Distinguishing NAFTA from the Peso Crisis

"Has NAFTA boosted trade on both sides of the border,…or has the free trade agreement boosted only U.S. imports from Mexico?"

SINCE THE 1994 mega-devaluation of the Mexican peso and the ensuing economic crisis, some critics of free trade have claimed that the North American Free Trade Agreement (NAFTA) has failed miserably. To a degree, the data appear to support their claim. In 1995, U.S. imports from Mexico grew nearly 25 percent, but exports dropped 11 percent. Has NAFTA boosted trade on both sides of the border, as its proponents claim, or has the free trade agreement boosted only U.S. imports from Mexico, as detractors argue?

Certainly, Mexico's economic crisis has something to do with the large decline in exports to Mexico. But looking at aggregate trade flows alone cannot reveal how much the peso crisis may have lowered trade or how much NAFTA may have helped boost trade. In this article, I use statistical techniques in an attempt to disentangle the impact of these two events on U.S.–Mexican bilateral trade flows. My estimates suggest that, although U.S. exports fell 11 percent in 1995, in 1996 they are 12 percent greater than they would have been *without* NAFTA. Imports are nearly 3 percent greater then they would have been without the trade agreement.

Measuring Bilateral Trade Flows

Effects of NAFTA. During 1994, the year NAFTA took effect, and before the peso crisis, U.S. exports to Mexico grew 22.9 percent and imports from Mexico grew 23.7 percent. That growth represented a healthy increase in trade compared with growth over the previous five years. From 1988 to 1993, U.S. exports grew 15 percent and imports grew 12 percent annually, on average. While some analysts have attributed 100 percent of this robust trade growth in 1994 to the effects of NAFTA, doing so is a mistake. The true effects of NAFTA actually may be much more or less than that simple calculation would suggest. The reason is because NAFTA did not take place in an economic vacuum.

Changes in the economies of the United States, Mexico and the rest of the world were under way as NAFTA took effect and would have likely influenced bilateral trade between the United States and Mexico. For example, U.S. real gross domestic product (GDP) increased 3.5 percent in 1994, which was positively related to an increase in the supply and demand for all imports and exports. As Chart 1 shows, U.S. imports and exports to the world, excluding Mexico, grew faster in 1994 than in the previous six years. In 1994, exports grew about 12 percent and imports grew over 23 percent. In 1993, exports grew only about 1 percent, while imports grew close to 7 percent.

Likewise, Mexican real gross domestic product increased 5.1 percent and the real value of the peso was quite high in 1994; both factors would have boosted U.S. exports to Mexico. As a result, NAFTA and its lower trade barriers were unlikely to be the only influences on bilateral trade flows.

To isolate the effects of NAFTA, one must account for the effects of changes in income, exchange rates and trade with other countries.[1] Only then can NAFTA's impact on trade be discerned. Thus, to measure the effects of NAFTA, I estimate empirically a model of bilateral trade flows that accounts for these economic fundamentals.

Effects of the Peso Crisis. Once the influence of changes in U.S. and Mexican income, exchange rates and trade with other countries are fully accounted for in the model of bilateral trade flows, the effects of NAFTA can be ascertained, even over the period of the

Chart 1
U.S. Trade with the World, Less Mexico

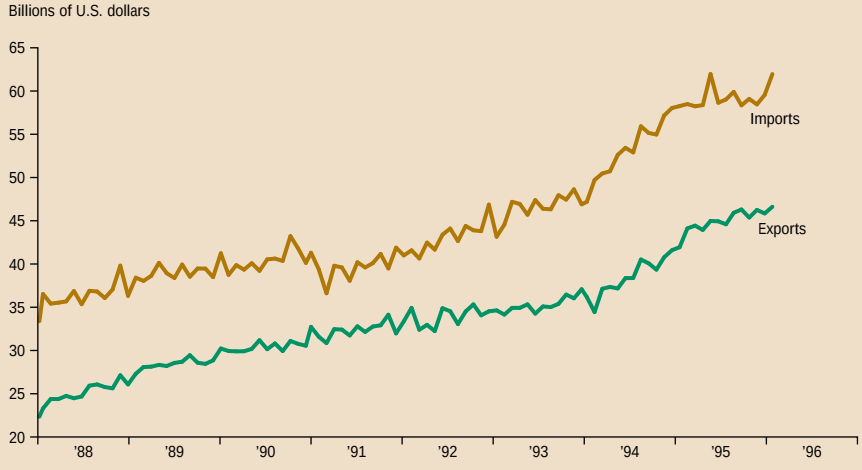
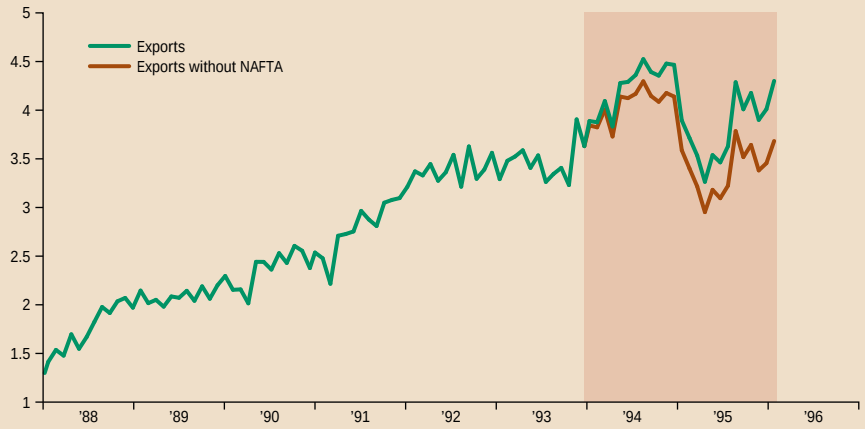


Chart 2
NAFTA's Impact on U.S. Exports to Mexico



peso crisis. NAFTA's impact is evident because the bilateral model accounts for the impact of economic fundamentals that would be affected by the peso crisis, such as exchange rates and incomes. Therefore, it is possible to get a good idea how NAFTA affected trade independently of the peso crisis.

But another important issue, aside from NAFTA, is what would have likely happened to U.S.–Mexican trade had there not been a peso crisis. Would trade have continued to expand, or would it have faltered anyway? To answer this question, one must estimate what would have happened to the determinants of bilateral trade flows without the peso crisis.

The peso crisis likely had its strongest effect on U.S.–Mexican bilateral trade through its impact on Mexican production, prices and the peso–dollar exchange rate. When the peso was dramatically devalued on December 20, 1994, the price of Mexican products suddenly became cheaper for U.S. residents to buy, while U.S. products became more expensive for Mexico residents. The likely result was lower Mexican demand for U.S. exports and higher U.S demand for Mexican imports. When the peso crisis worsened, Mexico fell into a deep recession that probably further weakened the country's demand for U.S. made goods.

I estimate the effects of the peso crisis by first examining the long-term behavior of Mexican production, the real value of the peso and Mexico's trade with the rest of the world. Once the long-run movements in these variables are determined, the unusual short-run effects of the peso crisis are excluded from these variables and the variables are reentered into the model to measure the crisis' effects on bilateral trade.[2]

Effects of NAFTA and the Peso Crisis

NAFTA. Charts 2 and 3 show the estimated effects of NAFTA on bilateral trade flows between the United States and Mexico. As the green line in Chart 2 indicates, exports are estimated to have grown faster than they would have, had there been no trade agreement. On average, U.S. export growth is about 7 percentage points higher per year with NAFTA.

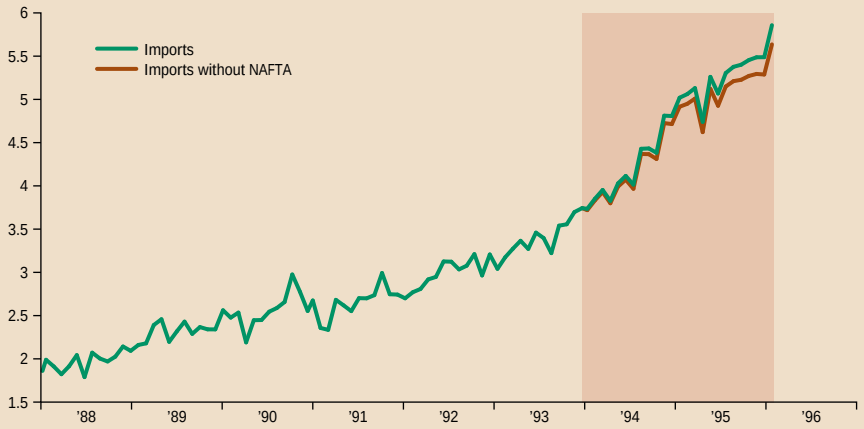
While the increase in growth is not extraordinary, the cumulative effect on

"I estimate the effects of the peso crisis by first examining the long-term behavior of Mexican production, the real value of the peso and Mexico's trade with the rest of the world."

DISTINGUISHING NAFTA *(continued)*

"After accounting for the effects of other economic variables…NAFTA has had an important positive effect…."

Chart 3
NAFTA's Impact on U.S. Imports from Mexico



exports since NAFTA was implemented is about $5 billion, or 12 percent more exports. Moreover, these effects should continue to grow because the phase-in of NAFTA's trade-liberalizing provisions is not scheduled to be complete until 2009.

For U.S. imports, as shown in Chart 3, the boost from NAFTA is smaller. On average, import growth is about 2 percentage points higher per year with NAFTA. Since NAFTA became law, the cumulative impact amounts to about $1.8 billion in additional imports, or about 3 percent more imports because of the agreement.[3]

The Peso Crisis. Charts 4 and 5 show what would have happened to trade had the peso crisis not occurred. Interestingly, while imports from Mexico do not seem to have been affected a great deal by the crisis, exports to Mexico were. U.S. exports fell dramatically, a decline that can be attributed

Chart 4
The Peso Crisis' Impact on U.S. Exports to Mexico

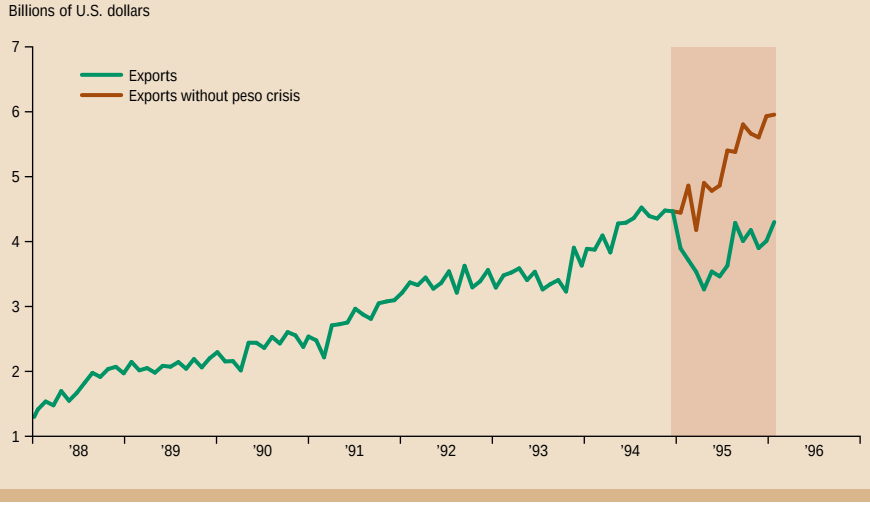
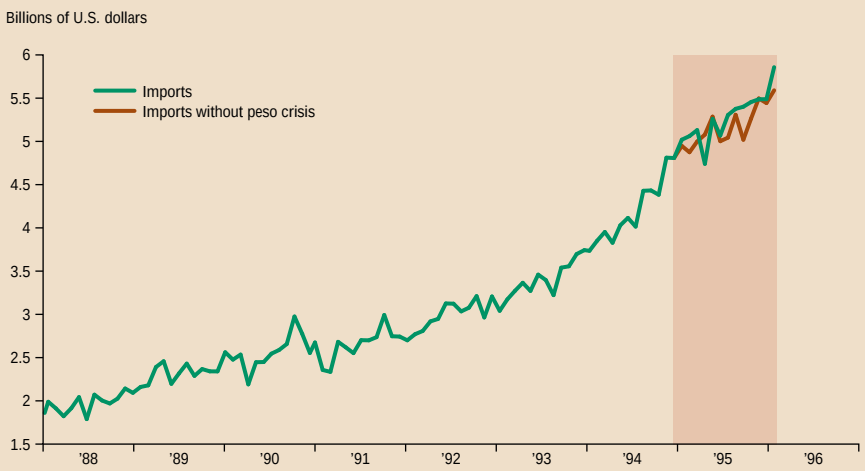


Chart 5
The Peso Crisis' Impact on U.S. Imports from Mexico



entirely to the peso crisis. According to the model's estimate, exports would have grown 22 percent without the peso crisis, rather than decline by 11 percent, as happened with the crisis.

Why were the effects of the peso crisis so great on exports to Mexico but so slight on imports from Mexico? Exports to Mexico were substantially influenced by the dramatic decline in Mexican consumer income. While the peso crisis generated a dramatic recession in Mexico, it had little perceptible effect on aggregate U.S. income. The peso crisis not only made U.S. goods more expensive for Mexicans, it also was associated with a sizable decline in their income. As a result, U.S. exports to Mexico suffered because of both an increase in relative price and a decline in Mexican consumers' income. NAFTA actually helped mitigate the decline in exports to Mexico that was inevitable, given the size of the Mexican recession.

Conclusion

The dramatic decline in U.S. exports to Mexico during 1995 can be traced to the peso crisis and the contraction in Mexican income, not to the effects of NAFTA. The devaluation of the peso not only made U.S. goods more expensive for Mexicans, it also caused Mexican income to fall. Both factors contributed to the decline in U.S. exports to Mexico. U.S. imports from Mexico, however, were not significantly affected by the peso devaluation.

After accounting for the effects of other economic variables—U.S. and Mexican incomes, prices, trade with the rest of the world and exchange rates—I estimate that NAFTA has had an important positive effect on U.S. exports to and imports from Mexico. Nevertheless, the largest gains from NAFTA may be the most difficult to quantify. Unlike conditions during previous periods of economic turmoil in Mexico, trade has continued to be relatively unimpeded during the peso crisis. After the 1982 debt crisis, Mexico imposed heavy restrictions on all of its imports in hopes of generating a trade surplus to buy down its foreign debt. It also restricted capital outflows and nationalized the banking system. NAFTA, by enhancing the economic ties between the United States and Mexico, likely limited capital outflow and helped facilitate a return of foreign investment and economic growth. Mexico

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DISTINGUISHING NAFTA *(continued)*

is now recovering from its deep recession. Exports to Mexico increased 6.9 percent and imports from Mexico increased 5.4 percent during the first five months of 1996.

—David M. Gould

Notes

I wish to thank Baoyuan Wang for excellent research assistance and comments. Mike Cox, Bill Gruben and Lori Taylor also provided helpful comments. All remaining errors are my responsibility.

1 See the box entitled "Modeling NAFTA's Impact: A Technical Appendix" for a description of the author's data and estimation technique.

2 Mexican industrial production, the real value of the peso and Mexican trade with the rest of the world are estimated with a second-order autoregressive model that includes a dummy variable for the peso crisis. Interestingly, after the effects of the peso crisis are excluded from these variables, the model still predicts declines in Mexican industrial production and the real value of the peso, although the predictions are not as great as what actually occurred. The technical appendix provides further details.

3 It should be noted, however, that while the effects of NAFTA are estimated to be positive, the statistical margin of error in these separate export and import figures is quite high. For the effects of NAFTA on total trade (exports plus imports), the figures are much more precise—significant at the 10-percent level. The relatively short period during which NAFTA has been in effect and the volatility introduced into the data from the peso crisis makes more precise individual estimates for exports and imports difficult to obtain.

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Modeling NAFTA's Impact: A Technical Appendix

The bilateral trade model used in this study is estimated utilizing monthly data from January 1980 through January 1996. All variables are seasonally adjusted and expressed in log first differences:

$$M_t = \alpha + \alpha_1 M_{t-i} + \alpha_2 I^*_{t-i} + \alpha_3 I_{t-i} + \alpha_4 E + \alpha_5 \bar{M}_{t-i} + \alpha_6 \bar{X}^*_{t-i} + \alpha_7 D88 + \alpha_8 N + \varepsilon, \text{ and}$$

$$X_t = \beta + \beta_1 X_{t-i} + \beta_2 I^*_{t-i} + \beta_3 I_{t-i} + \beta_4 E + \beta_5 \bar{X}_{t-i} + \beta_6 \bar{M}^*_{t-i} + \beta_7 D88 + \beta_8 N + \mu,$$

where M is U.S. imports from Mexico, X is U.S. exports to Mexico, I^* is Mexican industrial production, I is U.S. industrial production, E is the real peso–dollar exchange rate, $\bar{M}$ is total U.S. imports excluding those from Mexico, $\bar{X}$ is total U.S. exports excluding those to Mexico, $\bar{M}^*$ is total Mexican imports excluding those from the United States, $\bar{X}^*$ is total Mexican exports excluding those to the United States, $D88$ is a dummy variable for the recent period in which Mexico began opening up to foreign trade and started its macroeconomic stabilization program. It equals 1 beginning in January 1988. N is a dummy variable for the period in which NAFTA was implemented. It equals 1 beginning in January 1994. ε and μ are iid error terms.

The equations were estimated with ordinary least squares and the errors terms checked to see if they followed a white noise pattern. The lag structure of the equation was determined according to Akaike information criterion. To determine how trade has grown with NAFTA, the estimated coefficient on the dummy variable for N was excluded from the exports and imports equations and then these trade flows were dynamically forecast.

To estimate the effect of the peso crisis, secondary equations were estimated for I^*, E, $\bar{X}^*$, and $\bar{M}^*$ of the form

$$VAR_t = \gamma + \gamma_1 VAR_{t-1} + \gamma_2 VAR_{t-2} + \gamma_3 D82 + \gamma_4 D85 + \gamma_5 PESO + \gamma_6 PESO*TIME + \delta,$$

where VAR represents I^*, E, $\bar{X}^*$ or $\bar{M}^*$, $D82$ is a dummy variable that is equal to 1 during the 1982 debt crisis and 0 otherwise, $D85$ is a dummy variable that is equal to 1 during the 1985 recession and 0 otherwise, $PESO$ is a dummy variable that is equal to 1 during the 1995 peso crisis (December 1994 to May 1995) and 0 otherwise, $PESO*TIME$ is an interaction term of the peso crisis dummy variable with a time trend, and D is an iid error term.

To estimate the effects of the peso crisis, I calculate each estimated variable excluding the effects of the variables $PESO$ and $PESO*TIME$. These forecasted variables were then used in the primary trade equations to estimate how trade would have evolved had the peso crisis not occurred.