, drinking places, gasoline service stations, clothing and clothing accessories stores, radio, television and other electronic stores and general merchandise stores. We also include U.S. cross-border shoppers, as they might impact negatively on U.S. retailers. We examine four different specifications in

our regression analysis: include time fixed effects, county fixed effects, both types of fixed effects, and include no fixed effects.

We find significant relations for some industries in the county fixed effect specification. Canadian travelers appear to positively affect the size of those industries, as measured by the number of establishments. This is particularly the case for grocery stores and clothing stores. As expected, American cross-border shoppers negatively affect those industries. However, few other industries show significant results, and for some, the effects are the opposite of what one would expect.

In the next section, we review the literature on cross border shopping and analyse the cross-border market between Canada and the U.S. In Section III, we present the data and describe the different trends of the period from 1986 to 2008. We continue with a presentation of the model used to estimate relationships. Section IV presents the estimation results and we analyse the implications of those results. We conclude with remarks and future research implications.

II.   <u>**Literature Review**</u>

Most of the literature on cross-border shopping focuses on the motivation behind the phenomenon. As mentioned before Di Matteo (1993) and Di Matteo and Di Matteo (1993) argue that cross border shopping may be motivated by per capita income, the real exchange rate and different taxation policies. They followed a simple methodology, regressing same day return expenditure on a set of independent variables. However, they did not find that gasoline price was a significant motivator of expenditure by travelers returning the same day. They also found that the U.S.-Canada Free Trade Agreement was not responsible for any rise in traveler's expenditures. Those indicators, especially the real exchange rate and the diverging taxation policies from a country to another are important to take into account when analysing cross border shopping between Canada and the U.S. The real exchange rate went through large

variations during the time period under study. We will see that the flow of same day trips of Canadians to the U.S. is strongly correlated with the real exchange rate and to some extent as well with our dependent variables: number of employees and establishments.

In another study concerning cross-border shopping and the exchange rate, Chandra et al. (2010) analysed reasons for Canadians to cross the American border between 1990 and 2009. They determined using the International Travel Survey that 43.3% of travelers returning the same day are traveling for pleasure and personal reasons, which include shopping purposes. Using same day trips and overnight trips, they found that border crossing increases when the home country currency gets stronger.

The type of goods purchased by cross-border shoppers was examined by Ford (1992). The author found that people living within 30 minutes of the border tend to undertake short trips to buy groceries, gasoline and clothing. The range of different purchased goods expands as we focus on travelers living further from the border, with expenditures increasing for more costly and specialized goods.

Specifically studying large grocery sellers, Gopinath et al. (2010), "show that retail prices respond to changes in wholesale costs in neighbouring stores within the same country but not to changes in wholesale costs in a neighbouring store located across the border."[1] This suggests that prices are likely to differ across the border.

Regarding the impact of cross-border shopping on the economic health of the country receiving cross-border shoppers, Campbell and Lapham (2004) show how the real exchange rate might affect the number of establishments and the average employment for four different industries in the U.S. (food stores, gasoline service stations, eating places and drinking places).

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[1] Gopinath G., Gourinchas P.-O., Hsieh C.-T. & Li N., *International Prices, Costs and Markup Differences*, Working Paper, University of California at Berkeley, August 17 2010, abstract.

They found that "a real exchange rate shock affects the number of stores in three retail industries either contemporaneously or after one year"[2].

Another study, by Kendall and Kreck (1992), reported that Canadian travelers were clearly influencing the creation of jobs in the U.S. In addition, examining retail stores, hotels and local transport services, they also argue that those travelers contributed to the loss of jobs in Canada. This result tends to highlight the importance of taking American travelers in to account when studying the impact of same day travels on the economic performance of American retail stores. It seems reasonable to think that if Canadian cross-border shoppers are influencing negatively the job market in Canada, U.S. cross-border shoppers could also induce analogous results in the U.S.

In recent research, Baggs et al. (2011), used firm-level data to identify how Canadian retailers are responding to movements of the exchange rate. Taking sales, employment, profitability and probability of survival, they quantified the impact of cross-border shopping on Canadian retailers. They found that the exchange rate affects the employment variable, although the effect diminishes quickly over the distance from the border. In addition, the researchers examined the effect of the exchange rate on firm's probabilities of survival. To their surprise, they found that the exchange rate has a positive impact on the probability of survival. Noting that the studied time period was one of retailing restructuring, they suggest that further research should be performed regarding this result.

Other studies focused on structural breaks in the cross-border shopper's behaviour and impacts. In a study considering Canadians retuning the same day from Whatcom County in Washington, Hodges (2007) makes an attempt to explain the decreases of cross-border shoppers. While he agrees that anti-American perception caused by the war in Iraq may have an impact, he argues that the border reinforcement played a major role. As he states,

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[2]Campbell J. R. & Lapham B., *Real Exchange Rate Fluctuations and the Dynamics of Retail Trade Industries on the U.S.-Canada Border*, The American Economic Review, Vol. 94, No.4, September 2004, p.1205.

"perception of long delays beginning in September 2001 altered cross-border travel patterns"[3]. In this way, he concluded that there is a structural break in 2002.

The next section contains an analysis of the time series used in our study. We investigate variation during the time period studied and the possible explanations concurring with those changes. We also present data on selected retail industries. We identify the trends within the time period and their possible causes. We follow with the presentation of the regression model that is used in this study and the different specifications applied to the model.

III.   Data and Methodology

III.1 Data

Our traveler's data comes from Statistics Canada International Traveler Survey. We will use Canadian residents returning the same day from the U.S. as well as provincial data to estimate regional differences. Most of the literature on cross-border shopping argues that the majority of same-day return travelers are shoppers and that it is therefore sensible to use it as an indicator of cross-border shopping. However, we also use information on travelers staying one night and those staying two or more nights to investigate their impact on the retail industry.

Figures 1 and 2 depict the relationship between the flow of Canadian travelers returning the same day as well as the flow of American travelers returning the same day and the nominal exchange rate in Canadian dollars per unit of U.S. dollar. The figures suggest a negative relation between Canadian travelers and the exchange rate as the number of travelers

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[3] Hodges H., *Declining Border Crossings: An Econometric Study of Border Crossing in Whatcom County*, Canadian Journal of Regional Science, Vol. 30, No. 1, p. 80.

rise when the exchange rates fall. We observe the inverse relation, as expected with American travelers. This suggests that these travelers are responding to differences in prices between the two countries in a way which is consistent with cross-border shopping. Hence, same-day travelers appear to be a reasonable measure of cross-border shoppers.
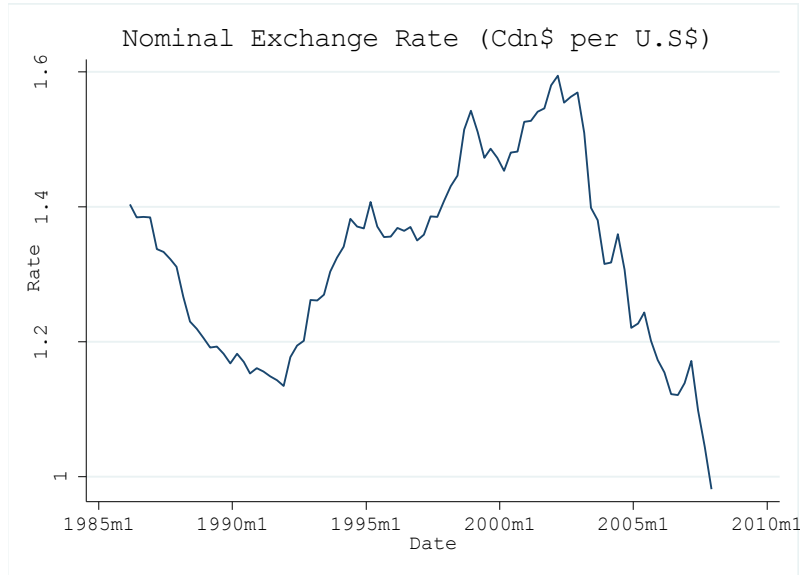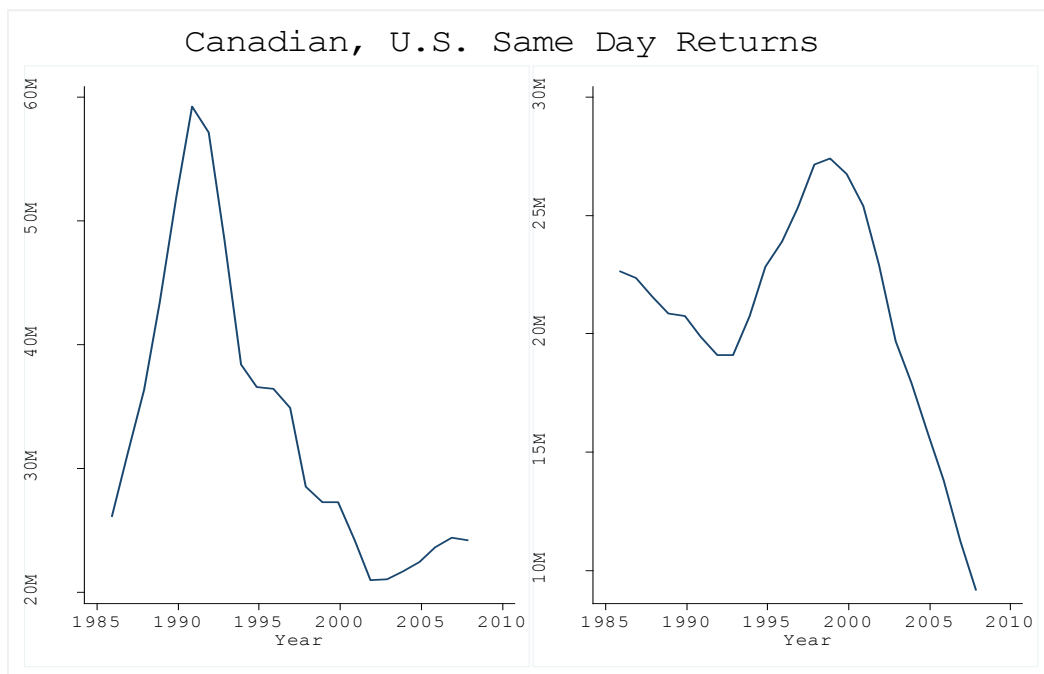
Figure 1

Figure 2

When examining the data on cross-border shopping, we can discern different trends through the period in question. Figure 2 clearly shows an increase of cross-border shopping by Canadians from 1986 to the beginning of the 1990's and then going through a long declining period, with a slight rise in 2002 up to 2006. Many reasons can be evoked to explain this behaviour. The goods and services tax (GST) introduced in Canada in 1991, had an impact on shopping decisions as it would motivate residents to shop abroad. Many researches focused on the impact of tax differences on border crossing behaviour as discussed in Section II. The other major reasons for the deviation in same day return travel would be the variation of the real exchange rate, the introduction of big box stores in Canada as well as the tightening of the border after the September 2001 terrorist attack. But what is relevant for this study is how the number of establishments and the average employment has responded to the variation in cross-border shopping. To do so, we will also need to include cross-border shoppers coming to Canada from the U.S. since they may influence the economic stability of their home country.

Those travelers seems to follow the opposite pattern from Canadian travelers until the late 1990's where they numbers were contracting in both time series. As shown in Figure 2 their numbers decline in the years afterwards, until they reach a low level of 10 million cars in 2008. This steep decline could be mainly due to a stronger Canadian dollar or the higher restrictions at the border after the September 2001 events. This might lead us to check if the relation we are studying is the same before and after the late 1990's. We will now analyse the behaviour of the number of establishment and the number of employees for the range of industries that we analyse in this essay.

The data used for county level employment and number of establishment are retrieved through the United States Census publication: *County Business Patterns* (CBP). The time period selected includes years from 1986 to 2007. The data sets used in this study include only the counties bordering Canada, therefore covering sixty American counties. We focus on seven different industries: eating places, drinking places, gasoline service stations, grocery stores,

clothing and clothing accessories stores, radio, television and other electronic stores and general merchandise stores.

To address the issues of suppressed data, encountered because the U.S. Census Bureau withholds information that could violate business confidentiality or does not meet publication standard, we use two methods. First, we exclude from the study all the counties hosting less than 20,000 residents according to U.S. Census Bureau population estimates of the year 2000. If some suppressed observations are still present, we exclude those county-industry pairs from the data. Moreover, although data on industries is available until 2008, we stop our analysis in 2007 to avoid any kind of outstanding behaviour caused by the recent recession.

Whenever studying the retail trade sector in the United States during the 1990's, one must consider the structural changes that it has gone through. Foster et al. (2006) argues that "all of the labour productivity growth in the retail trade sector is accounted for by more productive entering establishments displacing much less productive exiting establishments"[4]. They state that large national commercial chains stores might play a great impact on this productivity increase. It is possible then, that the restructuring of the retail industry might play a role in the variations of the number of establishments and employees turnovers within stores. Figures 5.1 to 5.7 depict employment of the industries under study while Figures 6.1 to 6.7 reports the number of establishments (see Appendices B and C). We now discuss patterns and data issues for each industry.

Grocery stores are a type of industry which sells a large variety of goods. A large part of this industry is represented by convenience stores although they hire fewer employees than large supermarkets. Through the years, the industry followed different patterns represented in Figures 5.1 and 6.1. In the early years of this study, grocery stores suffered significantly from the 1991 recession. After a period of relative stability, the number of establishments as well as

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[4] Foster L., Haltiwanger J., Krizan C. J., Market Selection, Reallocation, and Restructuring in the U.S. Retail Trade Sector in the 1990s., The Review of Economics and Statistics, November 2006, Vol.88, No. 4, pages 748-758.

employees started falling. Many explanations could describe this situation. First, the industry is facing more competition as home cooked food is being replaced by restaurants and takeout meals. Moreover, competition is arising from stores which traditionally were not involved in selling food, such as Wal-Mart. This transformed the industry by pushing grocery stores to diversify their products and services. On an opposite trend, many grocery stores started to specialize to adapt themselves to the demand of local customers. We also argue that the variation of cross-border shoppers might affect the grocery store industry and that the apparition of larger supermarkets in Canada may have diminished the flow of travelers crossing the border in order.

Eating places mostly consists of limited service restaurant and full-service restaurants. It also includes special food service being a marginalized part of the industry. In contrast with the grocery store industry, eating places have seen their number of establishments as well as employees rise in a relatively constant manner throughout the studied period (see Figures 5.2 and 6.2 in the appendix). Eating habits of the population are certainly playing a role as explained before. One might also think that cross-border shoppers are more likely to eat in one kind or another of service restaurant since they are fairly far from their home. This might explain the drop in the early 1990`s when we also saw an sharp decline in Canadian travelers returning the same day.

Drinking places are closely connected to food service establishments. Especially since alcohol started to be identified as a cause for health problems, drinking establishments started to diversify their products and included food in their menus. Figures 5.3 and 6.3, in the appendix show how drinking establishments and their employees seem to be facing a more volatile market than their counterpart eating places. Although the impact of cross-border shoppers on drinking places might be more limited, we still believe it might play a significant role in determining the health of this market. The early twenty first century saw large variations in the number of employees while the number establishments plummeted in 2005.

However, because of outstanding variations in 2004, that are likely due to a change in data collection and reporting methods, we stop our analysis in 2003.

Like many industries, clothing and apparel stores (figures 5.4 and 6.4 in the appendix) are always looking to stay competitive. The increasing availability and security of internet shopping is likely to affect the number of employees and establishments of clothing stores. Although the decrease in their number throughout the 1990`s might be related to internet shopping, we believe that cross-border shopping is also responsible. The two time series seems to follow each other as they both increased before 1990, afterward declining until the late 1990`s. They both remain relatively stable in the following years.

Gasoline service stations, as seen in Figures 5.5 and 6.5 in the appendix, may be used by cross-border shoppers traveling by car. Differences in prices between the two countries may cause travelers to fill up on one side or the other when undertaking a same day return trip. In the particular series of this study, we note a big gap from 1997 to 1998. Mainly due to the coding reorganisation, this bump illustrates how gasoline service stations are trying to compete with convenience stores. These breaks in the series lead us to believe that we should separate the analysis at the 1998 date and evaluate both time periods separately.

There is definitely an upward trend in the electronic store industry, although the jump in 1997 is partly due to the reorganisation of the industries' coding. The ever reducing costs of electronic items and the arrival of big-box format stores in this industry helped the market to grow over the years. It is quite possible that a difference in prices, either caused by lower costs or by changes in the exchange rate, pushed Canadians to travel relatively short distances to acquire electronic goods at a cheaper price. As the two series rise around 1990 (refer to figures 5.6 and 6.6 in the appendix), it seems like Canadians travelers might have impacted on the market's health. Although the rise of internet might induce people to shop online, the industry is also relying on increasing sales of computer and trendy devices. Again, as in the gasoline service station industry, the adjustments of industries code that took place in 1997 is causing

some time series to have large disparities before and after that year. Therefore, we split the sample in two sub-samples separated by the year 1998.

When considering industries like clothing and electronic stores, we should take into account the limitation of duty free import that the Canadian government imposes on travelers. For same day return, no article is duty free, while 24 hours trips allow you to purchase 50$CAN of product and for a 48 hours trip, the duty free amount is 400$CAN. However, Chandra et al. (2010) note that same day return trip are particularly sensitive to variation of the exchange rate, which leads the author to believe that travelers might be hiding their purchases from border officers or that the set of rules are not appropriately enforced. Another specificity of those industries, especially the electronic industry, is the possibility of buying via internet. Ballard and Lee (2007), conclude in their study that home-country shopping, cross-border shopping and internet shopping are actually substitutes. Therefore, the dependant variable could not be totally determined by Canadian cross border shopper for those industries.

General merchandise stores are becoming more popular since the 1990's, but it seems to be characterised by bigger stores. Small stores face an increasing competition from big box format stores like Wal-Mart and others. The data, shown in Figure 5.7 of the appendix B, illustrates an important decrease of the number of employees in 2003. Therefore, we exclude observations occurring after 2002 in the final analysis.

III.2 <u>Methodology</u>

The model we will use in this paper is a simple ordinary least square regression with and without fixed effects. We also allow for time fixed effects to account for variables that are constant across counties but evolve over time and fixed effects on the counties to account for variables that are constant in time but vary from one county to another. In particular we run a specification without any fixed effects, then another one including only time fixed effects and

one including counties fixed effects only. Finally, we run a last specification including both time and counties fixed effects. We include Canadian and American travelers as explanatory variables. We expect those series to be autocorrelated, therefore, we take the first difference of the logarithm of both series to include in the final regressions. Finally, we control for heterogeneous errors and make sure that our regression is robust to those kinds of errors. The basic regression equations we use are as follow:

$$\Delta\ln(Emp)_{jt} = a + \beta\,\Delta\ln(Can)_{jt} + \gamma\,\Delta\ln(Am)_{jt} + \theta(y) + \theta(c) + e_{it} \tag{1}$$

$$\Delta\ln(Est)_{jt} = a + \beta\,\Delta\ln(Can)_{jt} + \gamma\,\Delta\ln(Am)_{jt} + \theta(y) + \theta(c) + e_{it} \tag{2}$$

Equation (1) considers the case where cross-border shopper's impact on the number of employees in a given industry. We define $\Delta\ln(Emp)_{jt}$ by the one year variation of the logarithm of the number of employees in a specified industry in year t and county j. Similarly, equation (2) considers the case of the impact on the number of establishments. $\Delta\ln(Est)_{jt}$ defines the one year variation of the logarithm of the number of establishments in a given industry in year t and county j. β captures the impact of Canadian cars returning the same day from the U.S. and γ captures the impact of American cars returning the same day from Canada. In our equation, $\Delta\ln(Can)_{jt}$ defines the one year variation of the logarithm of Canadian cars returning the same the same day from the U.S. in year t and county j. Similarly, $\Delta\ln(Am)_{jt}$ represents the one year variation of the logarithm of American cars returning the same day from Canada in year t and county j. Finally, $\theta(y)$ and $\theta(c)$ respectively represent year and counties dummies respectively. All specifications also include an error term, denoted by e_{it}.

A first regression will be run to examine the relationships at the national level; that is analysing the relationship between Canada wide travelers on all the relevant counties for each industry. To check if the relation is stronger for some regions, at a smaller scale, we will perform the same analysis at a different geographic level. The number of observations being insufficient for a provincial analysis, we turn directly to a regional grouping of the data. We split the sample in three regions: the west, including Alberta and British Columbia; the mid-

west or central region, which regroup Saskatchewan and Manitoba; and the east, counting in Ontario, Quebec and New Brunswick. Because of a lack of observations, the central region is not analysed in the result section.

Finally, to examine if the relation is stable across time, we will split the sample of some industries into different time periods. This might help us determine if there is some change in the behaviour of cross-border shoppers from one period to the other.

IV. Results

IV.1 Country Wide Analysis

Table 2 reports results of the country level regressions for each industry, without any fixed effects, by showing coefficients on Canadian and American travelers with their corresponding level of significance. We will analyse each industry separately in this segment and will be more general when reporting the results of regional regressions. The impact of travelers on grocery stores seems to be quite significant. Canadian travelers returning the same day have a positive impact on both the number of employees and the number of establishments. We indeed expected a positive relation between those two variables. The magnitude of the effect is considerable as well. A one point percentage increase in the growth rate of Canadian travellers would generate a 0.1564 point percentage increase in the growth rate of employees in grocery stores. The same increase in Canadian travelers would increase the growth rate of the number of establishments by 0.133 point percentage. On the other side, American travelers have a significant negative impact only on the number of establishments. A one point percentage increase in the growth rate of the number of American cars crossing the border and returning the same day would decrease the growth rate of the number of establishments by 0.1138 percentage points.

When estimating the effect on eating places we found that only the American travelers have an significant effect on this industry. However, this effect is only present for the number

of employees. In fact, a one point percentage increase in the growth rate of American travelers would decrease the growth rate of the number of employees by 0.2313 point percentage. It therefore seems that eating places are more likely to vary their pool of employees than grocery stores.

Drinking places, an industry closely related to eating places, surprisingly does not show any significant relation between our independent and dependant variables. This may imply that drinking places are absorbing the changes of travelers more easily than eating places.

As mentioned before, the analysis of gasoline service stations was done in two parts. Before 1998, it seems that Canadian travelers and American travelers are affecting the number of establishments of this industry. However, they both do so negatively. We find that an increase of one point percentage increase in Canadian travelers decreases the growth rate of the number of establishment by 0.1289 point percentage. Similarly, the same variation in the growth rate of American travelers produces a decrease of 0.2013 point percentage. Although the effect of American travelers is not surprising, the negative effect of Canadian travelers can be. Moreover, after 1998, the relation found between Canadian travelers and the dependant variables is sustained while the American travelers have no more impact. The size of the effect is also much larger than in other industries as a one point percentage increase in the growth rate of the number of Canadian travelers decreases the growth rate of the number of employees and the number of establishment decreases respectively by 0.3955 and 0.4304 point percentage.

Table 2: Results from Country Level Regressions (No Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	0.1564** (0.0616)	-0.1173 (0.0734)	0.0341	258
	Establishments	0.1330* (0.0416)	-0.1138*** (0.0584)	0.0426	272
Eating Places	Employees	-0.1111 (0.0787)	-0.2313** (0.113)	0.0162	264
	Establishments	-0.0403 (0.0372)	-0.0344 (0.0527)	0.0042	272
Drinking Places	Employees	-0.0146 (0.1258)	-0.2362 (0.2159)	0.0064	132
	Establishments	0.0376 (0.113)	-0.0286 (0.1699)	0.0006	271
Gasoline Service Stations (before 1998)	Employees	-0.1489 (0.093)	-0.1501 (0.1402)	0.0372	109
	Establishments	-0.1289* (0.0493)	-0.2013** (0.0923)	0.0823	112
Gasoline Service Station (after 1998)	Employees	-0.3955* (0.108)	0.1606 (0.137)	0.0985	147
	Establishments	-0.4304* (0.0955)	0.1771 (0.1093)	0.1524	160
Clothing and Clothing Accessories Stores	Employees	0.2889** (0.1317)	0.0153 (0.181)	0.0200	169
	Establishments	0.2640* (0.0854)	-0.2100*** (0.1259)	0.0424	272
Electronic Stores (before 1998)	Employees	0.1359 (0.1434)	-0.8604 (0.6383)	0.0420	53
	Establishments	-0.0236 (0.173)	0.7089*** (0.3867)	0.0563	103
Electronic Stores (after 1998)	Employees	-1.4993 (1.3412)	0.5395 (0.5278)	0.1030	55
	Establishments	-0.8988* (0.2814)	0.3683 (0.2661)	0.1437	160
General Merchandise Stores	Employees	-0.0302 (0.1461)	0.4712*** (0.274)	0.0222	181
	Establishments	0.0257 (0.0922)	0.0446 (0.1107)	0.0009	272

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

From the results on clothing and clothing accessories stores, we again find results confirming the hypothesis that Canadian travelers affect positively American industries on the border while American travelers harm them. Indeed, a one point percentage increase in the growth rate of Canadian travelers increases the growth rate of the number of employees and establishments by respectively 0.2889 and 0.264 point percentage. On the other hand,

American travelers only affect significantly the growth rate of the number of establishments. A one point percentage of their growth rate decreases the growth rate of the number of establishment by 0.21 point percentage.

For the electronic store industry, we followed the same methodology as for the gasoline service station industry, which is splitting the sample into two time period. The results are only significant for two of the results. It seems that American travelers have a positive impact on the growth rate of the number of establishments by a large amount. A one point percentage increases in the number of American leaving the country for less than 24 hours, increases the growth rate of the number of establishments by 0.7089 point percentage. When looking at the impact of Canadian travelers, we see a similar large reaction on the growth rate of the number of establishments although the effect here is negative. A one point percentage increase in the number of Canadian travelers decreases the growth rate of the number of establishments by 0.8988 point percentage.

The last industry, general merchandise stores, does not respond significantly to Canadian travelers by adjusting their pool of employees or their number of establishments. Yet, American cross-border shoppers seem to have a significant positive impact on the number of employees. In fact, a one point percentage increase in the number of American travelers increases the growth rate of the number of employees by 0.4712 point percentage.

We then include county fixed effects to analyse the relation keeping constant variables that may influence the results which vary from a county to another but are constant in time. This enables us to exclude the omitted variable bias that may come from different cultural or legal specifications of the list of counties. Table 3 reports the results for this specification.

In the grocery store industry, we get similar results as without any fixed effects. The size of the effect is also comparable. A one point percentage increase in the growth rate of the number of Canadian travelers would provoke a 0.1684 point percentage increase in the growth rate of the number of employees of grocery stores, while the same variation in the growth rate

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of American travelers would decrease the growth rate of the number of employees by 0.1213 point percentage. The number of establishments is also responding from variation of cross-border shoppers. A one point percentage increase in the growth rate of the number of Canadian travelers would yield a 0.1435 point percentage increase in the growth rate of the number of grocery stores while a one point percentage increase in the growth rate of American travelers would cause a decrease of the growth rate of those establishments by 0.1157 point percentage.

Eating places and drinking places are not responding significantly from variations of cross-border shoppers. Although there is a significant adjustment of employees in eating places when there is an increase of the growth rate of American travelers. A one point percentage increase of their growth rate would create a 0.2483 point percentage decrease of the growth rate of employees.

Again, the gasoline service station industry is behaving differently from variation of cross-border shoppers. Specifically, before 1998, Canadian and American travelers have both a negative effect on the growth rate of the number of establishments. A one point percentage of the growth rate of Canadian and American travelers would respectively decrease the growth rate of the number of gasoline establishments by 0.1334 and 0.2289 point percentage. After 1998, Canadian travelers affect both the number of employees and establishments. A one point percentage increase in their number would cause the growth rate of employees and establishments to decrease respectively by 0.4204 and 0.449 point percentage, which is a larger effect than before 1998. Again, American travelers affect only the growth rate of establishments by a decrease of 0.1607 point percentage in its growth rate.

Table 3: Results from Country Level Regressions (County Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	0.1684** (0.0668)	-0.1213*** (0.0598)	0.0340	258
	Establishments	0.1435* (0.0336)	-0.1157*** (0.0544)	0.0426	272
Eating Places	Employees	-0.1184 (0.0721)	-0.2483* (0.0643)	0.0162	264
	Establishments	-0.0375 (0.0339)	-0.0422 (0.034)	0.0042	272
Drinking Places	Employees	0.0127 (0.1101)	-0.3267 (0.2279)	0.0063	132
	Establishments	0.0394 (0.102)	-0.0133 (0.1933)	0.0005	271
Gasoline Service Stations (before 1998)	Employees	-0.1559 (0.0987)	-0.1736 (0.1894)	0.0371	109
	Establishments	-0.1334** (0.0491)	-0.2289*** (0.1124)	0.0821	112
Gasoline Service Station (after 1998)	Employees	-0.4205* (0.1299)	0.1524 (0.1187)	0.0984	147
	Establishments	-0.4490* (0.0967)	0.1607*** (0.09)	0.1522	160
Clothing and Clothing Accessories Stores	Employees	0.2067** (0.1146)	-0.0140 (0.1159)	0.0199	169
	Establishments	0.2779* (0.082)	-0.2185** (0.0824)	0.0424	272
Electronic Stores (before 1998)	Employees	0.0585 (0.1376)	-0.6825 (0.6992)	0.0414	53
	Establishments	0.0317 (0.1936)	0.6683 (0.5436)	0.0553	103
Electronic Stores (after 1998)	Employees	-1.7744 (1.1448)	0.9871*** (0.4668)	0.1020	55
	Establishments	-0.8992* (0.267)	0.3923 (0.3167)	0.1437	160
General Merchandise Stores	Employees	-0.0657 (0.1533)	0.5636 (0.3342)	0.0221	181
	Establishments	0.0251 (0.058)	0.0403 (0.1035)	0.0009	272

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

In the clothing industry, we return to results according to the initial hypothesis that Canadian travelers affect positively American industries while American cross-border shoppers do so in a negative way. Indeed, a one point percentage increase in the growth rate of the number of Canadian cross-border shoppers will increase the growth rate of the number of employees and establishments of this industry by 0.2067 and 0.2779 point percentage

respectively. On the other hand, American travelers have a negative impact only on the number of clothing establishments. A one point percentage in the growth rate of American cross-border shoppers would decrease the growth rate of the number of establishments by 0.2185 point percentage.

Once again, the results in the electronic stores industry are mostly not significant. While none of the results are significant before 1998, after 1998, a one point percentage increase of the growth rate of the number of Canadian travelers decreases the growth rate of the number of establishments by a considerable 0.8992 point percentage. A similar variation of the growth rate of American travelers yields a 0.9871 point percentage change in the growth rate of the number of employees in the grocery stores. Finally, the general merchandise industry is not responding significantly in any way to variation of the growth rate of cross-border shoppers.

We now turn to a specification with year fixed effects only. This allows us to account for variables that vary from year to year but are fixed within counties. Those could include the economic variation affecting the whole country or the evolution of business ideology. Specifically, it could also include new form of industry, notably the introduction of big box format stores. Including this fixed effect affect considerably the results. Few coefficients remained significant while their sign is often contradictory to our expectations. This could imply that changes that occurred through the years in the sample have a significant impact on the dependant variables. Table 4 reports the results of the regressions but we will not analyse each coefficient individually since few of them are significant.

Table 4: Results from Country Level Regressions (Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R^2	Observations
Grocery Stores	Employees	0.0250 (0.0815)	-0.0648 (0.0933)	0.1976	258
	Establishments	-0.0055 (0.0592)	-0.0674 (0.0673)	0.2818	272
Eating Places	Employees	-0.1013 (0.11)	-0.0787 (0.1301)	0.1332	264
	Establishments	-0.0802 (0.0499)	0.1214** (0.0607)	0.3990	272
Drinking Places	Employees	-0.4706 (0.3592)	0.0850 (0.3973)	0.1224	132
	Establishments	0.0602 (0.2128)	-0.1361 (0.2351)	0.1561	271
Gasoline Service Stations (before 1998)	Employees	-0.2211 (0.1658)	-0.0854 (0.1731)	0.0851	109
	Establishments	-0.1010 (0.0746)	-0.1563*** (0.0927)	0.2099	112
Gasoline Service Station (after 1998)	Employees	0.0430 (0.1233)	-0.2331 (0.2098)	0.3760	147
	Establishments	0.0600 (0.0802)	-0.0662 (0.1236)	0.5504	160
Clothing and Clothing Accessories Stores	Employees	0.0109 (0.3061)	0.4793** (0.2359)	0.2443	169
	Establishments	0.1500 (0.1394)	0.0960 (0.1189)	0.2008	272
Electronic Stores (before 1998)	Employees	0.6894*** (0.3839)	-1.1447 (0.8771)	0.1072	53
	Establishments	-0.4746 (0.2962)	0.7961** (0.3659)	0.1285	103
Electronic Stores (after 1998)	Employees	-1.6698 (2.0006)	1.0445 (1.0496)	0.2094	55
	Establishments	-0.3770 (0.2307)	-0.2750 (0.3598)	0.5028	160
General Merchandise Stores	Employees	0.2869 (0.2316)	0.1706 (0.2482)	0.2175	181
	Establishments	-0.2583** (0.1253)	0.3151** (0.1437)	0.1894	272

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 5 reports the results including both types of fixed effects. That is, county fixed effects and year fixed effects. As in the previous specification with only year fixed effects, most of the results are not significant. Moreover, the few significant results are still showing signs contradictory to our original assumptions. We argue that this is due to the presence of the year fixed effects, which yielded similar results in the previous specification.

Table 5: Results from Country Level Regressions (Both County and Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R^2	Observations
Grocery Stores	Employees	0.0415 (0.0966)	-0.0791 (0.0931)	0.1974	258
	Establishments	0.0158 (0.04)	-0.0812 (0.0692)	0.2815	272
Eating Places	Employees	-0.1077 (0.1174)	-0.0967 (0.1174)	0.1331	264
	Establishments	-0.0680 (0.0609)	0.1121*** (0.0616)	0.3988	272
Drinking Places	Employees	-0.3154 (0.3766)	-0.1372 (0.4356)	0.1147	132
	Establishments	0.0551 (0.1763)	-0.1147 (0.1633)	0.1560	271
Gasoline Service Stations (before 1998)	Employees	-0.2624 (0.2777)	-0.0892 (0.279)	0.0847	109
	Establishments	-0.1034 (0.0748)	-0.1797 (0.1039)	0.2095	112
Gasoline Service Station (after 1998)	Employees	0.0469 (0.1327)	-0.2923 (0.2464)	0.3753	147
	Establishments	0.0701 (0.0972)	-0.1020 (0.1288)	0.5502	160
Clothing and Clothing Accessories Stores	Employees	0.0664 (0.382)	0.4121 (0.3344)	0.2429	169
	Establishments	0.1907 (0.131)	0.0815 (0.1142)	0.2006	272
Electronic Stores (before 1998)	Employees	0.3882 (0.2584)	-0.8549 (0.802)	0.1022	53
	Establishments	-0.3013 (0.3803)	0.7770 (0.5123)	0.1253	103
Electronic Stores (after 1998)	Employees	-3.0750 (2.0062)	2.4145*** (1.1772)	0.1674	55
	Establishments	-0.3648 (0.318)	-0.2542 (0.382)	0.5027	160
General Merchandise Stores	Employees	0.1954 (0.2538)	0.2765 (0.3203)	0.2161	181
	Establishments	-0.2744* (0.0904)	0.3194*** (0.1758)	0.1894	272

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Using county fixed effect in our model is useful since it allows us to eliminate any omitted variables bias that would be due to county specific characteristic but that are invariant in time. There seems to be a little improvement when including only the county fixed effects which indicate that different counties characteristics may be in play in the relation under analysis. On the other hand, time fixed effect are generating few significant results. This could

mean that other socio-economic forces that vary from year to year are affecting the relation between cross-border shoppers and the different industries of this study. Those forces could range from the progress of internet shopping, the entry of big box format stores and the price of gas. It might be, in addition, that the error term is correlated over time. Therefore, clustered standard errors should be use to increase the accuracy of the statistical inference. One could also argue that using fixed effect reduces the power of our regression by using too many dummy variables.

When comparing results with the study conducted by Campbell and Lapham (2004), we find some similarities in the results. As they found that cross-border shopping, using the exchange rate as a proxy, influences positively food stores, eating places, gasoline service stations and drinking places, we found comparable results for grocery stores and clothing stores. Note that the impact was for some industries, delayed by a year and that their study does not cover our whole period under exam. Finally, while gasoline service stations were positively affected by cross-border shopping, we found that the relation between cross-border shoppers and the number of establishments in this industry in negative. It is, however, impossible to compare those results, since our study report this negative coefficient for the period following 1998 which isn't covered by Campbell and Lapham.

Note that the analysis on the regional specifications did not yield enough significant results. The eastern region has some significant results but mostly contradicting our primary expectations. We believe that the reason for this is the lack of observations at this smaller scale. For completeness we report regional results for the west and east regions in Appendix D. The central region does not contain enough data to generate results. We discuss this issue in the next sub-section.

IV.2 <u>Robustness</u>

Although our study showed significant results for two major retail industries, we believe that our study might be biased by a small number of observations. This might also explain why the powers of our regressions, expressed by the R-squared are quite low. Moreover, it is possible that, even while using fixed effects, the errors of the model are correlated. Donald and Lang (2008) argued that a small number of observations within each groups might cause the t-statistic to be distributed in a different form than the usual normal distribution. Using an ordinary least square regression as we did could cause our statistical inference to be biased.

Cameron et al. (2007) suggest in their study that clustered standard errors have their limit when it comes to inferring on fixed effect models. Their paper suggests that bootstrapping is a solution whenever the sizes of the groups from the panel data are small. They argue that using the bootstrap procedures improves the accuracy of the inference. Further research on cross-border shopping should investigate this alternative.

V.   **Conclusions and Further Research**

In this paper, we analysed empirically the impact of Canadian and U.S. cross-border shoppers on American retail industries situated in counties bordering the northern border of the U.S. We focused our attention on seven different industries of the retail and service sector. As seen in previous studies, we incorporated grocery stores, eating places, drinking places and gasoline service stations. In addition, we included clothing and clothing accessories stores, general merchandise stores and electronic stores as they might be affected by the flow of cross-border shoppers.

We investigated whether the flow of cross-border shoppers from Canada and from America, would impact on two different variables of interests reflecting the economic situation of those industries. We believed that the number of employees and the number of

establishments of an industry would depend to a certain extent, on the movement of consumers across the border. To get a deeper analysis of the phenomenon, we added a range of specifications. Four specifications were analysed: a simple ordinary least square regression without any fixed effects, one with time fixed effects, one with county fixed effects and another one with both.

Using data of the CBP of the U.S. Census, we were able to identify some significant relations. The majority of significant relations concern the number of establishments which is in part due to the dataset used as the data for number of employees that was substantially reduced due to confidentiality reasons. Nonetheless, we found in our sample that cross-border shoppers' influence is mainly targeted around the grocery store industry and the clothing and clothing accessories store industry.

We also found striking results regarding the gasoline service station industry as Canadian cross-border shoppers seems to influence negatively employees and establishments. This special reaction might be due in part by the nature of the industry. Several researchers tried to identify the phenomenon of cross-border fuelling. We turn our attention to Banfi et al. (2005), who "estimates the impact of gasoline price differences between the border regions of Switzerland and adjacent areas in Germany, Italy, and France have upon the demand for this fuel in the Swiss border area". They found that a 10% decrease in the price of gasoline in Switzerland would generate approximately a 17.5% increase in the demand of this product in border regions of the country. Studies were also conducted for border areas in the Netherlands, Germany and Belgium and Spanish regions. In the United States Manuszak and Moul (2008) studied the trade off that consumers are willing to make between price of gasoline and travel. Looking specifically at the northern regions of Illinois and Indiana, the researchers found that the consumers will to travel an additional mile corresponds to approximately 0.075$ per gallon. Those researches proved that consumers are extremely mobile, even across borders, when it comes to buying gasoline. Since prices of gasoline are often more volatile than other retail articles, and as long as the information on price is available, this would imply that foreign

gasoline consumers should indeed impact service stations that border their country. That is as long as the prices do not follow each other from one country to the other. It would therefore be interesting to control for the impact of gasoline prices to identify the real impact of cross-border gas hunters.

It would be interesting to include a wider range of explanatory variables to take into account other structural forces that might impact on the retail industries. While prices of gasoline would help identify the relation for this industry, media coverage of tourist regions and particular industries could also have an impact. A variable relating the importance of media coverage of some regions or industry could be introduced in the model in order to take their impact into account. Since the 1990's, the internet increasing availability and performances has aided consumers get better, faster information as well as provided the ability to shop online. Since those e-shoppers might have an impact on the economic health of some industries, for examples electronic store and clothing stores, a variable relating the internet sales of those companies could be revealing. In addition, household's income is a relevant variable when it comes to shopping. In this view, it would be legitimate to introduce regional variables on traveler's income. An even more accurate variable would be the travelers travel budget. It would eliminate the bias caused by higher income of households not engage in cross-border shopping. Using travelers staying one and two or more nights could also be a good indicator for specific industries such as hotels and restaurant. Figure 3 and 4 in Appendix A report their movement from 1986 to 2007. One should also consider the observation made about the robustness of this study. While clustered standard errors could ameliorate the statistical inference, bootstrapping could also be a good option.

Finally, as employment and the number of establishment is relatively a good indication of an industry's health, some other variables could be more informative. A productivity variable for example, would eliminate the bias coming from the same number of employees being more productive. By introducing productivity variables, as simple as sales per employee, a more realistic impact of cross-border shoppers on the retail industry could be identify. Another

variable of interest, used by Baggs et al. (2010), would be the probability of survival. We could also use average employment to account for restructuration of an industry and the arrival of big box format stores. Finally, in order to discover the real impact of longer travel, one could include counties situated further from the border and examine the impact of travelers staying one or more nights. Specifically, this would be of interest to industries selling more expensive goods like electronic stores.

Appendix A
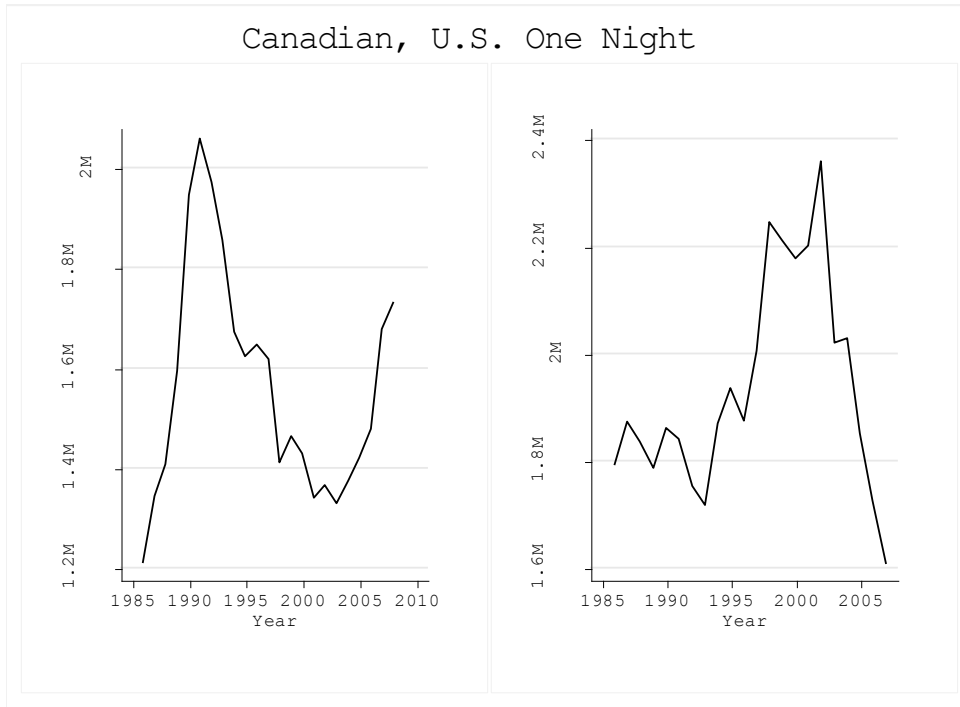
Figure 3

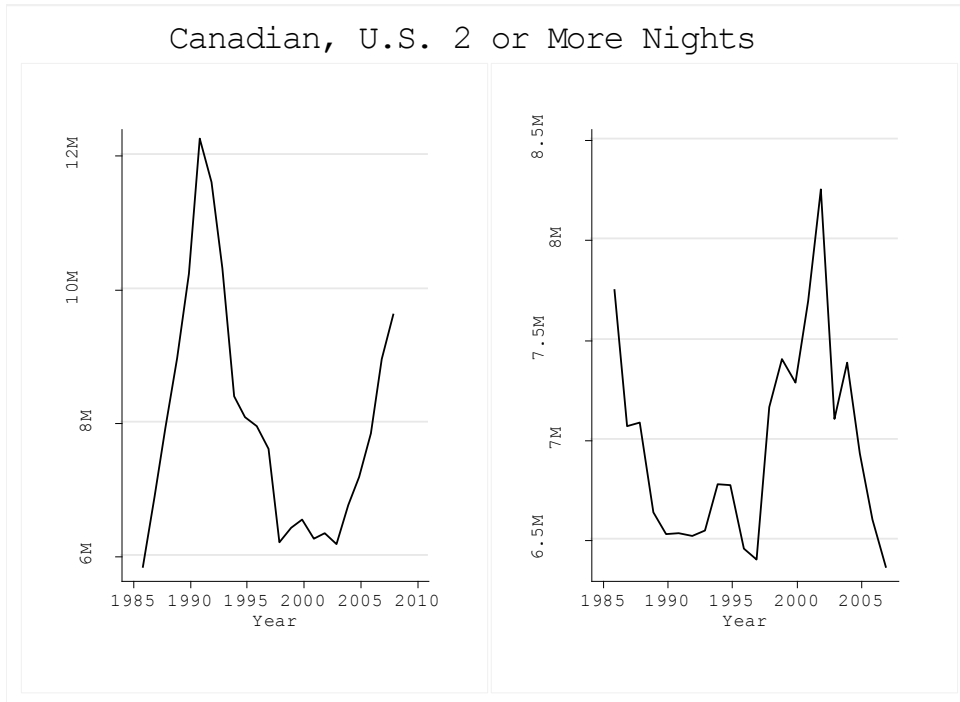Canadian, U.S. One Night

Figure 4

Canadian, U.S. 2 or More Nights

Appendix B

Employment in all border counties

Figure 5.1

Figure 5.2

Figure 5.3

Drinking Places

Figure 5.4

Gasoline Service Stations

Figure 5.5

Clothing Stores

Figure 5.6

Electronic Stores

Figure 5.7

General Merchandise Stores

Year
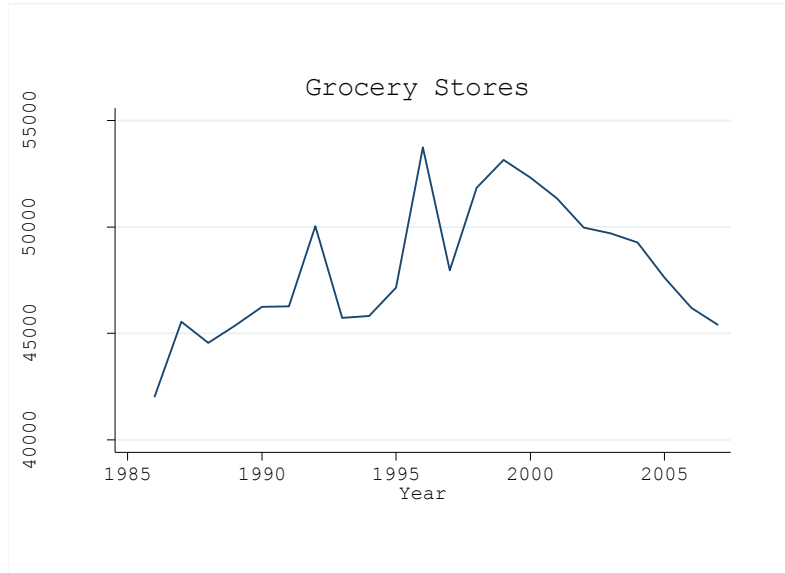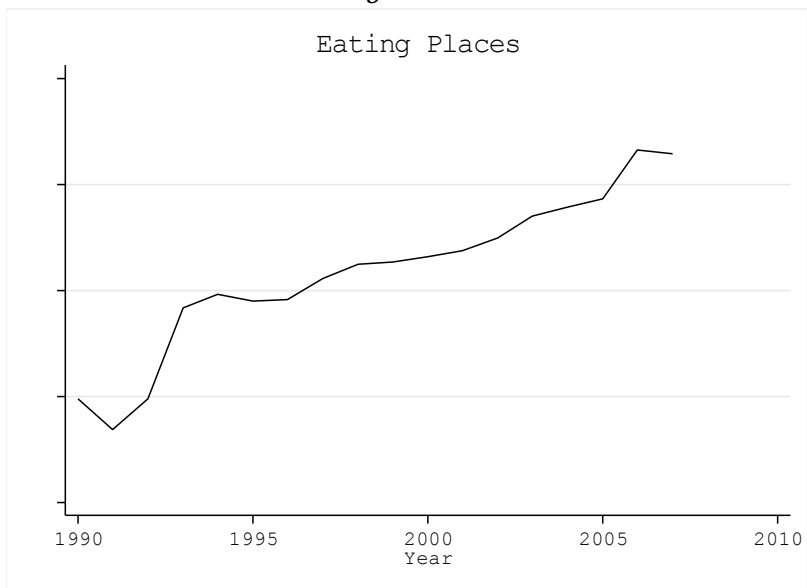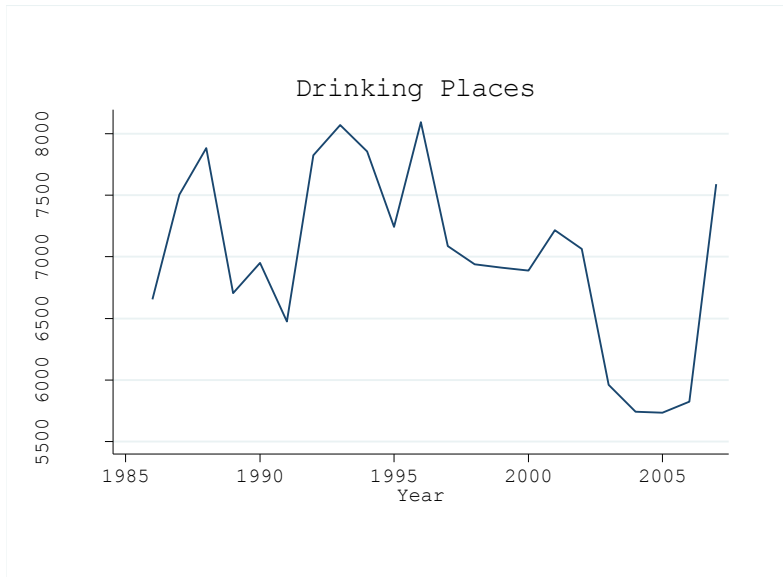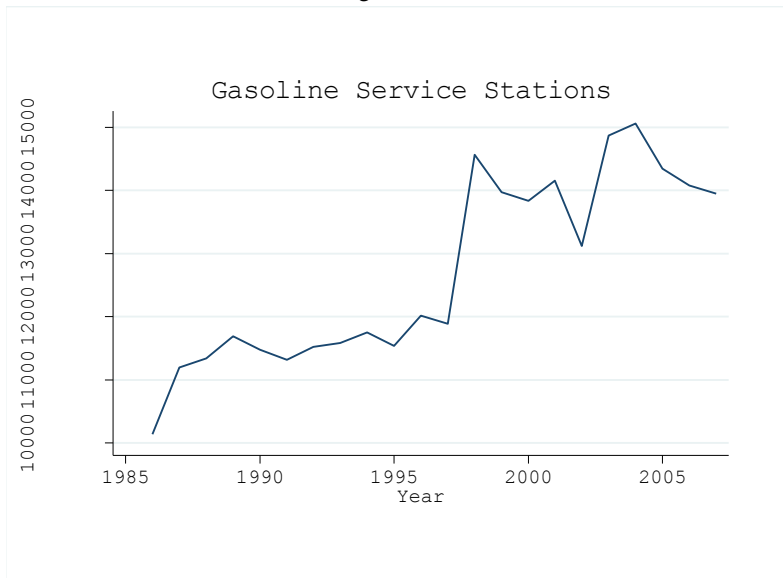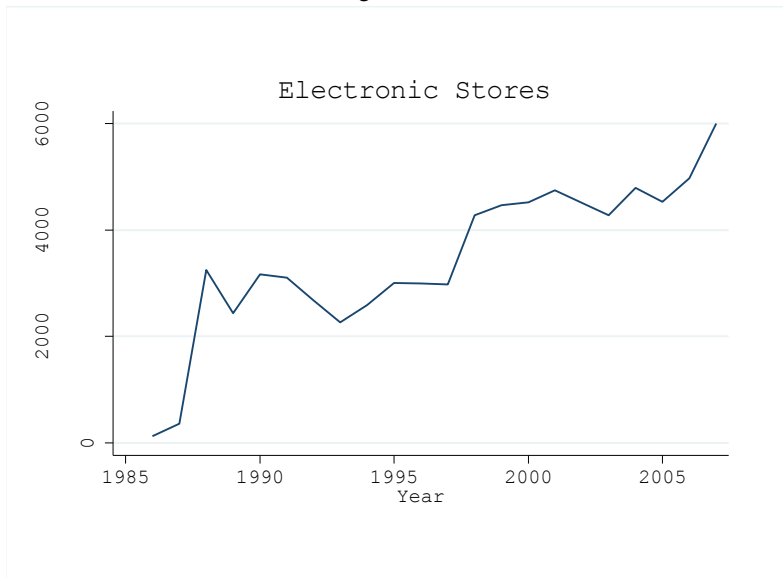
Appendix C

<u>Establishments in all border counties</u>

Figure 6.1

Grocery Stores

Year

Figure 6.2

Eating Places

Figure 6.3

Drinking Places

Figure 6.4

Gasoline Service Stations

Figure 6.5

Clothing Stores

Figure 6.6

Electronic Stores

Figure 6.7

General Merchandise Stores
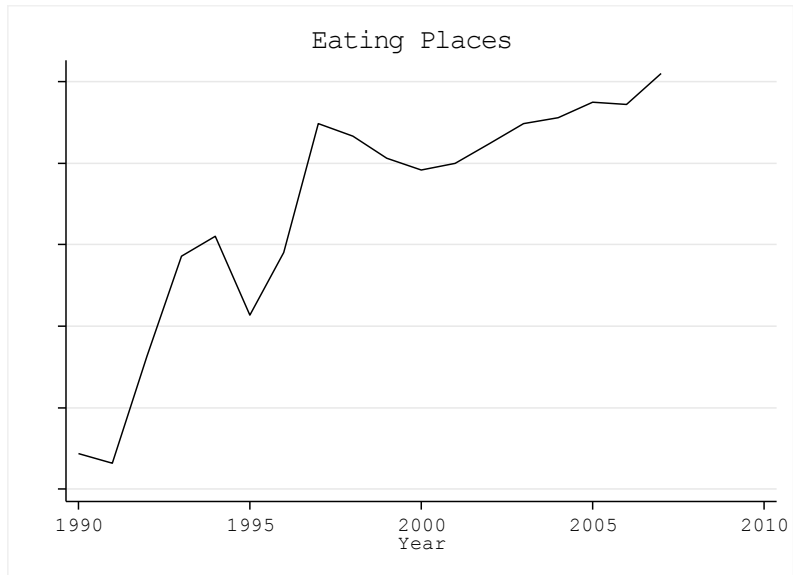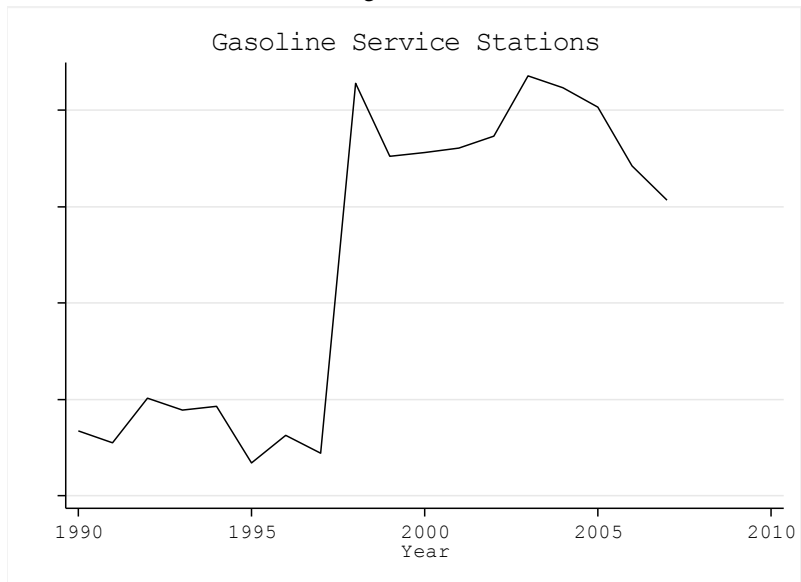
Appendix D

Regional Results

Table 6: Results from West Region Level Regressions (No Fixed Effects)

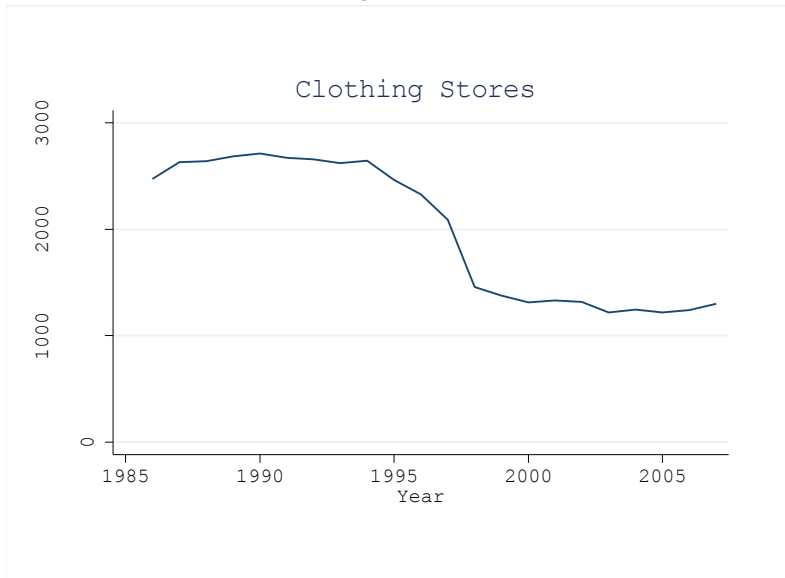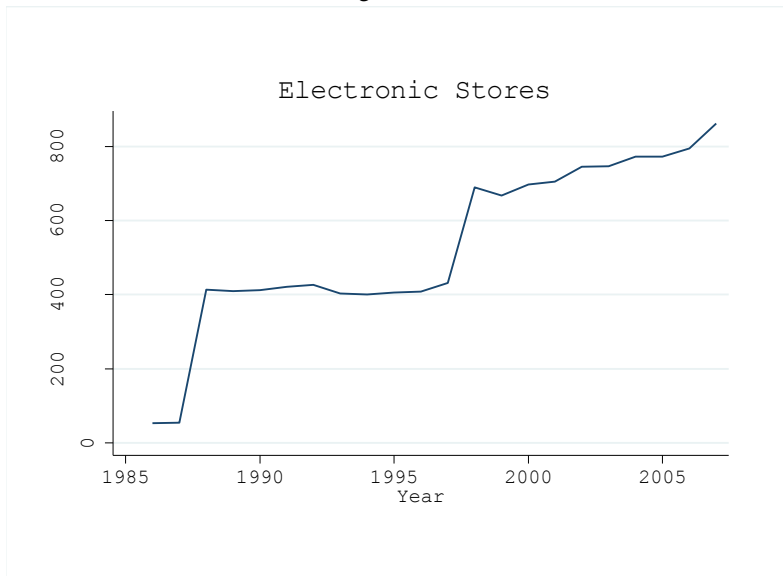| Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	0.4324 (0.28)	-0.0505 (0.204)	0.1060	50
	Establishments	0.1945 (0.1598)	-0.0826 (0.194)	0.0546	51
Eating Places	Employees	-0.2193 (0.3587)	-0.3544 (0.4005)	0.0224	51
	Establishments	-0.1305 (0.1181)	-0.1267 (0.1577)	0.0306	51
Drinking Places	Employees	0.2732 (0.2533)	0.1068 (0.307)	0.0231	32
	Establishments	0.1438 (0.3308)	0.1015 (0.2521)	0.0112	51
Gasoline Service Stations (before 1998)	Employees	-0.2801 (0.4456)	-0.1527 (0.4452)	0.0314	21
	Establishments	-0.4881* (0.1317)	-0.3523 (0.2411)	0.3405	21
Gasoline Service Station (after 1998)	Employees	-0.5985** (0.2258)	-0.778*** (0.3818)	0.1410	26
	Establishments	-0.7097* (0.2227)	-0.2447 (0.378)	0.2714	30
Clothing and Clothing Accessories Stores	Employees	0.0816 (0.2492)	0.1415 (0.2883)	0.0077	27
	Establishments	0.2997 (0.3809)	-0.2271 (0.3121)	0.0416	51
Electronic Stores (before 1998)	Employees	-0.0717 (0.7915)	1.4062* (0.2540)	0.6086	7
	Establishments	1.3602*** (0.7254)	2.4878** (1.0962)	0.3754	18
Electronic Stores (after 1998)	Employees	-0.4168 (0.6388)	3.9725 (2.3924)	0.4796	10
	Establishments	-1.2123 (0.7454)	0.7793 (1.0586)	0.3348	30
General Merchandise Stores	Employees	-0.6237 (0.4649)	1.6984 (1.1724)	0.2203	19
	Establishments	-0.1727 (0.4366)	0.2576 (0.4034)	0.0259	51

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 7: Results from West Region Level Regressions (County Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	0.4995 (0.3759)	-0.0267 (0.0374)	0.1059	50
	Establishments	0.2154 (0.1493)	-0.0759 (0.1579)	0.0545	51
Eating Places	Employees	-0.2331 (0.6311)	-0.3615 (0.6173)	0.0224	51
	Establishments	-0.1232 (0.1074)	-0.1256 (0.0517)	0.0306	51
Drinking Places	Employees	0.2704 (0.2454)	0.13 (0.2821)	0.0230	32
	Establishments	0.1751 (0.3407)	0.1324 (0.2213)	0.0112	51
Gasoline Service Stations (before 1998)	Employees	-0.3443 (0.1405)	-0.0679 (0.2542)	0.0284	21
	Establishments	-0.507* (0.0491)	-0.3494 (0.2901)	0.3403	21
Gasoline Service Station (after 1998)	Employees	-0.5939** (0.1358)	-0.7785*** (0.2581)	0.1410	26
	Establishments	-0.8088*** (0.2058)	-0.3838 (0.3257)	0.2696	30
Clothing and Clothing Accessories Stores	Employees	0.1452 (0.3446)	0.1741 (0.2225)	0.0072	27
	Establishments	0.3272 (0.3654)	-0.2517 (0.2162)	0.0416	51
Electronic Stores (before 1998)	Employees	-0.0717 (-)	1.4062 (-)	0.6086	7
	Establishments	1.5124 (0.8214)	2.3897 (1.525)	0.3718	18
Electronic Stores (after 1998)	Employees	-0.1595* (1.23e-16)	4.6978* (7.29e-16)	0.4764	10
	Establishments	-1.3955 (0.7035)	0.5129 (0.518)	0.3329	30
General Merchandise Stores	Employees	-0.7038 (0.392)	2.0695 (0.8986)	0.2103	20
	Establishments	-0.1266 (0.1465)	0.2766*** (0.0717)	0.0256	51

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 8: Results from West Region Level Regressions (Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	-0.1224 (0.3229)	-0.1003 (0.3353)	0.5772	50
	Establishments	0.2435 (0.316)	-0.0218 (0.2949)	0.4589	51
Eating Places	Employees	-0.4655 (0.5916)	-0.5974 (0.4276)	0.4918	51
	Establishments	-0.2484 (0.165)	0.0623 (0.1148)	0.6658	51
Drinking Places	Employees	-0.0442 (0.5474)	-0.088 (0.4001)	0.8025	32
	Establishments	0.4906 (0.4688)	-0.2861 (0.3558)	0.4676	51
Gasoline Service Stations (before 1998)	Employees	-0.7569 (0.6859)	0.0881 (0.6271)	0.2767	21
	Establishments	-0.4569*** (0.2339)	-0.4025 (0.2985)	0.5350	21
Gasoline Service Station (after 1998)	Employees	-0.4029 (0.4428)	-0.7462 (0.7852)	0.5552	26
	Establishments	-0.5096 (0.516)	-0.1686 (0.7341)	0.5543	30
Clothing and Clothing Accessories Stores	Employees	-0.6284 (0.637)	0.5115 (0.9248)	0.7224	27
	Establishments	-0.4338 (0.6127)	0.1035 (0.5583)	0.4487	51
Electronic Stores (before 1998)	Employees	-2.5594 (-)	1.5192 (-)	1	7
	Establishments	0.6164 (1.1848)	2.0052 (1.486)	0.5041	18
Electronic Stores (after 1998)	Employees	-3.7896 (-)	3.0725 (-)	1	10
	Establishments	-2.3086** (0.8454)	1.9035 (1.2585)	0.7581	30
General Merchandise Stores	Employees	-0.3822 (1.0791)	1.2088 (1.268)	0.8773	20
	Establishments	-1.7011* (0.549)	1.5594** (0.6037	0.5063	51

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 9: Results from West Region Level Regressions (Both County and Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R^2	Observations
Grocery Stores	Employees	0.1546 (0.4388)	-0.1891 (0.4355)	0.5709	50
	Establishments	0.3919** (0.0792)	-0.0773 (0.393)	0.4551	51
Eating Places	Employees	-0.5958 (0.7125)	-0.556 (0.2538)	0.4908	51
	Establishments	-0.2502 (0.1622)	0.0668 (0.1167)	0.6658	51
Drinking Places	Employees	-0.0021 (0.2972)	-0.0839 (0.4541)	0.8024	32
	Establishments	0.7663 (0.3723)	-0.3492** (0.0732)	0.4594	51
Gasoline Service Stations (before 1998)	Employees	-1.6072* (0.0834)	0.6166 (0.3836)	0.2291	21
	Establishments	-0.5498 (0.2248)	-0.3717 (0.2445)	0.5320	21
Gasoline Service Station (after 1998)	Employees	-0.6491 (0.8131)	-0.4316 (0.7587)	0.5436	26
	Establishments	-0.7409 (0.5645)	-0.1979 (0.7629)	0.5492	30
Clothing and Clothing Accessories Stores	Employees	-0.7183 (0.93)	0.5993 (0.6867)	0.7205	27
	Establishments	-0.3772 (0.3309)	0.0142 (0.4946)	0.4483	51
Electronic Stores (before 1998)	Employees	-	-	-	-
	Establishments	1.3818 (1.3816)	0.971 (0.6806)	0.4713	18
Electronic Stores (after 1998)	Employees	-	-	-	-
	Establishments	-3.0754** (0.598)	1.9493 (0.9453)	0.7498	30
General Merchandise Stores	Employees	-2.5566 (0.9693)	3.4543 (1.3855)	0.6398	20
	Establishments	-2.0094 (1.1224)	1.7538*** (0.4703)	0.5036	51

* significant at 1% level, ** significant at 5% level, *** significant at 10% level

Standard error in parenthesis

Table 10: Results from East Region Level Regressions (No Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	0.1089** (0.0518)	-0.094 (0.0829)	0.0196	208
	Establishments	0.1254* (0.0438)	-0.1213*** (0.0625)	0.0429	221
Eating Places	Employees	-0.0952 (0.0753)	-0.225*** (0.1207)	0.0162	213
	Establishments	-0.0265 (0.0408)	-0.333 (0.0576)	0.0026	221
Drinking Places	Employees	-0.0637 (0.1463)	-0.3143 (0.2733)	0.0106	100
	Establishments	0.0233 (0.1203)	-0.0364 (0.201)	0.0003	220
Gasoline Service Stations (before 1998)	Employees	-0.1280 (0.0911)	-0.1765 (0.1579)	0.0462	88
	Establishments	-0.0866*** (0.0507)	-0.1951*** (0.1106)	0.0614	91
Gasoline Service Station (after 1998)	Employees	-0.4649* (0.1376)	0.2699*** (0.1542)	0.1303	121
	Establishments	-0.4013* (0.1138)	0.1994*** (0.1204)	0.1287	130
Clothing and Clothing Accessories Stores	Employees	0.324** (0.1445)	-0.0424 (0.2126)	0.0237	142
	Establishments	0.2561* (0.0808)	-0.2031 (0.1427)	0.0432	221
Electronic Stores (before 1998)	Employees	0.1607 (0.1526)	-1.434** (0.6023)	0.0882	46
	Establishments	-0.1384 (0.1399)	0.4792 (0.3168)	0.0391	85
Electronic Stores (after 1998)	Employees	-1.8396 (1.8984)	0.2044 (0.5306)	0.1016	45
	Establishments	-0.7359** (0.307)	0.2607 (0.2709)	0.0906	130
General Merchandise Stores	Employees	0.0695 (0.1414)	0.2956 (0.2709)	0.0119	161
	Establishments	0.0826 (0.0751)	-0.0351 (0.1107)	0.0059	221

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 11: Results from East Region Level Regressions (County Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (*β)*	Coefficient on American Travelers (*γ)*	R²	Observations
Grocery Stores	Employees	0.1132** (0.0428)	-0.097 (0.0624)	0.0196	208
	Establishments	0.1319* (0.0348)	-0.115*** (0.061)	0.0428	221
Eating Places	Employees	-0.1017* (0.0255)	-0.2364* (0.0501)	0.0162	213
	Establishments	-0.0262 (0.0336)	-0.0341 (0.0371)	0.0026	221
Drinking Places	Employees	-0.0254 (0.1464)	-0.4607 (0.2765)	0.0101	100
	Establishments	0.0226 (0.1003)	-0.0293 (0.2276)	0.0003	220
Gasoline Service Stations (before 1998)	Employees	-0.1231 (0.1044)	-0.234 (0.2391)	0.0452	88
	Establishments	-0.0874*** (0.0429)	-0.2343 (0.1354)	0.0610	91
Gasoline Service Station (after 1998)	Employees	-0.5053* (0.1636)	0.2675** (0.1101)	0.1302	121
	Establishments	-0.4108* (0.1169)	0.1892*** (0.0578)	0.1286	130
Clothing and Clothing Accessories Stores	Employees	0.3349** (0.1267)	-0.0756 (0.1387)	0.0236	142
	Establishments	0.2656* (0.0856)	-0.2033*** (0.1012)	0.0432	221
Electronic Stores (before 1998)	Employees	0.0682 (0.121)	-1.2683** (0.5455)	0.0872	46
	Establishments	-0.085 (0.1452)	0.2438 (0.3633)	0.0388	85
Electronic Stores (after 1998)	Employees	-2.0156 (1.6568)	0.7823*** (0.3539)	0.0976	45
	Establishments	-0.7137** (0.2493)	0.2994 (0.3248)	0.0904	130
General Merchandise Stores	Employees	0.0388 (0.1539)	0.3606 (0.3244)	0.0115	161
	Establishments	0.0728 (0.0512)	-0.0393 (0.1129)	0.0058	221

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 12: Results from East Region Level Regressions (Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R^2	Observations
Grocery Stores	Employees	-0.0253 (0.0759)	0.007 (0.0962)	0.1795	208
	Establishments	-0.006 (0.0602)	-0.0763 (0.0658)	0.3202	221
Eating Places	Employees	-0.1186 (0.1153)	-0.0099 (0.134)	0.1625	213
	Establishments	-0.0689 (0.0578)	0.1094 (0.0677)	0.3649	221
Drinking Places	Employees	-0.4309 (0.4578)	0.0265 (0.4659)	0.1610	100
	Establishments	-0.0111 (0.2393)	-0.1325 (0.2793)	0.1799	220
Gasoline Service Stations (before 1998)	Employees	-0.1329 (0.1593)	-0.164 (0.1679)	0.1142	88
	Establishments	-0.064 (0.0814)	-0.1712 (0.1089)	0.2145	91
Gasoline Service Station (after 1998)	Employees	-0.0346 (0.1471)	-0.0892 (0.224)	0.4113	121
	Establishments	0.1084 (0.0764)	-0.0689 (0.1267)	0.5849	130
Clothing and Clothing Accessories Stores	Employees	0.2155 (0.3617)	0.4204 (0.269)	0.2701	142
	Establishments	0.0998 (0.1427)	0.0438 (0.1214)	0.2657	221
Electronic Stores (before 1998)	Employees	0.8473*** (0.4301)	-1.9056** (0.8011)	0.1643	46
	Establishments	-0.5332*** (0.292)	0.6935** (0.3105)	0.1275	85
Electronic Stores (after 1998)	Employees	-3.3316 (3.0582)	1.5578 (1.1413)	0.2862	45
	Establishments	-0.0788 (0.2063)	-0.438 (0.3348)	0.5086	130
General Merchandise Stores	Employees	0.2176 (0.2355)	0.0187 (0.2587)	0.2587	161
	Establishments	-0.1531 (0.113)	0.1515 (0.1343)	0.2491	221

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

Table 13: Results from East Region Level Regressions (Both County and Year Fixed Effects)

Industry	Dependant variable	Coefficient on Canadian Travelers (β)	Coefficient on American Travelers (γ)	R²	Observations
Grocery Stores	Employees	-0.0265 (0.0778)	0.0023 (0.0882)	0.1794	208
	Establishments	0.0024 (0.0578)	-0.0733 (0.0828)	0.3201	221
Eating Places	Employees	-0.1288 (0.1034)	-0.0144 (0.0984)	0.1625	213
	Establishments	-0.0658 (0.0705)	0.1133 (0.0697)	0.3649	221
Drinking Places	Employees	-0.1534 (0.3988)	-0.3032 (0.438)	0.1455	100
	Establishments	-0.0215 (0.1866)	-0.1261 (0.1698)	0.1799	220
Gasoline Service Stations (before 1998)	Employees	-0.1133 (0.2517)	-0.2306 (0.2624)	0.1125	88
	Establishments	-0.0525 (0.0799)	-0.2134*** (0.1122)	0.2133	91
Gasoline Service Station (after 1998)	Employees	-0.0534 (0.1595)	-0.1499 (0.2553)	0.4101	121
	Establishments	0.1327 (0.1111)	-0.1044 (0.1295)	0.5845	130
Clothing and Clothing Accessories Stores	Employees	0.257 (0.4618)	0.3442 (0.3812)	0.2687	142
	Establishments	0.1244 (0.1344)	0.0417 (0.1067)	0.2656	221
Electronic Stores (before 1998)	Employees	0.4242 (0.2484)	-1.5237 (0.8758)	0.1560	46
	Establishments	-0.2878 (0.326)	0.4637 (0.3677)	0.1198	85
Electronic Stores (after 1998)	Employees	-5.2122* (1.4734)	2.7184** (0.9872)	0.2512	45
	Establishments	-0.024 (0.2118)	-0.4066 (0.3744)	0.5082	130
General Merchandise Stores	Employees	0.1136 (0.2535)	0.1022 (0.3263)	0.2574	161
	Establishments	-0.1858* (0.0549)	0.153 (0.1549)	0.2488	221

* significant at 1% level, ** significant at 5% level, *** significant at 10% level
Standard error in parenthesis

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