Employment, Trade and Foreign Investment Effects of NAFTA

Calvin D. Siebert*
Mahmood A. Zaidi**

The economic implications of the North American Free Trade Agreement[1] (NAFTA) have been a topic of political controversy in the United States, Mexico and Canada for several years. Despite the recent adoption of NAFTA by the United States, NAFTA will probably remain politically controversial for the next several years.

The purpose of this Article is to provide a theoretical and empirical overview of the economic basis of the controversy and not to provide additional evidence on the impact of NAFTA. While most economists would agree that movement toward free trade is improving, any such change will result in some gainers and some losers. In particular, there will be some employment increases and decreases from the elimination of tariff walls between the countries. Employment levels in both the import-competing and export industries will be affected with import-competing industries likely to bear the brunt of the impact.

NAFTA, however, is more than a trade agreement. It also liberalizes investment.[2] In fact, one of the key reasons for Mexico's participation was the need to attract investment.[3] The idea was to bring in foreign capital in order to be able to import goods and services for the development of Mexican infrastructure, manufacturing, agriculture, etc. This leads to a conflict between whether NAFTA should be a trade agreement which stresses the opportunities for Mexican exports or whether it should stress in-

* Professor of Economics, University of Iowa, Iowa City.
** Professor and Director, International Programs, University of Minnesota Carlson School of Management, Minneapolis.

1. North American Free Trade Agreement, Dec. 17, 1992, Can.-Mex.-U.S., 32 I.L.M. 289, 32 I.L.M. 605.

2. *See generally id.* ch. 11-16.

3. *See* John Whalley & Colleen Hamilton, *The Intellectual Underpinnings of North American Economic Integration*, 4 MINN. J. GLOBAL TRADE 43, 64 (1995) (discussing the economic and political reasons for the passage of NAFTA).

vestment liberalization. These two foci give rise to rather different views about the real appropriate exchange value of the peso and ties into the recent peso crisis in Mexico.[4]

Part I of this Article provides an overview of the theoretical literature on the employment and economic impacts of a movement to free trade. Part II evaluates some of the empirical studies which attempt to quantify the effects. There has, of course, been a vast outpouring of literature on the effects of NAFTA. The authors cannot review every study. However, we hope to provide an overview or consensus view on the effects of NAFTA. One conclusion we reach is that the long-run effects will not be very great. We also provide some suggestions why the political fallout from NAFTA has been so great given the relatively small economic effects in the long run. Part III emphasizes that NAFTA is more than a trade agreement and shows how the investment side of the agreement relates to the current peso problem.

I. SOME GENERAL PRINCIPLES

From the theory of comparative advantage one can derive the following implications about the gains of trade:

1. If a country's relative domestic prices are, in the absence of trade, different than the relative prices of the country with which they would trade, the country can increase its income by trading.
2. The smaller the country, the greater the potential gains from trade, but all countries benefit to some extent.
3. A country will gain the most by exporting commodities that it produces using its abundant factors of production most intensively while importing those goods whose production require more of its scarce factors of production. Some of the implications of the theory of comparative advantage can be seen in Figure 1. We show the production possibilities curve and community indifference curve for a country which has abundant labor and scarce capital, e.g., Mexico, with the production possibilities curve drawn to denote this fact. That is, in order to produce some of the labor-intensive goods it has to give up only a small amount of the capital-

4. Swen W. Arndt, *NAFTA and the Mexican Peso*, CLAREMONT POL'Y BRIEFS (Claremont Center for Economic Policy Studies, Commons Institute for International Economic Studies and Lowe Institute of Political Economy), Nov. 1994, at 2-3.

intensive goods. Before trade, Mexico produces at point A which is tangent to indifference curve I.

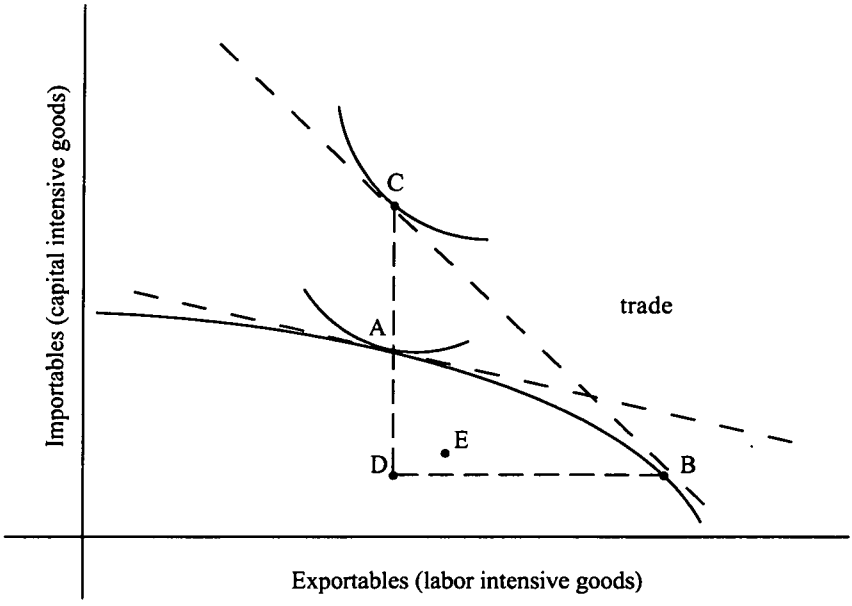

Figure 1. Gains from trade. A country, say Mexico, both consumes and produces at point A. When it opens up trade with a larger country, say the United States, it moves production to point B and can increase its consumption of both goods and consume at point C.

Now let's suppose trade is allowed. Mexico, as denoted in Figure 1, taking advantage of its factors endowment, will produce more of its labor-intensive product and less of its capital-intensive product and sell the additional labor-intensive product to the United States with whom it has opened trade. Note that the price of labor-intensive goods relative to the capital-intensive goods is higher in the U.S. than Mexico. Mexico will expand production of the labor-intensive product until it reaches point B on the production possibilities curve. Mexico exports the amount DB and imports the amount CD and moves to a higher level of consumption and welfare than it could reach without trade. Since Mexico is a small country relative to the United States, it will not affect the U.S. terms of trade much. Therefore, Mexico will gain the most from trade, although the United States will also gain.

The gains denoted are the result of eliminating trade barriers for a fixed amount and quality of domestic factors of production. These are known as the static gains from trade. In addition, there can be dynamic gains from trade. The dynamic gains result from an outward shift of the production possibilities curve. Such an outward shift results from an increase in the quantity or an improvement in the quality of the factors of production. For example, reducing the barriers to trade generally increases specialization and, as Adam Smith told us, this increases the productivity of the factors of production, particularly labor. There is learning by doing, which increases productivity over time. Trade expands the extent of the market, allowing economies of scale to be realized. In addition, as the industry favored by the elimination of trade barriers expands, it will create backward linkages for its inputs and create forward consumption linkages. As a result, income in the economy should increase. This will lead to increased savings which, if invested in the local economy, will increase capital stock over time. In sum, all these effects will shift the production possibilities outward over time and will lead the population to higher and higher levels of consumption and welfare.

The question naturally arises as to why, if all these positive effects from the elimination of the barriers to trade occur, is there so much opposition to freer trade? One reason is that even in the long run there will be some gainers and some losers in the movement to free trade. According to the Stolper-Samuelson Theorem,[5] there will be a tendency toward factor price equalization. For example, as production moves from point A to point B in Figure 1, resources will flow from capital-intensive goods production toward labor-intensive goods production. This should bid up the price of labor relative to the price of capital in Mexico until their relative price matches the U.S. terms of trade. The exact opposite is happening in the United States, where resources are flowing from labor-intensive production toward more capital-intensive production, and the price of labor falls relative to the price of capital in the United States. Since the United States has a much larger economy than Mexico, the terms of trade will adjust less for the United States than for Mexico. In

5. *See generally* Wolfgang F. Stolper & Paul A. Samuelson, *Protection and Real Wages*, 9 REV. ECON. STUD. 58 (1941). Stolper and Samuelson have shown that on certain restrictive assumptions, international trade necessarily lowers the real wage of the scarce factor of production without it being necessary to specify its pattern of consumption. MIT DICTIONARY OF MODERN ECONOMICS 404 (David W. Peaver ed., 3d ed. 1986).

any case, the reward to the scarce factor of production will be reduced. Since, presumably, the scarce factor of production in the United States is labor, the reward to labor should fall. In Mexico, the opposite should happen. In Mexico, where labor is plentiful and capital is scarce, the reward to labor should increase and the reward to capital should decrease.

The above is an example of the scarce factor of production losing from freer trade in the long run. More likely the opposition to the movement toward freer trade comes from the short-run costs which result from restructuring the economy. For example, as the Mexican economy moves from point A to point B in Figure 1, resources will have to relocate from import-competing capital-intensive industries toward labor-intensive industries. Firms will go out of business, workers will lose their jobs and in general there will be some structural readjustment of resources in the economy. Those who have to move will bear the costs of the adjustment process. They may have to relocate and retrain in order to obtain jobs in the expanding labor-intensive industries. Some workers will not be able to make the transition. For example, some may have to go into early retirement. So even if the transition is smooth, there will be losers along the way.

Opponents of freer trade argue that the transition will not be smooth. At least in the short run, wages and prices will not adjust enough to clear the markets. As a result, the initial reaction to the elimination of trade barriers will not be a smooth transition of resources from capital-intensive production to labor-intensive production, but a movement of resources — labor and business plant and equipment — into unemployment. Instead of movement along the production possibilities curve in Figure 1 from point A to point B, the movement will be from point A to point E; i.e., into unemployment and a position below the production possibilities curve. Only after a long and drawn-out transition would the economy move to point B.

As noted above, the theory of comparative advantage is based on a given quantity of factors of production with no international mobility of productive factors. That assumption is obviously not true for the NAFTA countries of Canada, Mexico and the United States. Although there is some restriction on the movement of factors of production across the international borders, in practice there is considerable movement of factors across borders. This possibly played a considerable role in the debate in the United States over NAFTA. Although U.S. businesses could invest in Mexico prior to NAFTA, the passage of

NAFTA makes it easier and, in fact, increases the incentive for U.S. firms to close their U.S. plants and move south to Mexico leaving unemployed U.S. workers in their wake.

Theoretical arguments can take us only so far, however, in our analysis of the economic and employment implications of NAFTA. We need to look at the empirical studies which attempt to quantify these effects. It should be noted that most of the costs from freer trade occur in the short run while most of the benefits occur in the long run.

II. MUCH ADO ABOUT NOTHING

When one looks at NAFTA objectively, it is difficult to understand why it drew so much opposition, particularly in the United States. We noted above that the impact of moving toward free trade will be greater on the smaller country.

Table 1
Alternative Measures of Size for the United States, Canada and Mexico[6]
(all numbers refer to 1988 unless otherwise noted)

	Gross National Product (Billions of 1988 U.S. Dollars)	Population (Millions)	Land Area (Thousands of Square Kilometers)	Purchasing Parity GDP per Worker (Thousands of 1985 International Dollars)
United States	4,886.6	245.9	9.4	37.6
Canada	440.9	26.1	10.0	32.4
Mexico	147.3	83.6	2.0	14.6

The data in Table 1 portray the Mexican and Canadian economies as much smaller than the U.S. and Mexico as much poorer than its two neighbors. For example, the GDP of the United States is more than twenty-seven times greater than Mexico's GDP. This suggests that NAFTA would have a much larger impact on Canada and, particularly, on Mexico than on the United States. In addition, the United States conducts only about one-quarter of its trade with its North American neighbors. Canada and Mexico, by contrast, undertake more than two-thirds of their foreign trade with the United States. Thus, the impact on

6. WORLD BANK, WORLD DEVELOPMENT REPORT 1990 178-79 (1990); Robert Summers & Alan Heston, *The Penn World Table (Mark 5): An Expanded Set of International Comparison, 1950-1988*, 106 Q.J. ECON. 327, 351-52 (1991).

the United States should be small relative to the trade impact on Canada and Mexico.

NAFTA would eliminate most tariffs among the three countries, substantially reduce non-tariff barriers to trade (NTBs) and ensure the nearly free flow of capital throughout the region. To see the full impact of the agreements on the three economies, we must keep in mind a number of considerations. First, the basic tariffs and NTBs at the start of the NAFTA agreements were not very high. For example, U.S. tariffs on imports from Mexico averaged about four percent. In 1991, Mexican tariffs on imports from the United States averaged about eleven percent. Similar low tariff levels existed between the United States and Canada when the Canadian and U.S. agreement went into effect in 1989.[7] It is true that in 1985 Mexico was one of the most closed economies in the world, with tariffs as high as 100%, licenses required to import all goods and laws which prohibited foreigners, with few exceptions, from owning more than forty-nine percent of any business or private property. However, Mexico has unilaterally reduced its tariffs and NTBs significantly during the last several years.

Second, these agreements will be phased in over a fifteen year period. Thus, any short run negative impacts should be small. For example, the job relocations which have been the focus of much recent debate will not be discernible in the macroeconomic data. Most of the projections of job losses and gains are in the four to five hundred thousand range, with most predicting a net gain for the United States. A 1992 study on the effects of NAFTA, for example, projects a net gain of 170,000 U.S. jobs over the first five years of the agreement.[8] Gross job displacements that occur annually in the dynamic U.S. economy are much larger than that. Over the five years up to 1990, some 8.9 million workers reported that they had been displaced from their jobs, meaning they are permanently laid off because of a plant closing or employer bankruptcy.[9]

Third, macroeconomic changes in the economy will swamp any effects of NAFTA on the economy. During the recent recessions in the United States and Canada, many more workers lost their jobs than will lose them as a result of NAFTA. In the

7. Free Trade Agreement, Jan. 1, 1989, Can.-U.S., 27 I.L.M. 281.

8. GARY CLYDE HUFBAUER & JEFFREY J. SCHOTT, NAFTA: AN ASSESSMENT 15 (1993).

9. Michael Podgursky, *The Industrial Structure of Job Displacement, 1979-1989*, MONTHLY LAB. REV., Sept. 1992, at 17, 20.

United States, the unemployment rate rose during 1989-1991 from about 5.5 to 7.5%. This means more than two million workers lost their jobs during that two year period. The unemployment rate in Canada increased from 7.5% in 1989 to 11.3% in 1993, which translates into more than one-half million additional unemployed.

Meanwhile, the Canadian dollar appreciated twenty percent relative to the U.S. dollar from 1987 to 1990.[10] This twenty percent appreciation of the Canadian dollar relative to the U.S. dollar resulted in a twenty percent price increase for both the Canadian import-competing and export firms. The Canadian-U.S. free trade agreement on the other hand resulted in only a three to four percent price disadvantage for import-competing firms as a result of Canadian tariff reductions. Canadian export industries gained from the free trade agreement since U.S. tariffs on these exported goods were lowered. In other words, the appreciation of the Canadian currency vis-a-vis the U.S. dollar had a six to seven times greater relative price effect than the change in tariffs which resulted from the free trade agreement.

A similar story can be told about Mexico, as seen in Table 2. From 1980 to 1987, the Mexican peso real exchange rate depreciated eighty-one percent vis-a-vis the U.S. dollar and appreciated relative to the U.S. dollar nearly the same amount by 1991. Such large swings in real exchange rates totally swamp any change in relative prices in the two countries which may result from the tariff reducing agreements.

Table 2
Real Exchange Rate Index Mexico/United States[11]

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Index	100	102.8	139.0	151.3	138.4	136.3	177.4	181.0	144.1	136.4	130.0	107.2

One of the strongest reasons for opposition to NAFTA in the United States at the time of its passage was the fact that NAFTA was more than a trade agreement. It also allowed the free flow of capital throughout the region. Opponents of NAFTA argued that U.S. firms would take advantage of lowered capital restrictions to move their companies to Mexico in order to exploit low wage rates.

10. Paul Wonnacott & Ronald Wonnacott, *Canada-U.S. Free Trade: Retrospect and Prospect*, 2 N. AM. REV. ECON. & FIN. 94, 99 (1991) .

11. Timothy J. Kehoe, Assessing the Economic Impact of North American Free Trade (Oct. 1992) (unpublished manuscript, on file with authors).

This argument ignores the fact that there were many incentives for U.S. firms to move to Mexico prior to NAFTA. Until a few years ago, Mexico followed what is termed an "import substitution strategy" of economic development. This was an attempt to substitute domestic production for imports of manufactured goods. This is done by setting high tariffs on imported manufactured goods and low or zero tariffs on the inputs used by the domestic manufacturing firms. The result is a high effective tariff rate. This rate increases with the decrease in the percentage of domestic added value in the manufacturing process. To see this, consider the effective rate of protection (ERP), which can be written as follows:

$$ERP = \frac{P_w t_o - C_w t_1}{P_w - C_w} \tag{1}$$

where P_w is world price of a unit of output, C_w is the world price of imported inputs used in producing a unit of output, t_o is the tariff rate on competing imports and t_1 is the tariff rate on imported inputs.

As an example, suppose that the production of $100 of cloth valued at world market prices requires $60 of imported inputs valued at world prices. Suppose also that the tariff rate on competing imports (t_o) is twenty percent, while the tariff rate on imported inputs (t_1) is ten percent.

$$ERP = \frac{100(.20) - 60(.10)}{100 - 60} = \frac{20 - 6}{40} = \frac{14}{40} = .35 \text{ or } 35\% \tag{2}$$

If, on the other hand, the domestic added value is only ten percent and the tariff rate on imported inputs (t_i) is zero, the tariff rate becomes

$$ERP = \frac{100(.20) - 90(0)}{100 - 90} = \frac{20}{10} = 2 \text{ or } 200\% \tag{3}$$

This tariff structure provides a strong incentive for foreign firms to enter into a joint venture with Mexican businesses to get behind these high tariff walls into the Mexican market. As the example shows, the lower the Mexican content of the product, the higher the tariff walls. This provides strong incentives for these firms to enter into assembly type operations which require low cost unskilled labor.

The movement of firms south of the border was further stimulated when the Maquiladora, or free trade zone, program was set up mainly along the Mexico-U.S. border. This allowed

U.S. companies to establish assembly operations along the Mexican border. The firms could import parts from the U.S. duty free, assemble them just across the Mexican border using inexpensive unskilled Mexican labor, and export the assembled products to the U.S. with duty paid only on the Mexican added value. The Maquiladora operation has expanded greatly in recent years. By January 1992, the program included about 1,954 factories, employing about half a million workers.[12] This rapid growth has also created environmental problems along the U.S.-Mexican border.

Thus, much U.S. foreign investment has already flowed south of the border. As Table 3 shows, the amount of total foreign investment in Mexico has increased in recent years as the Mexican economy has grown more rapidly and has become more open. It is true that the level of foreign investment, particularly portfolio investment, in Mexico decreased from 1993 to 1994. This was due, however, more to the financial crisis which occurred toward the end of 1994 than to NAFTA. We discuss this in more detail in Part III.

Table 3
Foreign Investment in Mexico[13]
(millions of U.S. dollars)

Year	1986	1987	1988	1989	1990	1991	1993	1994
Direct Investment	1,522	3,248	2,595	3,037	2,622	4,762	4,389	7,980
Portfolio Investment	—	—	—	493	1,995	7,540	28,919	8,186
Total	1,522	3,248	2,595	3,530	4,628	12,302	33,308	16,166

Both Mexico and Canada have had large capital inflows over the past several years. This has led to the real appreciation of their currencies alluded to above. No doubt some capital inflows have occurred in anticipation of NAFTA, but most were the result of macroeconomic influences which have a greater impact on the two economies than NAFTA.

The above discussion centered on the macroeconomic influences on the three economies which are part of NAFTA. There have also been a number of more microeconomic-level studies

12. Kathryn Kopinak, *The Maquiladorization of the Mexican Economy, in* THE POLITICAL ECONOMY OF NORTH AMERICAN FREE TRADE 141 (Ricardo Grinspun & Maxwell A. Cameron eds. 1993).

13. Kehoe, *supra* note 11, at table 5; BANCO DE MEXICO, INFORME ANNUAL 1994, 181 (1994).

using multisectoral general equilibrium models to analyze the impact of eliminating the barriers to trade. A whole industry has arisen applying these general equilibrium models to measure the quantitative impact of NAFTA. Fortunately, these efforts have been summarized and evaluated in a paper by Drusilla K. Brown.[14] Our discussion here highlights the results and draws heavily on her analysis. Briefly, the applied general equilibrium models work as follows. The modeler sets up a model which specifies the factors of production, the nature of technology and household preferences. The firms employ these factors and supply output with the goal of maximizing profits. Households supply the factors of production, receive factor payments and purchase consumer goods in such a manner as to maximize utility. After the model has been estimated, the modeler can perform counter-factual experiments in which the trade barriers are modified and eliminated. The models are estimated and the economic impact of changes in trade barriers can be evaluated.

The overall size of the impact depends on modeling assumptions. The first generation of these models assumed constant returns scale technology and perfectly competitive goods markets. In these models the impact of NAFTA is small since they only incorporate the gains due to countries expanding the production of goods in which they have a comparative advantage and thereby increase efficiency within North America. For example, one model calculates the effect of a three-country agreement which removes tariffs only.[15] Mexico's welfare rises only 0.11% and U.S. welfare rises by 0.07%. If, in addition, the non-tariff barriers (NTBs) were removed, the gains are larger: 2.28% for Mexico and 1.67% for the United States.

Such small gains are not unexpected given the size of the tariffs that will be removed. In addition, these models include the assumption of national product differentiation. Product differentiation on both the import and export sides tends to dampen the response of the domestic price system and lower the response to price changes. When this assumption is dropped, the responses are greater.

---

14. Drusilla K. Brown, The Impact of a North American Free Trade Area: Applied General Equilibrium Models (June 8, 1992) (unpublished manuscript, on file with authors).

15. DAVID ROLAND-HOLST ET AL., NORTH AMERICAN TRADE LIBERALIZATION AND THE ROLE OF NONTARIFF BARRIERS, Model I (Mills College Working Paper, Apr. 1992).

The small responses of the first generation models led numerous modelers to incorporate economies of scale and imperfect competition in their models.[16] The modelers argued, particularly for Canada and Mexico, that the size of the market was not large enough to use all the economies of scale in certain industries. Also, the small size of the markets would tend to lead to imperfect competition. More gains would result if the gains in efficiency from economies of scale and price competition were added to the models.

Table 4
Applied General Equilibrium Estimates of the Impact of NAFTA[17] Changes in Economic Welfare
(total amounts shown in billions of U.S. dollars)

	Mexico		Canada		United States	
Scenario	Total	Percent GDP	Total	Percent GDP	Total	Percent GDP
NAFTA Tariffs, NTBs	1.98	1.6	3.51	0.7	6.45	0.1
NAFTA Tariffs, NTBs Foreign Investment	6.30	5.0	3.66	0.7	13.23	0.3
U.S.-Mexico Tariffs, NTBs	1.93	1.5	0.08	0.0	3.66	0.1
U.S.-Mexico Tariffs, NTBs Foreign Investment	6.26	4.9	0.23	0.0	10.65	0.2
U.S.-Canada Tariffs only	0.04	0.0	3.36	0.6	2.87	0.1

The results reproduced in Table 4 are typical of the results of the impact of NAFTA on welfare for the models which include economies of scale and the elimination of price imperfections. The impact of NAFTA as a percentage of GDP is largest in Mex-

16. *See, e.g.*, Horacio E. Sobarzo, *A General Equilibrium Analysis of the Gains From Trade for the Mexican Economy of a North American Free Trade Agreement, in* MODELING NORTH AMERICAN ECONOMIC INTEGRATION (Patrick J. Kehoe & Timothy J. Kehoe eds., 1995); Drusilla K. Brown et al., *A North American Free Trade Agreement: Analytical Issues and Computational Assessment*, 15 WORLD ECON. 11 (1992); David Cox & Richard G. Harris, *North American Free Trade and Its Implications for Canada: Results from a C.G.E. Model of North American Trade*, 15 WORLD ECON. 31 (1992); ROLAND-HOLST ET AL., *supra* note 15.

17. Brown et al., *supra* note 16, at 22.

ico and smallest in the United States, with Canada in between. Note that with the elimination of tariffs and NTBs, the impact of NAFTA remains, except possibly for Mexico, very small. Allowing foreign investment to flow into Mexico from the United States or from the rest of the world has a big impact.

Unfortunately, the overall impact of NAFTA depends on the modeling assumptions employed in building various models. Drusilla Brown explains this in detail in her summary.[18] For our purpose here, we should note that capital flows are exogenously imposed in all the models. How much capital flow a NAFTA agreement would create is an open question. U.S. opponents of the agreement argued that the flow from the United States into Mexico of direct investment would be substantial, resulting in a negative impact on the U.S. economy. Proponents, on the other hand, reached the opposite conclusion.

In addition, the degree of market imperfections and the available economies of scale are also set by the modelers. The greater the current market imperfections and the larger the economies of scale which are available, the greater the benefits derived from NAFTA. However, different models obtain different results depending on the assumptions made. Most modelers vary their assumptions to see how sensitive the results are to crucial assumptions in their model. However, it is important to note that there is a net welfare gain for all countries from NAFTA under a wide range of underlying assumptions.

It is also interesting to note that the Stopler-Samuelson result,[19] which predicts that the real return to at least one factor should fall in each country as a result of trade liberalization, does not hold true in most of the models. Under Stopler-Samuelson, the United States, as the labor-scarce country, should suffer a decline in real wages and Mexico should experience a decline in the return to capital. These models do not show this quantitative result. In particular, the models show that both real wages and the real return to capital in all countries increases. In the context of increasing returns to scale and the market imperfections which freer trade eliminates, this result is not too surprising. What is troubling, however, is that it occurs even in models without economies of scale and initial market imperfections.

One positive aspect of these models is that they provide enough details so that sectors which will probably expand and

18. *See generally* Brown, *supra* note 14.
19. *See supra* note 5 and accompanying text.

sectors which will contract can be pinpointed. The results are not too surprising. For example, agriculture will expand, with grain and oil seed production expanding in Canada and the United States and contracting in Mexico. Sugar producers and apparel producers will lose market share to Mexican producers. The results for the automobile and textile industries are ambiguous. However, these results depend on how much the NTBs will be removed and how much domestic content is written into the law. Most of the models were estimated before the treaty was finalized. One important future use of these models would be to evaluate the impact of all the exceptions which have been written into the treaty.

Another fact should be mentioned. NAFTA is a trilateral agreement and not a multilateral agreement, thus the tariffs and NTBs between the treaty signatories and countries outside the North American Free Trade Area will remain in force. The treaty, therefore, will cause some trade diversion. However, the models do seem to agree that benefits from the trade created as a result of NAFTA will more than offset the trade diverted by the treaty. This is particularly true of Canada and Mexico, since such a large share of their trade already occurs within North America. U.S. tariffs, however, are already so low that consumption distortions created by NAFTA should be quite small.

These static models leave a number of important questions unanswered. For example, they are not able to provide evidence on the implications of an agreement for trade balance, exchange rates and capital formation. Recently, there have been attempts to remedy this problem by using endogenous growth models. Some of these place great emphasis on the importance of international trade in accelerating growth. For example, a model designed by Timothy Kehoe calculates that trade liberalization would raise Mexican output per worker fifty-one percent in thirty years.[20]

The problem with all these analyses, which are only in the beginning stages, is the same as that of all the endogenous growth modeling. The researchers note that economies grow faster than can be explained by the growth of inputs. They build a model which allows for increased productivity of inputs and search for one particular crucial input which can "explain" this increase in productivity. For some, this has been investment in

20. Timothy J. Kehoe, Towards a Dynamic General Equilibrium Model of North American Trade 20 (March 1993) (unpublished manuscript, on file with authors).

business, plant and equipment. For others, it has been investment in infrastructure. For modelers in the trade area and those studying the implications of NAFTA, it is the effects of increased openness in the economies which in various ways increases productivity growth. The basic problem with this approach is that each researcher has a "pet" explanation for the accelerating growth. There is no objective way to decide which is the correct explanation.

Although there has been considerable effort spent to build and estimate applied general equilibrium models in the past two decades, there has been little effort to evaluate their performances after the policy changes have taken place. One exception is a recent study conducted by Timothy Kehoe, Clemente Polo and Ferran Sancho, which assesses the performance of the model of the Spanish economy that the authors built in 1984-85 to analyze Spain's entry into the European Economic Community.[21] The authors compare the changes in relative prices, production levels, returns to factors of production and major components of GDP predicted by the model and the changes that actually took place. The comparisons lead to mixed results. The model appears to predict changes in real variables better than in relative prices. As shown in Table 5, the correlation between the model predictions and actual relative price changes is close to zero. The authors note that the poor prediction of the model resulted from external macroeconomic shocks, in particular, the fall of the international price of oil and the exceptionally bad harvest in Spain in 1986. When the model is adjusted for these unforeseen events, the correlation between the actual relative price changes and those predicted by the model improves substantially, as noted in column 3 of table 5.

21. Timothy J. Kehoe et al., An Evaluation of the Performance of an Applied General Equilibrium Model of the Spanish Economy (Oct. 1991) (unpublished manuscript, on file with authors).

Table 5.
Comparison of Spanish Model's Prediction with the Data[22]
(Percentage change in relative price)

Sector	Actual 1985-86	Model	Adjusted Model
1. Food and Nonalcoholic Beverages	1.8	-2.3	1.7
2. Tobacco and Alcoholic Beverages	3.9	2.5	5.8
3. Clothing	2.1	5.6	6.6
4. Housing	-3.2	-2.2	-4.8
5. Household Articles	0.1	2.2	2.9
6. Medical Services	-0.7	-4.8	-4.2
7. Transportation	-4.0	2.6	-6.6
8. Recreation	-1.4	-1.3	0.1
9. Other Services	2.9	1.1	2.8
Weighted Correlation with 1985-19862	1,000	-0.079	0.936

Change in sectoral price index deflated by appropriate aggregate price index.

Weighted correlation coefficients with actual changes 1985-1986. The weights used are: 1) 0.2540; 2) 0.0242; 3) 0.0800; 4) 0.1636; 5) 0.0772; 6) 0.0376; 7) 0.01342; 8) 0.0675; 9) 0.1617. These are the consumption shares in the model's benchmark year, which is 1980.

This exercise demonstrates a fact discussed earlier. Macroeconomic changes can swamp the prediction of these microeconomics-oriented models. The Spanish experience reiterates this fact. The Spanish experience shows that real exchange rate movements can swamp the effects of lowering tariffs. Between 1985, the year before Spain's entry into EC, and 1990 Spain's real exchange rate appreciated more than thirty-five percent. The real exchange rate is an index of the rate at which a domestic basket of goods trades for an international basket of goods. Such an appreciation would tend to discourage exports and encourage imports. In other words, the appreciation of the Spanish currency resulted in a price disadvantage of more than thirty-five percent for Spain's exporters, much more than the positive effects of any reduction in tariffs.

Given the fact that the short-run macro effects will more than offset the impact of NAFTA and that the long run welfare gains are relatively small, and given the low level of tariffs currently in force, some might argue that negotiating a trade agreement may not have been worth the trouble. Although from a macroeconomic perspective the gains may not be that large, the benefit-cost ratios are still quite substantial. For example, studies at the microeconomic level have attempted to measure society's benefits relative to the costs workers would endure if tariffs

22. Kehoe, *supra* note 11, at table 3.

were eliminated.[23] In the U.S. textile and clothing industries, the benefits to society would be $14 for each $1 cost to the workers. A Canadian study which included non-tariff barriers, showed a benefit-cost ratio of seventy to one. Therefore, there are considerable net benefits to be gained from elimination of trade barriers.

III. NAFTA AND THE PESO PROBLEM

As noted above, NAFTA is more than a trade agreement. It allows the free movement of capital throughout the region. The movement of foreign capital has been intertwined with the recent peso crisis in Mexico. This crisis is, in turn, another example of how the short-run macroeconomic changes can swamp the trade impact of NAFTA.

First, we need some background information. During 1993 and 1994, many analysts and commentators expressed concern that the peso was becoming "too strong". In 1994, the "real" value or purchasing power of the Mexican peso increased about ten percent.[24] The real exchange rate is the nominal rate adjusted for differences between U.S. and Mexican inflation rates. Thus, real peso appreciation can occur along with nominal depreciation of the peso if the Mexican inflation rate runs ahead of U.S. inflation. This is what had been occurring with the Mexican peso.

The Mexican authorities had been managing the nominal value of the peso by means of a crawling peg. Each day Mexican authorities allowed the nominal value of the peso to fall a predetermined amount. During 1993 and 1994, the Mexican authorities had not allowed the nominal value of the peso to fall as much as the difference between the Mexican and U.S. inflation rates. As a result, the real value of the peso increased.

Why was this a concern? It was a concern because of the contradictory nature of NAFTA from the point of view of Mexico.[25] On one hand, those who emphasized NAFTA as an agreement to liberalize trade argued that the peso should not increase in real value against the dollar since this would curtail Mexican exports to the United States. A higher real value of the peso would increase the dollar price of Mexican goods. On the import side, they see the appreciation of the peso as adding to the ad-

23. *See, e.g.*, WORLD BANK, 1984 WORLD DEVELOPMENT REPORT 40 (1984); WORLD BANK, 1987 WORLD DEVELOPMENT REPORT 152 (1987).

24. *See* Arndt, *supra* note 4, at 1.

25. *See generally id.*

justment problems of import-competing industries which have lost trade protection as a result of NAFTA. The outward signs of an overvalued peso were the large and growing trade deficit and a large current account deficit in the balance of payments, as shown in Table 6.

It is interesting to note that the trade deficit with the NAFTA countries did not increase much and that the deficit with the United States improved between 1993 and 1994. This evidence supports the view that trade changes in NAFTA did not create the financial crisis in 1994-1995.

Table 6
Mexico's Trade Deficit[26]
(in billions of U.S. dollars)

	1993	1994
Overall Trade Deficit	-13.5	-18.5
Trade Deficit with NAFTA Countries	-30.2	-3.2
Trade Deficit with U.S.	-3.4	+.37

Those, including the Salinas government, who focused on the investment liberalization aspect of NAFTA wanted a higher valued peso to attract foreign capital inflows to boost private capital formation and public infrastructure development to levels that Mexico's domestic saving rate alone could not support. A higher valued peso would lower the peso price of imports of U.S. capital goods needed by Mexican firms to modernize their plant and equipment.

This dichotomy of views resulted from two different visions of how best to promote Mexico's economic development. Those who want the peso's real value to remain low see economic growth as led by exports. A low value of the peso means that the dollar price of Mexican goods and services will be low. This will promote exports of Mexican goods to the United States. As exports expand, resources will be reallocated toward the export industry. Thus it would appear that a weak peso is especially attractive if growth in Mexico is to be concentrated in the export sector. This would, in addition, result in a current account surplus.

If, however, growth is to be more balanced throughout the economy and if domestic saving is believed not to be large

26. Private communication from Dr. Jaime SerraPuche, Visiting Fellow, Woodrow Wilson School of Public & International Affairs, Princeton University (Dec. 1995).

enough to support the desired growth rate, a strong peso is needed. A strong peso will attract foreign capital and investment goods. It will lead to a current account deficit and an inflow of foreign saving which can be used to invest more broadly throughout the economy.

Prior to the peso crisis in December 1994, the argument in favor of a strong peso which would attract foreign investment and saving had the upper hand. Policy makers had also been slowing the rate of inflation. From rates of more than 150% in 1987, annual inflation had been brought down to a single-digit level by 1993. With conservative monetary and fiscal policies, economic liberalization and the creation of NAFTA, Mexico enjoyed prospects for a high growth rate and capital inflows which allowed it to add to foreign reserves. These foreign reserves had risen to over $25 billion by the beginning of 1994. The future looked bright for Mexico.

Despite this rosy scenario, there were questions lurking in the background. Some observers feared that some of the capital inflows were not of the direct investment type, but were driven by short-term ephemeral considerations. The latter could be fickle and move out of Mexico as quickly as the funds came in. Capital of this type could destabilize the foreign exchange market and create problems in the fragile Mexican financial system. Policy makers had to be on guard for problems of this nature. In fact, during the three years prior to the crisis, Mexico attracted $91 billion in foreign capital, two-thirds being easy-to-withdraw portfolio investment.[27] In the face of potentially destabilizing foreign investment flows, stable domestic economic policies as well as stable political environments became essential.

Second, some economists worried that the real exchange rate was being allowed to increase too much.[28] As noted above, allowing the peso to appreciate in order to create substantial capital inflows was a goal of the Mexican government. This resulted in an overall balance of payments equilibrium based on a structure of capital account surpluses and current account deficits and a resulting large trade deficit. As noted above, not all economic observers agreed that this was the correct policy to pursue. Investors began to wonder if a much more rapid nominal depreciation of the peso was in the cards.

---

27. *Economic Survey of Mexico*, ECONOMIST, Oct. 28-Nov. 3, 1995, at Mexico Survey 1, Mexico Survey 5.

28. Rudiger Dornbusch, an MIT economist, was the most outspoken of this group. *See id.*

In the first part of 1994, a number of adverse political events added to this potentially volatile mix. These were the Chiapas rebellion, the March assassination of the presidential candidate of the ruling PRI political party and the September assassination of the ruling party's Secretary General. As the year progressed, other uncertainties arose. Questions were raised whether the ruling party's PRI candidate would lose. It was generally assumed that such a loss would lead to changes in economic policy less favorable for investment. As early as April 1994, nervous investors began to liquidate holdings of peso instruments.[29] With each new shock, foreign resources fell. At the start of the year reserves stood at twenty-five billion dollars but had fallen to six billion dollars by the end of the year. To avert a run on the peso, the Mexican government issued short-term dollar-indexed bonds called *tesobonos*. This was supposed to give investors enough protection to allow them to maintain their capital in Mexico. However, the measure was unsuccessful and the government found itself facing repayments of $29 billion worth of *tesobonos* in 1995.

In December 1994, Mexico was forced to allow the peso to float. It very quickly depreciated thirty-five percent against the dollar, from about 3.5 pesos per dollar to about 5.5 pesos per dollar. The peso has continued to fall, reaching a low 8.25 pesos to the dollar in November 1995 or a decline of about sixty percent in value since the crisis began.[30] The impact on the economy has been devastating. Real output has fallen more than nine percent since the crisis began, unemployment is up, inflation has increased to more than forty percent on an annual basis and the short-term interest rate rose to nearly ninety percent in March 1995 before the financial bail-out by the United States and the International Monetary Fund (IMF).[31] Some observers have argued that the current recession "is the deepest Mexico has seen since the great depression."[32] Once again, we see that the short-term macroeconomic changes have swamped any effects on trade flows. The large decline in value of the peso has turned the Mexican trade balance from a large deficit with the

29. Rogelio Ramirez De La O, *Reform of International Financial Institutions: A Mexican View*, 5 N. AM. OUTLOOK 67, 67 (1995).

30. *See* Craig Torres & Paul B. Carrol, *Mexico's Central Bank Shores Up Peso*, WALL ST. J., Nov. 11, 1995, at A3, A6.

31. Paul B. Carroll, *Optimism Remains for Mexican Economy*, WALL ST. J., Nov. 13, 1995, at A11.

32. Craig Torres & Paul B. Carroll, *Mexico's Economy Contracts Sharply*, WALL ST. J., Nov. 20, 1995, at A11.

United States to a surplus. In fact, the export sector in Mexico has shown some impressive gains.

In hindsight, one can see where Mexico went wrong. The government placed too much emphasis on the relatively stable nominal peso exchange rate. Given the relative inflation rates in Mexico and the United States, that meant that the real peso exchange was appreciating against the dollar. Given that maintaining the value of the peso was a top priority of the Mexican government, it found it necessary to follow rather restrictive monetary and fiscal policies in 1993. These policies led to a slowing Mexican economic growth rate. Mexico began to experience a serious problem of overdue loans in its banking system. Foreigners began to question the long-term prospects for the Mexican economy. This, along with the usual speculation against the peso, resulted in a situation ripe for crisis in 1994. In 1994, the Bank of Mexico monetized the outflow of short-term capital by issuing the dollar-indexed *tesobonos*. This made foreign investors even more nervous. The political instability in 1994 was the final straw that broke the camel's back.

It should be noted that despite the financial crisis, the long-term prospects for Mexico are quite good, assuming the political instability in the country can be resolved. Mexico's current account and its trade balance have moved from deficit to surplus. The financial bail out by the United States and the IMF seems to be working. Political and economic reforms seem to be continuing. Economic growth for 1996 is projected to become positive. Foreign companies have outlined plans to invest $6.3 billion in the country in 1996. This sum represents a fifty-three percent increase over 1995.[33]

IV. CONCLUSION

In this paper we have evaluated the economic basis of the controversy surrounding NAFTA. First, we highlighted the theoretical analyses of what the employment and economic impacts of a movement to free trade would be. We noted that, according to the theoretical literature, the countries will garner net benefits from the removal of trade barriers. However, there will be some net losers and there may be considerable transitional costs. Second, we provided an overview of the empirical studies which have attempted to quantify these economic effects. We found that, from a macroeconomic perspective, the magnitude of

33. *Foreign Investment in Mexico*, WALL ST. J., Dec. 5, 1995, at A14.

the net gains is not large. Given the size of the tariffs and NTBs this should not be surprising. Only by assuming significant economies of scale, market imperfections and foreign capital flows would the net gains be significant. Unfortunately, the size of the scale economies, market imperfections and foreign capital flows had been set arbitrarily by the researchers. Third, macroeconomic changes in the economies have a much larger economic and employment impact than does NAFTA. For example, a movement toward free trade appears to lead to a capital inflow which causes a significant appreciation of a country's real exchange rate. This movement in the real exchange rate more than offsets the price advantage for export firms from the reduction in tariffs. Recessions and other macroeconomic shocks have more employment effects than will result from NAFTA. The normal structural changes in a dynamic economy will create more employment impact in any given year than NAFTA would.

The question naturally arises as to why there is so much political controversy over the NAFTA proposal when: (1) it provides positive, but probably small, gains for the countries involved; (2) employment and other structural changes as a result of NAFTA will be small relative to the effects of normal macroeconomic changes in a dynamic economy; and (3) the effects will be spread out over fifteen years. Several answers come to mind. First, the gains from reducing trade barriers spread out across the population with each individual gainer benefiting only a little. On the other hand, the losses are concentrated on particular individuals. A textile worker, for example, who senses a possible job loss and who may have to retrain, move or retire early, feels the negative effects very strongly. Politicians can play on that fear. Second, the impacts of NAFTA are not widely understood and the specific impacts on particular industries, plants or jobs is not easily predictable. This leaves room for politicians to have a field day. They can exaggerate the impact for political purposes. This forces the other side to exaggerate the gains.

Finally, the recent peso crisis is another example of how short run macroeconomic changes can swamp the trade impact of NAFTA. This crisis resulted from a conflict in the policy to be followed under NAFTA in Mexico. Those who emphasized the trade expansion part of NAFTA wanted to allow the nominal value of the peso to depreciate enough so that the real value of the peso could remain stable. This would promote Mexican exports. Those who focused on the investment liberalization as-

pect of NAFTA argued that the real value of the peso must be allowed to increase in order to promote foreign investment in Mexico. The latter argument prevailed in the Salinas administration. With hindsight, one can say that the real value of the peso was allowed to increase too much. This, along with political instability in Mexico and rising interest rates in the United States, led to crisis.