

## MEASURING THE ECONOMIC EFFECTS OF NAFTA ON MEXICO

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### Introduction

The economic effects of NAFTA on Mexico have been discussed and measured, for the most part, in terms of its effect on employment on both sides of the border and by the increase in Mexico-US trade and investments before and after NAFTA. Measured in this way, some economists predicted that NAFTA would create hundred of thousand of new jobs on both sides of the border, reduce wage inequalities between the United States and Mexico, and sharply reduce the migration of Mexicans to the United States (see, for example, Hufbauer and Schott 1992). Others, such as Ross Perot (the third party candidate in the 1992 US Presidential election), believed instead that the United States would lose thousand of jobs to Mexico as US firms migrated south attracted by much lower wages and fewer labor and environmental regulations (the ‘giant sucking sound’). Of course, both predictions were wrong, but what is more important is that measuring the effect of NAFTA based on its effect on employment and comparing trade before and after the Agreement is incorrect.

More reasonable economists attempted to measure the effects of NAFTA by comparing Mexican growth before NAFTA and with NAFTA. This also is wrong because, as we know, growth is affected by many other factors, independently of NAFTA. For example, Mexico faced a serious financial and economic crisis in 1994-1995 (just when NAFTA took effect), the United States faced recession in 2001 and slow growth in 2002, and China joined the WTO in December 2001, thus becoming a more powerful competitor of Mexico in the United States and on world markets (and also leading to the diversion of some foreign

direct investments from Mexico to China – see also Salvatore 2010a). Thus, measuring the economic effects of NAFTA on Mexico based on the net number of jobs created or destroyed, or by comparing Mexican growth before and after NAFTA, is not appropriate.

### Measuring the economic effects of free trade areas and NAFTA

Until Jacob Viner wrote his classic work *The Customs Union Issue* in 1953, economists believed that a free trade area (FTA), by removing trade restrictions among member states, increased specialization in production and invariably benefited the member countries and it also had positive spillover effects on the rest of the world. Viner, however, showed that this was not necessarily the case. Member nations and the rest of the world would benefit only if the FTA created, rather than diverted, trade. This is an application of the theory of the second best, which postulates that if all the conditions for first best or maximum social welfare (free trade) are not satisfied, trying to satisfy as many of the conditions as possible (partial trade liberalization) is not necessarily or usually second best. Lipsey (1961) then specified the conditions under which a FTA was more likely to be trade creating and thus welfare enhancing.

Meade (1955) extended Viner’s analysis showing that by considering not only the production effects of FTA (as Viner did) but also the consumption effects of a FTA, then even a trade-diverting FTA could improve members’ and world’s welfare. Meade pointed out that the smaller the relative inefficiency of FTA members in relation to non-members, the greater was the probability that even a trade-diverting FTA or customs union could lead to net benefits to members and non-member nations. Although important, this method of measuring the economic effects of a FTA concentrates on the static effects of economic integration without considering its more significant dynamic effects, such as the increased competition, economies of scale, stimulus to investment, and the generally better utilization of economic resources.



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According to theory, therefore, the appropriate method of measuring the effects of a FTA, such as NAFTA, is by the increased efficiency and productivity resulting from specialization in production, trade, investments, and competition. This increased efficiency will certainly affect wages, employment and growth. But welfare can increase in a member nation even if the FTA creates few or no jobs, as long as it increases efficiency and productivity in the nation. Such an increase in efficiency and productivity will stimulate growth in member nations but since growth also depends on other crucial concomitant factors, it is impossible to identify the specific effects of a FTA by comparing its growth before and after its formation. But this is exactly how the effects of FTAs, in general, and of NAFTA, in particular, have been mostly measured – that is, by its effect on employment and on growth before and after the formation of the FTA (see, for example, Hufbauer and Schott 1992, 2005 and 2008; Kose, Meredith and Towe 2004).

The correct way to measure the effects of a FTA on member nations, instead, is by counterfactual simulation of its effect on intra-FTA trade and growth. That is, by how much intra-FTA trade and growth is higher with the FTA as compared with the situation without the FTA. Performing valid counterfactual simulations are fraught with difficulties, however. A general equilibrium model of trade and growth would have to be constructed, the model would have to be validated by in-sample dynamic simulation, and then used for counterfactual simulation. In our case, this would involve estimating how high trade and

growth would have been among the FTA members without the FTA.

I will begin, instead, with a more down-to-earth and less elegant but still legitimate method of estimating the economic effects of NAFTA on Mexico by comparing (1) the growth of intra-Mexico-US trade, on the one hand, to the growth of total Mexican trade, on the other, during the first dozen years (i.e. until 2005) of NAFTA's operation and also until 2008 (when the NAFTA accord became fully operational) and (2) by comparing the flow foreign direct investment (FDI) from the United States to Mexico, to total FDI to Mexico, over the same periods. I will then present the results of a counterfactual simulation of the effect of NAFTA on trade, FDI, growth, inflation, and other economic and financial variables.

#### The effects of NAFTA on Mexican trade

Table 1 shows the level and growth of Mexican exports to the United States as well as total Mexican exports to the rest of the world from 1984–1993 (i.e. during the decade before the formation of NAFTA) and during the first dozen years since the creation of NAFTA (i.e. until 2005) and also until 2008. The table shows that from 1984–1993, total Mexican exports grew from USD 29.4 billion in 1984 to USD 51.9 billion in 1993, or at an average yearly rate of 5.5 percent. On the other hand, Mexican exports to the United States grew from USD 18.1 billion in 1984 to USD 40.4 billion in 1993, or at a yearly average rate of 7.6 percent. Thus, from 1984–1993 (i.e. in the decade before NAFTA), Mexican

**Table 1**

#### Mexico's exports: 1984–1993, 1994–2005 and 1994–2008 (billion US dollars)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average growth 1984–1993
Total	29.4	27.2	22.0	28.0	30.8	35.3	41.0	42.9	46.2	51.9	5.5%
To US	18.1	19.1	17.7	20.3	23.3	27.1	30.5	31.5	35.6	40.4	7.6%
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average growth 1994–2005
Total	60.9	79.5	96.0	110.4	117.5	136.4	166.1	158.8	161.0	164.8	
To US	50.1	62.8	75.1	86.7	95.4	110.6	137.0	132.6	136.1	139.8	
Year	2004	2005	2006	2007	2008						Average growth 1994–2008
Total	188.0	214.2	249.9	271.9	291.3						9.3%
To US	158.3	173.5	202.0	214.8	220.3						9.2%
											8.7%
											8.4%

Sources: WTO (2009); US Department of Commerce.

exports to the United States grew more rapidly than total Mexican exports.

From Table 1, we see that in the dozen years of NAFTA's operation (i.e. until 2005) and also until 2008, the *total* exports of Mexico increased at about the same rate as Mexican exports to the United States. We would have expected, instead, that intra-FTA trade would grow faster than extra-FTA trade because of the elimination of trade barriers among member countries but not with respect to nonmembers. Actually, the increase in Mexican exports to the United States jumped by an average of 28.3 percent per year from 1991–1993 in anticipation of NAFTA, as compared with an average increase of 21.0 percent for total Mexican exports over the same period. But Mexican exports to the United States had been growing faster than the total exports of Mexico from 1984.

Similarly, Mexican exports to the United States grew much faster from 1994–2000 than from 2001–2005 or from 2001–2008, but over the entire 1994–2005 and 1994–2008 Mexican exports to the United States grew at a slightly lower rate than total Mexican exports. Thus, NAFTA seems to have benefited Mexico (and the United States) by leading to a more rapid expansion of trade in general for the three years preceding and for the seven years following the creation of NAFTA as a result of the general liberalization of trade (and the signaling of Mexico's commitment to further liberalization and reform) rather than by a more rapid increase of Mexican-US trade, as such, *in relation to total Mexican trade*.

The pattern of trade increase as a result of NAFTA also seems somewhat different from that arising in the European Union. Table 2 shows the value of total exports, intra-regional-trade-agreement (RTA) exports, and intra-RTA exports as a percentage of the total RTA exports of the European Union (EU) and NAFTA in 1990, 1995, 2000, 2005, and 2008. The table shows that the EU has a larger percentage of intra-RTA trade than NAFTA, but intra-RTA increased only slightly for the EU between 1990 and 2005 and between 1990 and 2008,

**Table 2**

**Total and intra-EU and intra-NAFTA trade:  
1990, 1995, 2000, 2005 and 2008**  
(billions US dollars and percentages)

NAFTA exports (billion US dollars)			
Year	Total	Intra-NAFTA	Intra-NAFTA as percentage of total
1990	562	240	42.8
1995	857	394	46.0
2000	1,225	682	55.6
2005	1,478	824	55.8
2008	2,036	1,015	49.9
EU exports (billions US dollars)			
Year	Total	Intra-EU	Intra-EU as percentage of total
1990 (EU15)	1,482	980	66.1
1995 (EU15)	1,937	1,295	66.9
2000 (EU15)	2,251	1,392	61.9
2000 (EU25)	2,437	2,523	67.5
2005 (EU25)	4,001	2,673	66.8
2008 (EU27)	5,898	3,974	67.4

Source: WTO (2009).

while for NAFTA it increased significantly. The big jump in intra-NAFTA trade, however, occurred during the first five years of NAFTA.<sup>1</sup> Intra-EU trade also increased in the years immediately after its creation (not shown in Table 2), but afterwards intra-EU trade expanded at about the same rate as total EU trade. Also note that there seems to have been no similar increase in intra-EU trade in anticipation of and immediately after the EU-expansion from 15 to 25 members in 2004 and from 25 to 27 members in 2008.

#### The effects of NAFTA on the inflow of FDI to Mexico

Another way by which a FTA can benefit a member nation is by encouraging an inflow of FDI, thereby stimulating the growth of the nation. Table 3 compares the inflow of FDI to Mexico, in total and from the United States, before and since the creation of NAFTA. The table shows that from 1984–1993, total FDI into Mexico averaged USD 2.8 billion per year as compared to USD 1.1 billion, or 39 percent of the total, coming from the United States. The big jump in total FDI to Mexico during this period occurred in 1991, perhaps in anticipation of NAFTA.

<sup>1</sup> The sharp decline in Mexican intra-NAFTA exports as a percentage of the total exports from 55.8 in 2005 to 49.9 in 2008 was the result of the sharp reduction in US imports from Mexico as a result of the economic crisis in the United States. In 2007, the corresponding percentage was 51.6 (still lower than the value of 55.8 in 2005) as a result of the approaching US crisis.

Table 3

**Foreign direct investments inflows to Mexico:  
1984–1993, 1994–2005 and 1994–2008**  
(billion US dollars)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average 1984–1993
Total	1.5	2.0	2.0	1.2	2.0	2.8	2.6	4.8	4.4	4.4	2.8
from US	0.3	0.5	-0.1	0.3	0.6	1.4	1.9	2.3	1.3	2.4	1.1
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Total	11.0	9.5	9.2	12.8	12.7	13.9	18.1	29.8	23.6	16.6	
from US	4.5	3.0	2.4	5.6	4.7	8.2	4.2	14.2	5.2	3.7	
Year	2004	2005	2006	2007	2008					Average 1994–2005	Average 1994–2008
Total	23.8	22.3	19.8	27.3	23.2					16.9	18.2
from US	6.4	6.8	10.6	8.8	7.2					5.7	6.4

Sources: IMF (2010); US Department of Commerce.

From 1994–2005, total FDI to Mexico averaged USD 16.9 billion per year as compared with USD 5.7 billion, or 34 percent of the total coming from the United States. The corresponding figures for 1994–2008 are, respectively, 18.2, 6.4 and 35. The big jump in FDI to Mexico in total and from the United States occurred in 1994 (the first year of NAFTA's operation) and then again in 2001 (eight years after the start of NAFTA). As in the case of trade, therefore, FDI to Mexico seemed to have increased as the general result of the liberalization of foreign trade and investments that accompanied the creation of NAFTA and not as a direct and specific result of NAFTA itself (since US FDI to Mexico did not increase more rapidly than total FDI to Mexico during the NAFTA period).

#### NAFTA's effects on Mexico's growth

Table 4 shows the growth of real GDP in Mexico before and after the formation of NAFTA. The expectation was that by stimulating the flow of trade and investments, a FTA would increase specializa-

tion in production and efficiency in general throughout the economy of a member nation, and thus speed up its rate of growth. The specific effect of NAFTA on Mexico's growth, however, can only be measured by estimating what growth in Mexico would have been without NAFTA and comparing that with its actual growth (i.e. by counterfactual simulation). As pointed out earlier, the reason for this is that growth depends on many other factors besides NAFTA and comparing actual growth before and after NAFTA simply cannot identify NAFTA's contribution.

For example, Table 4 shows that the growth of real GDP averaged 2.5 percent per year in Mexico from 1984–1993 (i.e. before NAFTA) and 2.8 percent from per year from 1994–2005 (i.e. after the creation of NAFTA) and 2.9 percent from 1994–2008. If we exclude the 1995 recession year in Mexico, yearly growth averaged 3.6 and 3.5 percent, respectively. But we cannot tell how much, if any, of the higher Mexican growth since 1994 can be attributed to NAFTA. That can only be measured by counterfactual simulation.

Table 4

**Growth of Real GDP: 1984–1993, 1994–2005 and 1994–2008 (%)**

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average 1984–1993
GDP	3.5	2.5	-3.6	1.8	1.3	4.2	5.1	4.2	3.6	1.9	2.5%
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
GDP	4.5	-6.2	5.5	7.2	5.0	3.6	6.0	-0.9	0.1	1.4	
Year	2004	2005	2006	2007	2008					Average 1994–2005	Average 1994–2008
GDP	4.0	3.2	4.9	3.3	1.5					2.8	2.9

Source: OECD (2010).

Table 5 shows long-run simulation results of NAFTA's impact on Mexico to the year 2005 and compares these to the actual outcome using the United Nations LINK Model of the world economy. During the 1995–2005 period, Mexican real GDP was estimated to grow at a rate of 5.2 percent per year with NAFTA, as compared with 3.8 percent without NAFTA. NAFTA was also expected to (1) reduce the Mexican inflation rate from 14.5 percent to 9.7 percent per year and the short-term interest rate from 18.3 percent to 13.0 percent, (2) increase the inflow of foreign direct investments (FDI) from USD 6.0 billion to USD 9.2 billion per year and the growth of exports from 8.3 to 10.4 percent, and (3) raise the Mexican trade deficit from USD 9.7 billion to USD 14.9 billion and net financial inflows from USD 10.6 billion to USD 14.7 billion per year.

The actual results, as yearly averages from 1994–2005, were as follows: a growth rate of real GDP of 2.8 percent per year, a rate of inflation of 13.9 percent, a short-term interest rate of 18.7 percent, an inflow of FDI of USD 16.9 billion, a growth of exports of 9.2 percent, a trade deficit of USD 7.7 billion, and net financial inflows of USD 16.8 billion. The actual results for 1994–2008 were similar to those for 1994–2005 (see the last column of Table 5).

Mexico did not realize more of the expected benefits from NAFTA because of its deep economic crisis in 1994–1995, the US recession in 2001 and slow

growth in 2002, and, more importantly, because of weak economic institutions and inadequate structural reforms, which limited Mexico's international competitiveness (Mexico ranked 47th out of 58 economies evaluated according to the 2010 *World Competitiveness Report*) in the face of increased competition from China. If we removed from the data 1995 (the recession year in Mexico) and also 2001 and 2002 (the years of recession and slow growth in the United States, which reduced US imports from Mexico), the average annual growth of real GDP in Mexico would be 4.5 percent for 1994–2005 and 4.1 for 1994–2008, which were hardly adequate to achieve a rapid increase in the standard of living of the nation (and less than half of China's growth rate over the same time period).

#### General effects of NAFTA on member nations

We now examine in more general terms the effect of NAFTA on Mexico, the United States and Canada. As we have seen, NAFTA benefited Mexico by indirectly leading to greater export-led growth resulting from increased access to the huge US market and by increasing inward foreign direct investments – all of which increased production efficiency and competition. Perhaps more significant than the change in the total volume of trade was the change in the composition of Mexican trade. As a result of vertical integration, Mexican trade shifted much more

toward intra-industry and intra-firm trade with the United States and Canada. Mexico suffered a net loss of jobs and incomes in agriculture, but these losses were more than matched by net increases in industry. With time, increasing employment opportunities and rising wages in industry are expected to reduce the pressure on Mexicans to migrate to the United States. Mexico's ability to benefit from NAFTA has been limited, however, by weak economic institutions and inadequate structural reforms of the economy.

The implementation of NAFTA benefited the United States by increasing competition in prod-

**Table 5**  
**Simulation of NAFTA's impact on the Mexican economy**  
(yearly averages: 1994–2005 and 1994–2008)

	Estimates with NAFTA	Without NAFTA	Difference	Actual results 1994–2005	Actual results 1994–2008
Growth of real GDP (%)	5.2	3.8	1.4	2.8	2.9
Inflation rate (%)	9.7	14.5	–4.8	13.9	12.0
Short-term interest rate (%)	13.0	18.3	–5.3	18.7	16.5
Inflow of FDI (bill. USD)	9.2	6.0	3.2	16.9	18.2
Growth of exports (%)	10.4	8.3	2.1	9.2	8.4
Trade deficit (bill. USD)	14.9	9.7	5.2	7.7	9.6
Net financial inflows (bill. USD)	14.7	10.6	4.1	16.8	16.2

Sources: Klein and Salvatore (1995); Hufbauer and Schott (2005); IMF (2010); OECD (2010).



uct and resource markets, as well as by lowering the price of many commodities to US consumers. Because the US economy is more than 15 times larger than Mexico's economy the US gains from NAFTA as a proportion of its GDP were much smaller than Mexico's, however. Furthermore, with wages more than six times higher in the United States than in Mexico, NAFTA led to a loss of unskilled jobs, but an increase of skilled jobs, for an overall net increase in employment in the United States of between 90,000 and 160,000 (see Inter-American Development Bank 2002). A more recent study by Hufbauer and Schott (2005), however, concluded that net gain in US jobs as a result of NAFTA may have been much smaller (and may even have resulted in a small net loss). Some States (such as Alabama and Arkansas) suffered while high-wage areas gained, but with a 15-year phase-in period and about USD 3 billion assistance to displaced workers, the harm to workers in low-income areas in the United States was minimized.

Free trade access to Mexico allows US industries to import labor-intensive components from Mexico and keep other operations in the United States rather than possibly losing all jobs in the industry to low-wage countries. Some of the jobs that Mexico gained during the years immediately preceding and following the creation of NAFTA did not, in fact, come from the United States but from other countries, such as Malaysia, where wages are roughly equal to Mexico's. As a condition for congressional approval of NAFTA, the United States also negotiated a series of supplemental agreements with Mexico governing workplace and environmental standards (to prevent US firms from moving all of their operations to Mexico to take advantage of much more lax labor and environmental regulations), as well as to protect some American industries against import surges that might threaten them.

NAFTA did not directly affect Canada in a significant way because Canada had already negotiated a free trade agreement with the United States in 1988, and so most of its economic effects on the two countries had already taken place by the time NAFTA came into effect in 1994. Indeed, one could say that the primary reason for Canada joining in the NAFTA negotiations was to protect its trade interests with the United States. Canada was and remains the largest trade partner of the United States, Mexico was second until 2006 when it was displaced by China, and Japan is fourth.

### Summary and conclusions

The economic effects of NAFTA on Mexico have been discussed and measured mostly in terms of their effect on employment on both sides of the border and by the increase in Mexico-US trade and investments, before and after NAFTA. These are not the appropriate ways to measure the effects of a free trade area on a member state. The theoretically correct way of measuring the economic effects of a FTA on a member nation is through its effects on trade, investments, competition and efficiency. It is through these effects that the growth and employment in the nation are affected. To measure the direct effects of a FTA on member nations requires using a counterfactual simulation. That is, comparing trade, investments, competition, and efficiency in general and, through them, their effect on growth and employment in the nation, with and without the FTA.

In the case of NAFTA, the benefits flowing to Mexico seem to have resulted more from the general liberalization of trade and investments than directly from NAFTA, as such. That is, the general liberalization of trade and investments that accompanied NAFTA led to a general increase in Mexican exports and inflows of FDI, which increased specialization, competition, productivity and efficiency in Mexico. But the increase in total Mexican exports and FDI inflows from the rest of the world was as large as or larger than that from the United States. Furthermore, most of the (indirect) benefits that Mexico received from NAFTA occurred in the years immediately preceding the creation of NAFTA rather than in the years soon after its creation. Mexico was unable to capture more of the potential benefits from NAFTA or for a longer period of time because of the economic crisis that afflicted Mexico in 1994–1995, the US recession in 2001 and slow growth in 2002, increased competition from China, but, most importantly, because Mexico failed to adequately restructure and liberalize its economy and improve the education and training of its labor force.

The implementation of NAFTA benefited the United States by increasing competition in product and resource markets, as well as by lowering the prices of many commodities to US consumers. Because the US economy is so much larger than Mexico's, however, US gains from NAFTA as a proportion of its GDP have been much smaller. Canada was the least affected by NAFTA because Canada had already negotiated a free trade agreement with

the United States in 1988, and so most of its economic effects had already taken place by the time NAFTA came into effect in 1994.

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