The Impact of NAFTA on Foreign Direct Investment flows in Mexico and the Excluded Countries.¹

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Abstract

This paper examines the effect of the North American Free Trade Agreement (NAFTA) on flows of foreign direct investment (FDI) received by the Mexico and the countries in the region that were excluded from the treaty. To this end, the paper compares the benefits provided by NAFTA to Mexico with the trade benefits offered by the US to other countries as well as the incentives provided by host countries.

I argue that NAFTA gave a significant advantage to Mexico with respect to other countries but that there are also important differences across excluded countries. Specifically, the advantage translated in significantly higher flows for Mexico with respect to the poorer countries in Central America but not with respect to Costa Rica. I argue that the difference is due to a NAFTA bias in the treatment of lower-skill intensive exports. Costa Rica was able to attract massive FDI in higher-skill sectors for which NAFTA did not represent a bias in favor of Mexico.

I use a flexible statistical model to determine if significant differences in the flows before and after NAFTA of Mexico with respect to the other countries. The data shows that find that with the exception of Costa Rica, all other Central American countries start lagging behind Mexico right after 1994, when NAFTA started functioning. I then examine the main differences in the preferential treatment between NAFTA and the Caribbean Basin Initiative (CBI) and find that the most severe bias is in textile and apparel sectors, which represented most of the FDI flows in Honduras, El Salvador and Guatemala, but not Costa Rica, a country that was rapidly attracting FDI for the production of electronic components, medical equipment and the like.

After examining the incentive across host countries I argue that the main differences in the average FDI flows and the response to trade biases are mainly driven by differences in the human capital and infrastructure across excluded countries, which is consistent with the location disparities of FDI within the Mexican territory. Countries in the region should improve significantly in those dimensions if the eventual extension of NAFTA is to translate into significantly higher FDI flows.

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I. Introduction and Summary

The purpose of this paper is to examine the implications the North American Free Trade Agreement (NAFTA) had on the flows of foreign direct investment (FDI) for the countries in the region –Central and South America and the Caribbean-- that were excluded from the agreement and to shed light on the likely implications of a potential Free Trade Agreement of the Americas (FTAA).

The signing of NAFTA has generated much attention, especially for its implications in the Mexican economy. It is the first Regional Integration Agreement (RIA) with a general scope that involves countries with disparate levels of development. Most authors studying the effects of NAFTA (see Kehoe and Kehoe (1994) and the references therein) employ static general equilibrium models, emphasizing increasing returns and imperfect competition as well as the interaction among an economy's different sectors or industries. While those are good tools for estimating the reallocation of resources within an economy, the models fail to address the implied dynamics.

Inter-sector reallocations emphasized by traditional Ricardian and Hecksher/Ohlin trade models can have first order effects on the growth, employment, wealth distribution and overall welfare of the economies. However, after a brief analysis of the data, it becomes clear that the most striking feature of the so-called globalization has been in terms of international investment flows. Indeed, over the last two decades, while trade has grown by a factor of two FDI flows have grown by a factor of ten for the world economy. Furthermore, FDI has become the most important form of capital flows to developing countries. And while it is still true that most of the FDI takes places within the developed world, FDI to developing countries is the fastest growing component of capital flows. All those transformations have taken place in a world where many countries are involved in the stages of production of many goods and as a consequence, input trade has become of first order importance.

Most observers would concur that NAFTA has fostered FDI to Mexico and that the large flows of foreign investment have had a large impact on the Mexican economy. The effect is not only in terms of the sector composition of production but also in the
structure of ownership between foreign and Mexican entrepreneurs, as shows Aguilar-
Ceballos (2002). Aguilar-Ceballos, Burstein and Monge-Naranjo (2002) argue that
traditional trade and growth models are not well suited to study the implications of RIA
such as NAFTA, and proposed span-of control models (a la Lucas (1974)) in which
entrepreneurs with diverse abilities can operate in different countries. Countries that
differ in sectorial productivities and capital, not labor, can freely move. They find that,
depending on country differences international entrepreneur mobility can enhance or
substitute for capital mobility.

Rather than deepening the analysis of the implications of NAFTA for Mexico (for that
see Cuevas, Messmacher and Werner (2002)), the purpose of this paper is to better
understand the situation of the neighboring countries excluded from the agreement.
Specifically, the objective of the study is to assess the possible effects of the FDI
attracted by the countries excluded from NAFTA. The paper also examines the impact
of the incentives offered to foreign investors provided by those countries.

In a recent study, Levy-Yeyati, Stein and Daude (2001), analyze the effect of FTAs on
the bilateral stocks of FDI. Applying a gravitational model, they use a panel data to
study the location of FDI originated by countries in the Organization for Economic
Cooperation and Development (OECD) to sixty countries, including developing
economies. Their econometric specification is flexible enough to allow examination of
the direct effect of the source and the host countries belonging to the same FTA, as well
as the effect of the extended market of the host and the extended market of the source
countries. This is important, as depending of the motivation of the FDI (horizontal,
vertical or variety), the FTA can actually decrease the bilateral FDI position across
member countries. The specifications are rich enough to explore which forces dominate
the location of FDI. However, their estimates are static in nature, perhaps due to data
limitations. Thus, they cannot examine the dynamic implications on the accumulation of
FDI stocks after signing a FTA.

Levy-Yeyati, Stein and Daude find huge effects of FTA on FDI stocks. Point estimates,
which are somewhat robust across specifications, suggest that the direct effect of a FTA
is to increase the net position of FDI stock by a 20% to 30%. Once the size of the
economies involved is taken into account, the implications can be even larger and
asymmetric. For instance, using their estimates, they ask the question of how much would the FDI position of US in Argentina and Mexico change as a result of finally signing the FTAA. Argentina will be affected because it currently does not have a FTA with the US. It would see its extended market increase from the current limits of Mercosur to the entire continent. This effect would be partially offset by an increase in the extended market for the US. Yet, overall, the estimated effect is huge. The US stock of FDI invested in Argentina would increase by 165%. For Mexico the result is quite different. Mexico already has FTA agreements with many countries in the region besides NAFTA. Thus, the extension of its market would be significantly smaller. It currently has a FTA with the US, so this will not change with FTAA. In this case, the increase of the extended market for the US induced by the FTAA dominate and would mean a decline in the US stock of FDI in Mexico by 3.5%.

While there is no doubt that these exercises suggest large macroeconomic implications of FTAs on FDI, the actual numbers should be taken with utmost caution. The experiment takes country and host/source countries effects as given. If in fact, the FTAA is finally signed; its implications would most likely have large general equilibrium effects in Latin America and the Caribbean, not only in factor prices, but also on the fiscal and other incentives provided by the host countries. The response by those margins would definitely reduce the response in the flows and stocks of FDI.

But perhaps the most serious limitation of the study by Levy-Yeyati, Stein and Daude is that the only FTA that involves developing and developed economies is precisely NAFTA. This is important, as the nature of FDI from developed economies to developing economies is very different from the nature of FDI between developed economies. The authors are not at fault: no other cases of this nature are available.

That limitation is undeniably present in this paper. Mexico is unique in the region for its FTA with US and Canada, and thus, it is hard to disentangle the factors that are special about Mexico and the shocks that have affected its economy (such as the 1994 speculative attack and the subsequent under-valuation) from the actual effects of NAFTA. Other ignored complications are the unilateral preferential trade initiatives, in particular those from the Caribbean Basin Initiative (CBI) and to the Andean Countries, that while far from formal FTAs, largely operate as FTAs from the point of view of
foreign investors whose production is targeted to final consumers in the US. Moreover, extensions of the preferential regimes as well as changes in the incentives provided by host countries can change the balance between Mexico and the excluded countries from the foreign investors perspective.

The strategy followed in this paper is to first look for differences in the dynamic behavior of FDI flows of Mexico and the neighboring countries before and after NAFTA. The idea is to analyze any special behavior of Mexico after NAFTA, and in that case, its relationship to NAFTA. In order to do that, I examine changes in the market access induced by the CBI as well as the incentives provided by the excluded countries and by Mexico.

First, I use a very flexible statistical model that separates host country effects, source country effects, pure (aggregate) year effects and source/host fixed effects and source/year effects. With this model I can determine if fact that there is a significant difference in the flows before and after NAFTA of Mexico with respect to the other countries in the region. The flexibility of the model allows to control for permanent differences across host countries with respect to links to the US and other source countries. And most important, to see if the differential dynamics of Mexico with respect to the other countries dies out or accentuates over time, as well as the size and magnitude of the cumulative effect.

Interestingly, the model shows the large heterogeneity among countries in the region and across time. For most countries, FDI increased dramatically in the second half of the 1990s. Further, over the entire sample period (1983 to 1998), some countries have been much more attractive to foreign investors than others. There is also significant heterogeneity across host countries in terms of the importance of the US as source of FDI.

The data shows that right after NAFTA was signed Mexico had a significant increase in the inflows of FDI with respect to most of the countries in the region. This is true regardless of whether we look only to Central America or all Latin America as the group of excluded countries. Again, it is difficult to disentangle NAFTA from the effect of the devaluation. Looking at Central America and the group of the largest
economies in South American countries, the advantage of Mexico seems to be short lived, if at all. After three years, Mexico appears to be relatively less attractive to foreign investors than the other countries. Moreover, the cumulative effect during the period between 1994 and 1998 is not positive. These results are also robust on different ways to measure FDI flows.

However, taking those results at face value would be misleading. The main reason is that during the second part of the 1990s Latin America saw a spectacular wave of privatizations. It is unlikely that trade biases induce by NAFTA had a significant effect on the FDI flows that were originated from those privatizations. Countries such as Argentina, Brazil, El Salvador, and many others received previously unseen amounts of FDI originated from the privatization of telecommunications and electricity utilities, and most of those flows accrued in the second part of the 1990s.

The results are quite different if we look at Central American countries and control for the large privatizations. Due to geographic and demographic considerations Central America is the natural comparison group for Mexico. Interestingly, the results here suggest that NAFTA had a significant effect on FDI as right after 1994, Mexico seems to separate from most Central America, with the exception of Costa Rica. The data indicates large and negative deviations in the FDI flows of Guatemala, Honduras and Panama right after 1994 with respect to Mexico. The year/deviations of Mexico and Costa Rica behave quite similarly, and if anything, FDI to Costa Rica seem to have a better response than for Mexico during that period. Thus, the data indicates that in the second part of the 1990s FDI surged but mostly to the relatively higher human capital regions. This is true not only for Central America but also within the Mexican territory as FDI was directed mostly to the Northern and Central Areas and not to the laggard Southern part of the country.

There are other relevant effects that may hinder the advantages that NAFTA signified for Mexico. And while they may be impossible to quantify it is important to keep them in mind. First, countries were excluded from NAFTA may be responding by providing fiscal and other incentives to foreign investors. Implementing the legal reforms required time, and therefore those incentives were put in place after a few years. Second, the US government extended the benefits of CBI and other regimes, which
effectively diminished the NAFTA induced advantage of Mexico. Third, general equilibrium effects as the gains for Mexico could be reflected more in the cost of labor. Needless to say an accurate quantification of the quantitative implications of those forces is unfeasible. In the paper I examine some qualitative information that can shed light on the results obtained. For instance, when I compare the incentives provided by the host countries to foreign investors vs. those provided by Mexico, I find that, among excluded countries, the fiscal incentives are comparable and that the key difference with Mexico is in the income tax. This can induce an asymmetric effect between industries according to their profit margins. On the other hand, when I compare the access to the US market, I find that the key difference is in the sector of textiles and apparel. NAFTA gave a strong advantage in textiles to Mexico with respect to Central American and Caribbean countries. Countries such as Honduras and Nicaragua are the first candidates to suffer the adverse effect of the bias, given their highly unskilled labor force and the ensuing comparative advantage on low skill textiles.

To examine the underpinnings of the bias induced by NAFTA vis-à-vis the CBI I examine the competition between Mexico (NAFTA) and Costa Rica (CBI) to attract FDI in high technological sectors. Here, the decision of INTEL of establishing a production plant in San José, Costa Rica instead of Guadalajara, Mexico, is a clear indication that the advantages provided by NAFTA are not the last word, and show how better human capital and infrastructure can eventually overcome (the existing worldwide) protectionist barriers to low-skilled labor exports.

The paper proceeds as follows. The next section reviews the basic facts on FDI for the region. The third section argues that the most FDI flows are vertically and not horizontally motivated, as suggested by the role that Export Processing Zones have had in attracting FDI. In this context, NAFTA should unambiguously augment FDI to Mexico vis-à-vis the neighbors. The fourth section examines if the time series reveal such advantage and argues for an answer in the positive. The fifth section examines the incentives by host countries and the access to the US market during the 1990s. The sixth section discusses the competition between Mexico and Costa Rica to attract INTEL. The seventh section concludes by warning the extension of NAFTA to Central America should not overshadow the need to invest in infrastructure and human capital.
II. Basic Facts on the Flows of FDI to Mexico and Latin America

According to standard trade and growth theory, the large differences among the economies of the US, Mexico, and other countries should generate large flows of trade and investments among the regions. In terms of trade, Mexico, and Latin America should, in general, have comparative advantage in skilled labor and natural resources of intensive goods. Regarding capital or labor flows, the large difference in the stocks of physical capital per capita, according to the neoclassical growth model, should generate large flows of capital from the US to Latin America and/or large flows of workers from Latin America to the US. While human capital may diminish and even revert these implications, the direction of actual flows is in line with the predictions of the basic economic models.²

Indeed, trade and investment flows are significant and have grown over time. The US is the major trade partner and the main investor for most, if not all, the countries in the region (with some obvious exceptions like Cuba). Like most North-South models, trade with the US is vertical, not horizontal. The direction of factor flows is also in line with the implications of the model. For instance, temporary worker programs have been present between the US and Mexico and have mobilized large flows of labor from Mexico to the US. Immigration has been significant especially after the 70s and has accelerated in the 1990s.

More relevant for my purposes is the fact of the explosion in trade and investment during the recent years, in line with the worldwide phenomenon called globalization. Regional Integration Agreements (RIA) haven been singled out as a major determinant for the explosion observed in those flows. In the context of the region, NAFTA, a free trade agreement signed by Canada, Mexico and the US has received, the largest

² In an insightful paper, Lucas (1992) asks the question why capital does not flow from rich to poor countries, given the huge differences in the implied returns according to the neoclassical growth model. He argues that factors complementary to physical capital, especially the quality of labor force can explain the puzzle if human capital has in fact, a large external effect on the firms productivity. Monge and Hall (1999) examine the hypothesis for the countries in the region. Surprisingly, the parameters used by Lucas and using data on physical and human capital from Hall and Jones (1998) practically equates the return to capital between the US and Mexico. However, the hypothesis can not explain the rest of the countries, due to the disparity in the human capital indicators.
attention. Other RIA have been signed or reactivated, for example, Mercomun (Central America), Andean Community, and Mercosur. What is special about NAFTA, in addition of its unexpected creation, is that for the first time a developing country signs a RIA with a major developed economy.

**Figure 1: Volume of International Trade of Mexico**

The growth in international trade arising from NAFTA has been closely followed by international economists. Figure 1 shows the trade volume (imports+exports) of Mexico for the last twenty years. Trade has grown by more than a factor of 6, which is significantly higher than the growth of world trade flows. The graph shows that indeed, trade flows accelerated right after the year 1994, suggesting a positive effect of NAFTA. Comparing the average trade flows of 1992 and 1993, the years before NAFTA, with those of 1997 and 1998, international trade for Mexico has grown by a factor higher than 2.3.

The most significant change, however, is in the explosion of FDI flows to the Mexican economy observed during recent years. Figure 2 shows the observations for the last twenty years. It shows three different measures of FDI: in current US$ per person, as a fraction of GDP, and as a fraction of total investment.
Figure 2: FDI Flows to Mexico

![Graph showing FDI Flows to Mexico, with data points for each year from 1984 to 1998 for FDI/Population, FDI/GDI(%), and FDI/GDP(%).]

Figure 3: US as a source of FDI to Mexico

![Graph showing the fraction of total net FDI originated in the US, with data points for each year from 1982 to 2000.]
Regardless of the measures used, it is obvious that the growth in foreign investment in orders of magnitude is higher than the growth in trade flows. Over the sample period, the three measures here have grown by a factor of 20 for FDI per capita and by more than a factor of 8 in the case of FDI/GDP and FDI/Total investment. To make the actual comparison with trade flows, one must consider the growth in the population and income per capita during these twenty years, which will make the differences in the growth much more pronounced. Moreover, as with trade, I also observe an acceleration of FDI around the time of NAFTA. Part of this acceleration may be due to legal reforms introduced in the years prior to NAFTA relaxing the regulations on the property of foreigners in Mexico.\(^3\)

The role of the US economy as a source of FDI for Mexico has also increased over time. Figure 3 shows the fraction of net US FDI to Mexico with respect to total net FDI to Mexico. Over the sample period, there seems to be an increase in the participation of US investors with respect to other investors. But this fraction has fluctuated. It is important to note, however, that there are no reasons to believe that NAFTA would necessarily increase the US participation, as investors from other countries would also benefit from the access to US markets available to goods produced in Mexico.

But Mexico has not been alone. Many other countries in Latin America exhibit a similar behavior for the trade and FDI flows. This will be a difficulty in trying to establish the actual strength of the effects of NAFTA. Table 1 shows basic statistics on the flows of FDI from US and non-US sources to a select sample of countries in Central and South America. I compare the mean (to measure magnitude) and the standard deviation (to measure volatility) of the flows for the years 1983-1993 (before NAFTA) and 1994-1998 (after NAFTA).

\(^3\) See Jimenez (1997). Basically, in 1992 and 1993 Mexico relaxed the ownership of foreigners in local firms, which were particularly constrained near the borders and the seashore. This is important as a large fraction of total FDI investment is in the regions near the US border.
As seen from the table Mexico is not the number one in the region, neither in the level nor in the growth between pre and post NAFTA periods of FDI. In either level or growth, Chile, Panama, Argentina, and Costa Rica are above Mexico. If anything, the table makes clear that the late 1990s surge of FDI is a widespread phenomenon in the region. It also shows that not only the US has increased its investment in the region. Other sources have increased their absolute positions, and this is a common factor for all the countries in the region. There are other, very interesting findings. First, there is a large heterogeneity across countries. While the growth in Costa Rica and Panama has been spectacular, Guatemala and Honduras do not seem to haven been affected much. For these countries, the growth of average annual FDI flows after 1994 have grown a meager factor of 1.5 times the average in the previous period. But the heterogeneity is not only in terms of the mean FDI inflows. Indeed, the volatility of the FDI flows has actually declined for some countries (Mexico, Costa Rica, Argentina, Chile and Venezuela) and increased for others (Guatemala, Honduras). For the other countries in the table, the results are mixed. To arrive to this conclusion, I take the coefficient of variation, i.e. the standard deviations and divide them by the mean of the relevant series/period.

Thus, while there is a clear common component for all these countries, there is an important degree of cross-country variations. Some countries have been much more successful in terms of attracting FDI than others. In the paper, I will try to use this cross-section variation to determine whether there is something special in the dynamics of some of these economies. The focus will be placed on Mexico, given out interest in NAFTA.
Table 1: Basic Indicators of FDI flows, before and after NAFTA.
(in U.S. $)

<table>
<thead>
<tr>
<th>Country</th>
<th>Statistic</th>
<th>FDI per person in host country, by period and source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>U.S.</td>
</tr>
<tr>
<td>México</td>
<td>Mean</td>
<td>11.23</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>12.46</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Mean</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>18.62</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Mean</td>
<td>-0.28</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>3.55</td>
</tr>
<tr>
<td>Honduras</td>
<td>Mean</td>
<td>-1.46</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>11.44</td>
</tr>
<tr>
<td>Panama</td>
<td>Mean</td>
<td>143.07</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>177.99</td>
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<tr>
<td>Argentina</td>
<td>Mean</td>
<td>7.68</td>
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<tr>
<td></td>
<td>St.Dev.</td>
<td>10.03</td>
</tr>
<tr>
<td>Brazil</td>
<td>Mean</td>
<td>8.67</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>7.84</td>
</tr>
<tr>
<td>Chile</td>
<td>Mean</td>
<td>14.18</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>16.93</td>
</tr>
<tr>
<td>Colombia</td>
<td>Mean</td>
<td>-1.69</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>12.13</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Mean</td>
<td>10.12</td>
</tr>
<tr>
<td></td>
<td>St.Dev.</td>
<td>26.27</td>
</tr>
</tbody>
</table>

Source: Own elaboration with data from the World Bank and the Bureau of Economic Analysis.
III. Export Processing Zones and the Nature of FDI in the region.

What is the expected implication of a free trade agreement as NAFTA for the neighboring countries that were excluded? It is safe to say that the implications for trade flows are well understood in light of the trade creation and trade diversion effects of custom unions as originally studied by Jacob Viner. Trade diversion should definitely reduce the trade flows of excluded countries with Canada, Mexico, and most disheartening with the US. Trade flows of those countries with the rest of the world should increase. As this is purely trade diversion, welfare would definitely decline. The effect is likely to be high, given the historical importance of the US economy for most Latin American countries.

The implications for investment flows are less clear. As discussed by Levy-Yeyati, Stein and Daude (2002), the difficulty in assessing the effect of RIA on member and excluded countries is that different forces in different directions enter into operation. The difficulty is that the motivation for investors can be of diametrically different nature. On one hand, a foreign firm may invest in a country to serve the local market. Such form of FDI is called horizontal FDI, and it is motivated by trade costs such as transportation and tariffs. On the other hand, a foreign firm may invest in a country to exploit a cost advantage of that country. Such form is called vertical FDI and is typically aimed at exporting the production to third countries or back to the source country. Obviously, many intermediate forms are possible.

The reaction of FDI flows to members of a FTA depends on whether the gross of the FDI flows are horizontal or vertical. Assume first that it is horizontal. In that case, barriers to trade motivated the FDI. Instead of serving a country by production of plants in the source country, a firm “jumps” the trade barriers by investing in the country whose market is interested to serve. Therefore, anything that lowers the barriers would reduce the net flows from the source country member of the FTA to the host country member of the RIA. Conversely, source countries that are excluded from the agreement may increase its FDI to one or some members of the FTA, as market becomes more extended, and partly because the FTAs usually raise the barriers to trade to outside
countries. The implications for host countries that are excluded are not clear-cut in the case of horizontally motivated FDI, although they are likely to be negative.

But now assume that the most FDI flows are vertically motivated. In this case an FTA that reduces the trade cost between two countries would definitely increase the FDI flows among members of the FTA, precisely because cost advantages are easier to exploit due to the reduced trade costs. What would be the effect on flows of FDI to host countries that are excluded from the FTA? If FDI is vertically motivated they will necessarily decline, as source countries will substitute their investments there for investments in the now lower tariff countries.

Interestingly, over time, both forms of FDI have been present in Central and South America. The first forms of FDI were directed to the most traditional sectors of the region (agricultural and mineral goods), which constituted the main countries’ exports (cooper, bananas, oil, etc. were originally produced by foreign companies). During the Import Substitution era, Central and South America significantly raised the tariffs, which attracted significant flows of horizontal FDI. Indeed, companies such as Firestone, Pfizer, Colgate, Sherwin Williams and many others established production plants in Central America. Automakers established production units in Brazil, Argentina, and Mexico. It is easy to realize that tariff jumping was one of the major motivations for those investments.

Nowadays, however, the most relevant form of FDI is very likely to be vertical, especially in Central America and the Caribbean. In fact, during the 1980s, the debt crisis together with the political instabilities in Nicaragua and El Salvador, practically shut down the Central American Common Market (MERCOMUN). As a response, those countries, pioneered by Costa Rica, started the promotion of exports to alternative markets, first with direct fiscal subsidies and later with tax exemptions in Export Processing Zones (EPZs).

But the incentives for investors in EPZs are not exclusive of Central American countries. Mexico and Dominican Republic were the introductors of *maquiladora* programs in the region. Currently, most of the countries in Central America and the Caribbean and some in South America have this type of incentives, which basically
exonerate domestic or foreign producers of import, export and income taxes. The majority of these benefits required that most of the production is targeted to exports. To promote this form of FDI, most countries have agencies with private participation, government support, and financial support of the Inter American Bank. Examples are CINDE and PROCOMER in Costa Rica, PROGUAT in Guatemala, FIDE in Honduras, CEI in Nicaragua, and to some extend FUSADES in El Salvador.

The result of those incentives, which I study in detail below, is that FDI in Central America, aside of FDI in tourism and the privatizations recently observed in some countries such as Guatemala, Panama and El Salvador, must be closely linked to the EPZs. As such, those flows are vertically motivated, and therefore, highly sensitive to cost considerations. This is even stronger for the case of textiles that use easily movable equipment.

As NAFTA tilted the balance against the excluded Central American countries in favor of Mexico, one should observe significant differences in FDI flows between those countries in the years following its implementation.

FDI flows to South America appear much less linked to exports. The average market size of those countries is larger than Central American countries. Moreover, during the 1990s, most of these countries, primarily Argentina and Brazil, received a very large fraction of FDI inflows from privatizations of public utilities and concessions of public works. Privatizations and concessions should not be directly sensitive to whatever free trade agreements exists in the region, as they target the local market of non-traded goods. However, if the effect of NAFTA on other FDI is large, the growth rate of the whole country can be influenced, affecting the profitability of the privatized utility, and hence, the bidders willingness to pay. To any extent, the FDI flow to South American should be less sensitive to NAFTA. The differentials effect on FDI to Mexico vis a vis those to South America should be smaller than with respect to Central America.

In the following section I look at the actual data to see if in fact they conform with these hypotheses.
IV. Assessing the Effects of NAFTA on the Excluded Countries.

As seen in the previous section, most countries in the region experienced large increments in the FDI flows in the second part of 1990s. Yet, can I detect any special behavior in the Mexican economy? Can I discern a larger increment in FDI flows to Mexico in the periods ensuing NAFTA? To explore the answers to these questions, I will use both the variation in FDI flows across countries in the region and across periods. The objective is to assess whether I can find differences in the FDI behavior I prior and posterior to NAFTA implementation.

I recognize that many other factors may be underlying any observed difference. Specially, after 1994 when many relevant changes took place, including host countries incentives, free trade agreements, unilateral trade preferences, and the privatization of public utilities. The effects of those changes are likely to be reflected in the FDI flows received by each country. In this paper I will follow the strategy to first look at the actual time series and then question whether I can assign a direct link to NAFTA.

In the statistical model I control for permanent differences across countries and estimate year effects specific to each country. In this way, I isolate the component that separates Mexico from the rest of the countries in each year and also explore the year effects for the neighboring countries. My attention will be placed on the behavior of those components using also my the information of other events affecting each country each year. I proceed by discussing the statistical model and the data employed. Then I discuss the results and the main conclusions.

IV.1. The Statistical Model.
Assume I have observations of net FDI flows from $i=1,2,...,I$ source countries to a sample of $n=1,2,...,N$ host countries. The observations are for periods $t=1,...,T$. Let $f(i,n,t)$ be a measure (to be discussed later) on the flows of FDI received by country $n$ from country $i$ in the year $t$. I want to separate different factors that explain the variation across countries and across time periods. First of all, one must recognize the fact that the characteristics of some countries make them a more attractive destiny of FDI (host country fixed effects). Second, some source countries, e.g. the US, are more naturally inclined to invest in the region (source country fixed effects). Third, there are years in which shocks affect the flows from all sources and to all host countries in the sample (year effects).

Moreover, there are combinations of these effects that are also relevant. Indeed, characteristics of pairs of host/source countries, for example historical or geographic closeness, can be important (host/source fixed effects). Year effects can be specific to a host country (host country year effects) as well to a source country (source country year effect).

There are many ways to decompose the series. Here I will follow the increasingly popular identifying assumptions of Marimon-Zilibotti (year) to identify the model. I postulated that the series of $f(i,n,t)$ can be written as

$$f(i,n,t)=h(i)+b(t)+m(i,n)+f(i,t)+g(n,t)+u(i,n,t)$$

here $h(i)$ is a fixed source country effect, $b(t)$ is a year effect that affects all source and host countries, $m(i,n)$ is a fixed source/host country effects, $f(i,t)$ is a fixed effect specific to a source country, $g(n,t)$ is a year effect specific to a single host country. The term $u(i,n,t)$ is simply the residual of the series once these effects have been accounted for.

As the model exhibits perfect co-linearity in the explanatory variables. There is virtually a continuum of ways to separate the effects. One alternative to solve this problem is to use a country/year as the base. The main problem of this strategy, as explained by Marimon-Zilibotti (year), is that the right hand side variables are not orthogonal to each other. Moreover, the results are sensitive to the choice of the base
country/year. For these reasons, these authors support using a different set of identification assumptions. Those assumptions are basically viewing the effects as deviations from their mean. In practice it means imposing the conditions:

\[
\sum_{n=1}^{N} m(i,n) = 0, i = 1, \ldots, I \\
\sum_{t=1}^{T} b(t) = 0, t = 1, \ldots, T \\
\sum_{i=1}^{I} f(i,t) = 0, t = 1, \ldots, T \\
\sum_{i=1}^{I} f(i,t) = 0, i = 1, \ldots, I \\
\sum_{n=1}^{N} g(n,t) = 0, n = 1, \ldots, N \\
\sum_{n=1}^{N} g(n,t) = 0, t = 1, \ldots, T
\]

With all these conditions imposed, the right hand-side variables become orthogonal to each other. In this way, the estimated coefficients can be interpreted as pure orthogonal effects.

It is convenient to discuss further the interpretation of the estimated effects. First, \( h(i) \) would indicate the preponderance of the source country \( i \) on the average host country in the sample during the sample period. In particular, these estimates can be useful to compare the relevance of the US economy as a source of FDI to the region. In turn, the estimates of \( m(i,n) \) are the permanent deviation of country \( n \) with respects to the flows of FDI from country \( i \) to the average country in the group. This is very useful as it controls for permanent differences across countries. Indeed, those variables would capture the effect of geographic, historical and political distances of each of the \( n \) countries with the particular source country \( i \). In this sense, it is obvious that the econometric tools employed here are more flexible than a strategy based on gravitational models that explicitly controls for distance and characteristics of countries. Furthermore, with this strategy I do not need to find the appropriate measure of
distance, a difficult task given the geographic closeness of the mostly small countries in the group.

The second condition imposes that the year effects $b(t)$ are simply deviations from the average flow of FDI during the sample period to the average country in the group. It is simply a normalization. This plays an important role in my exercise as FDI flows are increasing over time. By including these year effects, I am able to separate the forces that increased the FDI flows to all the host countries in the region from those forces that favored a subset of countries with respect to others, which is my ultimate main interest.

Conditions three and four imply that $f(i,t)$ are deviations to the year effects that are specific to the source countries. They are normalized in such a way that for each year they represent deviations across source countries with respect to the mean $(b(t))$, and for each source country, they represent year deviations from its average $h(i)$.

Conditions five and six have a very similar interpretation. Thus, $g(n,t)$ are host country year effects that represent, for each year $t$, the deviation of host countries $n$ with respect to the mean year effect $(b(t))$. For each host country $n$, they would represent year deviations from its average flow.

The advantages of this statistical model are important. For practical purposes, it is quite simple and needs only to run regressions using dummy variables. More importantly, it does not impose uniformity of year effects across periods or across countries. This flexibility is of particular importance when the purpose is to compare the behavior of the series before and after a particular date. Further, the fact that it does not imposed uniformity across countries will be very useful. Indeed, the results of the model will suggest which countries have been affected more by NAFTA.

To examine whether NAFTA has favored Mexico with respect to the other countries in the region, I can look at the estimates of $g(n,t)$ for Mexico before and after 1994, the year in which NAFTA started being operative. To see this, remember that $g(Mexico,t)$ would indicate positive or negative deviations of Mexico at time $t$ with respect to the rest of the group as well as deviations of Mexico with respect to its average over time. To be more precise, if in fact, NAFTA implied a relevant advantage for Mexico one
must find that \( g(Mexico, t) > 0 \) for \( t > 1993 \) and \( g(Mexico, t) \leq 0 \) for \( t \leq 1993 \). Again, the great advantage of the method is that it would tell us the behavior over time. This is, if such advantage slows down or speeds up over time.

I will also look for changes over time considering other indicators. First, whether there is an increase in the FDI to the overall region, in particular whether the US has become a larger FDI supplier. Observers who look only at Mexico and neglect other countries in the region may be led to believe that NAFTA has had a large impact on the FDI flows of Mexico. This could be misleading, as those flows would have been large regardless of NAFTA.

This is the reason why I will compare the behavior of the estimates of Mexico/year effects \( g(n, t) \) with those with the aggregate of year effect \( b(t) \) and the US year effect \( f(i, t) \). The comparison of those series suggests the quantitative relevance of any additional effect of NAFTA on Mexico.

Another indicator is the \textit{cumulate} effect of NAFTA. It is quite possible that the effects tend to diminish over time. But even if that is the case, it would be misleading to believe that NAFTA had no relevant effect as there is not permanent effect on the flows. It can perfectly be the case that there is a huge effect on the stock invested by foreigners in Mexico. Such level effect could certainly be large in terms of welfare and income. Thus I will also compute the value of the cumulative sum.

\[
\sum_{t \geq 1994} g(Mexico, t)
\]

Finally, I can look at the resulting year-country effects for the subset of neighboring countries, which are the ones, which interest us. The results for \( g(Mexico, t) \) only indicate factors that separate Mexico from the other countries in the sample. I will also look closely at the resulting values \( g(excluded, t) \), after 1994, for the neighboring (Central American) countries excluded from NAFTA.

I now discuss the data, sets of countries used, and alternative measures of FDI.

\textit{IV.2. Data}
The model will be applied to the FDI flows to countries in Latin America and the Caribbean. Like in previous tables, data was obtained from the World Bank World Development Indicators Database (WDI), and from the Bureau of Economic Analysis website (BEA). Collecting those two datasets, I estimate the net flows of FDI originated from the US and from the aggregate of all other countries. While it would be interesting to have more desegregated data by source countries, the separation between US and non-US sources is the most important distinction for my purpose. Moreover, the US is the most important investor in Latin America, and focusing on the behavior of its investments seems to be the first order concern.

The major data limitation is on US investments. While the data on total FDI flows from the WDI, is practically complete from 1950 for many of the countries of interest, there are many missing points for the US dataset. The main reason arises from confidentiality issues. The BEA database does not report the FDI in the country/year pairs where just one or a few US firms invested to avoid disclosing the investment of those firms. The need to combine the WDI and BEA databases limited the number of countries included in the exercise. Many countries were included in the WDI but not in BEA dataset and vice-versa. Conversely, many Caribbean countries are included in the BEA but not in the WDI dataset. However, for my purpose, the most painful exclusions in BEA are the cases of El Salvador and Nicaragua. Other countries in South America are also excluded.

Facing the trade-off between number of countries and the years included, I opted for using data that dates back to 1983 and run until 1998, inclusive. I report results using two different groups of countries. Of course, Mexico is included in both. The first group, which I call Central America (CA) is composed by Costa Rica, Guatemala, Honduras, and Panama. The second group, which I call All Latin America, includes the previous countries and adds Argentina, Brazil, Chile, Colombia and Venezuela.

All the reported exercises were replicated with the inclusion of the Dominican Republic, another country that has actively pursued FDI via Export Processing Zones. Yet, due to the limitation in data availability, the inclusion of the Dominican Republic required restricting the dates from 1991 to 1998. The results are comparable so, ultimately I decided not to include them in the text.
I analyze and report the results for three different measures of FDI. All measures are aimed to make FDI flows comparable across countries with very different size and income per capita. The first one is annual net flows of FDI in current US$ per inhabitant of the host country (FDI pc). It is important to notice that the pure year effects will correct automatically for international inflation. Moreover, the (implicit) host country fixed effect will correct for differences in terms of demographic composition across host countries.

The second measure is net flows of FDI with respect to the annual GDP of the host economy (FDI/GDP). Such measure will give a clearer picture of the relevance of foreign investment for the host country and make the figures comparable across countries with very different levels of income per capita. The third measure used is the fraction of FDI with respect to the annual investment in fixed capital of the host country (FDI/TI). Such measure will directly reflect the importance of foreign investment in the total investment of the country.

It is conceivable that the results obtained be very different depending on the measures used. For example, if richer countries receive higher amounts of FDI per capita but once scaled by the GDP they receive much less than poorer countries. Additionally, fluctuations in the investment of host countries can yield very different results for FDI/TI than for the other measures. While not pursued here, the results can vary depending on whether US and non-US foreign investors commode positively or negatively with domestic investment. Also, the volatility and pro-cyclicality of FDI can translate in different country-year effect for the model using FDI/GDP, FDI/TI and FDI pc.

It turns out, however, that all measures yield pretty much the same conclusions.

**IV.3. Results.**

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4 I preferred to use nominal FDI than FDI in constant US$ value to avoid problems of choosing the appropriate price index deflator of foreign investment vs. domestic investment and with
In Table 2 I report the estimated fixed effects for source countries and source-host countries pairs for both country groups and for all three measures of FDI. There are several salient conclusions from this table. The first is the importance of the US as a source of FDI. Second, the US is more important for Central America than for South America. Third, there is a large degree of heterogeneity across countries, even within Central and South American groups. Finally, according to the data, it is not true that Mexico is the most integrated economy to the US. I discuss each conclusion in detail.

First, the estimated source country fixed effect indicate that, during the sample period, the US has been on average, a more important source of FDI than all other countries combined. Indeed, as shown in the first two columns and rows of the table, the US invested, on average, a net of $32.38 per person on each country in the group of all Latin American countries studied. This is almost 37% more than all other sources combined, which invested only $23.68. The differences are much more striking if we look only at Central American countries where the numbers are 47.06 vs. 2.29, i.e. almost 18 times higher. The greater importance of the US with respect to all other countries combined is maintained if we look at the other measures. However, the comparison of their actual magnitudes is not as straightforward as it involves countries with different income levels and for which the FDI may exhibit different degrees of pro or counter-cyclically.

There is huge heterogeneity across the host countries, not only in terms of the total attraction of FDI but also in terms of the importance in the attraction of total FDI and the importance of the different sources. Looking at the US/host country and non-US/host country pair effects reported on the table can see this fact. All these effects must average zero, and thus indicate how the host countries are distributed in terms of attracting FDI from each source. For example, the table implies that Panama receives orders or magnitude more FDI from the US than the other countries. Per capita, it received almost US$ 150 more than the average of all Latin American countries and more than US$ 133 than the average Central American countries. Contrasting, Honduras received, per person, US$33.5 less than the average Latin American group and US$48.15 less than the average Central American group in terms of FDI from the consumption goods. I believe that index problems can be more complicated as it would involve comparing various host and source countries.
US. This is the difference between Panama and Honduras, more than US$ 180 on average per year/per person. The large flow of FDI to Panama from the US put most of the other countries below average. The values of those fixed effects, however, indicate the relative closeness of each of the host countries to the US and alternative sources.

Table 2: Estimated Fixed Effects on net flows of FDI
( various measures of FDI and two different samples of countries)

<table>
<thead>
<tr>
<th>Year</th>
<th>FDI per Capita (in U.S.$)</th>
<th>FDI/GDP (%)</th>
<th>FDI/Total Investment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Lat. Am.</td>
<td>Only CA</td>
<td>All Lat. Am.</td>
</tr>
<tr>
<td>US source Fixed Effect</td>
<td>32.38</td>
<td>47.06</td>
<td>1.07</td>
</tr>
<tr>
<td>(common to all hosts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-US source Fixed</td>
<td>23.68</td>
<td>2.29</td>
<td>0.81</td>
</tr>
<tr>
<td>Effect (common to all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hosts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US source/host fixed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>effects (specific to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>each host)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notice that countries receiving higher than average FDI from the US tend to receive less than average FDI from other sources. For example, Mexico receives US$11.18 more from the US but $11.76 less from the other sources than the average Latin American countries per capita. Panama, a country that receives much more FDI from the US than the other host countries, receives much less FDI from the other source countries. However, there are remarkable exceptions to this pattern. Indeed, Chile receives more FDI from both US and non-US sources than the average Latin American country. The opposite case holds for Honduras.
It is important to notice that while there are important differences between Central and South American countries, the differences are also pronounced within each of those groups. Trying to control those differences by simply including distance and cultural differences of the host and source countries would be a hopeless strategy, given the uniformity of those indicators for the host countries in the study.

The most relevant case is Mexico, which is the only country that has a common border with the US. According to the results here, Panama and not Mexico is the country that is closer to the US. Moreover, the estimates indicate that Costa Rica and Chile are closer to the US than Mexico, in view that the estimates for the US/Costa Rica and the US/Chile fixed effects are positive or less negative than the estimate for the US/Mexico fixed effect. This is true for all measures of FDI and in the case of Costa Rica, for both groups of countries.

The main interest of the paper is on the different implications originated by NAFTA and not on the permanent heterogeneity of the countries in the region in terms of the strength in the linkages to the US economy. Can we discern differences in FDI behavior from US and non-US sources before and after NAFTA for Mexico with respect to the other countries? The advantage of the statistical model used is that, for each country, it estimates a country-specific year effect, $g(n,t)$, which enables to look directly into this question. And as I explained above, we simply need to look at the estimate for Mexico. Table 3 shows the estimates for both country groups and for all three measures of FDI.

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Table 3 Estimated México/Year Effects (g(n,t)) on net flows of FDI (various measures of FDI and two different samples of countries)
Table 3 shows Mexico specific year effects for each sampled year. If NAFTA had a positive effect for Mexico in its ability to attract FDI, that effect would be reflected by mostly positive estimates from 1994 to 1998. Given the normalizations imposed, looking at those estimates we can simultaneously compare Mexico before and after NAFTA and Mexico vs. the countries excluded from NAFTA. (Remember that for a given country the sum of those terms over the entire period is equal to zero, and that for each year its sum across all countries is also equal to zero).

The Table shows that in fact, for the first years after NAFTA, Mexico seems to pull ahead of the rest of countries. This result holds for all measures. In all those cases, when the sample of all Latin American countries is used, there is a positive effect in the first two years, 1994 and 1995. When only Central American countries are used, the positive effect holds for the first three years. Looking at the measure of FDI per capita, the effect seems larger on impact and decline over time. This would indicate that during

<table>
<thead>
<tr>
<th>Year</th>
<th>FDI per Capita (in U.S. $)</th>
<th>FDI/GDP (%)</th>
<th>FDI/Total Investment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Lat. Am.</td>
<td>Only CA</td>
<td>All Lat. Am.</td>
</tr>
<tr>
<td>1983</td>
<td>-3.70</td>
<td>-8.12</td>
<td>-0.12</td>
</tr>
<tr>
<td>1984</td>
<td>-2.10</td>
<td>-5.17</td>
<td>-0.05</td>
</tr>
<tr>
<td>1985</td>
<td>-5.08</td>
<td>-7.88</td>
<td>-0.21</td>
</tr>
<tr>
<td>1986</td>
<td>5.50</td>
<td>3.27</td>
<td>0.41</td>
</tr>
<tr>
<td>1987</td>
<td>12.38</td>
<td>4.77</td>
<td>0.76</td>
</tr>
<tr>
<td>1988</td>
<td>6.81</td>
<td>2.26</td>
<td>0.27</td>
</tr>
<tr>
<td>1989</td>
<td>4.51</td>
<td>4.24</td>
<td>0.09</td>
</tr>
<tr>
<td>1990</td>
<td>0.47</td>
<td>-3.38</td>
<td>-0.06</td>
</tr>
<tr>
<td>1991</td>
<td>7.61</td>
<td>9.27</td>
<td>0.06</td>
</tr>
<tr>
<td>1992</td>
<td>1.98</td>
<td>1.95</td>
<td>-0.06</td>
</tr>
<tr>
<td>1993</td>
<td>3.79</td>
<td>0.44</td>
<td>-0.05</td>
</tr>
<tr>
<td>1994</td>
<td>22.66</td>
<td>19.05</td>
<td>0.26</td>
</tr>
<tr>
<td>1995</td>
<td>11.40</td>
<td>13.68</td>
<td>0.31</td>
</tr>
<tr>
<td>1996</td>
<td>-8.43</td>
<td>5.77</td>
<td>-0.16</td>
</tr>
<tr>
<td>1997</td>
<td>-25.00</td>
<td>-12.17</td>
<td>-0.58</td>
</tr>
<tr>
<td>1998</td>
<td>-32.80</td>
<td>-28.00</td>
<td>-0.87</td>
</tr>
<tr>
<td>sum 94-98</td>
<td>-32.16</td>
<td>-1.67</td>
<td>-1.03</td>
</tr>
</tbody>
</table>

Source: Own estimation with data from the World Bank and the Bureau of Economic Analysis.
the first year Mexicans received a roughly difference of US$ 19 in favor with respect to Central Americas and US$ 23 with respect to Latin Americans as a result of NAFTA. The differences fall to US$13.7 and US$11.4 in the following year. Using FDI pc as measure, we obtain a declining pattern. That is not the case when we look at FDI/GDP or FDI/TI, which would suggest a hump-shaped response, as the positive effect is largest in the second year. The reason of this result could be the negative impact of the 1995 Mexican recession in GDP and investment. Though the effects are eventually declining, and hence, if we believe the only change is NAFTA, we would have to conclude that the effects on FDI flows die over time.

However, the most surprising result in the table is the negative estimates for the last two or three years, depending on the group of countries used. Furthermore, the magnitude of this negative effect increases over time. None of these results are an artifact of the model. Likely as FDI flows increased in the first year, the early on acceleration in the build-up of capital could imply a decline on investment in the future years. Still such hypothesis does not bind, because the cumulative effect from 1994 to 1998 is negative.

The more plausible explanation is that NAFTA in 1994 is not the only innovation for the group of countries. Indeed, it is quite possible that the effect on 1994, 1995 and perhaps 1996 is the combined result of NAFTA and the under-valuation of the Mexican peso after the Tequila crisis. The estimates obtained for 1997 and 1998 may be the outcome of the response of the excluded countries in the form of incentives to foreign investors. They can also reflect changes in preferential trade treatment to excluded countries in the region. Negative estimates can also arise as the outcome of large chunks of FDI investment to the group of countries, originated from a diverse array of reasons. For example, privatizations and concessions in Argentina, Brazil and other countries; the introduction of INTEL and other large scale companies in Costa Rica, etc., all of which are registered as FDI. Needless to say, other exogenous shocks to Mexico and the other countries can manifest themselves in negative estimates.

In the next sections I explore some of these forces in detail. However, before closing this section, I want to retake the question: Has Mexico really behaved different from the rest of the countries? One way to look at this question is to see how much of the variations in the Mexican FDI can be explained by shocks common to all the countries in the region (aggregate year effects). If the answer is significant, Mexico is not much
different from the rest, and agreements such as NAFTA have probably not translated into differential advantages. If the answer is small, then there is room to hold NAFTA as a suspect for part of the difference. One can also see if the periods of major disagreement between the series can be explained by concomitant events.

Figure 3 illustrates such experiment. The blue line shows the actual total FDI pc for Mexico. The yellow and red lines show the series of year effects, $b(t)$, common to all countries for, respectively, the model with only Central America and Latin American countries. The series are scaled to have the same mean as the actual series (remember the normalization imposed in the model), which coincides with a Mexican fixed effect. We can use the estimated values from the model because all the shocks are, by construction, orthogonal to each other.

It is clear that the series with only year effects and the actual Mexican series move very closely. Indeed, correlations are above 88%. Thus, shocks common to all the countries in the region can explain almost 80% of the total variation of the Mexican FDI series. However, notice that the graph shows vividly large discrepancies, especially in the years 1994 and 1995, right after NAFTA and the Tequila crisis. Thus, NAFTA and other shocks specific to Mexico may account for a small fraction of the variation of the FDI series over the sample period not because their effects are small, but instead, because they have occurred less frequently than other shocks.
Probably the most important advantage of the statistical model employed in this paper, is that it allows the country year effects vary across countries. Thus, the estimation results directly indicate which countries would be the most affected by NAFTA. This is particularly important given the large heterogeneity reported across countries in terms of the flows of FDI during the sample period.

Effectively, the estimated country effects for Mexico only capture differences of Mexico with respect to the entire group of countries. We can use also the estimates for the countries of specific interest in this paper, namely Central America and compare them with those of Mexico. Such comparison can yield interesting information on how Mexico has fared with respect to Central America before and after NAFTA.

The next six graphs show the estimated country year effects of Mexico and Central American countries. For all three measures of FDI used I report two different graphs, one with total flows and another subtracting flows originated from privatizations of public utilities that took place in Central America in the last part of the 1990s decade. Certainly, most countries in Central America, with the notable exception of Costa Rica, have embarked in the privatization of their electric and telecommunication utilities, resulting in large inflows of investment from abroad. This fact is the sole reason for...
which Panama in 1997 and El Salvador in 1998 were the countries reporting the largest inflows of FDI in Central America.

As can be seen directly from the graphs, the large FDI flows from privatizations are reflected in the large and positive country specific year effect. For Panama in 1998 and in 1997 and 1998. For Guatemala, it is reflected in reverse from large negative year effects in 1996 and 1997 to a mildly negative or even positive effect in 1998, depending on the measure used. Specifically, for Guatemala, these effects reflect the sale of TELGUA (Telecomunicaciones de Guatemala) to Consorcio Luca (Mexican, Honduran and Guatemalan investors), and the concession of cellular phone services to Telefónica de España as well as the partial privatization of three main electric utilities. All of these events took place in 1998 and, according to official information, the FDI generated by these transactions amounted US $ 510 millions.

The FDI flows induced by privatizations are even larger. According to the records of the Ministry of Economics, the privatization of the public concrete factory to Mexican investors yielded US$60 millions in 1994. For 1996, the concession of the Band A of mobile phones to US BellSouth generated US$72.6. Numbers are larger for 1997, when the concession of Band B and the privatization of part of INTEL (Panama’s phone company) added to FDI flows in the amount of US$ 777.87 millions. In 1998 the figure is of US$ 469 millions, originated mainly from the concession of sections of Puerto Coco, the concession of Ferrocarril de Panama and the partial privatization of Metro Oeste, S.A. Noroeste, S.A. and Chiriqui S.A., the three main electricity distribution companies.  

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5 I am not including the flows paid for the distribution companies, which took place at the end of 1998 and it is not clear whether they are included in the flows of FDI for 1998. If I include them (which total more than US$300) then the net FDI flows without privatizations would be a large negative number.
It is clear that the magnitude of the privatization flows can largely distort the attraction of FDI across countries before and after NAFTA, for reasons not directly related to whether countries were included or excluded from this RIA. The ideal would be to run the model with data that subtracts the FDI from privatizations. The problem is that at the time I wrote this paper I did not have the necessary data on privatizations. While I can directly measure the flows for Central America, as reported here, the task is much more daunting for the larger countries such as Brazil, Argentina, Chile, Colombia and even Mexico, where many different local utilities have been privatized. The data needed to filter the flows of FDI is much tougher of a task than what meets the eye, as we need to know the source country of the investor, complicated by the fact that many investors from different countries are involved in the purchase of the privatized utilities. Given this data limitation, I followed the strategy of reporting the year effects but subtracting in the Guatemala and Panama series the amounts of FDI originated from privatizations and concessions of public services. I scaled back the series so that, for each country the sum over years in the sample add to zero.

The second triplet of graphs shows the results. It is clear that there are some common components in the year effects of the countries in this group. A naked eye inspection of the graphs suggests that the country/year effects tend to move closely together. To confirm this observation, the following table shows the correlations of the country year effects using all three measures of FDI. The table shows very strong correlations in the FDI flows per capita among the countries. It is evident that even controlling for the common effects of FDI to Latin America, there are still significant factors that bind the countries in Central America and Mexico with respect to the rest. Indeed, some correlations are surprisingly strong. The most notable cases are Honduras and Guatemala. Moreover, while fluctuations in the investment and GDP of the different countries reduce the magnitude of co-movement, the cross-country correlations of FDI/GDP and FDI/TI are still significant.
For the purposes of assessing the effect of NAFTA, the graphs indicate that the pack of the Central American/Mexican countries had negative deviations with respect to the average Latin American. This outcome arises from the large flows of FDI generated in the South American countries in the sample (Argentina, Brazil, Chile, Colombia and Venezuela), most notably at the end of the 1990s.

But the most interesting conclusion from the graphs is that there are significant differences in the year effects across the countries. When I look at the graphs correcting from privatization flows, the differences seem to widen in the last years of the 1990s. As discussed above, Mexico shows positive year effects in 1994 and 1995, but negative effects after that. In comparison Honduras and Guatemala show negative year effects of larger absolute magnitude, with a clear negative trend over time. The gap between Mexico and Guatemala-Honduras broadens over time. In contrast, the country/year effects for Costa Rica are almost always above those for Mexico. And in several instances they are positive while Mexican counterparts are negative.

How can we explain the differences between Costa Rica and Guatemala/Honduras? In the next sections, I state that the main reason lies in the advantage NAFTA granted
Mexico over the rest of the region in textiles and apparel sectors. Contrary to the rest of the Central American countries, Costa Rica was in a position, and actively pursuing the strategy, of attracting FDI in sectors where NAFTA did not create a bias with respect to the preferences granted by the Caribbean Basin Initiative.

V. Access to International Markets and Fiscal Incentives by Host countries to Foreign Investors

Perhaps the most severe complication in the attempt to seize the effects of NAFTA on the countries excluded from it is the fact that many other national policies relevant for the attraction of FDI are being implemented and reformed during the sample period. Moreover, changes in unilateral trade preferences from the US, especially the Caribbean Basin Initiative alters the access to the US from the countries involved, which will be ultimately reflected in the flows of FDI to those countries.

In this section I describe and discuss some of these changes. I argue that the fiscal incentives provided by excluded countries work as compensatory incentives for NAFTA. The full bias of NAFTA may not be reflected in actual FDI flows. Third, I argue that FDI incentives were distorted the most in the textile sectors. This help to explain the results in the previous section that suggested Guatemala and Honduras were the countries most affected by NAFTA.

V.I. Access to International Markets: The Caribbean Basin Initiative

In 1983, the US Congress approved the Law for the Recovery of the Caribbean Basin Region, providing unilateral preferences to countries in the region, which included Central America and Panama. This law, commonly known as the Caribbean Basin Initiative, basically granted free access to US markets— with no tariffs or quotas—to virtually all the goods produced by those countries. The original law provided benefits for the ensuing twelve years. Yet in 1994, months before its expiration, the benefits were postponed indefinitely but the schedule of the benefits was left unchanged.
However small, the set of goods excluded from the preferential treatment contained key sectors, including some of main comparative advantages of those countries. For the purposes of foreign investment, perhaps, the most relevant exclusion was the textiles. Textiles received no preferential treatment, as they have to pay maximum tariffs (those applicable to third countries). For other goods the benefits were limited. For example, some agricultural goods such as meat and sugar were exempted up to some quota. Follows a discussion of two specific sets of goods, which provide a very different conclusion about the comparison between CBI and NAFTA.

**V.I.1. Textiles**

Textiles is an important sector in the region, which has seen a dramatic growth in recent years. Not only textiles has grown in absolute terms, but also as a fraction of the exports from the region to the US, the major trade partner of those countries. The following table shows that currently the sector accounts for half of the exports to the US.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>28,2</td>
<td>22,9</td>
<td>20,9</td>
</tr>
<tr>
<td>Textiles and Apparel</td>
<td>27,3</td>
<td>41</td>
<td>49,9</td>
</tr>
<tr>
<td>Other Manufactures</td>
<td>44,6</td>
<td>36,2</td>
<td>29</td>
</tr>
</tbody>
</table>

*Source: US Dept. of Commerce*

In a similar vein, the following table graph shows the shares in the US market of three different regions: Asia, Mexico and the aggregate of the whole set of countries under the CBI. The graphs show the dramatic decline for the Asian products and the remarkable growth for the region and, most notably, Mexican goods. Indeed, adding all the countries in the region, they account for 85% of the market share lost by Asia.
Shares in US Textile Market

Difference Between the Market Shares of CBI Countries with Mexico (in percentages)
Over the sample period, the aggregate of the countries under CBI had a stronger presence in the US market than Mexico. Looking at the difference between the share of CBI with respect to Mexico, it also becomes evident that Central American and Caribbean exports grew much faster in the years before NAFTA but in 1994, precisely when NAFTA was put in operation, the trend is reverted, and now Mexico has practically caught up in importance.

There is strong basis to believe that the discriminatory treatment of Mexican goods under NAFTA versus that of the other countries under the CBI is a major factor behind these observations. Under the original CBI scheme textiles produced in the area were excluded from the list of goods with exemptions. NAFTA created a significant bias and increasing bias in favor of Mexican textiles. It is obvious that this bias, which can be inferred from the data reported in the following Table, which was taken from Gitli and Arce (2000), shows how large this bias has been. Up until 1994, textiles from Mexico and the rest of the countries were in the same level field. Five years later the effective tariffs barely declined for the countries excluded while they basically disappeared for Mexico. In equality of conditions, many firms that were operating in Asia or Central America could jump the tariffs by simply moving to comparable regions in Mexico, and save almost a fifth of the sale price.

<table>
<thead>
<tr>
<th>Year</th>
<th>CBI</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>18.3</td>
<td>18.3</td>
</tr>
<tr>
<td>1991</td>
<td>18.3</td>
<td>18.3</td>
</tr>
<tr>
<td>1992</td>
<td>18.3</td>
<td>18.3</td>
</tr>
<tr>
<td>1993</td>
<td>18.3</td>
<td>18.3</td>
</tr>
<tr>
<td>1994</td>
<td>18.3</td>
<td>14.7</td>
</tr>
<tr>
<td>1995</td>
<td>18.1</td>
<td>11.2</td>
</tr>
<tr>
<td>1996</td>
<td>17.9</td>
<td>7.7</td>
</tr>
<tr>
<td>1997</td>
<td>17.7</td>
<td>4.1</td>
</tr>
<tr>
<td>1998</td>
<td>17.5</td>
<td>0.6</td>
</tr>
</tbody>
</table>

*Source: Gitli and Arce (2000)*
Given the size and diversity of the Mexican economy, the bias would affect practically all the economies in the region. Indeed, according to a study of PROCOMER and the Chamber of Costa Rican Textiles Producers (CADECO), there is a large diversity of textile sectors in the region. Most countries are specialized in one or two segments. For example, according to the study (PROCOMER/CADECO, 2000), the Dominican Republic and Mexico are concentrated on textiles with significant economies of scale. Honduras and Nicaragua are specialized in the production of simple parts which is intensive in low skilled labor. Guatemala and El Salvador are specialized in the confection of garments of intermediate complexity. The textile sector in Costa Rica is the most sophisticated. Indeed, while Costa Rica specializes in the elaboration parts that typically involve more than twenty operations, the average in the rest of the region is less than ten operations. The final price and added value of the goods is an increasing function of the number of operations.

The view that labor quality differs greatly in the region is confirmed by the huge disparities in the wage per hour paid by manufacturing firms in EPZs across countries in the region. The following table, taken from Gitli (1997), shows that indeed, workers from those countries in the region with presumably higher human capital receive higher wages. Those wage differences are reflecting the productivity of labor, but also, obviously, differences in the opportunity cost of the workers employed by the textile sector, which also reflect productivity differences in the other sectors, due, perhaps to differences in education, health, labor benefits and infrastructure.

<table>
<thead>
<tr>
<th>Country</th>
<th>Wage per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico (North)</td>
<td>1,22</td>
</tr>
<tr>
<td>Mexico (South)</td>
<td>0,95</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1,14</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1,22</td>
</tr>
<tr>
<td>Honduras</td>
<td>1,05</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>2,04</td>
</tr>
<tr>
<td>Panama</td>
<td>1,8</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1,49</td>
</tr>
</tbody>
</table>

*Source: Gitli (1997)*
However, it would be a mistake to presume that Mexican competition is only relevant for one or a few sectors within textiles. Mexico competes in every one of the sectors. In fact, in one extreme, the abundant low skilled labor available in the most underdeveloped Mexican regions in the South (e.g. Oaxaca, Chiapas) appears as natural competitors to Honduras and Nicaragua. In the other extreme, the most developed regions in the Center and North of Mexico can compete with the more developed south of Central America (Costa Rica and Panama).

How important is the CBI-NAFTA bias for the location of textile firms and hence for FDI flows in that sector? The following table shows the results of a survey applied by PROCOMER and CATECO (PROCOMER/CATECO, 1999) applied to 89 textile firms operating in Costa Rica. The study, which aimed to characterize the sector in Costa Rica, also asked about potential competitors in the region. One of the questions was concern on the factors that the firm will weight as advantages of each of the countries with respect to Costa Rica. The table shows the percentage of firms that consider that each one of the items is an advantage of the country.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Dominican Republic</th>
<th>Guatemala</th>
<th>Honduras</th>
<th>Nicaragua</th>
<th>El Salvador</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheap Labor</td>
<td>18.9</td>
<td>33.3</td>
<td>47.6</td>
<td>51.5</td>
<td>58.3</td>
<td>0</td>
</tr>
<tr>
<td>Skwelled Labor</td>
<td>2.7</td>
<td>6.5</td>
<td>0</td>
<td>6.5</td>
<td>14.3</td>
<td>0</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>16.3</td>
<td>0</td>
<td>8.3</td>
<td>6.5</td>
<td>14.3</td>
<td>16.7</td>
</tr>
<tr>
<td>Cost of production</td>
<td>5.4</td>
<td>14.3</td>
<td>16.7</td>
<td>19.4</td>
<td>16.7</td>
<td>0</td>
</tr>
<tr>
<td>Low labor benefits</td>
<td>0</td>
<td>6.5</td>
<td>0</td>
<td>6.5</td>
<td>4.8</td>
<td>0</td>
</tr>
<tr>
<td>Incentives from EPZs</td>
<td>8.1</td>
<td>0</td>
<td>16.7</td>
<td>3.2</td>
<td>0</td>
<td>63.6</td>
</tr>
<tr>
<td>Geographic location</td>
<td>8.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9.1</td>
</tr>
<tr>
<td>Free trade Agreement</td>
<td>13.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Political and Economic Stability</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3.2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Distance from the US</td>
<td>24.3</td>
<td>0</td>
<td>0</td>
<td>16.7</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Survey of PROCOMER/CATECO.
Table XX confirms the significant heterogeneity in the region in terms of the cost and quality of labor, as well as infrastructure. It shows that the incentives provided by EPZs are relevant, although the numbers here only reflect differences in the benefits provided across countries. Interestingly, a significant fraction, 13.5% of firms consider the existence of a free trade agreement with Mexico as a relevant advantage. The number is not large, but one has to consider a potential large bias generated by the fact that only firms operating in Costa Rica are not representative from the average firm in the region. Firms in Costa Rica are likely to require more sophisticated workers, and the relative scarcities across countries can outdo the effect of the bias.

The CBI-NAFTA bias may affect countries differently because of their comparative advantage in different sectors within textiles, but also because of the comparative advantage of the countries in sectors other than textiles. There is ground to believe that the bias will affect much more the most underdeveloped countries in the region than the more developed ones, as the latter could produce more efficiently other goods that are more skilled intensive, and that are not subject to the bias.

The best example is the ability of Costa Rica to attract FDI in the production of electric and electronic equipment, including computer components and software. For those, the CBI and NAFTA provide equal benefits. All those goods entered the US market in the same footing as Mexican potential competitors.

It is important to notice, however, that benefits from CBI were recently enhanced significantly. The major enhancement implemented in 2000 included textiles in the list of goods that can be exempted from paying tariffs when entering in the US. However, two main asymmetries with respect to NAFTA still remain. First, there are quotas. Second, the benefits depend on the use of US raw materials and intermediate goods. Firms operating in Mexico are not subject to those requirements or limitations. Specifically, after a pre-specified maximum, the exports of the country have to pay tariffs. Below that maximum, they are exempted. Second, the rules of origin on the inputs and raw materials can create a cost distortion in order to be eligible for the benefits.
Needless to say, quotas are likely to affect FDI directed to textiles, even if currently they do not limit production and exports, but they may limit them in the future. There is an aspect to be considered. The quotas are set according to previous exports. Indeed, as the previous figure shows, El Salvador, Guatemala and Honduras receive much larger shares that the other countries as a result of their higher market share in the past. Hence, even if quotas are a limiting factor, the actual scheme of distributing it may reduce the impairing effect on FDI, specially for countries who have comparative advantage in the sector, as reflected by their past performance.

V.1.2. Access to Markets: Electric and Electronic Equipment, Semiconductors, etc.

The conclusions obtained for the textile sector are not necessarily valid for other sectors. This is very important when to determine the aggregate implications of NAFTA for the FDI flows to the different countries excluded. Indeed, if has comparative (and absolute) advantages in sectors where NAFTA does not introduce a bias, then no significant adverse implications should be expected for those countries.

In sum, how attractive is each of the countries excluded from NAFTA for foreign investors that producing goods for which no bias is present will determine the sensitivity of FDI flows to NAFTA. This hypothesis is confirmed by the fact that the more developed countries in the region, most notably Costa Rica, received considerably more FDI flows precisely in sectors with no CBI-NAFTA bias. Countries such as El Salvador, Guatemala and Honduras, receive most of their FDI directed to textiles, which is consistent with my findings above that those countries were the most affected by NAFTA.
One of those sectors, whose appearance in the region took most observers by surprise, is the so-called hi-tech sector, especially in Costa Rica and some regions in Mexico (Guadalajara and Monterrey). Perhaps the most celebrated is INTEL, but many other firms (Abbott, Merck, Roche, etc) producing electric, medical equipment, pharmaceuticals, etc, have invested significant amounts in the recent years, changing the profile of exports for the countries involved. Interestingly, Costa Rica, which has been the main magnet in the region for this type of FDI, does not appear affected by NAFTA, at least from the results of the previous section.

A recent study by PROCOMER-CINDE (the agencies promoting FDI and international trade in Costa Rica), PROCOMER-CINDE (2000x), analyzes the access of goods produced in Costa Rica in those sectors. The paper analyzes the trade codes of the US, the European Community as Well as markets in Latin American, and also reports on specific cases of firms exporting to those markets.

The study finds that goods produced in Costa Rica (and hence in any other country under the umbrella of the CBI) enter the US market in the same footing as if they were produced in Mexico. As neither CBI nor NAFTA have provisions with regard to EPZs benefits, effectively the goods are playing in a leveled field with actual and potential Mexican competition.

This is not, however, the case for alternative markets. The study finds that those goods have more obstacle to penetrate markets in Europe (they report the case of a firm exporting to France), South America (they report the case of a firm exporting to Brazil), and even Central America! In those cases, the Costa Rican goods were regarded as subsidized exports, and hence, were excluded from any preferential treatment. In some cases, a trade dispute were resolved in favor of the firm (the case of Brazil), but in other cases, the firm had to choose between a preferential treatment from the importing country or the benefits available to firms in EPZs (the case of Central America).

In any event, it is clear that these obstacles arise from the incentives and implicit subsidies originated in EPZs schemes, not to the presence or not of free trade agreements of the country with other partners. However, it would be a mistake to
conclude that they do not have an effect at all. Indirectly, countries may have to provide more generous EPZs to compensate for biases, like the one induced by the difference in the treatment of textiles between NAFTA and the CBI. Political economy considerations can easily explain that once a benefit is granted for one sector, it is granted to other sectors as well. And this could be truer for the countries that had attracted most of their FDI in textiles, as the less developed countries in the region.

V.2. Incentives Provided by Host Countries.

As I have argued above, it is quite possible that the observe FDI do not seem to respond to NAFTA not because the effects are small, but instead, because governments respond by changing policies regarding to the attraction of FDI and market prices of labor and other inputs respond. In this subsection I briefly review the different incentives offered by the countries in the region in scheme for Export Processing Zones (EPZs) or benefits alike.

The subsection is based on a recent study by CINDE-PROCOMER (XX) and also the thesis study by Borbon-Guevara (2002) comparing and analyzing the incentives provided by countries competing with Costa Rica (in the first case) and in Central America in the second case.

Interestingly, there is a surprising homogeneity in most of the incentives provided by the countries. All of them offer the same treatment in terms of taxes for intermediate inputs,

<table>
<thead>
<tr>
<th>Country</th>
<th>1993</th>
<th>1996</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costa Rica</td>
<td>28.9</td>
<td>27.2</td>
<td>59.8</td>
</tr>
<tr>
<td>Dom.Rep</td>
<td>81.2</td>
<td>77.4</td>
<td>83.3</td>
</tr>
<tr>
<td>El Salvador</td>
<td>28.1</td>
<td>42.7</td>
<td>53.1</td>
</tr>
<tr>
<td>Mexico</td>
<td>42.1</td>
<td>38.5</td>
<td>46.8</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>5.3</td>
<td>25.1</td>
<td>41.0</td>
</tr>
</tbody>
</table>

*Source: Central Bank of each country*
taxes on exports, free remittances of goods and profits. Practically there are no difference regarding the benefit of not having to go thru the established proceeds for clearing customs.

In all those respects, Mexico and the other countries in the region offer the same benefits.

The key difference is with respect on how countries tax profits of the investors. Mexico does not provide any exemption. Foreign investors are subject to the same tax on profits prevalent in Mexico for other firms. The tax rate is 34%. All the other countries in the region, analyzed by the aforementioned studies show that firms are exempted from the tax for long periods of time. The exemption is for the 100% of the taxes. This is, FDI investors do not pay taxes on profits at all.

<table>
<thead>
<tr>
<th>Country</th>
<th>Income Tax Deduction</th>
<th>Years of Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>0% (tax is 34%)</td>
<td>n.a.</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>100% first, then 50%</td>
<td>8-12/4-6</td>
</tr>
<tr>
<td>Guatemala</td>
<td>100%</td>
<td>12-15 years</td>
</tr>
<tr>
<td>El Salvador</td>
<td>100%</td>
<td>Indefinite</td>
</tr>
<tr>
<td>Honduras</td>
<td>100%</td>
<td>20</td>
</tr>
<tr>
<td>Dom. Republic</td>
<td>100%</td>
<td>15 to 20</td>
</tr>
<tr>
<td>Brazil</td>
<td>100%</td>
<td>3 to 10</td>
</tr>
<tr>
<td>Chile</td>
<td>0% (tax is 34%)</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

The table shows the benefits offered by a sample of countries. Clear, among the excluded countries, the main differences are not in the rate of exemption but instead on
the period. In some cases, e.g. Costa Rica and Guatemala, the period of exemption is based on whether the location of the plant is in a low development region or not. However, the option of reinventing/renaming themselves right before the expiration must be a relevant one for many firms, making the effect period longer than what the law says.

It is important to notice that most of the EPZs legal codes were enacted in the years before 1994. They do not seem to have responded to NAFTA. But there was little margin for responding, as most taxes were already at zero! Yet, anecdotal information indicate that governments have offered other forms of incentives, in the form of training workers, financing some investments, providing infrastructure, subsidizing electricity, etc. Many, if not most, of those other benefits are granted in a discretionary, case-by-case way.

How do those incentive compare with the biases originated from the differences between CBI and NAFTA? First of all, as indicated above, for many potential sectors, there are no biases. For those, the excluded countries, being more aggressive than Mexico on taxes on profits may look, in principle, more attractive. Second, when there is a bias, the net effect must be determined by the ratio value/profits. In any event, what is clear is that if not the volume, the composition of FDI to Mexico and to the other countries must be affected.

VI. A Case in Point: Costa Rica vs. Mexico after INTEL

The decision of INTEL in 1997 to choose Costa Rica as the host for a large production plant took almost everyone by surprise, but represents the result of efforts and reforms taken over the last ten years or so by Costa Ricans. This single investment decision, a plant of 400,000 square feet, employing up to 2,000 people to assemble and test the latest Pentium microprocessors, provides useful information on the factors that affect the quantity and composition of FDI. First, it shows the potential to attract investment in sectors commonly believed to be unattainable for any country in the region. Indeed, it suggests that the limits of development for the countries in the region are probably

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6 This section is based on Spar (1998) and Larrain, Lopez-Calva and Rodriguez-Clare (2001).
much farther than previous history could predict. However, it also indicates serious barriers that need to be removed, especially in terms of infrastructure. Third, it shows that being member of an RIA with the host country and target market could be a relevant factor but not a determinant one. Thus, I should not expect that extending NAFTA will create an scorching effect of the FDI flows of the region by itself, unless the factors such as infrastructure, institutions and human capital are improved. In this section, I review briefly the Intel episode which strongly point in those directions.

Early in 1996, executives at Intel convened a team experts to research for sites for a new assembly and test plant (ATP). Those plants take the wafers in “fabs” (another, more sophisticated type of plant) and are thinned and cut into many individual chips, or integrated circuits. The chips are then mounted onto a lead frame and attached to thin gold wires that will eventually connect them with the other elements of the computer. In the final stage of the manufacturing process, the chips are encapsulated in either ceramic or plastic packaging and subjected to a rigorous series of tests.

For a plant to run efficiently Intel needed to find a combination of low cost but highly trainable labor force, where employee turnover would be low and where highly qualified engineers were available. Costa Rica was included in the list of potential sites greatly due to the active promotion of CINDE (Coalición Costarricense de Iniciativas para el Desarrollo). In the late 1980s and early 1990s, CINDE switched the strategy from a broad promotion of the country to one that targets a specific group of potential investors. First, CINDE successfully targeted textiles producers, but when the wages and labor benefits of Costa Rica made it clear that Costa Rica was not in position to compete with other, lower salaries countries, CINDE decisively switched to electronics. According to Spar (1998) as early as 1993, Intel was included in the list of large companies courted by CINDE. The efforts of CINDE in promoting the quality of the labor force, the geographic advantages, the political stability, converged in the inclusion of Costa Rica in the first (“long”) list of possible investment sites. The other contenders were Argentina, Brazil, Chile, China, India, Indonesia, Korea, Mexico, Puerto Rico, Singapore, Taiwan, and Thailand.

The second step in the selection consisted of eliminating countries for the list, for which obvious reasons were considered. Countries also had display workable financial
conditions, considering wages, labor benefits, taxes, tariffs, requirements for capital repatriation. As all output was for export, tariffs and customs fees were particularly important. Inputs and outputs move efficiently from the plant to an international airport. Based on these basic criteria, the list was narrowed to Brazil, Chile, Costa Rica, and Mexico.

The selection process proceeded by Intel’s selection team visiting each of the remaining countries, with the objective to assess the business conditions and government practices. Costa Rica received its first visit in April of 1996. The visit was organized by CINDE, and Intel team interviewed representatives from foreign firms, such as Citibank, KPMG Peat Marwick, Price Waterhouse and DSC Communications, the largest US electronics company with operations in Costa Rica. It is important to highlight the enthusiastic effort put forth by the then president of the country, José María Figueres and of José Rossi, the Minister of Foreign Trade. Both, Rossi and Figueres, have been active businessmen. When the Intel team expressed concerns about the quality and availability of the workforce in the country, Figueres and Rossi suggested (and later delivered) government actions towards an enhanced training program to meet Intel's needs. After that first meeting, Intel representatives visited Costa Rica every week. In July, 1996, CINDE and the Costa Rican government knew that the list was down to only two contenders, themselves and Mexico.

At that point a few major concerns emerged. The most relevant ones were Intel’s concerns with Costa Rica: its physical and educational infrastructures were inadequate, and the financial terms of the proposed investment were less favorable than those being offered elsewhere. Intel's main problem was Costa Rica's infrastructure, specifically in the transportation sector. Intel's new plant would use inputs from any many points in the world and would send its output to many other regions, not only the US. Geographic location was not the problem, but instead the frequency of flights and the capacity of the main airport. Land transportation was also a concern. Even if Intel’s plan is very close to the airport, the access to the main highway was indirect and convoluted.

The Costa Rican government responded by granting more licenses to foreign carriers, accelerated plans for a new cargo terminal, and agreed to help improving access to the
highway by constructing an overpass ramp. A final problem remained: electricity, specifically, its high cost and problems in the construction of a substation. Existing rate structure included only rates for residential and industrial users. It is estimated by Spar (1998) that the rate that Intel would be facing is around $0.07 to $0.09 per kilowatt hour (kWh). Given the high demand for electricity, the difference between those rates and the $0.02/kWh that Mexico was offering was a serious challenge. The two problems found solutions. So the government worked with ICE and its National Regulatory Authority to develop a two-tier industrial rate structure, giving larger users like Intel more favorable pricing. Under the new agreement, still pending final approval, the cost of power will drop to an average of $0.05/kWh for any users consuming over 12 megawatts. Intel provided the land and some funding to ICE for the construction of the substation and also agree to fund a second substation to serve a neighboring industrial park.

Reading the studies of Spar (1998) and Larrain et. al (2001), it seems that three factors led to the selection of Costa Rica over Mexico. First, Costa Rican system of fiscal incentives was aggressive and credible. It had attracted other foreign firms. The political stability and the decisive strategy towards inserting the country’s economy into international markets convinced investors that the incentives would be in place for any discernible horizon. Instead, Mexican incentives were less generous, and although there was the attempt to offer special tax breaks, the discrentional nature of such exemptions undermined their credibility. Second, Costa Rican authorities responded promptly to the concerns of Intel. Indeed, while human capital indicators in Costa Rica outdo those in Mexico, the country did not have the education infrastructure to support Intel's personnel needs. The ministers of Education and of Science and Technology, staff from Intel staff from CINDE, formed a team with officials from national institutions of higher education to identify the gaps in Costa Rica's educational system and to submit guidelines for improvement. They contrasted the curricula of the country's technical high schools and advanced training programs with those required by Intel. A group of professors from the Costa Rican Institute of Technology (ITCR) and two teachers from local technical high schools made a six-week trip to Intel facilities in Arizona, New Mexico, and California to understand precisely the education and skills required to support an Intel work force. The outcome was a detailed list of recommendations to the Ministry of Education, with specific actions for high schools (technical and academic)
updating their technical skills and physics/chemistry competency. A one-year program designed jointly by Intel and ITCR was instated. 7

Educational institutions would provide language training courses (in Spanish for expatriates from Manila and the US and English training to the first group of 50 technicians hired in Costa Rica). Perhaps its smaller size and the larger effects of the investment for the country as a whole, allowed and motivated Costa Rican authorities to act more swiftly to accommodate the concerns of the investors. Moreover, Mexico, with both Federal and state governments, represented a double risk of policy obstacles and changes. Thus, instead of a liability, the smaller size of the country could work in favor of attracting more FDI if the political will of the authorities is in place.

A third main factor was the requirement in Mexico that investors be subject to comply with a system of mandatory union rules. All Intel’s plants are union-free, so allowing an exception would trigger unionizations attempts elsewhere. As reported by Spar (1998) Mexican authorities offered to make an exception to the rules for Intel, as it had for other major multinational investors. But this offer could have backfired, as according to here, this very offer made Intel wary of the way business policy was formulated in Mexico.

By the end of 1996, Intel announced its decision to build its next ATP in Costa Rica, conditional on the government to compliance with its part of the deal. In April of 1997, the construction of the plant began.

Important conclusions can be extracted from this episode are as follows. First, Costa Rica already had much of the conditions that Intel needed. The result was not a solely due to the enthusiastic efforts of good authorities. For a long time, Costa Rica had been stable politically with fairly Well trained work force with an already developing electronics sector. While the current leader in the region, Costa Rica had made efforts to liberalize international trade and labor markets. 8 These were sine qua non conditions

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7 Initially, these programs would focus on semiconductor manufacturing, although they could be extended over time to include other career tracks as well.

8 As discussed by Larrain et. al. a study carried out in 1999 confirmed that other foreign investors’ perceptions of Costa Rica coincided with Intel’s assessment to a large extent. The 61 foreign investors interviewed ranked “political stability” and “well-educated labor force” as the top strengths of Costa Rica’s.
for the officials to even think of start courting a firm of the characteristics of Intel. This is true even if the country had the most generous fiscal incentives for foreign investors. But a second conclusion is that the regime of fiscal incentives was important. In a world where many countries compete for attracting FDI, a serious contender also has to provide tax exemptions to investors. One key factor is the credibility of the incentives provided by Costa Rica given its generalized nature and automated process.

A third lesson is that an efficient team such as CINDE and government authorities can be key in attracting a big investment project. There should be not doubt of the contribution of the efforts of President Figueres and his ministers in this endeavor. They were prompt and effective in eliminating the obstacles for the profitable operation of Intel’s plant. Given the size and “quality” of the investment involved, it was worth the time and effort put by the local authorities to do away with the specific problems of Intel. Yet, an important fact, as highlighted by Spar (1998), is that the Costa Rican government responded to Intel’s concern mostly by changing the general nature of the regulations and updating the education system, not by providing grants and subsidies only to Intel.

Paradoxically, I think that the main message of this happy ending episode, is that Costa Rica, and all the other countries in the region have still a long way to go before they have the conditions required to be a natural magnet for large flows of FDI and rely on skill-intensive foreign investment as a sustainable engine of growth. As indicated above, Costa Rica had some important conditions, probably the most difficult ones to get. But it was only thanks to extraordinary, entrepreneurial efforts of the authorities at the time that the specific concerns of Intel were resolved. Countries in the region must work very hard on improving the general infrastructure, including electricity and telecommunications. A case-by-case strategy is definitely not the way to go if I want massive flows from many foreign firms competing to hire my work force.

VII. Concluding Remarks: Extending NAFTA to Central America.
In this paper I have examined the question: How much of an advantage did NAFTA represent for Mexico vis-à-vis the other countries in the region, in attracting foreign direct investment? Using a flexible statistical model I argued that the data indicates that indeed, right after NAFTA, Mexico seem to attract more FDI than its neighbors. Interestingly, the data shows important differences across Central American countries. In fact, we find that in the second part of the 1990s, right after NAFTA was signed, Mexico but also Costa Rica experienced a significant impulse in the flows of FDI departing from the other countries in Central America.

The paper argues that the relative higher human capital of Costa Rica enabled the country to embark in a strategy of attracting FDI in sectors in which the benefits of the CBI and of NAFTA were similar. The other countries were unable to attract foreign investment on those sectors and had to compete for FDI in textiles and apparel. Precisely, the latter sectors are the ones where there is the main difference between NAFTA and the CBI. Thus, the main argument of the paper is that the observed differences in the aggregate flows of FDI can be directly linked to the bias in the trade preferences. The data indicates that Honduras, Guatemala, Panama and perhaps El Salvador may have been subject to significant reductions in the foreign investment due to NAFTA and as such attracted reduced foreign investment due to NAFTA. Thus, in principle, those countries would be the most benefited from an extension of NAFTA that encompasses Central America. Yet, I am skeptical on the size of those effects. First of all, the CBI has been already expanded and as a result, the FDI in textiles/apparel in those countries have increased in the last years.

But most importantly, the said countries are outstanding in their serious limitations in terms of the human capital of their population and in their infrastructure. Economic theory clearly indicates that the skills of the labor force and the quality of the infrastructure are crucial determinants of investment in physical capital, as they are complementary factors that increase the rate of return of capital.

But empirical evidence very close to the case at hand forcefully supports this view. If we look at the geographic location of FDI in Mexico it is striking the geographic concentration in the main urban areas and in the Northern regions, specially those near the borders of USA. Those regions in Mexico are significantly richer that the southern
areas where the infrastructure is scanty and the population is less educated. Even the large wage disparities are not sufficient to compensate foreign investors. And trade asymmetries can be trivially dismissed as the leading cause as the NAFTA applies in equal terms on the entire country.

In many respects the countries in the Northern part of Central America are similar to the Southern regions of Mexico. And as free trade was not sufficient to bring foreign capital to the latter, it will not be sufficient for the former. By all means, one should avoid the trivial mistake of expecting that capital will flow to Central America as the prima facie results of the FTA. It can only happen with a significant effort by the local governments in promoting the internal conditions needed, which, anyway, are more important as shown by Costa Rica.
VIII. References.


