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The Impact of NAFTA on the United States

Mary E. Burfisher, Sherman Robinson and Karen Thierfelder

The U.S. Congress approved the North American Free Trade Agreement (NAFTA) after an intense political debate. Opponents voiced a number of concerns, focusing on the impact of the agreement on U.S. labor markets. Often these arguments took on a mercantilist tone, with NAFTA opponents arguing that imports from Mexico—accompanied by surging capital flows to Mexico—would destroy jobs in the United States. Other concerns were more subtle and related to the effect trade liberalization in Mexican agriculture would have on labor market transitions in Mexico and unskilled labor emigration to the United States. For example, there was concern that Mexico's traditional anti-poverty policies for rural labor, which accounted for approximately 25 percent of the labor force in the early 1990s, were partially supported by trade restrictions. The anticipated expansion of U.S. grain exports to Mexico under NAFTA raised concerns that Mexico's rural labor market would collapse, leading to a surge of migration of unskilled workers to the United States.

On the other side, NAFTA supporters argued that trade liberalization would create gains from increased trade based on comparative advantage. They pointed out that cheaper imports from Mexico helped U.S. consumers (in purchases of final goods) and producers (in purchases of intermediate goods). In the long run, as Mexico's economy grew and demanded more goods and services, there would be an expanding market for U.S. exports. Furthermore, they argued that the agreement would have a relatively small impact on the U.S. economy since Mexico accounted for a small share of U.S. trade and the U.S. average tariffs against Mexico

■ *Mary E. Burfisher is a Senior Economist, Economic Research Service, U.S. Department of Agriculture, Washington, D.C. Sherman Robinson is Director, Trade and Macroeconomics Division, International Food Policy Research Institute (IFPRI), Washington, D.C. Karen Thierfelder is Associate Professor of Economics, U.S. Naval Academy, Annapolis, Maryland.*

were already low. Like many NAFTA opponents, supporters also often relied on mercantilist arguments that exports to Mexico were good for the United States because they created jobs.

Quantitative economic analysis of the potential effects of NAFTA made a major contribution to the policy debate. A multitude of models and analyses were carried out at various levels of aggregation, ranging from industry and sectoral studies done in a partial equilibrium framework to a number of studies using single and multi-country computable general equilibrium models. Surveys of the empirical work include U.S. Department of Labor (1993), Francois and Shiells (1994), Lustig, Bosworth, and Lawrence (1992), and U.S. International Trade Commission (1992). These surveys indicated a remarkable degree of consensus across studies that varied widely in methodology and coverage. The mainstream consensus concluded that the effects of NAFTA would be positive but small for the U.S. economy, and positive and large for Mexico.

In this paper we compare arguments made during the debate to post-NAFTA data to see whether, in fact, they were borne out by actual events. Our comparison must be qualified by the fact that other macroeconomic forces also affect trade, GDP, and employment. Also, NAFTA has a 15-year phase-in period, so its full effects have yet to be realized. To address the first point, we review results from controlled experiments using models that isolate the effects of NAFTA. After discussing aggregate trade issues, we focus on three sectors that were especially contentious in the NAFTA debate: agriculture, autos, and textiles. Our analysis provides lessons for future debates over other regional trade agreements in which the United States may participate. In particular, we comment on the significance of bilateral trade balances; adjustment costs of trade liberalization; interactions between domestic policies and trade policies; and the links between regional trade agreements and multilateral free trade.

Macroeconomic Issues

NAFTA affects bilateral trade flows among the United States, Canada, and Mexico because it eliminates tariffs and many nontariff barriers to trade. At the time of the NAFTA debate, studies suggested that Mexico would bear more of the adjustment than would the United States or Canada. For example, the Congressional Budget Office (1993) forecast that Mexico's economy could increase 6 to 12 percent, or even more, by the end of the NAFTA transition period. In contrast, it predicted the U.S. economy would increase by about one-fourth of 1 percent in the long run due to NAFTA. The different gains are due to differences in trade dependence and tariff structure. In 1993, Mexico accounted for less than 10 percent of U.S. imports and exports. In contrast, 83.3 percent of Mexico's exports and

71.2 percent of Mexico's imports were with the United States.[1] The trade-weighted average tariff and tariff equivalent of quotas was 4 percent for the United States, compared to 10 percent for Mexico. NAFTA was expected to have little effect on Canada because Canada had already liberalized trade with the United States under the Canada-U.S. Free Trade Agreement in 1989, and Canada had relatively little trade with Mexico.[2]

Macroeconomic trends also affect trade patterns, making it difficult to isolate NAFTA effects in the data. Here we describe some of those trends. Then we discuss the interaction between NAFTA and key macroeconomic variables that were important in the ongoing debate: real trade flows, U.S. employment, and the overall U.S. trade balance. Finally, we comment on the interaction between NAFTA and Mexico's peso crisis, an important macroeconomic event that occurred one year after NAFTA was implemented.

U.S. real gross domestic product (GDP) fell slightly from 1990 to 1991, but grew steadily from 1992 onward, coinciding with the implementation of NAFTA (*Economic Report of the President*, 2000, Table B-2). GDP growth contributes to increased demand for imports from all regions, including Mexico. Likewise, the dollar strengthened during the late 1990s—particular against Asian currencies in the wake of the Asian currency crisis—and this influences U.S. import growth. Finally, global trade reforms encouraged global integration: the United States approved the Uruguay round agreement in 1994, and the Canada-U.S. free trade agreement in 1989. Mexico unilaterally reduced its tariffs in 1986 when it joined the GATT. All of these developments are evident in U.S. trade data.

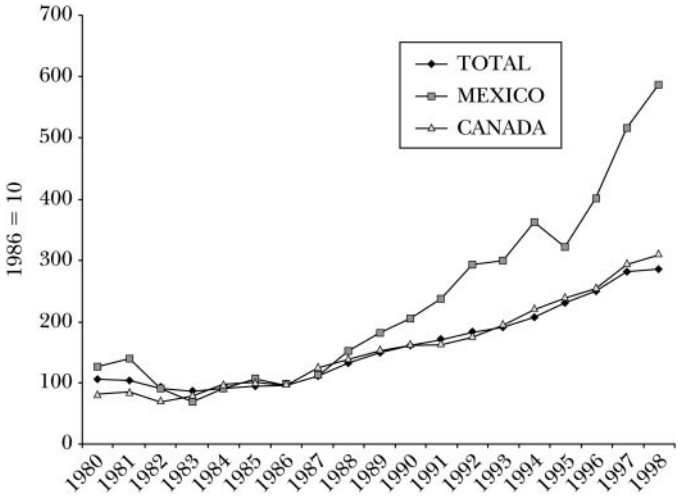
Real exports and imports for the U.S. economy since 1980, along with bilateral real exports and imports with Mexico and Canada, are shown in Figures 1 and 2.[3] U.S. trade with Mexico has grown more rapidly than overall trade since Mexico started its domestic reform process in the mid-1980s. U.S. trade with Mexico accelerated since NAFTA was enacted in 1994, although there was a dip in 1995 when Mexico went through its peso crisis (to be discussed in the next section). The Canada-U.S. Free Trade Agreement (CUSFTA) went into effect earlier, in 1989, and so Canadian trade shows only a minor acceleration since the enactment of NAFTA.

[1] Trade shares are constructed from data on bilateral merchandise trade found in the International Monetary Fund, *Direction of Trade Statistics*.

[2] Canada's exports to Mexico as a share of total Canadian exports were 0.4 percent in 1994 and remained at that rate in 1999; likewise, Canadian imports from Mexico as a share of total Canadian imports were 2.1 percent in 1994 and 2.9 percent in 1999, based on bilateral merchandise trade data from the International Monetary Fund, *Direction of Trade Statistics*.

[3] The real export and import indices are calculated from nominal export and import data from the IMF Direction of Trade Statistics deflated by U.S. export price index and import price index from the *Economic Report of the President*.

Figure 1
Real U.S. Export Index



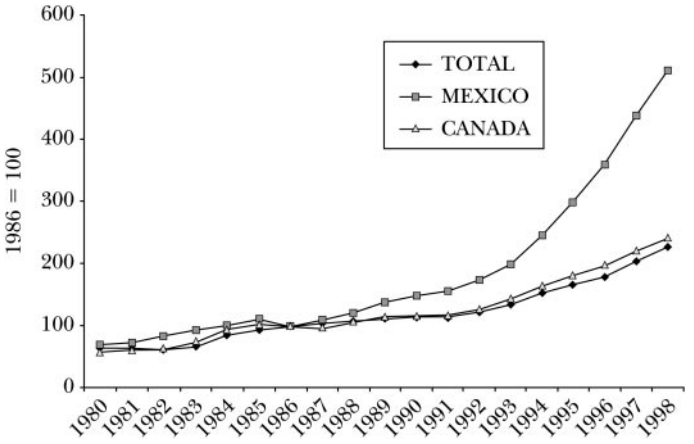
NAFTA and U.S. Labor Markets

Perhaps the worst fear in the United States about NAFTA was that U.S. workers could not compete, and there would be a surge of imports based on low Mexican wages. Ross Perot memorably spoke of a "giant sucking sound south" of jobs moving to Mexico because of NAFTA. In 1991, the average hourly compensation in Mexican manufacturing was only about 14 percent of the U.S. figure: $2.17 in Mexico versus $15.45 for the United States (Hufbauer and Schott, 1993, p. 11). There was also concern that investment would move from the United States to the Mexican economy, further eliminating U.S. jobs.

The broad consensus from research in the early 1990s suggested that these fears were overstated. For example, the Congressional Budget Office (1993) estimated that the total number of U.S. workers who might have to change their jobs due to NAFTA was likely to be substantially less than half a million, spread out over at least a decade. To put this number in perspective, the CBO noted that in the 1980s, nearly 20 million workers lost their jobs and were not recalled by their former employers. Similarly, a Department of Labor (1992) survey of potential employment effects of NAFTA found that sectoral employment changes would be small, in most cases less than 2 percent of current sectoral employment and much less than normal turnover rates.

Empirical studies at the time of the NAFTA debate also predicted very small wage effects. For example, the International Trade Commission (1992) survey of a symposium of academic research noted that aggregate real wages of U.S. workers would rise, with the increases ranging from 0.1 to 0.3 percent. Likewise, the CBO (1993) found that NAFTA would have a small effect on wages, with most estimates of changes in real wages being less than 1 percent. Lustig et al. (1992, p. 4),

Figure 2
Real U.S. Import Index



summarizing the labor market effects of NAFTA in a survey by the Brookings Institution, notes: "The general consensus of the studies, however, is that NAFTA will raise the average wage of U.S. workers and that the effect on low wage workers will be negligible."

The evidence on labor markets post-NAFTA indicates that, while NAFTA has had some effect, the effects in the U.S. economy are indeed small and are overwhelmed by other U.S. macroeconomic trends such as a rapidly growing economy.

The NAFTA-Trade Adjustment Assistance Program (NAFTA-TAA) provides some evidence of the effects of NAFTA on employment. Congress and the Clinton administration, concerned that even employment effects which were small in the aggregate appeared likely to be concentrated by industry and region, enacted NAFTA-TAA as part of the NAFTA implementing legislation. NAFTA-TAA expands the trade adjustment benefits, which were originally established in the 1962 Trade Expansion Act, by providing job training as well as additional income support for workers displaced by imports from Mexico and Canada.[4] NAFTA-TAA petitions were certified for 23,037 workers in 1994, 34,100 workers in 1995, and 32,120 workers through October 19, 1996 (U.S. Department of Agriculture, 1997).[5] More recently, Hinojosa et al. (2000) report that, as of July 1999, the U.S. Department of Labor had certified 238,051

[4] See Rosen (1994), who was an early supporter of an expanded Trade Adjustment Assistance program, for more details on the evolution and implication of the TAA for U.S. workers.

[5] According to the website of the U.S. Department of Labor at ⟨http://www.dol.gov⟩, a worker is "certified" for eligibility to apply for worker adjustment assistance when each of the group eligibility requirements are met: 1) That a significant number or proportion of the workers in the workers' firm, or an appropriate subdivision thereof, have become totally or partially separated; 2) That sales or production, or both, of the firm or subdivision have decreased absolutely; 3) That increases of imports of articles like or directly competitive with articles produced by the firm or appropriate subdivision have

workers for NAFTA-TAA, an average of 3662 workers per month. While these numbers probably understate the displacement due to NAFTA because some qualified workers did not apply, they are still quite low in the context of U.S. labor markets.

Many post-NAFTA studies describe the effects of increased U.S. imports on jobs. Hinojosa et al. (2000) use a partial equilibrium model to analyze the effects changes in imports from Mexico have on U.S. demand for domestic production and therefore U.S. employment. They find that the job impact is relatively small, with the total estimated potential job impact in the United States from 1990-97 due to imports from Mexico at 299,000, or an average of 37,000 jobs lost per year due to increased Mexican trade. To put this number in perspective, they note that the U.S. economy has been creating over 200,000 jobs per month.

Other studies reach a similar conclusion: NAFTA had no discernible effects on aggregate employment. The report of the U.S. Trade Representative (1997) calculates the number of jobs supported by exports to NAFTA using "jobs per export" data from the Department of Commerce, finding 2.3 million jobs in 1996. This measure, however, does not consider job changes due to increased imports or other factors. The International Trade Commission (1997) analyzes 120 manufacturing sectors. It found seven sectors in which imports from NAFTA countries had an adverse effect on employment, four sectors where imports had a positive effect on employment, and in all other sectors imports had no effect on employment. The U.S. Department of Agriculture (1997) used a dynamic computable general equilibrium model to assess the effects of NAFTA on rural employment. They calculate the changes in employment with and without NAFTA, finding that U.S. rural employment in 1996 is 0.07 percent higher with NAFTA than it would be without the agreement, with the greatest increases in non-grain crops.

Other models of the dynamic gains from trade emphasized that NAFTA would reduce the perceived risk of investment in Mexico, thereby attracting foreign investment to Mexico. For example, Manchester and McKibbin (1995), using a dynamic macroeconomic model, find that a reduction in the risk premium could boost net private capital inflows to a level of 6 or 7 percent of GDP. In the long run, as the Mexican economy and income grow, U.S. exporters would benefit because there would be more demand for U.S. products. There are two implications for the U.S. labor market of Mexican growth. First, as U.S. exports to Mexico increase, there are potential employment gains in the United States. Second, as Mexico's economy grows, there will be less migration pressure on U.S. labor markets.

NAFTA and the U.S. Trade Balance

Both sides in the U.S. debate on NAFTA raised mercantilist arguments, in which export growth is viewed positively for both its trade balance and employment

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contributed importantly to the separations, or threat thereof, and to the absolute decline in sales or production.

effects, while imports are regarded negatively because of their potential to displace domestic production. In this perspective, the impact of NAFTA was often extrapolated from its presumed effects on U.S. and Mexican exports, or on the bilateral trade balance. For example, Prestowitz and Cohen (1991) argued that an agreement with Mexico should be structured so that a large portion of Mexican exports would be directed away from the U.S. economy, protecting the bilateral trade balance. Faux and Rothstein (1991), using a simple macroeconomic model with trade multipliers, predicted a losing outcome for the U.S. economy with investment, production, and employment all shifting from the United States to Mexico. Using a similar methodology, pro-NAFTA analysis by Hufbauer and Schott (1992) tended to oversell the pact's potential benefits to the U.S. economy, working from the basis that NAFTA would increase U.S. exports more than imports.

From the perspective of standard trade theory, the mercantilist view that a trade deficit—whether bilateral or aggregate—is necessarily bad is simply indefensible. Indeed, economic theory argues that bilateral trade balances are irrelevant. Only a nation's aggregate trade balance matters and it is a macroeconomic phenomenon, determined by the gap between a nation's domestic savings and investment. The trade balance depends at least as much (or, some would argue, exclusively) on what happens in financial markets as in commodity markets.

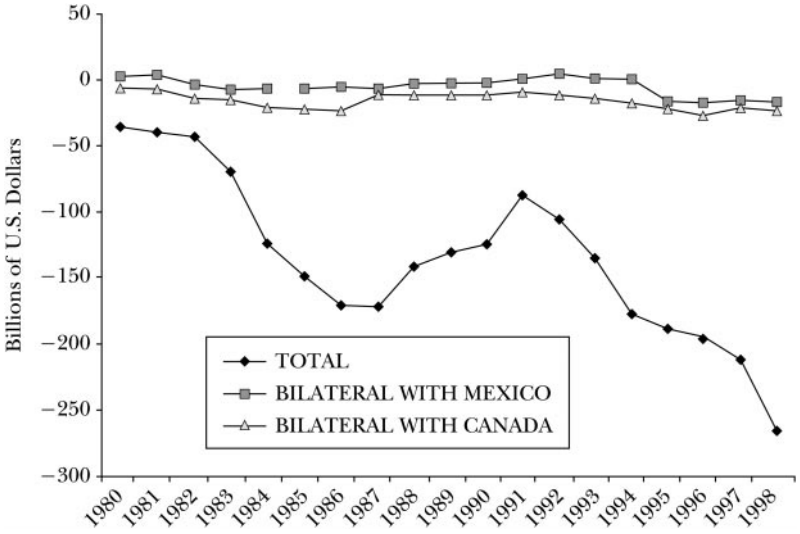
Figure 3 shows the empirical weakness of any argument that seeks to extrapolate from the bilateral trade balances under NAFTA to the U.S. aggregate trade balance. Changes in the aggregate U.S. trade deficit swamp any changes in bilateral balances among the NAFTA partners.

These arguments imply that, in evaluating trade agreements, it would be wise to set aside all discussion of the trade balance and the associated macroeconomic models that apply multipliers to trade balances to estimate employment and growth effects. Some argued against mercantilist arguments at the time of the debate. For example, Hinojosa and Robinson (1992, pp. 79-86), in surveying both optimistic and pessimistic work on likely employment effects of NAFTA, state:

> The use of short-run, Keynesian macroeconomic trade multipliers in a model seeking to analyze the long-term benefits of trade liberalization seems inappropriate. Since the model involves only aggregates and macroeconomic trends, it cannot capture any of the structural changes and gains from trade liberalization predicted by neoclassical trade theory. Since most of the gains and strains arising from trade liberalization will involve shifts in the sectoral structure of trade, output, and employment, predictions of the [Hufbauer and Schott] model about employment effects are questionable at best. . . . The optimistic [Hufbauer and Schott] model and the pessimistic analyses of Prestowitz and others . . . are striking in their lack of theoretical underpinnings.

Given the theoretical and empirical failure of such macroeconomic arguments in the NAFTA debate, one hopes that mercantilist analysis will no longer appear in

Figure 3
U.S. Trade Balance



policy debates. Instead, an honest argument for trade liberalization should recognize that an economy benefits from both imports and exports. However, to realize these gains, resources must be reallocated, and this entails adjustment costs. It is encouraging to note that, during the recent debate on normalizing trade relations with China, the Clinton administration did not rely on arguments about job creation. Indeed, in a speech last year to the World Economic Forum in Davos, Switzerland, President Clinton said (White House Office of the Press Secretary, January 29, 2000):

> We can also, I must say, do better in the developed countries if we are able to make a more forceful case for the value of imports. None of us do this enough. . . . There are benefits to imports. We don't just do a favor to developing countries, or to our trading partners in developed countries, when we import products and services from them. We benefit from those products. Imports stretch family budgets; they promote the well-being of working families, by making their dollars go further; they bring new technology and ideas; they, by opening markets, dampen inflation and spur innovation.

NAFTA and the Peso Crisis

Evaluating the impact of NAFTA on the U.S. economy is complicated by the Mexican "peso crisis." The peso crisis began in December 1994, a year after NAFTA went into effect. Foreign investors lost confidence in the value of the peso, which was pegged in a band around the U.S. dollar, and began to withdraw their funds. The Mexican government did not have foreign currency reserves needed to sup-

port the peso, and it ultimately abandoned the peg in late December 1994. The peso depreciated nearly 50 percent in early 1995.

The peso crisis had a significant, but temporary, impact on aggregate U.S. exports to Mexico (which appears in Figure 1) and little impact on aggregate imports from Mexico. This result was consistent with Mexico's need to cut its aggregate trade imbalance in response to the crisis. The recovery in trade flows happened very quickly, however.

Some NAFTA opponents argued that NAFTA had destabilized the Mexican economy in a way that led to the peso crisis. This argument is not persuasive, given that macroeconomic strains were evident in Mexico by the early 1990s. While the exact timing of the peso crisis was a surprise, it was widely anticipated that some kind of crisis was imminent. For example, Krueger (1992) and Dornbusch and Werner (1994) warned that, given the inflation differentials, the peso had become overvalued. Dornbusch and Werner advocated a real 20 percent devaluation of the peso, with supporting monetary and fiscal policies to allow depreciation while controlling inflation. Lawrence (1992) noted that Mexico needed a peso weak enough to generate the needed trade surpluses for debt repayment from the 1982 crisis, also suggesting that the peso was overvalued in the early 1990s. The Congressional Budget Office (1993), when describing the effect of NAFTA on capital flows and the exchange rate, noted that NAFTA would initially cause the peso to appreciate as investment to Mexico increased. However, there would be an eventual depreciation after Mexico had accumulated capital and needed to generate a trade surplus to repay the debt. CBO (1993) warned of a hard landing if Mexico did not manage the peso well after implementing NAFTA—which is what transpired a year and a half later.

Rather than causing the peso crisis, it appears that NAFTA facilitated a quick resolution and contributed to Mexico's more rapid growth in the late 1990s by locking in Mexico's commitment to open markets (De Long, De Long and Robinson, 1996). First, NAFTA provided Mexico with guaranteed access to the U.S. market, even as the collapse of the peso increased the competitiveness of Mexico's exports and dramatically lowered its demand for imports. Prior to NAFTA, Mexico's exports to the United States were covered by the Generalized System of Preferences (GSP), which allows many products to enter the United States duty-free, up to a dollar amount or market share limit. With the weak peso, a surge in U.S. imports from Mexico may have exceeded the amount needed to qualify for GSP treatment, which would have restored tariff rates against Mexican products to most favored nation levels. NAFTA also prevented Mexico from raising its tariffs against the United States. Although Mexico did raise some tariffs on goods from other nations, the United States is Mexico's main supplier and NAFTA prevented Mexico from returning to an inward-looking protectionist policy stance. Finally, the commitment made by both countries under NAFTA to a long-term, open trade relationship helped to reassure investors about the long-term prospects for recovery and growth of the Mexican economy, and its continuing commitment to reform.

De Janvry (1996) uses a regression model to disentangle the effects of NAFTA

on trade patterns from other macroeconomic shocks such as the peso crisis. He constructs a counterfactual using a regression model which predicts U.S. exports to and imports from Mexico based on population, per capita income, and the real exchange rate for the pre-NAFTA period, 1973-1990. He predicts U.S. exports and imports for 1994 and 1995 using this equation and attributes the difference between actual and predicted values to NAFTA. He finds that in 1995, U.S. exports to Mexico would have fallen by 28 percent without NAFTA, as opposed to 14 percent with NAFTA; so NAFTA helped avoid 52 percent of the fall in exports to Mexico due to the peso crisis. Similarly, he predicts that, without NAFTA, U.S. imports from Mexico would have increased in 1994 by 3 percent rather than the 19 percent observed; and in 1995 imports would have fallen by 3 percent rather than by increasing by 17 percent as observed. This counterfactual experiment suggests that NAFTA greatly reduced the negative effect the peso crisis would otherwise have had on U.S. trade with Mexico.

Structural Adjustments

Both the static and dynamic benefits of free trade are realized through economic adjustments, as trading partners reallocate resources to their sectors of comparative advantage. Often, however, the adjustment is more complicated because there are other distortions in the economy. Here, we examine three sectors, agriculture, automobiles, and textiles, which had extensive domestic distortions in addition to tariffs. These sectors were also highly contentious during the NAFTA debate. We focus on changes in trade between the United States and Mexico because the United States and Canada had already largely adjusted production following the Canada-U.S. Free Trade Agreement in 1989.

Agriculture: Transition Issues and Domestic Policy Reforms

At the time of the NAFTA debate, agriculture was a relatively larger sector in Mexico than in the United States: it accounted for 7 percent of GDP and 24 percent of employment in Mexico, compared to 1.6 percent of GDP and 2 percent of employment in the United States. Mexican agriculture was characterized by small-scale enterprises, relatively low productivity, and high trade barriers on the main crops produced by subsistence farmers. It had extensive domestic support to corn and grain farmers in the form of a guaranteed price that exceeded the market price. To constrain the cost of this program, the government also restricted imports to maintain the high domestic market price. In this situation, liberalizing agricultural trade very rapidly could disrupt Mexico's rural labor market (Levy and van Wijnbergen, 1994; Burfisher et al., 1992). If Mexico eliminated farm supports and allowed import competition, Mexico's corn sector would collapse. Certain Mexican agricultural sectors such as the labor-intensive fruits and vegetable sectors had potential to expand under NAFTA, but it would take time for these sectors to grow.

In the meantime, there was concern that many of the displaced agricultural workers might seek to migrate to Mexican cities and to the United States.

For these reasons, the final NAFTA agreement allowed a 15-year transition period for sensitive crops. For example, using a "tariff rate quota," which is a two-tiered tariff structure, Mexico allowed 2.5 million tons of corn from the United States and 1,000 tons of Canadian corn to enter duty-free in 1994, increasing 3 percent per year thereafter. Imports over this level faced a tariff of 215 percent until 1999, when the rate was reduced to 24 percent. The tariff will be eliminated by 2008. However, Mexico has imported more than the duty-free amount each year since NAFTA took effect and has not applied the high over-quota tariffs (U.S. Department of Agriculture, 1997).

Mexico has not relied on the available extended phase-in period for corn in part because it has undertaken major reform of its agricultural policy system, including replacing price supports with income subsidies under the Procampo program initiated in late 1993. Mexican agricultural policy has not been constrained by NAFTA, but the existence of the NAFTA timetable has given credibility to the domestic reform process since farmers can see that the old policies—which relied on trade restrictions to support domestic prices in sectors such as maize—cannot be reinstated. Instead, Mexico has committed itself to free trade and has locked into such policies via NAFTA.

Between 1993 and 1998, U.S. agricultural exports to NAFTA countries increased by an annual average of 9.5 percent compared to a 2.8 percent annual increase to its non-NAFTA partners (calculations based on trade data in U.S. Department of Agriculture, 1999). U.S. agricultural imports from NAFTA countries increased an average of 13.8 percent annually, compared to 7.7 percent from non-NAFTA partners.[6] According to U.S. Department of Agriculture simulations of a base model without NAFTA, the agreement has had small but positive effects on U.S. agricultural trade.

Independently of NAFTA, the United States and Canada have reformed domestic agricultural support policies to reduce distortions in production decisions. The changes in domestic reforms in all three countries have had a bigger impact on agricultural output, employment, and trade than has NAFTA, as Burfisher et al. (1998) note. The policy changes are consistent with the reality of an integrated regional economy in which it is difficult to support different domestic agricultural prices in individual member countries.

Autos and Parts: Industry Rationalization

In the NAFTA debate, U.S. autoworkers were concerned that free trade with Mexico would eliminate their jobs, either due to cheaper auto imports from Mexico

[6] NAFTA has also built stronger trade relationships in agriculture through the creation of a number of standing committees that provide oversight of agricultural trade, such as the Sanitary and Phytosanitary (SPS) Committee. This committee has provided a venue for both resolving SPS issues, and for preventing such issues from arising through a process of information consultations and regulatory reform.

or to U.S. auto companies relocating to Mexico. Indeed, Perot and Choate (1993) put the auto industry near the top of their "endangered jobs" list. These fears were fueled by studies such as Shaiken (1993), which claimed that Mexican auto assembly plants had high quality workers at low wages. The mainstream economic predictions, as summarized by the CBO (1993), argued that NAFTA would increase U.S. exports of autos and parts to Mexico, with smaller increases in U.S. imports, because Mexico had higher initial tariffs.

Potential changes in the auto sector, however, would depend on more than tariff elimination. As in the agricultural sector, Mexico had extensive distortions in the domestic automobile sector prior to NAFTA through its "auto decrees" which included requirements for domestic content and the trade balance, limits on imports of new vehicles in relation to total sales, prohibition on importing used cars, and restrictions on foreign ownership of the auto parts industry. As part of NAFTA, Mexico agreed to phase out the auto decrees, improving U.S. competitiveness in the Mexican market. NAFTA also includes rules of origin which specify that, to qualify for preferential tariff treatment, a vehicle must have 62.5 percent North American content.

The changes in these regulations and the strong rules of origin created potential for significant rationalization of the production process among the three NAFTA countries. For example, Lopez-de-Silanes (1991) argued that the ability of North American firms to rationalize production with NAFTA would lead to a significant increase in their competitiveness, particularly with respect to non-NAFTA suppliers. Taking a similar view, Womack (1991) argued that rationalization would benefit all three countries, but would lead to increased auto exports from Mexico to the United States. Lopez-de-Silanes, Markusen and Rutherford (1994), using a multi-country computable general equilibrium model with detailed specification of the auto sector, largely support these results. Conversely, Faux and Rothstein (1991) argued that U.S. welfare and employment would decline as a result of rationalization, as production shifted to the technologically competitive Mexican facilities.

There is strong evidence of increased integration in the North American auto industry since NAFTA, which has made U.S. parts and vehicle manufacturers more efficient. Prior to NAFTA, the United States was already a net importer from Mexico in vehicles and parts. Since NAFTA, auto imports from Mexico more than doubled, increasing from $11.1 billion in 1993 to $27.7 billion in 1998. One reason for increased Mexican exports is that U.S. producers are using their Mexican plants to supplement U.S. production to meet the high U.S. demand in a strong economy. On the other hand, U.S. auto exports to Mexico rose 14-fold, albeit from a low base, between 1993 and 1998, increasing to $2.4 billion. U.S. exports of auto parts also rose dramatically, by 30 percent (U.S. Department of Commerce, 1999).

Whether viewed as beneficial or not, the trend toward greater intra-industry trade across North American auto production seems clear. The Grubel-Lloyd index, which is the ratio of intra-industry trade to total trade, provides a measure of the degree of integration between the United States and Mexico. We use data from

the U.S. International Trade Commission to calculate the Grubel-Lloyd index for the auto sector (SITC 78000-78999), adjusted for the trade imbalance. We find a dramatic increase in intra-industry trade in autos and parts. In 1993, for example, intra-industry trade in autos represented 52 percent of all North American trade in autos; by 1999, it was 79 percent. As the U.S. Trade Representative (1997) notes, U.S. imports of vehicles assembled in Mexico include a high percentage of auto parts made in the United States. There appear to be efficiency gains from finer specialization within the industry. These gains do not appear to be "Ricardian," in that they are not primarily based on different national factor proportions, but "Smithian" in the sense that NAFTA widened the extent of the market and permitted increasing returns to finer specialization.

Most fears about the ill effects of NAFTA on the U.S. auto industry, whether in term of employment, wages, or investment, have been proven wrong. The U.S. auto industry did experience rationalization of production and hence job displacements. But overall, NAFTA appears to have helped the U.S. auto sector (U.S. Trade Representative, 1997). Employment in the American automotive industry grew by 14.1 percent overall, with an increase of 16.1 percent in the auto parts sector and 10.1 percent in the motor vehicle assembly sector from 1994-1996. Hourly earnings for production workers in the U.S. automotive sector grew by 5.6 percent between 1993 and 1996. The Big Three U.S. automobile manufacturers invested $39.1 billion from 1993 to 1996 in new manufacturing plants and equipment in the United States, while investing only $3 billion in Mexico over the same period.

Textiles and Apparel: The Effects of Rules of Origin

At the time of the NAFTA debate, textiles and apparel were declining industries in the United States, despite efforts under the ongoing Multi-Fiber Agreement to restrict imports from developing countries. From 1980-1990, textile employment declined from 848,000 to 550,000 production workers and apparel employment declined from 1.3 million to 824,000 production workers (Hufbauer and Schott, 1992). Employment declined in textiles as the industry adopted productivity-enhancing innovations, becoming more capital intensive. The apparel sector, which is heavily dependent on low-skilled labor, was not internationally competitive. Against this background, imports from Mexico, a low-wage country, were seen as a further threat.

Predictions of what NAFTA would bring for the textile industry were "all over the map," according to the Congressional Budget Office (1993), but the absolute sizes of effects were expected to be small, partly because U.S. trade with Mexico represented only a small part of U.S. production. The U.S. apparel industry was expected to be helped less than textiles, or else to be hurt by NAFTA. Economic analysis at the time of the debate predicted an increase in two-way trade in textiles and apparel due to efficiency gains in each country. For example, Hufbauer and Schott (1992), drawing parallels from Spain and Portugal's entrance to the European Union, predict a beneficial surge in two-way commerce. Likewise, KPMG Peat Marwick (1991), using a computable general equilibrium model, report an increase

in two-way trade. Trela and Whalley (1994), in a computable general equilibrium model which analyzes policy changes in the textile sector, found welfare gains to both the United States and Mexico when those countries liberalize textile trade.

Under NAFTA, most tariffs on textiles and apparel were to be phased out over five years, with a small number of tariffs to be eliminated over ten years. NAFTA also included strong rules of origin; specifically, textile and apparel goods had to be produced from yarn made in a NAFTA country to receive NAFTA preferences. U.S. import quotas were lifted immediately for goods meeting this "yarn forward" rule of origin, and gradually for other Mexican goods. Given that world trade in textiles currently is regulated by the Agreement on Textiles and Apparel, which superceded the Multi-Fiber Agreement under the WTO, the effect of NAFTA was to eliminate quotas on textiles and apparel within NAFTA, which should favor Mexico over other producers such as those in Asia, and lead to trade diversion.

Since the passage of NAFTA, U.S. textile production has increased, although textile and apparel employment both continue to decline. Technological change has been the main factor causing job loss, while also accounting for higher wages among remaining workers (Fisher, 1999). NAFTA, with its strong rules of origin, actually preserved U.S. jobs in the textile and apparel industries, contrary to pre-NAFTA fears that jobs would be lost to Mexico. According to the U.S. Trade Representative (1997), two-thirds of the value of U.S. textiles and apparel imported from Mexico in 1996 was comprised of originally U.S. content. In contrast, Asian textile and apparel products have almost no U.S. content. Analysis of bilateral trade data shows that U.S. imports of textiles and apparel from Mexico have increased, while those from Asia have declined, since NAFTA.[7] For example, in 1993, 14.5 percent of U.S. textile exports went to Asia while 13.4 percent went to Mexico. By 1999, textile exports to Asia had declined to 10.3 percent of total textile exports and the share to Mexico had grown to 31.0 percent. A similar trend is evident in apparel trade: imports from Asia as a share of total imports declined from 70.7 percent in 1993 to 55.4 percent in 1999; imports from Mexico rose from 4 percent in 1993 to 13.5 percent in 1999. U.S. export shares to Mexico also rose over that period from 17.5 percent in 1993 to 31.6 percent in 1999.

This evidence strongly suggests a pattern of trade diversion, which would be expected given that NAFTA effectively exempted Mexico from the quota system of the Agreement on Textiles and Apparel (ATA). James and Umemoto (1999) find a similar pattern of trade diversion using United Nations data on commodity trade statistics. Welfare effects of this trade diversion are not necessarily negative, given that the trade is highly regulated under the ATA and production incentives are therefore distorted. Changes under NAFTA would shift quota rents away from Asian to NAFTA suppliers.

The extent of integration between the United States and Mexico in textile and apparel production is apparent in the increase in intra-industry trade as a share of

[7] Data for this comparison are from the U.S. International Trade Commission's interactive trade data base at ⟨http://www.usitc.gov⟩.

total trade. While the results are not as dramatic as in the auto sector, there is evidence that the industry became more integrated after 1994. For example, in 1995 the Grubel-Lloyd index of intra-industry trade in textiles and apparel was 50 percent; by 1997 it had risen to 60 percent. However, since then it has declined back toward 50 percent, which is probably due to the east Asian financial crisis which reduced the price of Asian goods on U.S. markets.

Gains from Regional Integration

NAFTA, as a regional trade agreement, is part of the larger debate over the benefits of regional integration versus multilateral trade liberalization. The welfare effect of a regional trade agreement depends on the magnitude of trade creation, which is the expansion of intra-regional trade as member countries produce and export more of their comparative advantage goods, and trade diversion, which is the extent to which increased trade among members comes at the expense of imports from a low-cost supplier who is not a member of the regional trade agreement. In contrast, there is no trade diversion with multilateral trade liberalization.

Krueger (1999a) discusses the theoretical debate over the gains from regional trade agreements versus multilateral free trade. As she notes, those who view regional trade agreements as building blocks towards multilateralism argue that regional trade agreements are overwhelmingly trade-creating; they allow developing countries to "lock in" trade reforms, thereby encouraging investment flows; and regional trade agreements permit member countries to liberalize beyond what often can be accomplished multilaterally. NAFTA satisfies these conditions and can be viewed as a building block towards multilateralism. Indeed, the extension of NAFTA and other western hemisphere regional trade agreements into a Free Trade Area of the Americas is now being negotiated.

Panagariya (2000) surveys the theoretical models of regional trade agreements and their potential effects on welfare, addressing not only trade creation and trade diversion issues, but also the effects of transportation, economies of scale, imperfect competition, and rent-seeking. One can conclude from Panagariya's survey, as well as from the earlier work on customs unions, that whether or not a regional trade agreement benefits its members will depend on parameter values and initial economic structure—it is essentially an empirical issue that must be settled by data analysis.

It is difficult to sort out empirically the impact of the formation of a regional trade agreement from other concurrent shocks and trends, a problem which is inherent in any historical analysis. In the empirical trade literature, there are two common approaches to analyzing the impact of a regional trade agreement while controlling for other effects: computable general equilibrium models and "gravity" models. For the theoretical models surveyed in Panagariya (2000), computable general equilibrium models would seem to provide a good framework for doing

empirical analysis, given their strong underpinnings in neoclassical general equilibrium theory. Gravity models do not incorporate the features of many trade theory models, but do provide an empirical way to control for income changes and other macroeconomic shocks.

Robinson and Thierfelder (1999) survey the empirical literature in which multi-country computable general equilibrium models have been used to analyze the impact of regional trade agreements. A computable general equilibrium model allows one to isolate the effects of a regional agreement on trade, production, and sectoral employment; it is a comparative static experiment in which the counterfactual is the economic structure without the tariff reductions and other policy changes. Some of the models surveyed stayed close to standard neoclassical trade theory, but many incorporated features such as scale economies, imperfect competition, existing policy distortions, investment flows, and migration. Virtually all of these studies find that trade creation from regional trade agreements is much larger than trade diversion. The studies of NAFTA, whether in a single or multi-country context, all concluded that NAFTA was net trade-creating and would benefit all three member countries, with the largest relative gains for Mexico.

However, most of the computable general equilibrium studies were done before NAFTA. Since then, regression analysis using "gravity" models has been used to estimate the effects of NAFTA on bilateral trade flows, holding constant other factors such as national income, exchange rates, and trade with other countries. Both Gould (1998) and Krueger (1999b) find that NAFTA, in general, does not have a significant impact on bilateral trade flows. Gould comes to this conclusion using a gravity model with quarterly data from NAFTA countries from 1980 to 1996. Krueger uses time-series cross-sectional data, with observations for 61 countries for six years, comprising every other year from 1987 to 1997. This allows her to comment on the effect of regional trade agreements in general, as well as NAFTA in particular. Like Gould, she finds the coefficient on the variable "both partners are NAFTA members" to be statistically insignificant. However, one must note that it may be too early to conduct analyses of NAFTA, since its provisions will not be fully implemented until 2008.

Both Gould (1998) and Krueger (1999b) supplement their analysis of the effects of NAFTA on bilateral trade flows by looking for evidence of trade diversion in the data. For example, Gould uses the estimated trade equation to predict bilateral trade flows in the absence of NAFTA. Comparing this prediction to actual trade data, he concludes that U.S. export growth to Mexico was 16.3 percent higher and that U.S. import growth from Mexico was 16.2 percent higher due to NAFTA. Gould also examines North American trade with non-NAFTA countries and finds that it increased. This suggests that the increase in NAFTA trade was net trade-creating. Industry studies which do not use a gravity model also find that, while trade diversion exists, it is dominated by trade creation (Wylie and Wylie, 1996; Karemera and Ojah, 1998). Likewise, Krueger (1999b), an eloquent critic of regional trade agreements in the larger debate, concludes that there is no evidence that NAFTA diverted trade from non-NAFTA countries. Examining trade data at

the three-digit SITC level, she finds few sectors in which imports of any NAFTA country from the rest of the world fell while rising within NAFTA. She also uses "shift and share analysis" to determine the extent to which intra-NAFTA trade occurred at the expense of the shares of trade to non-NAFTA countries. Focusing on Mexico, she reports that Mexico's increased exports to the United States do not come at the expense of its exports to the rest of the world. Consistent with our discussion of the textile sector, she finds that U.S. imports of textiles and apparel increase from Mexico and decrease from East Asia.[8] However, Mexico's increase in sales to the United States did not come at the expense of its exports to the rest of the world (see her Table 3).

Krueger's (1999b, p. 3) overall conclusion provides a good summary of the results from the empirical work since NAFTA came into force in 1994: "[T]he evidence to date bears out most economists' initial predictions: that for the U.S., the impact of NAFTA has been relatively small, and that for Mexico, changes in trade flows to date do not give much support to the view that NAFTA might be seriously trade diverting."

Conclusions

Recently, U.S. trade policy has become a much more politically sensitive topic. Legitimate fears by affected industries and labor about the adjustment costs of increasing globalization need to be addressed in the political arena if the world is to continue the trend of trade liberalization that has been a consistent goal of U.S. foreign policy since the end of World War II, a goal that has been supported by the vast majority of the economics profession. In this broader context, the NAFTA experience offers several lessons.

First, economists can do a reasonably good job of projecting the gains from trade liberalization agreements. The mainstream forecasts during the NAFTA debate were basically correct: NAFTA has had relatively small positive effects on the U.S. economy and relatively large positive effects on Mexico. The only blemish marring this otherwise exemplary use of economic analysis in a policy debate was the occasional use of mercantilist arguments that attempted to infer the effect of trade liberalization by applying simple multipliers to projected bilateral trade balances. Such methods are inappropriate for the analysis of the benefits and costs of trade liberalization, and were criticized during the debate.

Second, a debate over the effects of removing trade distortions should not discuss the aggregate trade balance. Regional trade liberalization primarily affects resource allocation, production, and trade patterns. While regional trade agreements may affect bilateral trade balances, a country's aggregate trade balance is determined primarily in asset markets. The only way a regional trade agreement

[8] She does not identify the individual sectors for which this pattern does not hold, so we cannot compare her analysis with changes in the textile sector described in the previous section.

can affect a country's aggregate trade balance is if it signals a country's commitment to an open development strategy and therefore raises investor confidence. In this context, NAFTA probably affected Mexico's aggregate trade balance and helped ameliorate the effect of the peso crisis on capital flows. However, there is no discernible effect of NAFTA on the U.S. aggregate trade balance.

Third, realizing benefits from any trade agreement (or indeed, from any technological change) necessarily involves shifting resources across sectors, which in turn will involve adjustment costs, especially for labor. While the amount of adjustment required under NAFTA was small relative to normal labor turnover, the Clinton administration anticipated labor dislocation and extended Trade Adjustment Assistance. Globalization appears to be speeding structural changes in many economies, and there is clearly scope for developing policies that facilitate and smooth the adjustment process.

Fourth, free trade agreements can accelerate domestic reforms of policies that distort prices because countries can no longer maintain substantial price differences when they open borders. In this capacity, regional trade agreements can serve as a building block towards multilateral liberalization. They force countries to eliminate domestic distortions that are incompatible with free trade, whether regional or global.

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