North American Integration and Canadian Foreign Direct Investment

Waldkirch, Andreas and Tekin-Koru, Ayca

February 2010

North American Integration and Canadian Foreign Direct Investment*

Andreas Waldkirch[†] and Ayça Tekin-Koru[‡]

Revised: February 2010

Abstract

We investigate how economic integration in North America has altered the pattern of foreign direct investment (FDI) to and from Canada. The theoretical analysis suggests that while the Canadian-U.S. free trade agreement should generate less FDI, the addition of Mexico in the North American Free Trade Agreement (NAFTA) produces the opposite effect. The fall in trade costs results in investment diversion from the U.S. and Canada, yet lower fixed costs may increase FDI even in those countries via an increased incentive to locate production facilities abroad rather than only domestically. Using a difference-in-differences estimator, we find that U.S. FDI in Canada as well as Canadian FDI in the U.S. have expanded disproportionately since NAFTA, suggesting that the latter effect dominates.

Keywords: Foreign Direct Investment, Multinationals, NAFTA, Canada.

JEL Classification: F15, F21, F23.

*We thank seminar participants at the 2008 Summer Meeting of the International Banking, Economics, and Finance Association in Honolulu for useful comments.

[†]Department of Economics, Colby College, 5244 Mayflower Hill, Waterville, ME 04901.
E-mail: andreas.waldkirch@colby.edu.

[‡]Department of Economics, Oregon State University, 303 Ballard Hall, Corvallis, OR 97331.
E-mail: a.tekin-koru@oregonstate.edu

1 Introduction

A salient feature of international economic relations is the recent proliferation of regional integration schemes. The European Union (EU) has expanded its membership into Eastern Europe while at the same time continuing its move towards "deep" integration. Many developing countries in Asia and South America have pursued economic integration amongst themselves (ASEAN, Mercosur) or have sought free trade agreements with other developed countries or blocs, such as the EU or the United States. In North America, the 1989 Canada-U.S. Free Trade Agreement (CUSFTA) was followed quickly by the inclusion of Mexico into a North American Free Trade Agreement (NAFTA). The latter had been unique at the time as it combined two advanced developed with a developing country, a phenomenon dubbed the 'new regionalism' by Ethier (1998).

This paper's focus is on studying the effect of NAFTA on Canadian inward and outward investment. Our main hypothesis is that the fall in trade costs results in investment diversion from the U.S. and Canada, yet lower fixed costs may increase FDI even in those countries via an increased incentive to locate production facilities abroad rather than only domestically. Of primary interest is investment in and from the partner countries, although the effect on investment from countries outside of the agreement is investigated as well.[1] In doing so, we also need to take into consideration that Canada had entered into CUSFTA only five years prior to NAFTA. This implies that trade as well as investment costs between Canada and the United States were lowered before these were lowered in Mexico. Consequently, we analyze a two-step reduction in these costs in our theoretical model and generate predictions for the differential effects these reductions have for Canadian FDI.

We use a three-country model based on Grossman, Helpman and Szeidl (2006). The model predicts that economic integration between the two Northern countries -with no decline in investment costs- results in decreased FDI due to a decline in the incentive for tariff-jumping. When the

[1] We do not consider Mexico's outward FDI since it is negligible and data on early years are largely missing.

Southern country is added -with not only a decline in trade costs but also declines in investment costs-, FDI in the entire region by the member countries increases. First, medium productivity Northern firms switch from using the other Northern country to using the South as an export platform, especially in components production. Second, even though there is a decline in FDI in Northern countries by low productivity firms due to lower trade costs, lower investment costs make investing in these high cost countries attractive for medium and high productivity firms, particularly in assembly. Since the level of production by low productivity firms is small due to their inefficiency, the negative diversion effect is dominated by the positive FDI creation effect and investment in the region as a whole rises.

The empirical analysis uses aggregate FDI data from 1980 to 2002 and covers the largest feasible sample of bilateral FDI. Unfortunately, we have no firm level information. Likewise, industry level information that would at a minimum cover Mexico, Canada and the U.S. is not available on a comparable basis for this time period. Still, we believe that how economic integration of this kind, first the traditional North-North, then the new North-South, affects small Northern countries in the aggregate is of interest to academics and policy makers alike and has not been studied sufficiently. As far as the effect of NAFTA on FDI is concerned, most existing studies either focus on Mexico alone or the U.S. and Mexico, ignoring Canada.

We find that since the start of economic integration in North America, Canadian FDI in the U.S. and U.S. FDI in Canada has increased by more than what can be explained by the usual determinants of FDI such as market size, factor cost differences or exchange rates and relative to the rise in FDI elsewhere. Due to the relatively short time period that only CUSFTA was in effect before the addition of Mexico, it is difficult to separately identify the effects of the different stages of integration. Still, these results suggest that overall, the investment cost lowering effect of integration dominates the investment diverting one from lowering trade barriers and adding a low-cost country. There is some, albeit weak, evidence that Canadian FDI in Mexico has not been positively affected by NAFTA, despite an increase in the absolute amount of FDI that can be observed after 1994.

We also find robust evidence that the FDI-increasing effect among Northern NAFTA countries does not apply to non-NAFTA FDI in Canada, which is negatively affected, suggesting a diversion effect for this type of FDI. Still, overall our results suggest that adding low-cost countries to existing agreements among industrialized countries, such as the EU's eastward expansion, does not imply reduced FDI in the original countries, not even the smaller ones, from partner countries. While FDI in the new members is likely to increase, such a rise need not come at the expense of FDI in existing members but rather, the total increase in FDI in the region benefits all countries, at least as far as intra-regional FDI is concerned.

We do emphasize that our results appear to be very robust. We carefully correct for both country-pair specific autocorrelation as well as heteroscedasticity in our econometric analysis. We use skill data drawn from the International Labor Organization (ILO) as, for example, Carr, Maskus and Markusen (2001), but also the updated schooling data from Barro and Lee as, for example, Blonigen, Davies and Head (2003). The results are also robust to the consideration of an "announcement effect" since both CUSFTA and NAFTA were anticipated before their formal inception.

The paper proceeds as follows. The next section reviews the previous research. The following section discusses the theoretical implications of our three-country model on the location choice of firms. The following section presents the empirical model which is designed to allow testing of the main hypotheses generated by the theory. After a discussion of our econometric approach and the data, the empirical results are presented, followed by concluding remarks.

2 Previous Literature

The recent surge in regional integration efforts is unprecedented. In 2008 alone, 35 new regional trade agreements (RTA) were notified to the World Trade Organization (WTO), which is the largest number of RTA notifications in any single year since the establishment of the WTO. In total, there are 422 RTAs notified of which 230 were in force in 2008.

The ever increasing web of integration schemes has important effects on international economic interactions. Traditionally, the analysis of such agreements -dating back to Viner (1950)- has focused on their impact on trade flows as they potentially lead to both trade creation (between the partners in the agreement) and trade diversion (from countries now outside of the agreement).[2]

Economic integration and its coincident reduction in trade barriers also alter the incentives for firms when making their location decisions. Motta and Norman (1996), Neary (2002), Yeaple (2003a), Ekholm, Forslid and Markusen (2007) and Grossman, Helpman and Szeidl (2006) have formally examined the effect of regional integration on multinational firms' location decisions through export-platform FDI. This type of FDI is usually taken to refer to a situation where the output of a foreign affiliate is largely exported to a third country rather than sold in the host country. Different from simple bilateral FDI models, export-platform FDI models include at least three countries with complex integration strategies. Two countries form a trading bloc lowering the intra-bloc trade costs. External trade barriers remain largely the same as before. One generic result of these models is that intra-bloc trade liberalization encourages horizontal FDI in trading blocs since foreign firms can use one of the member countries as an export-platform to serve the entire region.[3]

Trade agreements not only reduce trade, but also investment costs, which can be viewed as

[2] See Feenstra (2004) for a review of the early literature on RTAs.

[3] Motta and Norman (1996) theoretically show that economic integration may increase the incentive of firms from countries outside of the agreement to locate in the lowest cost country inside the free trade area (FTA). But they also show that firms from inside the FTA benefit from the increased market size due to increased economies of scale. Tekin-Koru and Waldkirch (2010) show that in the case of NAFTA the latter effect dominates the former with respect to foreign direct investment (FDI) in Mexico.

essentially reducing the initial, fixed cost of foreign investment. These lower costs in turn raise the incentive for firms that may not have been engaged abroad before to consider foreign production locations. Thus, it becomes an empirical question whether the foreign investment diversion or the FDI creation effect dominates for countries within an agreement that are not the low-cost location.

There are a number of empirical studies that examine the relationship between regional economic integration and FDI. Baldwin, Forslid, and Haaland (1995) and Barrel and Pain (1999) using the EU data and Feinberg and Keane (2001) and Chen (2009) using US data support the existence of a positive investment creation effect of RTAs. Chen (2009) finds this effect to vary sharply with the size of the integrated markets and countries' comparative advantage. Similarly, but using European data and spatial econometric techniques, Baltagi, Egger and Pfaffermayr (2008) point to a relocation of FDI from Western European to Eastern European host countries. This is consistent with export-platform FDI, where multinationals locate subsidiaries in host markets with low costs of production to serve broad consumer bases elsewhere.

Ozden and Parodi (2004) for Mercosur, Yeyati, Stein, and Daude (2004) for a large sample of countries and Park and Park (2008) for East Asia find strong investment creation and diversion effects of RTAs. Yeyati et.al (2004) claim that FDI into RTA member countries is more attractive than FDI into nonmember countries. Park and Park (2008) supply evidence for both North-North and North-South RTAs being preferred to South-South RTAs in East Asia.

As far as the effect of NAFTA on FDI is concerned, most existing studies either focus on Mexico alone, such as Waldkirch (2003) or Cuevas, Messmacher and Werner (2005), or the U.S. and Mexico, ignoring Canada, such as our companion paper (Tekin-Koru and Waldkirch, 2010). Hejazi and Pauly (2005) examine the effect of NAFTA on Canada, although they use a simple gravity framework and analyze U.S. outward FDI and OECD bilateral inward FDI separately, making their results not strictly comparable to ours, as we discuss in more detail below. Blomström and Kokko

(1997) report that CUSFTA led to a reduction in within-region FDI to both Canada and the US while it increased out-of-region FDI into Canada. Similarly, they find that NAFTA and Mercosur increased the out-of-region FDI into Mexico and other member countries, respectively.

In this paper we present a well founded theoretical discussion followed by a straightforward yet thorough empirical design. The paper contributes to the above literature in at least three ways: First, our data covers the largest feasible sample of bilateral FDI which is important for completeness. Second, unlike most papers we have a complete account of North American integration by including both CUSFTA and NAFTA in our theoretical and empirical analyses. Last but not least, our results show that the investment creation effect dominates the investment diversion effect and therefore adding low cost countries into an already existing agreement does not necessarily reduce FDI in the original members, not even in the small ones.

3 The Theoretical Model and Hypotheses

In this section we present a variation of the three-country model of Grossman, Helpman and Szeidl (2006) -from now on GHS. They examine the location strategies of heterogeneous multinational firms in a three-country setting and do not consider economic integration effects, so we extend and re-interpret their model for our case.

Economic integration will affect both trade (tariff and transportation) costs and the fixed costs of establishing operations abroad. The former is a standard feature of trade agreements and formalized in specific reductions of both tariffs and non-tariff barriers. The latter may result as a consequence of loosening regulations governing foreign investment as described in the previous section. Thus, we model both, which generates interesting hypotheses regarding the FDI effects of CUSFTA and NAFTA with respect to the location decisions of U.S. and Canadian firms.

In this model, firms choose between domestic production and undertaking foreign direct investment to save either production or trading costs. Assembly activities, which result in finished products, and intermediate activities, which result in inputs used in assembly, are differentiated.

Consumption. Households consume $J + 1$ products produced by J differentiated goods sectors and one homogeneous good sector. Consumers share identical preferences which can be represented as

$$U = x_0 + \sum_{j=1}^{J} \frac{1}{\mu_j \alpha_j^{\alpha_j}} X_j^{\mu_j}, \qquad 0 < \mu_j < 1 \tag{1}$$

where x_0 is the consumption of the homogeneous good and $X_j^{\mu_j}$ is an index of consumption of the differentiated goods produced by industry $j \in \{1, ...J\}$. This index is a CES aggregate of amounts of different varieties consumed.[4]

Markets. There are three markets: Canada (C), the U.S. (U) and Mexico (M). Firms in the Northern countries are more productive than those in the Southern country in the homogeneous good production. Therefore, Northern country wages are higher than the Southern country ones. Formally, $w^C = w^U = 1 > w^M = w$, where w^ℓ is the wage rate in country ℓ. The homogeneous good is produced in all three countries in equilibrium and taken to be the numeraire. The sizes of these markets for the differentiated products are different. Let M^ℓ be the number of households in country ℓ that consume differentiated products. We assume that $M^C = M^M < M^U$. We further assume that producers of differentiated goods are from the Northern countries and they must locate their headquarter activities at home, following Tekin-Koru and Waldkirch (2010). Different from them we allow for a market in Mexico for the goods produced by multinationals.

Demand. The demand in market ℓ is given by

$$x^\ell = \alpha^{-\alpha/(1-\alpha)} M^\ell (X^\ell)^{(\mu-\alpha)/(1-\alpha)} (p^\ell)^{-1/(1-\alpha)} \tag{2}$$

[4] $Xj = \left[\int_0^{n_j} x_j(i)^{\alpha_j} d_i \right]^{x_j(i)}$, where $0 < \alpha_j < 1$, $x_j(i)$ is the consumption of the i^{th} variety of industry j and n_j is the number of varieties in that industry. Given equation (1), the elasticity of substitution within j is $1/1 - \alpha_j$. We assume that $\alpha_j > \mu_j$, in other words, there is a higher degree of substitution within industry than among industries.

where X^ℓ is an aggregate consumption index for varieties in the industry in country ℓ, and p^ℓ is the price charged in country ℓ.

Production. Productivity levels in industry j are independent draws from the cumulative distribution function $G_j(\theta)$. A firm's production function in industry j is $\theta F_j(m, a)$, where m is the intermediate goods -or components- used in the production of the final good and a is the level of assembly activity. $F_j(\cdot)$ is an increasing and concave function with constant returns to scale. The elasticity of substitution between the intermediate goods production m and the assembly activity a is less than 1.

Production Costs. Let $c_j(p_m, p_a)$ be the unit cost function dual to $F_j(m, a)$, where p_m and p_a are the effective prices (inclusive of delivery costs) of intermediate goods and assembly activity, respectively. Thus, $c_j(p_m, p_a)/\theta$ is the per-unit variable cost of production for a firm with productivity θ. A firm that chooses to produce intermediate goods in a different location from its headquarters bears a fixed cost of g_j units of home labor. On the other hand, if the assembly activity is undertaken in a different place than the headquarters, the firm incurs a fixed cost of f_j units of home labor. These fixed costs are assumed to be independent of the foreign location. That is, a U.S. firm does not bear a different fixed cost when it chooses to produce its intermediates (assembly activity) in Mexico rather than Canada. Since 1 unit of m requires 1 unit of local labor in the place where intermediates are produced and 1 unit of a requires 1 unit of local labor in the assembly location, Mexico enjoys a comparative advantage in the production of both components and final goods relative to the production of the homogeneous good.

Trade Costs. Iceberg trade costs could apply to both intermediate and final goods. We will, however, focus on costly final goods trade only.[5] A firm in industry j must ship $t_j \geq 1$ units of the final good to deliver one unit of that good to the final consumption destination. A firm with

[5] See GHS for a brief treatment of costly intermediate goods trade.

headquarters in $C(U)$ will never produce the intermediates in $U(C)$. Such a firm would instead produce the intermediates in M, ship them costlessly to the assembly plant and thus achieve lower variable costs while incurring the same fixed costs. Moreover, there is no justification for a firm to produce the intermediates in two locations due to the costless shipping of these goods. Therefore, the production of intermediates will be realized either in $C(U)$ or M but not both.

Given the full structure of the model, it is now easy to calculate the variable costs of a firm in industry j that opts for different location strategies. For example, a Canadian firm with productivity θ that wants to deliver final goods to consumers in the U.S. can produce and assemble the good in Canada and pay $t_j c_j(1,1)/\theta$ per unit, whereas it would pay $t_j c_j(w,w)/\theta$ per unit to conduct all its operations in Mexico. Another possibility for this Canadian firm is to produce the components in Mexico and perform the assembly in the U.S. and thus pay $t_j c_j(w,1)/\theta$ per unit.

Operating Profits. For any strategy with a fixed cost of k and unit variable cost of c/θ the maximized operating profits are

$$\pi = (1-\alpha)\overline{Y}\Theta c^{-\alpha/(1-\alpha)} - k \tag{3}$$

where $\Theta = \theta^{\alpha/(1-\alpha)}$ is a transformed measure of productivity and $\overline{Y} \equiv \Sigma M^{\ell}(X^{\ell})^{(\mu-\alpha)/(1-\alpha)}$ is the size of the entire region's demand. We shall assume that $Y^C = Y^M < Y^U$, i.e., the U.S. is the large country among all three, and the share of Mexican or Canadian demand in the region's demand is $\sigma/2 = Y^C/\overline{Y} = Y^M/\overline{Y}$ where $\sigma \in (0,1)$. In the original model, GHS assume that two high-cost, developed countries are of equal size and greater than the low-cost, developing country. Here we assume that Mexico and Canada are of equal size and smaller than the U.S. This assumption simplifies the analysis without affecting the major conclusions described below.[6]

[6] Canadian and Mexican GDP are not quite the same. In 2008, purchasing power adjusted GDP was \$1.52 trillion in Mexico and \$1.21 trillion in Canada, according to the World Bank's World Development Indicators. In other words, Canada is a high cost country and it is smaller than Mexico. That actually strengthens our conclusions. The equal country size assumption considerably simplifies the algebra, gets rid of one parameter and gives us clean results. All we need indeed is that the size of the US should be greater than 1/3 of the size of the region (Canada+US+Mexico), which is a fact.

3.1 Pre-CUSFTA

We begin our analysis with a regime of relatively high trade costs (inclusive of tariff and transportation costs) and high fixed costs of FDI among all three countries, which is a good approximation of the time before CUSFTA.[7] Globerman and Shapiro (1999) provide a nice overview of foreign investment policies in Canada for this period.

We concentrate on firms in a particular industry j, and to reduce the clutter in the notation we drop the subscript j from now on. We assume that

$$t^H > \frac{c(w,1)}{c(w,w)} \tag{4}$$

where t^H denotes a high level of trade costs. We will use superscript $H(L)$ to denote the high(low) level of a variable from now on. When trade costs are this high, the lowest cost of serving any market is assembling the final product in the consumption location to conserve the shipping costs including tariffs. To see this, notice that if intermediates are produced in M and assembled in $C(U)$, the unit variable cost of serving $C(U)$ is at most $c(w,1)$. However, the unit variable cost of serving the same market from a plant in M is at least $tc(w,w)$ which is obviously higher given inequality (2).

Next, observe that if the intermediates are produced in $C(U)$, the cost of serving $C(U)$ from an assembly plant there is at most $c(1,1)$, whereas serving $C(U)$ from an assembly plant in $U(C)$ is at least $tc(1,1)$ and from an assembly plant in M is at least $tc(1,w)$. As long as $c(w,1)/c(w,w) > c(1,1)/c(1,w)$[8], inequality (2) also satisfies $tc(1,w) > c(1,1)$. Therefore, each market is served at the lowest cost through assembly in the same market. No firm will choose to assemble in one foreign location only and export to both home and the other country. In other words, export platform FDI as analyzed in Ekholm et al. (2007) is not a possibility in this high trade cost regime.

[7] This is a case we use as our benchmark and corresponds to the high trade costs scenario of GHS.

[8] $c(w,1)/c(w,w) > c(1,1)/c(1,w)$ holds if and only if $\log c(p_m, p_a)$ is submodular. When the elasticity of substitution between m and a is less than one, as we have assumed, the submodularity is guaranteed.

This leaves us with a total of eight *potential* location strategies: home or Mexican production of intermediate goods with assembly either in home, or in home and in Mexico, or in home and in the other Northern country or in all three countries.

Next, we compare the operating profits under these alternative strategies. Since we assume asymmetry between the two Northern countries, different from GHS we have to consider two sub-cases within each regime; one for Canada and one for the U.S. as the source of FDI. The maximum attainable profits for all dominant strategies in each regime for each firm are given in Table 1.

The set of possible location strategies when a C firm invests involves six elements: $\{C, C\}$, $\{C, UC\}$, $\{C, UCM\}$, $\{M, C\}$, $\{M, UC\}$, and $\{M, UCM\}$. The first element in brackets is the location of components production and the second one is (are) the location(s) of assembly. Notice that no C firm will use M as an export platform to U in this high trade cost regime since that strategy is dominated by assembling in C and U as long as the size of market U in the region is greater than 1/3.

The left panel of Figure 1 shows the combinations of fixed costs of FDI in components, g and productivity levels, Θ that give rise to different optimal location strategies for a Canadian firm in the pre-CUSFTA regime. The lines in the figure represent the boundaries between regions with different optimal location strategies. In the region $\{M, C\}$, for example, components are produced in M and shipped costlessly to C for assembly. The final product is consumed locally and also exported to M and U. The figure is drawn for a particular value of fixed costs of FDI in assembly, f. When f changes, the boundaries between the regions shift.[9] FDI in assembly takes place to the right of the dashed lines in the figure.

For all positive values of g, firms with low productivity conduct all their production activities

[9] We followed the details provided in the appendix of GHS in the construction of these boundaries. The idea is simple. The boundary between $\{M, C\}$ and $\{M, UC\}$, for example, is defined by the values that g takes for each Θ value when $\pi_{M,C} = \pi_{M,UC}$. In this particular case, the boundary is vertical because both strategies involve FDI in components and thus the boundary does not depend on g. Detailed calculations of our boundaries and their shifts in different regimes are available upon request.

at home and export the final product to the U.S. and Mexico. The level of output produced by these firms is relatively small because the variable cost savings through FDI do not compensate for the high fixed costs of FDI. Firms with intermediate levels of productivity may engage in FDI in components or in assembly depending upon the size of g. They will engage in intra-firm trade besides exporting final output from Canada or from an export platform in the U.S. Notice that high trade costs and the bigger size of the U.S. market encourage firms to undertake FDI in assembly there rather than the low cost but small Mexico. Firms with high productivity levels go for complete globalization in which they set up assembly plants in all three countries and thus engage in horizontal FDI in all three countries.

The set of possible location strategies when the investing firm is from U involves six elements: $\{U, U\}$, $\{U, UM\}$, $\{U, UCM\}$, $\{M, U\}$, $\{M, UM\}$, and $\{M, UCM\}$. Observe that, different from the previous case, no U firm will use C as an export platform to M since M is the low cost location with the same size market as C and the same level of FDI fixed costs.

The right panel of Figure 1 depicts the different possible location strategies when the investing firm is from the U.S. The intersection points of the boundaries in the U.S. case are drawn exactly the same as the Canadian case for convenience. The productivity levels corresponding to the intersection points can be different from the Canadian case, although the ordering of these productivity levels and thus the intuition are not. This is true for all three regimes discussed in this paper.

As in the case of a Canadian firm, the low productivity firms prefer not to engage in FDI in assembly and high productivity firms conduct horizontal FDI in all markets. Firms with intermediate productivity levels originating from the U.S., on the other hand, have their assembly line set up in Mexico rather than Canada.

3.2 CUSFTA

In this subsection we concentrate on the case where trade costs between only the two Northern countries are reduced, reflecting the drop in tariff barriers between Canada and the U.S., while those barriers between Mexico and the two Northern countries remain high.[10] We also assume no decline in the fixed costs of investing in this regime. In particular,

$$\frac{c(1,1)}{c(1,w)} < t^L < \frac{c(w,1)}{c(w,w)} \tag{5}$$

$$t^H > \frac{c(w,1)}{c(w,w)} \tag{6}$$

where t^L is the reduced trade costs between C and U and t^H is the high trade costs between M and the other two countries.[11] We assume that the relative decline in trade costs are bounded both from below and above to ensure a moderate level of decline.[12]

In this scenario there are again six location strategies to consider. The difference between the optimal location strategies in pre-CUSFTA and CUSFTA regimes for Canada and thus our first three testable hypotheses can be derived by comparing Figures 1 and 2. All hypotheses are formulated with respect to aggregate FDI, even though the model is one of heterogeneous firms. This is because we only have comparable economy-wide data for the three NAFTA countries as well as FDI in and between all other countries which serve as our control group (for details, see the next section).

Hypothesis 1 *Canadian FDI in the U.S. declines after CUSFTA.*

[10] While the Canada-U.S. FTA in 1989 relaxed some investment rules for investors in the partner country, it stopped short of according national treatment for all investments. In particular, investments exceeding a certain threshold, $CDN 150 million at the time, still required a review.

[11] Inequality (5) corresponds to the moderate transport case of GHS. Since CUSFTA reduced tariff barriers but not necessarily transportation costs, we opt for not using their low transport cost scenario.

[12] In particular, $\frac{C(1,1)}{C(1,w)} < \frac{T^H}{T^L} < \frac{T^H T^L(1-\sigma)+T^L\sigma/2-T^{H(1-\sigma)}}{T^H T^L\sigma/2}$.

Compare the left panels of Figures 1 and 2. High productivity Canadian firms continue to produce and sell close to the customers and maintain their investments in the U.S. Low productivity firms continue to produce at home and export to the other two countries as before but now they are able to expand their production to export more to the U.S. due to the lower trade costs. Notice that region $\{C, C\}$ increases in size. The medium productivity firms, on the other hand, behave much more differently. Observe that regions $\{C, UC\}$ and $\{M, UC\}$ shrink in size. Trade costs are low enough for the firms at the lower end of the medium productivity range to invest in the home country and export, rather than to invest in the assembly line in the U.S. Given the same level of production costs in Canada and the U.S., now they are able to avoid fixed costs of assembly in the U.S. In other words, the need for tariff-jumping FDI declines after CUSFTA.

Hypothesis 2 *Canadian FDI in Mexico declines after CUSFTA.*

High productivity Canadian firms continue to produce and sell close to the customers and maintain their investments in Mexico. Observe that FDI in components in Mexico by low and medium level productivity Canadian firms decline after CUSFTA. Due to lower trade costs, Canadian firms are less able to justify the fixed costs of components production and thus reduce their FDI in components in Mexico. That is why we observe a shrinkage in the size of the regions $\{M, C\}$ and $\{M, UC\}$.

Hypothesis 3 *U.S. FDI declines in Canada after CUSFTA.*

Examine the right panels of Figures 1 and 2. The behavior of low and low-end medium productivity U.S. firms is very similar to the behavior of Canadian firms. They increase their production of components and assembly in the home country and export to the entire region to benefit from low trade costs. Therefore, the size of region $\{U, U\}$ increases. The low-end medium productivity firms reduce their assembly activity in Mexico once used to supply Canada and instead invest in the U.S. and export to Canada, while the rest of the medium productivity firms continue to use Mexico as an export platform.

3.3 NAFTA

NAFTA, going into effect in January of 1994, went much further than CUSFTA with respect to FDI regulations. It contains a provision to grant national treatment to foreign investors from partner countries. In addition, it codifies the most favored nation principle in that signatory states must be accorded at least the same favorable treatment as any other country. NAFTA does allow the use of 'negative lists', the exclusion of certain sectors from liberalization. However, even this can be argued to foster transparency as exceptions are made explicit and are not subject to an approval process that may potentially deny any investment in any sector. In practice, the major exceptions were financial services and culture and media.[13] Thus, it seems reasonable to argue that it took until NAFTA for foreign investment regulations to be relaxed substantially enough for investment costs to fall significantly.[14]

In this subsection, we analyze changes in the optimal location strategies when trade costs between all three countries are as low as indicated in inequality (5). Moreover, we also assume a decline in the fixed costs of both components production and assembly of the final products as a reasonable approximation of NAFTA. For a detailed discussion of NAFTA's investment provision, see Graham and Wilkie (1994).

In the NAFTA regime there are only five location strategies to consider. The set of possible location strategies when a C firm invests are $\{C, C\}$, $\{C, CM\}$, $\{C, UCM\}$, $\{M, C\}$, and $\{M, M\}$, whereas for a U firm they are $\{U, U\}$, $\{U, UM\}$, $\{U, UCM\}$, $\{M, U\}$, and $\{M, M\}$.[15] The difference

[13] For a detailed discussion of NAFTA's investment provision, see Graham and Wilkie (1994).

[14] For a dissenting view see Buckley, Clegg, Forsans and Reilly (2007) who argue that the fundamental policy environment did not change since the 1989 treaty, although they do acknowledge a potential effect on FDI stemming from the expanded geographic area of NAFTA.

[15] $\{M, M\}$ dominates $\{M, UC\}$, $\{M, UM\}$ and $\{M, UCM\}$ under NAFTA.

between the optimal location strategies in CUSFTA and NAFTA regimes and thus our remaining testable hypotheses can be derived by comparing Figures 2 and 3 which are depicted for low trade and fixed costs.

Hypothesis 4 *Canadian FDI in the U.S. increases after NAFTA.*

Even though there is a decline in Canadian FDI in the U.S. by low-end medium productivity firms due to declining trade costs, the decline in the fixed costs of assembly, f, increases Canadian FDI in the U.S. considerably by the remaining medium productivity and also high productivity firms. Furthermore, if the decline in f is much more pronounced than the decline in g, then assembly activity in all countries will go up. This can be shown as a huge downward shift of the positively sloped boundary between $\{C, UCM\}$ and $\{M, M\}$. Thus, $\{C, UCM\}$ may even become the only optimal choice for all medium and high productivity firms.

Hypothesis 5 *Canadian FDI in Mexico increases after NAFTA.*

Examine the left panels of Figures 2 and 3. As the trade costs between Canada and Mexico decrease, even low productivity firms start assembling in Mexico. Notice that region $\{C, UC\}$ is replaced by region $\{C, CM\}$, that is, medium productivity firms stop using the U.S. as an export platform and start using Mexico as one. Some of the other medium productivity firms, on the other hand, engage in full horizontal FDI in all countries, which was not a possibility before.

As g goes down, components production in Mexico by a majority of Canadian firms increases. Observe that regions $\{M, UC\}$ and $\{M, UCM\}$ are replaced by region $\{M, M\}$. When a Canadian firm invests in performing any activity in low-cost Mexico, such FDI reduces its unit costs, which raises the output level, and therefore increases the return to performing other production activities in Mexico. Reduced trade costs coupled with low levels of fixed costs in components make being close to the final consumers redundant. Notice that more firms with lesser productivity engage in

FDI in assembly as well when g is low.

Hypothesis 6 *U.S. FDI in Canada increases after NAFTA.*

Compare the right panels of Figure 2 and 3. U.S. FDI in Canada compared to Canadian FDI in the U.S. increases even more since there is no decline in U.S. FDI in Canada at all. Any decline in the fixed costs of assembly, f, increases U.S. FDI in Canada considerably by medium and high productivity firms. As in the case of Canada, if the decline in f is more pronounced than the decline in g, then $\{U, UCM\}$ may become the only optimal choice for all medium and high productivity U.S. firms.

4 The Empirical Model

Our empirical strategy is to examine the effects of CUSFTA and NAFTA on inward and outward Canadian FDI by employing a difference-in-differences estimator which attributes only changes relative to a control group to the agreements. In addition, to avoid spurious correlations as much as possible, we include an array of control variables drawn from the existing literature on the determinants of foreign direct investment such as Brainard (1997), Markusen (1997, 2002), Carr et al. (2001), Markusen and Maskus (2002) and Blonigen et al. (2003).

We first outline the difference-in-differences estimation. Specifically, let

$$FDI_{ijt} = \alpha + \sum_{k=1}^{2} \beta_k d_{rk} + \sum_{l=1}^{4} \gamma_l d_{hl} + \sum_{k=1}^{2} \sum_{l=1}^{4} \delta_{kl} \left(d_{rk} \cdot d_{hl} \right) \tag{7}$$

where FDI_{ijt} is FDI in host country i from source country j at time t; rk denotes the regime ($k = 1$ for CUSFTA, $k = 2$ for NAFTA) and hl denotes host-type, to be explained below. d_{r1} is a dichotomous variable that is equal to one if the regime is CUSFTA (from 1989 on) and d_{r2} equals one if the regime is NAFTA (1994 and later); both are zero otherwise.[16] Note that specifying the

[16] As a robustness check, we vary the starting point of both CUSFTA and NAFTA in consideration of a possible announcement effect.

regimes in this manner is consistent with CUSFTA remaining in effect through the addition of Mexico in NAFTA, where the NAFTA dummy then only represents the effect of that addition, not the effect of the entire three-country FTA.

$d_{h1} - d_{h4}$ are dichotomous variables, one for each of four host-source types. Let d_{h1} equal one if the U.S. hosts Canadian FDI. Let d_{h2} equal one if Mexico is the host country to Canadian FDI. Let d_{h3} equal one if Canada is the host country to FDI from the U.S., and finally, let d_{h4} equal one if Canada is the host to FDI from any non-NAFTA country. We add this last host-source type -even though it is not formally treated in our theoretical model- for completeness, so that we cover all FDI relationships involving Canada. We would expect a negative effect of both CUSFTA and NAFTA on this FDI as the agreements make the U.S. (due to lowered trade costs for exporting to Canada) and Mexico (due to the lower trade and investment costs) more attractive locations for non-North American firms.

The estimated impact of CUSFTA and NAFTA, respectively, for a particular host-source relationship is then given by the δ_{kl}'s, the difference-in-differences estimators. Since there are four such relationships and two regimes to consider, there are a total of eight coefficients. For example, δ_{11} gives the difference-in-differences effect of CUSFTA on Canadian FDI in the U.S.; δ_{22} gives the effect of NAFTA on Canadian FDI in Mexico.

In order to see why the δ's are of central interest, note that α is the baseline effect for observations that are pre-CUSFTA and NAFTA ($d_{r1} = d_{r2} = 0$) and are not of a (future) NAFTA host ($d_{hl} = 0$ $\forall\ l$). Then, $\alpha + \beta_k$ is the effect of CUSFTA/NAFTA on non-NAFTA hosts. The simple difference, i.e. the "CUSFTA-" or "NAFTA-effect" is therefore given by β_1 and β_2, respectively. For host type l, the pre- and post-NAFTA effects (and similarly for CUSFTA only) on FDI are given by $\alpha + \gamma_l$ and $\alpha + \beta_2 + \gamma_l + \delta_{2l}$, respectively, with the difference, the "NAFTA-effect", being $\beta_2 + \delta_{2l}$. Hence, the difference-in-differences estimate is given by δ_{2l}. While the signs, magnitudes and significance levels of the δ_{kl}'s are going to be of central interest, we will also report the simple difference results.[17]

By employing a difference-in-differences estimator, the effects of CUSFTA and NAFTA on FDI that we identify here are relative to changes in FDI that have occurred in non-NAFTA countries, the control group. It is desirable that the control group exhibit similar characteristics along several dimensions as the 'treated' group. However, this is not possible when the treated group is a very small and specific set of countries and in particular when it includes the U.S., which is clearly unique, for example with respect to GDP. We therefore condition FDI on a wide set of other variables taken from the literature on the determinants of FDI. These controls then represent heterogeneity in outcome dynamcis among countries (Abadie 2005). Then, rather than assuming that FDI in Canada would have evolved similarly to FDI in a country outside of North America without CUSFTA and NAFTA, we only need the weaker assumption that this evolution would have been similar conditional on all other determinants of FDI.

Still, in order to further raise confidence in the robustness of the results, we also specify several control groups. As a baseline, we use all bilateral FDI that does not include any of the three North American countries as a host. Then, we exclude all FDI elsewhere in the world that originates in Canada or the U.S.[18] Next, we further limit the control group to developed economies as these tend to be more similar to the treatment group.[19]

For other control variables to include in the empirical model, we appeal to the standard FDI

[17]We deal with inward U.S. and inward Mexican FDI other than from Canada in the same manner as described above, by including appropriate dichotomous variables, but in the interest of clutter and as we have explored these issues in more depth in our companion paper (Tekin-Koru and Waldkirch, 2010), we omit the associated coefficients from our presentation of the results below.

[18]Hejazi and Pauly (2005) analyze the effect of NAFTA on U.S. FDI in Canada in a sample of outward U.S. FDI only. In their analysis of inward FDI, using bilateral OECD data, they do not control explicitly for the U.S. , but only include a North America dummy and no interactions of that dummy with NAFTA or CUSFTA dummies.

[19]We discuss additional issues with the difference-in-differences approach and how we deal with them in the next section.

literature and use a parsimonious model with the following controls:

$$FDI = f\left(\begin{array}{c} GDP\ Host, GDP\ Source, Skill\ Host, Skill\ Source, Real\ Exchange\ Rate, \\ Host\ Openness, Source\ Openness, Distance, ties, language, contiguity \end{array}\right) \quad (8)$$

The coefficients on the first two terms, *GDP Host* and *GDP Source*, are expected to be positive as larger market size of both the sending and the receiving country positively affect the scale of foreign production. The next two terms, *Skill Host* and *Skill Source*, which are defined as the share of skilled workers in the economy, proxy for a country's endowments with skilled labor. The literature suggests that countries better endowed with skilled labor are more likely to be headquarter countries of multinational firms, but since even for relatively unskilled labor intensive production processes some skilled labor is needed and we observe most FDI between similar countries, the coefficients on both skill variables are expected to be positive (Carr et al., 2001; Markusen and Maskus, 2002). The real exchange rate, measured as an index, has been found to matter by some studies on the determinants of FDI (Froot and Stein, 1991; Blonigen, 1997; Goldberg and Klein, 1997), although its sign can be ambiguous. On the one hand, a higher real exchange rate of a potential source country makes investment abroad (in foreign currency) less costly. On the other hand, revenue received in foreign currency is worth less in home currency, which investors presumably want at some point. If the former dominates, a positive sign is expected, if the latter, a negative one.

Source country and host country openness are measured by the KOF economic index of globalization, which is based on several measures, including trade, tariffs, hidden import barriers, trade taxes and others (Dreher, Gaston and Martens, 2008). The sign on host country openness may be positive or negative. A negative sign would be consistent with the tariff-jumping argument whereby greater openness reduces the incentive to produce abroad. A positive sign is consistent with vertical integration as lower trade costs increase the incentive to ship intermediate goods abroad for final assembly taking place there. As source country openness decreases the cost of shipping either intermediates or final goods back home, a positive sign is expected. Distance is a complex measure taken from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) which uses domestic and international distance weighted by the population concentration in important cities within a country. Its sign is theoretically ambiguous since it can proxy for both trade and investment costs. It is included since it usually performs well in gravity-type models. Finally, we include a set of variables that are typically added in gravity equations as they provide additional explanatory power. These are indicators of common language, colonial ties, and contiguity.

We should note that we do not claim that the effects that we find can solely be ascribed to CUSFTA or NAFTA as we have limited ways of controlling for other events during the time period that we are looking which may affect the pattern of FDI. One example is Mexico joining the OECD in 1994, the same year that NAFTA took effect, though it seems unlikely that this step would have much of an effect given that no significant policy changes were associated with this move. Another example is the peso crisis in late 1994, early 1995. However, its main effect was a steep real depreciation of the peso and a fall in GDP, followed by a real appreciation in the years afterwards. Our GDP and exchange controls do attempt to control for that, though one should keep in mind that they may be limited in their ability to control for the extent of the crisis and its effect on foreign investors. However, by employing a difference-in-differences estimator, we do control for the worldwide rising trend in FDI over the sample period, whatever its cause.

5 Econometric Considerations and Data

5.1 Econometric Considerations

The data are in panel form and preliminary tests indicated that both autocorrelation and heteroscedasticity were present. Therefore, we use a panel data model (Prais-Winsten regression) with panel corrected standard errors. We report results from regressions where the autocorrelation coefficient is assumed to be different for each observational unit (country pair). The variance-covariance matrix is computed under the assumption that the disturbances are heteroscedastic and contemporaneously correlated across units, where each pair of cross-sectional units has their own covariance. For each element in the covariance matrix, all available observations that are common to the two units contributing to the covariance are used to compute it, given that the panel is unbalanced.

We have an unbalanced panel because not all data are available for all years of the sample period. We apply the following rules. Since we are primarily interested in the effects of CUSFTA and NAFTA, we need a sufficiently long time series. In our base specification, we choose a minimum of 14 observations for each country pair. In order to implement the correction for autocorrelation, no gaps in the data are allowed. Hence, when there is a gap, we limit ourselves to using post-gap information. In other words, if 1983 is available, 1984 is missing, and 1985 onwards is available, the data for this country-pair start in 1985. One of the robustness checks uses a larger number of observations, although a minimum of five must still be imposed in order to allow for the computation of the autocorrelation coefficients for all country pairs.

Bertrand, Duflo and Mullainathan (2004) point out that ignoring serial correlation in difference-in-differences estimation can lead to severely biased standard errors. This should be clear as the independent variable of interest, namely the policy change, is itself very serially correlated. While we account for the problem by estimating a first-order autocorrelation coefficient, we also use one of the techniques they suggest which works well for samples of more than 20 observational units (we have at least 178 country pairs). It requires estimating standard errors while allowing for an arbitrary covariance structure between time periods, using a generalized White-like formula. This estimator of the variance-covariance matrix is consistent as the number of country pairs tends to infinity and imposes no restrictions on the possible serial correlation of error terms. Note, however, that this procedure has problems as well. It tends to work well for short time periods, but tends to blow up standard errors excessively for longer time periods such as our 22 year panel.[20]

5.2 Data

FDI data come from three sources. U.S. inward and outward FDI data come from the standard source used in most studies of U.S. FDI, the Bureau of Economic Analysis (BEA). These data are described in detail elsewhere. Mexican FDI data come from the Mexican National Statistical Institute (INEGI). These are FDI stocks in Mexico from 1980 on, published in U.S. dollars. The data distinguish ten source countries throughout the sample period. They account for about 90 percent of total FDI in Mexico. Since 1994, more source country and especially industry detail is available, but since we need sufficient pre-1994 data, we cannot use the additional detail in this study. No industry or additional source country detail is available retroactively for the time before NAFTA. The third data source, used for all other countries, including Canadian FDI in countries other than the U.S. and Mexico, is the OECD's International Direct Investment Statistics, which publishes FDI data in U.S. dollars. In the empirical analysis, all nominal values are converted to real dollars using the U.S. producer price index for capital equipment.[21]

[20] Donald and Lang (2007), Hansen (2007) and Abadie et al. (2007) consider additional sources of uncertainty, besides sampling error. However, implementation of their approaches is either not feasible or beyond the scope of this paper.

[21] FDI among many OECD countries is often available twice as both an OECD source and an OECD host country report their inward and outward FDI. Inspection of such cases reveals that the numbers do not match. For the results reported below, we pick the numbers reported by the host country, but note that the results are largely robust to picking source country FDI instead.

For most of the countries in the sample, FDI rose modestly during the 1980s and rose much more substantially during the 1990s. Within North America, the United States is the most important host country of Canadian FDI and the most important source of both Canadian and Mexican inward FDI. Figure 4 illustrates the evolution of real Canadian inward and outward (in the U.S. and Mexico) FDI. Note the different scale for Mexico (on the right), illustrating that the magnitude of FDI in Mexico is dwarfed by FDI in the U.S.

Control variable data also come from standard sources. We use PPP-adjusted GDP data from the Penn World Tables (6.2). An important control variable in many studies is skill. The two most common sources of skill data are the International Labor Organization (ILO) and the Barro/Lee data on schooling. We use both in our analysis to ensure the robustness of our results. The ILO data measure the number of workers in a particular occupation and characterize some as skilled, some as unskilled, employing the skill definitions from Carr et al. (2001). A country's skill level then is represented by the share of skilled workers. We fill in missing data using a linear trend between non-missing years. For just a few countries, additional years are filled in using the growth rate of the skilled labor share between non-missing years. Alternatively, we use the Barro/Lee data on years of schooling. These are available only in five-year intervals, though for a larger number of countries than the ILO data, and we fill in missing values using a linear trend as well.[22] Distance in kilometers is a complex measure taken from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) which uses domestic and international distance weighted by the population concentration in important cities within a country. However, the measure is highly correlated with simpler distance measures and results are not affected by the choice of distance.

Table 3 contains summary statistics for our basic sample with a minimum of 14 observations per country pair as well as for the larger sample where only a minimum of five observations are

[22] Filling in missing values with repeated values from prior or future years does not change the results.

required. It is of note that mean FDI far exceeds median FDI, indicating that it is skewed towards a smaller number of countries. Host countries tend to be larger than source countries, but the latter have a higher share of skilled labor than the former. Note that expanding the sample lowers average FDI and GDP, but substantially raises openness and the real exchange rate. Since the additional countries are small, they tend to have higher degrees of openness, as is typical when measured by the share of trade in GDP. Moreover, their currencies tend to depreciate significantly over time.

6 Results

Tables 4 - 11 report the results. Tables 4 (using ILO skill data), 6 (using Barro/Lee education data), 8 (using different control groups) and 10 (with trade as the dependent variable) show regression results for the control variables and some of the coefficients on the dichotomous variables, for a variety of specifications. Tables 5, 7, 9 and 11 present the simple difference and the difference-in-differences estimation results, which are of central interest.

The basic sample contains only source-host country pairs for which we have at least 14 observations. Specification (3) in Table 4 includes country pairs with fewer observations, which increases the sample size from 3,294 to 6,606 observations. However, many of the newly included country pairs still have twelve or 13 observations. Specification (4) accounts for a possible announcement effect by starting the CUSFTA and NAFTA regime dummies in 1987 and 1992, respectively, rather than 1989 or 1994.[23] Specification (5) computes an arbitrary variance-covariance matrix as suggested by Bertrand et al. (2004) as a different way to address potential bias in the difference-in-differences estimation and specification (6) includes both host and source country fixed effects.

The first specification is one that only includes the dichotomous variables needed for the difference-in-differences estimation without any controls. The significantly positive and large co-

[23] Dating the announcement effect to 1988 and 1993 makes little difference to the results.

efficients on both dummies indicating U.S. FDI in Canada (γ_1) and Canadian FDI in the U.S. (γ_3) illustrate that even before NAFTA and CUSFTA, bilateral FDI between these countries was unusually high. Interestingly, however, this result only holds up for inward Canadian FDI from the U.S., not Canadian FDI in the U.S., once we include additional controls in column (2), and that is also robust across the other specifications in the table. Almost all control variables are highly statistically significant and have the expected signs. Market size, both of the host (*GDP Host*) and the source (*GDP Source*), has a positive effect on FDI, as does the share of skilled workers in the economy (*Skill Host* and *Skill Source*). This illustrates that multinationals from large countries with abundant skilled labor tend to dominate. The real exchange rate is not significantly different from zero in any specification except marginally in the fixed effects regression, indicating that it does not tend to affect FDI at such an aggregate level. Host and source country openness are at best marginally statistically significant, though this improves when we use the Barro/Lee skill data later on. Finally, distance is a deterrent of FDI, as expected.

Table 5 shows the results of the effects of CUSFTA and NAFTA, both in absolute terms and relative to the evolution of FDI elsewhere in the world (the difference-in-differences estimator). Recall that the difference-in-differences coefficient is the one on the interaction term of host type and CUSFTA or NAFTA indicator (the δ's). The simple difference is the sum of that coefficient and the one on the CUSFTA or NAFTA indicator alone ($\beta_{1/2}+\delta$). F-tests are used to check for the joint significance. The order of host type results follows the order of the hypotheses from the theoretical section, with the addition of non-NAFTA countries' FDI in Canada. Note that the statistical significance of the results with respect to a particular host type and regime is very robust across specifications. This is also true for the simple difference and the difference-in-differences results. However, the magnitudes of the coefficients, which represent millions of dollars since the estimation is in levels, do differ somewhat and we put these differences in perspective below.

Recall that the theory predicts that the fall in trade costs due to CUSFTA should lower intra-agreement FDI as well as Canadian FDI in Mexico. However, only Canadian FDI in Mexico (*MexhostCan*) is shown to be significantly negatively affected, though consistently so across specifications. Intra-CUSFTA FDI (*CanhostUS*) is only marginally significant in specification (5), though with an unexpected positive sign. Thus, we can confirm one of the three hypotheses for CUSFTA only.

The effect of the agreement on other countries' FDI in Canada (*CanhostOther*) is strongly negative and very robust across specifications. This suggests that with easier access to the Canadian market from the U.S., FDI may have been re-oriented to the U.S., with its far larger market.

With respect to the addition of Mexico to the existing CUSFTA agreement (NAFTA), the theory predicts a positive effect for intra-agreement FDI among all countries. The results are mixed, however. Canadian FDI in the U.S. as well as U.S. FDI in Canada have positive coefficients across all specifications, but they are only marginally significant in a few of the Prais-Winsten regressions, although strongly significant, and much larger, when we compute an arbitrary VCE instead. Thus, there is evidence that lower investment costs expanded FDI generally as they make foreign engagement more attractive and that this effect dominates the reduced incentive for tariff-jumping.

In order to get a sense of the total economic effect, we can relate the estimated effect of both CUSFTA and NAFTA to the level of FDI reached by the end of our sample period (2002). For U.S. FDI in Canada, the range is from about 20 to 30 percent, a considerable effect. That is, the model suggests that 20 to 30 percent of the 2002 FDI stock has resulted from the two agreements.[24] For Canadian FDI in the U.S., the effect is even larger, ranging from 28.6 to nearly 40 percent,

[24] Note that the model appears to be doing well in predicting FDI. The correlation between actual and predicted FDI stocks is in the neighborhood of 0.55, statistically significant at the one percent level. Blonigen and Davies (2004) find that in their data, the residuals are unreasonably large and differ systematically between rich and poor countries. Our residuals appear to be of reasonable size and do not differ in any systematic way.

depending on specification. We caution, however, that while all coefficients are positive, statistical significance is not always achieved.

The negative impact on Canadian FDI in Mexico found under CUSFTA only is confirmed for NAFTA to some extent, though note that only two of the difference-in-differences results that includes control variables is statistically significant. Still, the result is somewhat puzzling as it is not only contrary to theoretical expectations, but also in stark contrast to the evolution of the absolute amount of FDI, which rose substantially after 1994. However, if we compare its magnitude to that of, for example, Canadian FDI in the U.S., it is much smaller. The estimated effect is also unreasonably large in magnitude, on the order of more than 90 up to over 200 percent of 2002 FDI.

As did CUSFTA, NAFTA is robustly shown to have had a negative effect on other countries' FDI in Canada, which is statistically significant in every specification. Putting the estimated coefficients in relation to 2002 FDI, the agreements resulted in a 10 to over 22 percent lower amount. This is consistent with the hypothesis that for other countries, access to the Canadian market from either the U.S. or Mexico has been greatly facilitated with the lower trade costs, provided rules of origin are satisfied. The additional reduction in investment costs in Mexico in particular reinforces this investment diversion away from Canada.[25]

Despite some differences in the magnitude of the estimated effects, the qualitative results are similar across our different specifications except in the NAFTA cases for bilateral Canadian-U.S. FDI when we allow for an arbitrary variance-covariance matrix, where the coefficients are much larger. Even though this method worked well for Bertrand et al.'s (2004) data, it may not be the case here. For example, consider the average estimated autocorrelation in regressions (1) through (4). It is about 0.85, much higher than in Bertrand et al.'s data, where the true autocorrelation is comparable to our estimated one in magnitude. Moreover, they do not allow for individual (in

[25] In contrast, Hejazi and Pauly (2005) find a negative effect of NAFTA on U.S. FDI in Canada and no effect (see the statistically insignificant coefficients for Canada) for other countries' FDI in Canada. However, as discussed above, due to their differences in methodology and sample, their results are not strictly comparable to ours.

our case: country-pair specific) autocorrelation coefficients, but impose a common one. Thus, we maintain that our Prais-Winsten methodology is appropriate and yields good results.

Our first important robustness check is re-estimating the model using the Barro/Lee education data rather than the ILO skill data. Results are presented in Tables 6 and 7, which contain the same specifications as Tables 4 and 5, without the "no controls" one of course. The signs and significance levels of most control variables are virtually the same, including the coefficients on the Barro/Lee education measures. An exception are host and source country openness, which are now statistically significant in most regressions. The positive coefficients are consistent with a vertical integration motive for FDI. Turning to the CUSFTA and NAFTA effects, we note that virtually all results hold up qualitatively. There are some differences in the magnitudes of the coefficients, though they do not appear to systematically differ in one direction or the other and not by much.

Our second important robustness check changes the identity of the control group. As discussed earlier, there is no obvious control group of countries that are similar to the CUSFTA/NAFTA countries in all respects but becoming part of an integration agreement. Therefore, we use a variety of control groups to check whether the results hinge on this choice and present the results in Tables 8 and 9. We repeat the basic exercise for three out of our six specifications, but note that results for the others are comparable. Almost none of the results concerning the effects of CUSFTA and NAFTA are sensitive to the identity of the control group. The only exception concerns U.S. FDI in Canada, whose coefficient is now significantly negative in all of the fixed effects specifications. For CUSFTA, this is consistent with theoretical expectations. For NAFTA, it is not.

Finally, we repeat our exercise with trade as the dependent variable rather than FDI. Consistent with theoretical expectations, we find that both CUSFTA and NAFTA had a positive effect on trade between the U.S. and Canada. This represents the effect from increased vertical integration in the region as well as a traditional trade creation effect. For Canada-Mexico trade as well as Canadian trade with other countries, the results are mixed. This reflects the fact that there is simply little economic interaction between the two small countries in North America as well as a possible trade diversion effect.

In summary, we find that there is ample evidence that North American economic integration first with CUSFTA and then including Mexico in NAFTA has affected FDI both in and from Canada, the small Northern country in the agreements. The effect is positive for intra-NAFTA FDI except that Canadian FDI in Mexico is negatively affected. Although other countries' FDI in Canada has also fallen relative to general trends and what is to be expected from the evolution of the traditional determinants of FDI, the results suggest that economic integration with low-cost countries need not strictly divert FDI away from a small higher-cost member country.

7 Conclusion

This paper has investigated the effect of North American integration on Canadian foreign direct investment (FDI), both inward and outward. The empirical results suggest that CUSFTA alone did not have a positive effect, perhaps because it was quickly followed by the inclusion of Mexico into NAFTA. The larger agreement is found to have had a positive effect on Canadian FDI in the U.S. and Canadian inward FDI from the U.S., though a negative effect on other countries' FDI in Canada and Canadian FDI in Mexico. The results are consistent with a theory of trade agreements lowering not just trade, but investment costs, which results in greater foreign engagement of some firms, sufficient to generate a positive effect in aggregate data.

To our knowledge, this is the first paper that combines U.S., Mexican and bilateral OECD FDI data to analyze the effect of NAFTA on Canada. Together with the results from our companion paper, which found substantial increases in the wake of NAFTA of U.S. FDI in Mexico and no positive effect on non-NAFTA FDI in either the U.S. or Mexico, we obtain a comprehensive picture of how North American integration with its coincident reduction in investment costs affects FDI in the region. Clearly, it encourages intra-regional FDI, although to the detriment of third-country FDI.

The results are robust to different econometric specifications, the nature of the data and the sample, the inclusion of country fixed effects as well as the identity of the control group. More importantly, while we cannot claim to cleanly isolate a CUSFTA or NAFTA effect given that it is impossible to control for all other events that occur during this time period, the nature of a difference-in-differences estimation and an attempt to control for all commonly recognized determinants of FDI make us confident about the robustness of the results.

References

[1] Abadie, A., 2005. Semiparametric Difference-in-Differences Estimators. Review of Economic Studies 72, 1-19.

[2] Abadie, A., Diamond, A., Hainmueller, J. 2007. Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program. NBER Technical Working Paper 335, NBER.

[3] Baldwin, R., Forslid, R., Haaland, J. 1995. Investment Creation and Investment Diversion: Simulation Analysis of the Single Market Programme. NBER Working Paper Series 5364, NBER.

[4] Baltagi, B., Egger, P., Pfaffermayr, M. 2008. Estimating Regional Trade Agreement Effects of FDI in an Interdependent World. Journal of Econometrics 145, 194-208.

[5] Barrel, R., Pain, N. 1999. Domestic Institutions, Agglomerations and Foreign Direct Investment in Europe. European Economic Review 43, 925–34.

[6] Bertrand, M., Duflo, E., Mullainathan, S., 2004. How Much Should we Trust Difference in Differences Estimates? Quarterly Journal of Economics 119, 249-75.

[7] Blomström, M. and Kokko, A.. 1997. Regional Integration and Foreign Direct Investment. Working Paper Series in Economics and Finance No. 172. World Bank.

[8] Blonigen, B.A., 1997. Firm-specific assets and the link between exchange rates and foreign direct investment. American Economic Review 87, 447–65.

[9] Blonigen, B.A., Davies, R.B., Head, K., 2003. Estimating the Knowledge-Capital Model of the Multinational Enterprise: Comment. American Economic Review 93, 980-94.

[10] Blonigen, B.A., Davies, R.B., 2004. The Effects of Bilateral Tax Treaties on U.S. FDI Activity. International Tax and Public Finance 11, 601-22.

[11] Braconier, H., Norbäck, P.-J., Urban, D., 2005. Multinational Enterprises and Wage Costs: Vertical FDI Revisited. Journal of International Economics 67, 446-70.

[12] Brainard, S.L., 1997. An Empirical Assessment of the Proximity-Concentration Trade-Off between Multinational Sales and Trade. American Economic Review 87, 520-44.

[13] Buckley, P.J., Clegg, J., Forsans, N., Reilly, K.T., 2007. A Simple and Flexible Dynamic Approach to Foreign Direct Investment Growth: The Canada-United States Relationship in the Context of Free Trade. The World Economy 30, 267-91.

[14] Carr, D.L., Markusen, J.R., Maskus, K.E., 2001. Estimating the Knowledge-Capital model of the Multinational Enterprise. American Economic Review 91, 693-708.

[15] Carr, D.L., Markusen, J.R., Maskus, K.E., 2003. Estimating the Knowledge-Capital Model of the Multinational Enterprise: Reply. American Economic Review 93, 995-1001.

[16] Cuevas, A., Messmacher, M., Werner, A., 2005. Foreign Direct Investment in Mexico since the Approval of NAFTA. World Bank Economic Review 19, 473-88.

[17] Chen, M. 2009. Regional Economic Integration and Geographic Concentration of Multinational Firms. European Economic Review 53, 355-75.

[18] Donald, S and Lang, K. 2007. Inference with Difference-in-Differences and Other Panel Data. The Review of Economics and Statistics 89(2), 221-33.

[19] Dreher, A., Gaston, N., Martens, P., 2008. Measuring Globalization - Gauging its Consequences. New York: Springer.

[20] Ekholm, K., Forslid, R., Markusen, J.R., 2007. Export-Platform Foreign Direct Investment. Journal of the European Economic Association 5, 776-95.

[21] Ethier, W.J., 1998. The New Regionalism. Economic Journal 108, 1149-61.

[22] Feenstra, R. 2004. Advanced International Trade, Theory and Evidence. Princeton University Press.

[23] Feinberg, S. and Keane, M. 2001. U.S.-Canada Trade Liberalization and MNC Production Location. Review of Economics and Statistics 83(1), 118–32.

[24] Froot, K.A. and Stein, J.C., 1991. Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach. Quarterly Journal of Economics 106, 1191-217.

[25] Globerman, S., Shapiro, D.M., 1999. The Impact of Government Policies on Foreign Direct Investment: The Canadian Experience. Journal of International Business Studies 30, 513-532.

[26] Goldberg, L.S. and Klein, M.W., 1997. Foreign Direct Investment, Trade and Real Exchange Rate Linkages in Southeast Asia and Latin America. NBER Working Paper 6344.

[27] Graham, E.M., Wilkie, C., 1994. Multinationals and the Investment Provisions of the NAFTA. The International Trade Journal VIII, 9-38.

[28] Grossman, G.M., Helpman, E., Szeidl A., 2006. Optimal Integration Strategies for the Multinational Firm. Journal of International Economics 70, 216-38.

[29] Hansen, C. 2007. Asymptotic Properties of a Robust Variance Matrix Estimator for Panel Data When T Is Large. Journal of Econometrics 141(2), 597-620.

[30] Hejazi, W., Pauly, P.H., 2005. How Do Regional Trade Agreements Affect Intra-Regional and Inter-Regional FDI? In: Eden, L., Dobson, W. (Eds.), Governance, Multinationals and Growth. Northampton, MA: Edward Elgar, 176-208.

[31] Markusen, J.R., 1997. Trade versus Investment Liberalization. NBER Working Paper Number 6231.

[32] Markusen, J.R., 2002. Multinational Firms and the Theory of International Trade. The MIT Press, Cambridge.

[33] Markusen, J.R., Maskus, K.E., 2002. Discriminating Among Alternative Theories of the Multinational Enterprise. Review of International Economics 10, 694-707.

[34] Motta, M., Norman, G., 1996. Does Economic Integration Cause Foreign Direct Investment? International Economic Review 37, 757-83.

[35] Ozden, C. and Parodi, F. 2004. Customs Unions and Foreign Investment: Theory and Evidence from MERCOSUR's Auto Industry. Working Papers 282, Central Bank of Chile.

[36] Park, I. and Park S. 2008. Reform Creating Regional Trade Agreements and Foreign Direct Investment: Applications for East Asia. Pacific Economic Review 13(5), 550-66.

[37] Tekin-Koru, A., Waldkirch, A. 2010. North-South Integration and the Location of Foreign Direct Investment. Review of International Economics, forthcoming.

[38] Viner, J. 1950. The Customs Union Issue. London: Carnegie Endowment Internat. Peace.

[39] Waldkirch, A., 2003. The 'New Regionalism' and Foreign Direct Investment: The Case of Mexico. Journal of International Trade and Economic Development 12, 151-84.

[40] Yeaple,S.,2003.The Role of Skill Endowments in the Structure of U.S.Outward Foreign Direct Investment. Review of Economics and Statistics 85(3), 726–34.

[41] Yeyati, E., Stein E. and Daude, C,. 2004. The FTAA and the Location of FDI. Working Papers 281, Central Bank of Chile.

Table 1: Maximum Profits for a Canadian and a U.S. Firm in Different Regimes

Canadian Firm	U.S. Firm
Pre-CUSFTA Regime	
Canadian Firm	U.S. Firm
$\pi_{C,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{1+\frac{\sigma}{2}(T^H-1)}{T^H C(1,1)}\right]$	$\pi_{U,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\sigma)+\sigma}{T^H C(1,1)}\right]$
$\pi_{M,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{1+\frac{\sigma}{2}(T^H-1)}{T^H C(w,1)}\right] - g^H$	$\pi_{M,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\sigma)+\sigma}{T^H C(w,1)}\right] - g^H$
$\pi_{C,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H-\frac{\sigma}{2}(T^H-1)}{T^H C(1,1)}\right] - f^H$	$\pi_{U,UM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\sigma}{C(1,1)} + \frac{\frac{\sigma}{2}(1+T^H)}{T^H C(1,w)}\right] - f^H$
$\pi_{M,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H-\frac{\sigma}{2}(T^H-1)}{T^H C(w,1)}\right] - (f^H+g^H)$	$\pi_{M,UM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\sigma}{C(w,1)} + \frac{\frac{\sigma}{2}(1+T^H)}{T^H C(w,w)}\right] - (f^H+g^H)$
$\pi_{C,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^H$	$\pi_{U,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^H$
$\pi_{M,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(w,1)} + \frac{\frac{\sigma}{2}}{C(w,w)}\right] - 2f^H - g^H$	$\pi_{M,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(w,1)} + \frac{\frac{\sigma}{2}}{C(w,w)}\right] - 2f^H - g^H$
CUSFTA Regime	
Canadian Firm	U.S. Firm
$\pi_{C,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H T^L \frac{\sigma}{2} + T^L(1-\sigma) + T^H\frac{\sigma}{2}}{T^H T^L C(1,1)}\right]$	$\pi_{U,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H T^L(1-\sigma) + \frac{\sigma}{2}(T^H+T^L)}{T^H T^L C(1,1)}\right]$
$\pi_{M,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H T^L \frac{\sigma}{2} + T^L(1-\sigma) + T^H\frac{\sigma}{2}}{T^H T^L C(w,1)}\right] - g^H$	$\pi_{M,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H T^L(1-\sigma) + \frac{\sigma}{2}(T^H+T^L)}{T^H T^L C(w,1)}\right] - g^H$
$\pi_{C,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\frac{\sigma}{2})+\frac{\sigma}{2}}{T^H C(1,1)}\right] - f^H$	$\pi_{U,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\frac{\sigma}{2})+\frac{\sigma}{2}}{T^H C(1,1)}\right] - f^H$
$\pi_{M,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\frac{\sigma}{2})+\frac{\sigma}{2}}{T^H C(w,1)}\right] - (f^H+g^H)$	$\pi_{M,UC} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^H(1-\frac{\sigma}{2})+\frac{\sigma}{2}}{T^H C(w,1)}\right] - (f^H+g^H)$
$\pi_{C,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^H$	$\pi_{U,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^H$
$\pi_{M,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(w,1)} + \frac{\frac{\sigma}{2}}{C(w,w)}\right] - 2f^H - g^H$	$\pi_{M,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(w,1)} + \frac{\frac{\sigma}{2}}{C(w,w)}\right] - 2f^H - g^H$
NAFTA Regime	
Canadian Firm	U.S. Firm
$\pi_{C,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{1+\frac{\sigma}{2}(T^L-1)}{T^L C(1,1)}\right]$	$\pi_{U,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^L(1-\sigma)+\sigma}{T^L C(1,1)}\right]$
$\pi_{M,C} = (1-\alpha)\overline{Y}\Theta\left[\frac{1+\frac{\sigma}{2}(T^L-1)}{T^L C(w,1)}\right] - g^L$	$\pi_{M,U} = (1-\alpha)\overline{Y}\Theta\left[\frac{T^L(1-\sigma)+\sigma}{T^L C(w,1)}\right] - g^L$
$\pi_{M,M} = (1-\alpha)\overline{Y}\Theta\left[\frac{1+\frac{\sigma}{2}(T^L-1)}{T^L C(w,w)}\right] - (f^L+g^L)$	$\pi_{M,M} = (1-\alpha)\overline{Y}\Theta\left[\frac{(1-\sigma)+\frac{\sigma}{2}(1+T^L)}{T^L C(w,w)}\right] - (f^L+g^L)$
$\pi_{C,CM} = (1-\alpha)\overline{Y}\Theta\left[\frac{\frac{\sigma}{2}}{C(1,1)} + \frac{(1-\sigma)+T^L\frac{\sigma}{2}}{T^L C(1,w)}\right] - f^L$	$\pi_{U,UM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\sigma}{C(1,1)} + \frac{\frac{\sigma}{2}(1+T^L)}{T^L C(1,w)}\right] - f^L$
$\pi_{C,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^L$	$\pi_{U,UCM} = (1-\alpha)\overline{Y}\Theta\left[\frac{1-\frac{\sigma}{2}}{C(1,1)} + \frac{\frac{\sigma}{2}}{C(1,w)}\right] - 2f^L$

Note: $C(p_m, p_a) \equiv c(p_m, p_a)^{\alpha/(1-\alpha)}$ and $T^H = (t^H)^{\alpha/(1-\alpha)}$ and $T^L = (t^L)^{\alpha/(1-\alpha)}$ are transformed measures of the unit and trade costs, respectively.

Table 2: Hypotheses

	CUSFTA Regime	NAFTA Regime
Canadian FDI in the U.S.	Decreases	Increases
Canadian FDI in Mexico	Decreases	Increases
U.S. FDI in Canada	Decreases	Increases

Table 3: Summary Statistics

	14+ observations			5+ observations		
Regressor	Mean	Median	S.D.	Mean	Median	S.D.
FDI ('000 $)	7,856	986.0	22,262	4,132	247.0	15,515
GDP Host (mill. $)	2,064	626.2	2,892	1,336	366.5	2,392
GDP Source (mill. $)	1,579	642.7	2,388	1,152	308.1	2,140
Skill Host - ILO (share)	0.258	0.285	0.102	0.261	0.285	0.103
Skill Source - ILO (share)	0.280	0.298	0.096	0.287	0.306	0.101
Skill Host - Barro/Lee (years)	8.384	8.483	2.635	8.333	8.684	2.577
Skill Source - Barro/Lee (years)	8.795	9.007	2.265	8.289	8.706	2.615
Real Exchange Rate (index)	99.64	99.01	35.14	126.9	100.0	897.9
Host Openness (%)	59.70	44.22	60.73	72.07	59.02	64.18
Source Openness (%)	60.20	50.58	50.59	73.27	62.22	58.23
Distance (km)	7,205	6,855	4,705	7,088	6,923	4,888
CUSFTA	0.268	0	0.443	0.197	0	0.398
NAFTA	0.469	0	0.499	0.676	1	0.468
UShostCan	0.007	0	0.083	0.003	0	0.056
MexhostCan	0.007	0	0.083	0.003	0	0.056
CanhostUS	0.006	0	0.079	0.003	0	0.053
CanhostOther	0.061	0	0.239	0.040	0	0.196

Notes:
CUSFTA and NAFTA are indicator variables for the CUSFTA only (1989-93) and NAFTA (1994 on) time periods.
UShostCan, *MexhostCan*, *CanhostUS* and *CanhostOther* are indicator variables for the four host types discussed in the text, where Can = Canada, US = United States, Mex = Mexico and other = countries other than Mexico and the United States.

Table 4: Regression Results: ILO Skill Data

Regressor	(1) No Controls	(2) 14+ obs.	(3) 5+ obs.	(4) Announce-ment Effect	(5) Arbitrary VCE	(6) Country FE
GDP Host		4.976***	5.868***	4.738***	6.150***	4.829***
		(1.139)	(0.623)	(1.111)	(1.774)	(0.985)
GDP Source		5.021***	2.898***	4.932***	2.637***	4.562***
		(0.613)	(0.346)	(0.603)	(0.751)	(0.550)
Skill Host		46,397***	17,490***	44,747***	14,528	49,896**
		(11,745)	(3,265)	(11,127)	(10,083)	(20,252)
Skill Source		32,124***	14,548***	32,088***	39,392**	7,294
		(9,438)	(3,479)	(9,447)	(13,923)	(11,202)
Real Exchange Rate		-0.218	-0.011	0.887	-24.14	-8.210*
		(4.419)	(0.020)	(4.568)	(15.43)	(4.264)
Host Openness		5.083	56.02*	-4.322	76.43	-64.96
		(65.29)	(28.83)	(66.80)	(57.91)	(65.12)
Source Openness		42.86	17.71	40.39	-72.70	-133.1*
		(47.68)	(19.36)	(48.38)	(96.18)	(71.36)
Distance		-1.146***	-0.355***	-1.171***	-0.419	-1.026***
		(0.258)	(0.079)	(0.260)	(0.266)	(0.228)
CUSFTA (β_1)	-1,147	-780.0	-197.9	-669.3	-1,817*	-595.6
	(989.6)	(1,108)	(918.9)	(1,318)	(1,019)	(1,112)
NAFTA (β_2)	-694.4	-837.7	-463.2	-672.8	-2,288**	-205.3
	(991.5)	(1,112)	(542.7)	(1,118)	(1,125)	(1,095)
UShostCan (γ_1)	28,372***	-261.6	-6,618	1,715	-10,290	12,398
	(7,419)	(10,043)	(7,795)	(11,252)	(9,117)	(11,049)
MexhostCan (γ_2)	-573.0	4,715***	1,933	4,375**	3,249	18,938***
	(1,446)	(1,687)	(1,216)	(1,793)	(2,202)	(4,243)
CanhostUS (γ_3)	68,042***	39,467**	49,438***	40,043***	47,324***	52,521***
	(7,408)	(6,644)	(6,780)	(8,013)	(4,617)	(9,666)
CanhostOther (γ_4)	-3,165**	827.9	-1,089	762.9	1,633	6,388
	(1,476)	(1,950)	(1,303)	(2,178)	(1,975)	(6,745)
Number of obs.	3,294	3,294	6,606	3,294	3,294	3,294
R^2	0.21	0.34	0.29	0.31	0.34	0.47
Average autocorr.	0.872	0.837	0.850	0.837	N/A	0.818

Notes:
Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All regressions include a constant, a time trend, dummies for colonial ties, common language and contiguity as well as dummies for non-NAFTA country FDI in the U.S. and Mexico and U.S. FDI in Mexico as well as the their interactions with CUSFTA and NAFTA dummies (not reported). The δ-coefficients (the difference-in-differences estimators) are reported in Table 5, along with the simple difference results.
Regressions (1)-(4) correct for first-order autocorrelation where autocorrelation coefficients are estimated separately for each country pair. Covariances vary across country pairs. See the text for details. Regression (5) computes an arbitrary variance-covariance matrix. Regression (6) includes host and source country fixed effects (coefficients not reported).
All regressions except (3) contain at least 14 observations for each country pair.
In Regression (4), the CUSFTA and NAFTA dummies are set equal to one starting in 1987 and 1992

Table 5: CUSFTA and NAFTA Effects, ILO Skill Data

	(1)	(2)	(3)	(4)	(5)	(6)
	No Controls	14+ obs.	5+ obs.	Announce-ment Effect	Arbitrary VCE	Country FE
CUSFTA						
Simple Difference	11,021	6,368	7,803	7,326	1,424	6,863
UShostCan $(\beta_1 + \delta_{11})$	(7,932)	(7,010)	(7,026)	(7,136)	(3,282)	(7,050)
Difference-in-differences	12,168	7,148	8,001	7,995	3,241	7,459
UShostCan (δ_{11})	(8,013)	(7,087)	(6,835)	(7,407)	(3,001)	(6,973)
Simple Difference	-5,913***	-5,386***	-2,509***	-4,384***	-7,211***	-5,063***
MexhostCan $(\beta_1 + \delta_{12})$	(1,504)	(1,317)	(667.7)	(1,258)	(2,024)	(1,519)
Difference-in-differences	-4,767***	-4,606***	-2,311**	-3,715**	-5,395***	-4,467**
MexhostCan (δ_{12})	(1,525)	(1,416)	(947.7)	(1,548)	(1,381)	(1,770)
Simple Difference	11,344	4,600	9,546	8,896	4,545**	3,956
CanhostUS $(\beta_1 + \delta_{13})$	(7,810)	(7,327)	(7,982)	(7,510)	(1,847)	(7,421)
Difference-in-Differences	11,347	5,380	9,744	9,566	6,362**	4,551
CanhostUS (δ_{13})	(7,809)	(6,965)	(7,449)	(7,314)	(1,734)	(7,038)
Simple Difference	-4,026***	-4,654***	-1,942***	-3,625**	-4,189**	-4,695***
CanhostOther $(\beta_1 + \delta_{14})$	(1,422)	(1,329)	(632.6)	(1,428)	(1,749)	(1,583)
Difference-in-Differences	-2,917*	-3,874***	-1,745	-2,956*	-2,372*	-4,099***
CanhostOther (δ_{14})	(1,556)	(1,409)	(1,149)	(1,523)	(1,412)	(1,548)
NAFTA						
Simple difference	13,149*	9,187	9,669	5,636	21,686***	9,222
UShostCan $(\beta_2 + \delta_{21})$	(7,932)	(7,027)	(6,998)	(7,048)	(3,464)	(7,026)
Difference-in-differences	13,844*	10,025	10,133	6,309	23,975***	9,427
UShostCan (δ_{21})	(8,017)	(7,105)	(7,157)	(7,175)	(3,369)	(6,921)
Simple difference	-4,371***	-3,010**	-672.4	-3,803***	-1,946	-3,606**
MexhostCan $(\beta_2 + \delta_{22})$	(1,537)	(1,296)	(653.0)	(1,416)	(1,292)	(1,517)
Difference-in-differences	-3,677**	-2,172	-209.2	-3,130**	342.1	-3,400**
MexhostCan (δ_{22})	(1,566)	(1,418)	(653.9)	(1,490)	(874.4)	(1,731)
Simple difference	13,149*	9,242	12,966*	2,641	21,497***	9,092
CanhostUS $(\beta_2 + \delta_{23})$	(7,874)	(7,163)	(7,723)	(7,173)	(1,815)	(7,138)
Difference-in-differences	13,844*	10,080	13,429*	3,314	23,786***	9,297
CanhostUS (δ_{23})	(7,600)	(6,750)	(7,616)	(6,812)	(1,630)	(6,681)
Simple difference	-5,374***	-3,485***	-1,853***	-3,401**	-5,811***	-2,636**
CanhostOther $(\beta_2 + \delta_{24})$	(1,520)	(1,164)	(607.0)	(1,357)	(1,489)	(1,178)
Difference-in-differences	-4,680***	-2,648**	-1,390**	-2,728**	-3,523***	-2,430**
CanhostOther (δ_{24})	(1,617)	(1,238)	(621.1)	(1,354)	(1,000)	(1,165)

Notes: Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. Results derived from the regressions in Table 4.

Table 6: Regression Results: Barro/Lee Education Data

Regressor	(1) 14+ obs.	(2) 5+ obs.	(3) Announce- ment Effect	(4) Arbitrary VCE	(5) Country FE
GDP Host	4.835***	4.816***	4.616***	5.544***	3.309***
	(0.915)	(0.453)	(0.867)	(1.320)	(1.123)
GDP Source	4.376***	2.299***	4.339***	2.662***	4.365***
	(0.531)	(0.274)	(0.522)	(0.657)	(0.589)
Skill Host (Barro/Lee)	1,785***	816.6***	1,754***	270.9	-3,967***
	(485.3)	(146.4)	(460.5)	(324.0)	(895.6)
Skill Source (Barro/Lee)	1,141***	381.0***	1,166***	755.1**	1,110
	(292.4)	(89.03)	(289.5)	(380.9)	(684.4)
Real Exchange Rate	-3.177	0.007	-1.940	-24.75*	-5.461
	(3.380)	(0.011)	(3.511)	(13.36)	(3.878)
Host Openness	98.06*	90.47***	91.03*	113.9***	-116.9**
	(54.72)	(20.84)	(53.28)	(42.92)	(58.05)
Source Openness	123.7***	70.20***	120.5***	101.3	-5.370
	(43.35)	(20.24)	(43.99)	(74.30)	(39.37)
Distance	-0.969***	-0.403***	-0.972***	-0.410**	-1.005***
	(0.240)	(0.079)	(0.241)	(0.166)	(0.190)
CUSFTA (β_1)	-716.3	-329.8	-597.6	-1,843**	-557.6
	(1,042)	(871.0)	(1,205)	(801.2)	(875.2)
NAFTA (β_2)	-496.3	-400.2	-401.8	-1,918**	20.07
	(984.3)	(501.9)	(990.8)	(845.1)	(811.1)
UShostCan (γ_1)	-7,413	-6,527	-4,968	-10,878	70,298***
	(9,224)	(7,442)	(10,553)	(7,177)	(18,436)
MexhostCan (γ_2)	1,567	1,174	1,830	-465.7	31,568***
	(1,381)	(1,105)	(1,508)	(1,509)	(7,660)
CanhostUS (γ_3)	36,164***	48,026***	37,270***	44,952***	104,524***
	(6,847)	(6,879)	(8,279)	(4,518)	(13,027)
CanhostOther (γ_4)	-6,367**	-3,249**	-5,970**	80.39	63,263***
	(2,688)	(1,441)	(2,695)	(1,867)	(12,359)
Number of obs.	4,419	9,379	4,419	4,419	4,419
R^2	0.33	0.28	0.31	0.34	0.45
Average autocorr.	0.841	0.856	0.841	N/A	0.829

Notes:
Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All regressions include a constant, a time trend, dummies for colonial ties, common language and contiguity as well as dummies for non-NAFTA country FDI in the U.S. and Mexico and U.S. FDI in Mexico as well as the their interactions with CUSFTA and NAFTA dummies (not reported). The δ-coefficients (the difference-in-differences estimators) are reported in Table 7, along with the simple difference results.
Regressions (1)-(3) correct for first-order autocorrelation where autocorrelation coefficients are estimated separately for each country pair. Covariances vary across country pairs. See the text for details. Regression (4) computes an arbitrary variance-covariance matrix. Regression (5) includes host and source country fixed effects (coefficients not reported).
All regressions except (2) contain at least 14 observations for each country pair.
In Regression (3), the CUSFTA and NAFTA dummies are set equal to one starting in 1987 and 1992.

Table 7: CUSFTA and NAFTA Effects, Barro/Lee Education Data

	(1) 14+ obs.	(2) 5+ obs.	(3) Announce- ment Effect	(4) Arbitrary VCE	(5) Country FE
CUSFTA					
Simple Difference	8,717	9,931	8,088	6,412***	7,622
UShostCan $(\beta_1 + \delta_{11})$	(6,945)	(7,281)	(7,098)	(1,921)	(7,085)
Difference-in-differences	9,434	10,261	8,686	8,255***	8,179
UShostCan (δ_{11})	(7,127)	(7,168)	(7,438)	(1,795)	(7,105)
Simple Difference	-5,375***	-2,379***	-4,641***	-3,550***	-1,837*
MexhostCan $(\beta_1 + \delta_{12})$	(1,356)	(713.3)	(1,245)	(1,068)	(1,020)
Difference-in-differences	-4,658***	-2,049**	-4,044***	-1,707*	-1,280
MexhostCan (δ_{12})	(1,404)	(916.8)	(1,439)	(881.6)	(1,194)
Simple Difference	7,948	11,203	9,989	6,240***	6,287
CanhostUS $(\beta_1 + \delta_{13})$	(7,316)	(8,100)	(7,628)	(1,143)	(7,112)
Difference-in-Differences	8,664	11,533	10,587	8,082***	6,845
CanhostUS (δ_{13})	(6,977)	(7,623)	(7,480)	(1,021)	(6,851)
Simple Difference	-2,303*	-607.3	-3,207**	-2,682**	-2,392*
CanhostOther $(\beta_1 + \delta_{14})$	(1,233)	(727.0)	(1,342)	(1,201)	(1,296)
Difference-in-Differences	-1,586	-277.5	-2,609	-839.1	-1,834
CanhostOther (δ_{14})	(1,363)	(994.0)	(1,631)	(877.2)	(1,334)
NAFTA					
Simple difference	9,313	10,947	6,713	21,838***	9,052
UShostCan $(\beta_2 + \delta_{21})$	(6,920)	(7,237)	(6,991)	(2,935)	(7,070)
Difference-in-differences	9,809	11,348	7,114	23,756***	9,032
UShostCan (δ_{21})	(7,178)	(7,506)	(7,310)	(2,669)	(7,132)
Simple difference	-3,962***	-1,006	-4,414***	-2,810**	-3,028***
MexhostCan $(\beta_2 + \delta_{22})$	(1,294)	(670.4)	(1,366)	(1,099)	(1,160)
Difference-in-differences	-3,466***	-606.1	-4,012***	-891.5	-3,048**
MexhostCan (δ_{22})	(1,312)	(582.2)	(1,399)	(615.3)	(1,354)
Simple difference	9,712	13,646*	4,037	21,914***	9,465
CanhostUS $(\beta_2 + \delta_{23})$	(7,096)	(7,836)	(7,193)	(1,546)	(6,890)
Difference-in-differences	10,209	14,046*	4,439	23,832***	9,445
CanhostUS (δ_{23})	(6,800)	(7,801)	(6,953)	(1,376)	(6,637)
Simple difference	-3,381***	-1,210*	-2,630**	-4,174***	-2,282*
CanhostOther $(\beta_2 + \delta_{24})$	(1,292)	(619.3)	(1,217)	(1,149)	(1,253)
Difference-in-differences	-2,885**	-809.9	-2,229*	-2,256**	-2,302*
CanhostOther (δ_{24})	(1,344)	(526.9)	(1,274)	(888.2)	(1,264)

Note: Results derived from the regressions in Table 6.

Table 8: Robustness: Regression Results for Different Control Groups

	(1)	(2)	(3)	(4)	(5)	(6)
	Alternative Control 1			Alternative Control 2		
Regressor	No Controls	14+ obs.	Country FE	No Controls	14+ obs.	Country FE
GDP Host		4.468***	5.789***		4.729***	4.389***
		(1.138)	(1.066)		(1.331)	(1.169)
GDP Source		16.06***	21.52***		20.76***	23.04***
		(2.239)	(2.631)		(2.885)	(2.772)
Skill Host		59,651***	61.716**		93,974***	69,861**
		(15,992)	(25,867)		(27,079)	(32,804)
Skill Source		21,939**	11,590		36,866**	7,978
		(9,334)	(12,437)		(14,712)	(13,943)
Real Exchange Rate		4.511	-13.85***		14.80	-16.21***
		(5.679)	(4.314)		(11.55)	(5.972)
Host Openness		9.625	-58.89		-66.94	-78.08
		(98.78)	(65.24)		(106.3)	(100.3)
Source Openness		226.6***	-219.4***		432.2***	-293.3***
		(69.44)	(72.22)		(102.7)	(96.04)
Distance		-0.568**	-0.641***		-1.122***	1.020
		(0.267)	(0.169)		(0.389)	(1.374)
CUSFTA (β_1)	-1,425	-1,023	-438.3	-1,521	-1,198	-420.8
	(1,041)	(1,250)	(1,181)	(1,604)	(2,212)	(1,895)
NAFTA (β_2)	-1,139	-1,201	8.480	-635.9	-2,153	528.2
	(1,033)	(1,236)	(1,144)	(1,567)	(2,233)	(1,850)
UShostCan (γ_1)	26,276***	3,862	26,665*	28,703***	4,042	73,083***
	(7,754)	(9,071)	(14,961)	(7,695)	(9,716)	(26,844)
MexhostCan (γ_2)	1,854	7,211***	37,153***	826.8	12,768***	76,918***
	(1,324)	(2,448)	(7,929)	(2,204)	(4,363)	(22,637)
CanhostUS (γ_3)	66,032***	-19,212	-23,034	68,213***	-39,017***	6,760
	(7,652)	(12,969)	(19,990)	(7,400)	(14,888)	(28,727)
CanhostOther (γ_4)	2,100	121.1	416.0	-7.594	6,628*	29,206**
	(1,322)	(2,620)	(7,150)	(2,426)	(3,431)	(14,506)
Number of obs.	2,684	2,684	2,684	1,944	1,944	1,944
R^2	0.25	0.39	0.58	0.25	0.45	0.59
Average autocorr.	0.691	0.634	0.375	0.694	0.528	0.381

Notes:
Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All regressions include a constant, a time trend, dummies for colonial ties, common language and contiguity as well as dummies for non-NAFTA country FDI in the U.S. and Mexico and U.S. FDI in Mexico as well as the their interactions with CUSFTA and NAFTA dummies (not reported). The δ-coefficients (the difference-in-differences estimators) are reported in Table 9, along with the simple difference results.
Regressions (1)-(3) limit the control group to bilateral FDI among countries not involving Canada, the U.S. and Mexico as source. Regressions (4)-(6) limit the control group further to include only developed host and source countries. See the text for more details.
See Table 4 Notes for details on specific regressions.

Table 9: Robustness: NAFTA and CUSFTA Effects for Different Control Groups

	(1)	(2)	(3)	(4)	(5)	(6)
	Alternative Control 1			Alternative Control 2		
	No Controls	14+ obs.	Country FE	No Controls	14+ obs.	Country FE
CUSFTA						
Simple Difference	11,512	7,993	6,495	9,990	7,056	6,570
UShostCan ($\beta_1 + \delta_{11}$)	(8,002)	(6,865)	(6,859)	(7,731)	(6,633)	(7,011)
Difference-in-differences	12,936	9,016	6,933	11,511	8,254	6,991
UShostCan (δ_{11})	(8,395)	(7,302)	(6,989)	(8,132)	(7,444)	(7,211)
Simple Difference	-5,295***	-3,725***	-4,762***	-7,197***	-3,896**	-6,276***
MexhostCan ($\beta_1 + \delta_{12}$)	(1,357)	(1,364)	(1,568)	(1,859)	(1,848)	(2,108)
Difference-in-differences	-3,871***	-2,702*	-4,323**	-5,676**	-2,699	-5,855**
MexhostCan (δ_{12})	(1,357)	(1,552)	(1,979)	(2,244)	(2,291)	(2,967)
Simple Difference	10,640	-7,317	-17,672**	9,270	-16,447**	-21,543***
CanhostUS ($\beta_1 + \delta_{13}$)	(8,154)	(6,465)	(6,948)	(7,867)	(7,273)	(7,423)
Difference-in-Differences	12,064	-6,294	-17,234***	10,791	-15,249**	-21,123***
CanhostUS (δ_{13})	(8,082)	(6,030)	(6,546)	(7,457)	(6,571)	(6,906)
Simple Difference	-4,163***	-4,513***	-4,107***	-5,588***	-6,743***	-5,024**
CanhostOther ($\beta_1 + \delta_{14}$)	(1,375)	(1,398)	(1,568)	(1,854)	(2,067)	(1,977)
Difference-in-Differences	-2,739*	-3,490***	-3,669**	-4,067*	-5,546***	-4,603**
CanhostOther (δ_{14})	(1,404)	(1,253)	(1,606)	(2,377)	(2,000)	(2,267)
NAFTA						
Simple difference	13,649*	9,323	9,324	12,095	8,268	9,840
UShostCan ($\beta_2 + \delta_{21}$)	(7,992)	(6,914)	(6,856)	(7,731)	(6,701)	(7,013)
Difference-in-differences	14,789*	10,524	9,315	12,731	10,421	9,311
UShostCan (δ_{21})	(8,397)	(7,346)	(6,956)	(8,152)	(7,544)	(7,144)
Simple difference	-3,750***	-4,146***	-2,850*	-5,666***	-5,675***	-4,749**
MexhostCan ($\beta_2 + \delta_{22}$)	(1,381)	(1,497)	(1,570)	(1,897)	(2,059)	(1,982)
Difference-in-differences	-2,610*	-2,945*	-2,858	-5,030**	-3,522	-5,277**
MexhostCan (δ_{22})	(1,336)	(1,579)	(1,799)	(2,277)	(2,334)	(2,611)
Simple difference	13,645*	-3,792	-11,209*	12,079	-10,381	-15,254**
CanhostUS ($\beta_2 + \delta_{23}$)	(7,982)	(6,409)	(6,735)	(7,698)	(7,165)	(7,120)
Difference-in-differences	14,785*	-2,591	-11,217*	12,715*	-8,228	-15,783**
CanhostUS (δ_{23})	(7,882)	(5,914)	(6,358)	(7,202)	(6,296)	(6,642)
Simple difference	-5,363***	-2,592**	-1,328	-7,028***	-3,151**	-1,795
CanhostOther ($\beta_2 + \delta_{24}$)	(1,430)	(1,096)	(906.0)	(1,935)	(1,503)	(1,195)
Difference-in-differences	-4,224***	-1,392	-1,337	-6,392***	-997.4	-2,323
CanhostOther (δ_{24})	(1,384)	(904.0)	(994.2)	(2,386)	(1,545)	(1,725)

Note: Results derived from the regressions in Table 8.

Table 10: Regression Results for Dependent Variable Trade

Regressor	(1) No Controls	(2) 14+ obs.	(3) 5+ obs.	(4) Announce-ment Effect	(5) Arbitrary VCE	(6) Country FE
GDP Host		3.811***	4.026***	3.893***	6.037***	3.137***
		(0.371)	(0.247)	(0.360)	(1.045)	(0.381)
GDP Source		1.778***	1.170***	1.756***	1.418***	2.065***
		(0.134)	(0.089)	(0.125)	(0.385)	(0.202)
Skill Host		6,753***	3,841***	6,968***	7,110	2,618
		(1,642)	(724.2)	(1,541)	(4,431)	(2,430)
Skill Source		873.0	1,461**	1,539	13,359*	2,212
		(2,024)	(746.9)	(2,214)	(8,085)	(2,340)
Real Exchange Rate		-6.424***	-0.010*	-5.694***	-25.67*	-3.935**
		(1.924)	(0.005)	(1.811)	(13.99)	(1.645)
Host Openness		13.26	31.76***	15.21	56.02*	-37.00
		(11.58)	(5.283)	(10.76)	(30.28)	(28.87)
Source Openness		-46.30***	-18.32***	-56.41***	-117.0*	-15.82
		(15.28)	(6.145)	(16.38)	(66.71)	(25.21)
Distance		-0.297***	-0.136***	-0.299***	-0.286**	-0.261***
		(0.041)	(0.011)	(0.040)	(0.143)	(0.053)
CUSFTA (β_1)	-552.2	-155.2	-125.4	345.4	1,405***	-197.6
	(475.1)	(381.3)	(400.3)	(445.5)	(541.9)	(378.6)
NAFTA (β_2)	-131.0	102.5	-14.24	-181.4	329.5	103.1
	(464.2)	(383.3)	(216.3)	(379.7)	(653.0)	(382.1)
UShostCan (γ_1)	65,913***	44,501***	46,947***	46,365***	29,260***	56,559***
	(8,527)	(8,353)	(7,659)	(11,492)	(6,297)	(8,215)
MexhostCan (γ_2)	-120.6	-319.6	-728.2	27.76	34.26	9,154***
	(694.3)	(546.4)	(471.8)	(527.2)	(1,620)	(1,528)
CanhostUS (γ_3)	54,934***	43,579***	50,783***	44,463***	40,548***	51,372***
	(6,399)	(6,515)	(6,024)	(8,803)	(3,726)	(6,417)
CanhostOther (γ_4)	-837.0**	-924.8**	-1,522***	-738.9*	-854.4	5,607***
	(385.6)	(400.1)	(363.4)	(408.1)	(1,287)	(1,399)
Number of obs.	2,970	2,970	5,572	2,970	2,970	2,970
R^2	0.90	0.91	0.90	0.86	0.66	0.92
Average autocorr.	0.928	0.912	0.921	0.913	N/A	0.903

Notes:
Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All regressions include a constant, a time trend, dummies for colonial ties, common language and contiguity as well as dummies for non-NAFTA country FDI in the U.S. and Mexico and U.S. FDI in Mexico as well as the their interactions with CUSFTA and NAFTA dummies (not reported). The δ-coefficients (the difference-in-differences estimators) are reported in Table 5, along with the simple difference results.
Regressions (1)-(4) correct for first-order autocorrelation where autocorrelation coefficients are estimated separately for each country pair. Covariances vary across country pairs. See the text for details. Regression (5) computes an arbitrary variance-covariance matrix. Regression (6) includes host and source country fixed effects (coefficients not reported).
All regressions except (3) contain at least 14 observations for each country pair.
In Regression (4), the CUSFTA and NAFTA dummies are set equal to one starting in 1987 and 1992.

Table 11: CUSFTA and NAFTA Effects on Trade

	(1)	(2)	(3)	(4)	(5)	(6)
	No Controls	14+ obs.	5+ obs.	Announce-ment Effect	Arbitrary VCE	Country FE
CUSFTA						
Simple Difference	29,477**	26,540**	26,911**	22,283*	22,127***	26,977**
UShostCan ($\beta_1 + \delta_{11}$)	(11,596)	(10,645)	(10,686)	(13,273)	(1,725)	(10,804)
Difference-in-differences	30,030**	26,696**	27,036**	21,938	20,722***	27,174**
UShostCan (δ_{11})	(11,827)	(10,771)	(10,796)	(13,379)	(1,753)	(10,946)
Simple Difference	-2,349***	-1,080**	-386.9	-520.8	-1,555	-1,264***
MexhostCan ($\beta_1 + \delta_{12}$)	(646.3)	(422.5)	(330.7)	(385.3)	(1,132)	(463.6)
Difference-in-differences	-1,797**	-924.8*	-261.5	-866.2	-2,960***	-1,066*
MexhostCan (δ_{12})	(733.5)	(553.5)	(566.5)	(571.4)	(927.6)	(545.8)
Simple Difference	17,473**	16,627**	18,068**	16,350*	17,909***	16,281**
CanhostUS ($\beta_1 + \delta_{13}$)	(7,833)	(7,500)	(7,769)	(8,942)	(1,847)	(7,400)
Difference-in-Differences	18,026**	16,782**	18,193**	16,004*	16,505***	16,478**
CanhostUS (δ_{13})	(8,040)	(7,584)	(7,841)	(9,025)	(928.3)	(7,508)
Simple Difference	-1,714***	-647.6***	-305.3**	-271.7	-354.4	-583.6**
CanhostOther ($\beta_1 + \delta_{14}$)	(471.3)	(204.6)	(131.9)	(232.1)	(787.5)	(231.5)
Difference-in-Differences	-1,162***	-492.4	-180.0	-617.1	-1,759**	-386.0
CanhostOther (δ_{14})	(434.9)	(365.0)	(371.0)	(412.8)	(721.5)	(369.6)
NAFTA						
Simple difference	55,919***	52,720***	52,897***	41,536***	57,421***	53,121***
UShostCan ($\beta_2 + \delta_{21}$)	(11,953)	(11,047)	(11,068)	(13,030)	(1,563)	(11,225)
Difference-in-differences	56,050***	52,617***	52,911***	41,718***	57,091***	53,018***
UShostCan (δ_{21})	(12,182)	(11,177)	(11,164)	(13,117)	(1,530)	(11,364)
Simple difference	-1,065*	260.3	797.2**	-302.0	1,379**	5.739
MexhostCan ($\beta_2 + \delta_{22}$)	(644.2)	(388.5)	(326.8)	(400.1)	(659.1)	(398.0)
Difference-in-differences	-934.2	157.8	811.4*	-120.7	1,049***	-97.40
MexhostCan (δ_{22})	(729.3)	(520.6)	(448.2)	(519.8)	(332.5)	(499.0)
Simple difference	33,642***	32,844***	34,009***	23,726***	39,676***	32,428***
CanhostUS ($\beta_2 + \delta_{23}$)	(7,802)	(7,476)	(7,753)	(8,550)	(875.7)	(7,392)
Difference-in-differences	33,773***	32,741***	34,023***	23,907***	39,347***	32,325***
CanhostUS (δ_{23})	(8,018)	(7,569)	(7,835)	(8,609)	(547.5)	(7,502)
Simple difference	-1,789***	-188.9	-140.7	-431.5*	-38.27	-165.0
CanhostOther ($\beta_2 + \delta_{24}$)	(499.4)	(388.5)	(113.1)	(229.9)	(678.3)	(213.0)
Difference-in-differences	-1,658***	-291.5	-126.4	-250.2	-367.8	-268.2
CanhostOther (δ_{24})	(457.0)	(361.7)	(180.6)	(365.3)	(510.8)	(366.2)

Notes: Standard errors in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. Results derived from the regressions in Table 10.

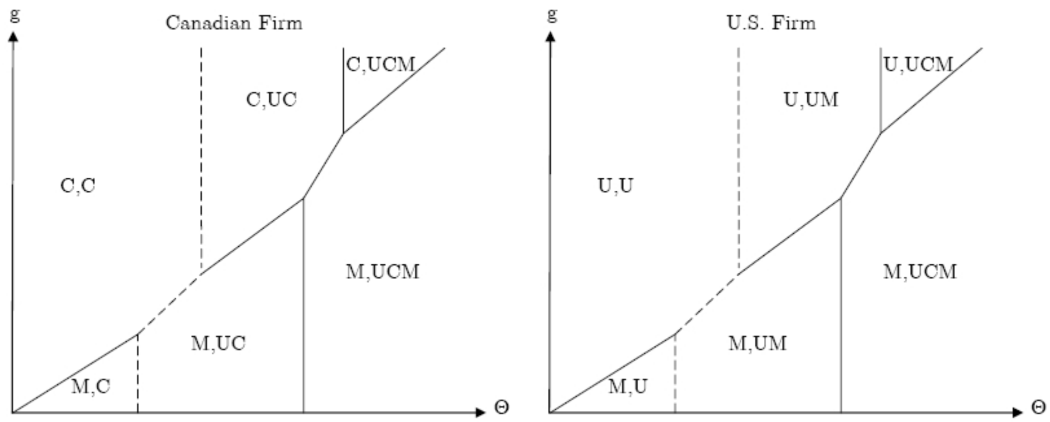

Figure 1: Pre-CUSFTA integration strategies

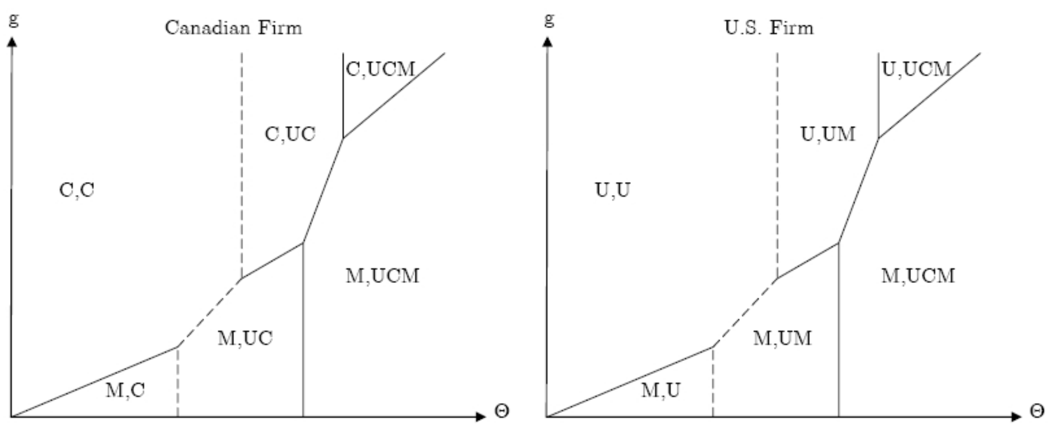

Figure 2: CUSFTA integration strategies

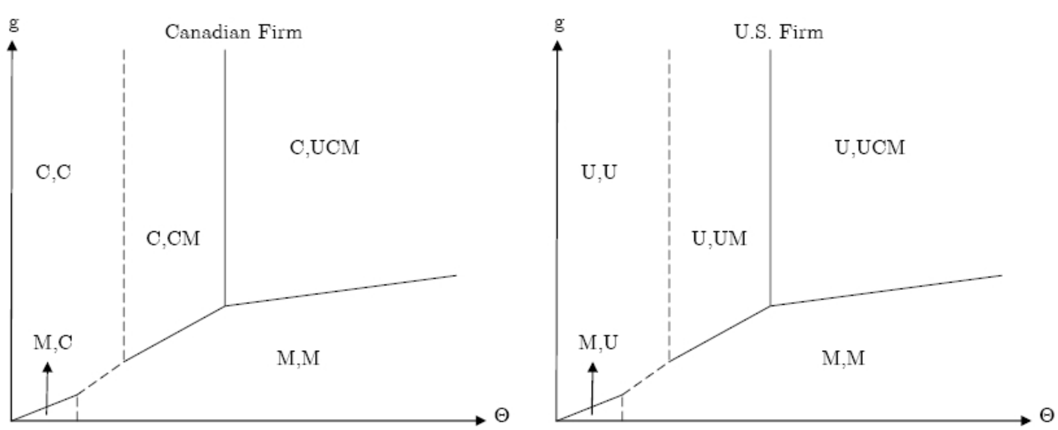

Figure 3: NAFTA integration strategies

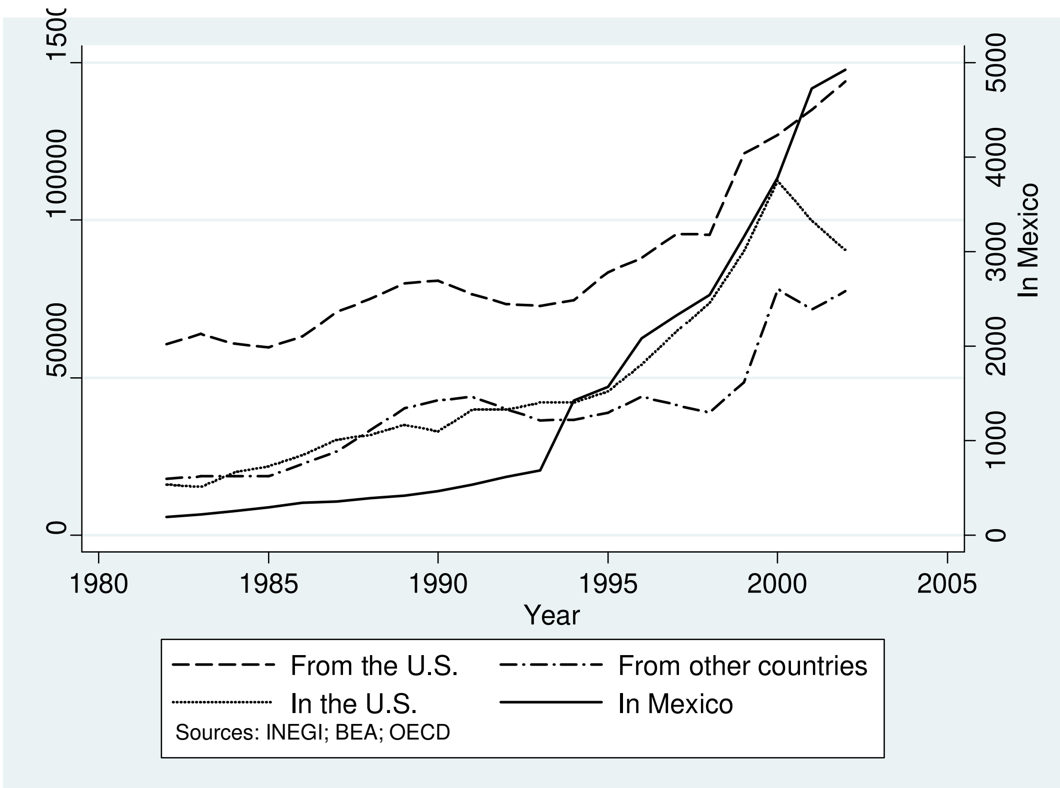

Figure 4: Canadian Inward and Outward Real FDI Stock, $millions