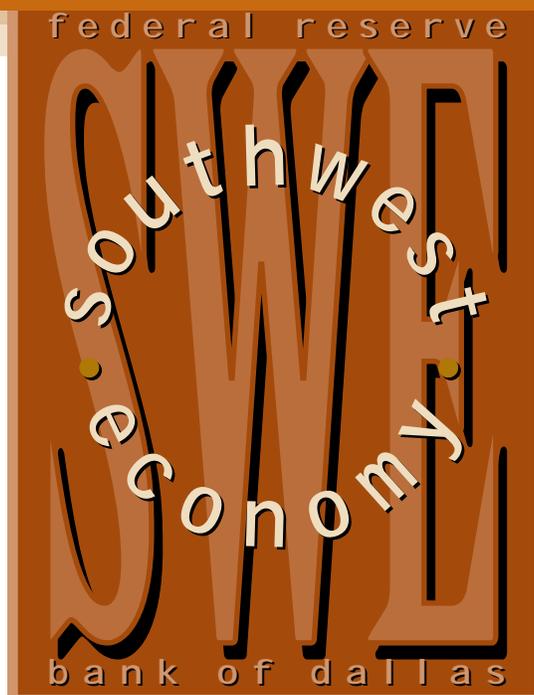


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TEXAS-MEXICO TRADE AFTER NAFTA

Texas exports affected more than its imports

A NAFTA RETROSPECTIVE

In this special issue, Dallas Fed economists look at NAFTA's effect on U.S.-Mexico trade. David Gould develops a model to disentangle the treaty's effects from those of the peso crisis. Jeremy Nalewaik and Lori Taylor extend the analysis to Texas-Mexico trade.

MERCHANDISE TRADE is a significant economic link between Texas and neighboring Mexico. In 1995, Texas exported nearly \$22 billion in merchandise to Mexico and imported at least \$14 billion in Mexican merchandise.¹ As such, trade with Mexico represents a bigger share of the Texas economy than oil and gas extraction.

Recently, Texas-Mexico trade has gone through a series of dramatic changes. The implementation of the North American Free Trade Agreement (NAFTA) is one such change. Another was the sharp drop in the value of the peso in December 1994 and subsequent fall in Mexican output. Both the Mexican economy and the value of the peso have since staged comebacks, further changing the Texas trade picture. This article describes the flow of merchandise trade between Texas and Mexico, assesses the relative impacts of NAFTA and the peso crisis on Texas trade flows, and examines the outlook for Texas merchandise trade with Mexico.

Chart 1
Texas Exports to Mexico
A Historically Strong Growth Record



SOURCE: Massachusetts Institute of Social and Economic Research (MISER).

An Overview of Texas Trade with Mexico

Given the proximity of Texas and Mexico, it is not surprising that Mexico is Texas' biggest international export market. From 1988 to 1993, exports to Mexico accounted for 33 percent of Texas exports to the world. Since 1994, this proportion has increased to nearly 36 percent.

Electronics and electrical equipment, transportation equipment, and industrial machinery and computer equipment make up most of Texas' exports to Mexico. Together these industries have accounted for nearly 50 percent of Texas exports to Mexico since 1988; the electronics and electrical equipment industry alone has accounted for more than 26 percent. Furthermore, Texas frequently sells more than half of its electronics and electrical equipment exports and almost half of its transportation equipment exports to Mexico. Mexico accounts for roughly 15 to 20 percent of Texas exports of industrial machinery and computers.

Not only is Mexico a large market for Texas products, but it has traditionally been a rapidly growing market (*Chart 1*). Since 1987, Texas exports to Mexico have grown 14 percent per year (after adjustment for inflation). In contrast, total exports to other foreign countries have grown only 9 percent per year. Although exports to Mexico contracted sharply with the onset of the peso crisis, they resumed their upward trend in third-quarter 1995.

Chart 2
U.S. and Texas Imports From Mexico
U.S. Imports Grow Faster



SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics.

The pattern of Texas imports is not as well documented as the pattern of exports. However, data on transborder surface freight between Texas and Mexico illustrate most of the pattern of trade (goods shipped by air and sea are excluded).² The surface freight data indicate that Texas is a substantial importer of Mexican goods. Since April

The Role of Maquiladoras in U.S. Trade with Mexico

Maquiladoras are Mexican firms with special tariff status. *Maquiladoras* import components and raw materials that are exempt from Mexican tariffs and use those imports to produce export goods. If the goods are exported to the United States, the U.S. content of the goods is also exempt from U.S. tariffs.

Trade with *maquiladoras* has been a major influence on U.S. trade with Mexico. The U.S. International Trade Commission estimates that nearly one-quarter of U.S. exports to Mexico in 1994 were destined for *maquiladora* firms. Most of those temporary exports then returned as the duty-free content of U.S. imports from *maquiladoras*. In 1994, *maquiladora* products made up nearly half of total U.S. imports from Mexico, and temporary exports reentering the United States made up over half the value of those *maquiladora* imports. *Maquiladoras* have been particularly important to transborder trade in transportation equipment, apparel, electronics, industrial machinery and instruments.

NAFTA and the peso crisis likely affected the *maquiladora* trade in ways that were different from their effects on exports and imports in general. Because U.S. content is not subject to tariffs, NAFTA probably had no effect on U.S. exports to *maquiladoras* and only limited effects on U.S. imports from *maquiladoras*. Furthermore, U.S. exports to *maquiladoras* are only temporary and were not reduced by declines in Mexican purchasing power. Instead, the peso devaluation made it more cost-effective to assemble products in Mexico and probably increased U.S. exports to *maquiladora* firms. In turn, the increase in U.S. exports to *maquiladoras* probably fostered a corresponding increase in U.S. imports from *maquiladoras*.

1993, Texas has consistently purchased at least one-quarter of U.S. surface imports from Mexico.

Interestingly, the leading import industries generally correspond to the leading export industries. As with exports, the largest Texas import industry—by a wide margin—is the electronics and electrical equipment industry. Thirty-seven percent of Texas’ surface imports from Mexico are classified as electronics and electrical equipment. Other important import industries include industrial machinery and computers, transportation equipment, instruments and apparel. This correspondence probably arises from the prominent role that maquiladora firms play in transborder trade. (See the box entitled “The Role of Maquiladoras in U.S. Trade with Mexico.”)

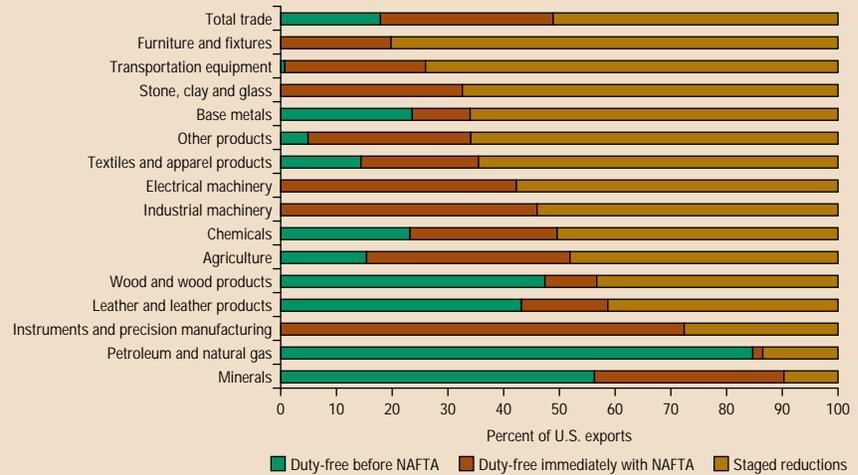
Texas imports from Mexico have been growing recently, although the pace of that growth is much slower than for U.S. imports from Mexico (*Chart 2*). Between second-quarter 1993 and first-quarter 1996, Texas surface imports from Mexico grew at an average annual rate of 3 percent, while U.S. surface imports from Mexico grew at an average annual rate of 19 percent.

Changes in Export and Import Demand

Recent economic changes—NAFTA, the peso devaluation, the Mexican recession and recovery—all have had an impact on demand for Texas imports and exports. However, these events have influenced demand in different ways. The expected demand effects of each change are the focus of this section.

The implementation of NAFTA on January 1, 1994, kicked off a series of tariff reductions. Under the agreement, tariffs on many traded goods immediately dropped to zero. Tariffs on remaining products will drop in stages over the next five to 15 years. (*Chart 3* illustrates the pattern of Mexican tariff reductions.) Mexican tariff reductions

Chart 3
Pattern of Mexican Tariff Reductions Under NAFTA



SOURCE: U.S. International Trade Commission.

encourage demand for Texas exports by lowering the effective price of Texas goods. Similarly, U.S. tariff reductions encourage Texas imports by lowering the effective price of Mexican goods. Each step down in tariffs under NAFTA should increase both Texas imports and exports.

After the sharp devaluation of the Mexican peso in December 1994, Texas

goods became much more expensive for Mexicans, while Mexican goods became much cheaper for Texans. These price effects increased Texas demand for Mexican exports and reduced Mexican demand for Texas exports. The devaluation also triggered one of the sharpest economic downturns in Mexican history. Mexican real gross domestic product (GDP) con-

Chart 4
Mexico Experiences Sharp Business Cycle With Onset of Peso Crisis



SOURCES: International Financial Statistics (IFS); Instituto Nacional de Estadística, Geografía e Información (INEGI).

Chart 5
NAFTA's Estimated Effect
On Texas Exports to Mexico

Billions of 1995 dollars,
(Quarterly data)



SOURCES: MISER and authors' calculations.

tracted at an 18.2-percent annual rate between fourth-quarter 1994 and second-quarter 1995 (*Chart 4*). The recession further reduced Mexican demand for Texas exports and may have spurred Texas imports by encouraging Mexican producers to look abroad for sales.

Since the middle of 1995, however, conditions in Mexico have started to turn around. The inflation-adjusted value of the peso has regained more than one-third of the devaluation losses. In addition, Mexican real GDP grew 7.2 percent between second-quarter 1995 and second-quarter 1996. A leading index for Mexico created by the Dallas Fed and the Center for International Business Cycle Research indicates that the expansion is likely to continue for at least the remainder of 1996. This recovery implies a reversal of previous demand shifts.

NAFTA's Impact on Trade

NAFTA's tariff reductions have not had an obvious impact on Texas exports. Export growth was robust immediately after NAFTA's implementation, but the 1994 growth rates were not unprecedented. Moreover, the industries that experienced large reductions in

Mexican tariffs generally were not the industries that experienced surging export growth in 1994. For example, export growth slowed in 1994 for the instruments industry even after Mexican tariffs dropped to zero on more than 70 percent of instruments exports on January 1, 1994.

The effects of NAFTA are difficult to discern because tariff rates are only one of many factors influencing exports. For example, Texas exports to Mexico are also influenced by the purchasing power of the peso, the relative health of the Mexican and U.S. economies, and the extent to which Texas producers can sell products to the rest of the world.

To isolate the effects of NAFTA on Texas exports, we rely on the historically strong relationship between U.S. exports to Mexico and Texas exports to Mexico. The tendency of changes in Texas exports to move with changes in U.S. exports implies that Texas exports are probably influenced by largely the same factors as U.S. exports. Moreover, forecasts from a model of U.S. exports do a reasonably good job of predicting Texas exports since 1987. (For a discussion of this U.S. model, see David Gould's article on page 6.) Because the greater quantity of data available at the national level permits more precise esti-

Chart 6
Texas Imports from Mexico
Jump in Late 1994

Billions of 1995 dollars,
(Six-month moving average of monthly data)



SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics.

Chart 7
Peso Crisis' Estimated Effect
On Texas Exports to Mexico

Billions of 1995 dollars,
(Quarterly data)



SOURCES: MISER and authors' calculations.

mates of NAFTA's effects than are possible using Texas data, we use Gould's model of the national economy to estimate these effects on Texas exports.

As expected, the model indicates that NAFTA boosted Texas exports (*Chart 5*). By comparing actual exports to Mexico with the level of exports that could have been expected without NAFTA, we estimate that NAFTA has boosted Texas real exports by approximately 6 percent since January 1994. However, given the substantial uncertainty surrounding our estimate, it should be interpreted as suggestive rather than definitive.

There is no evidence that NAFTA provided a comparable boost to Texas imports from Mexico. Data limitations preclude the use of a formal model to estimate NAFTA's effects on Texas imports, but the contrast with the U.S. experience is suggestive. NAFTA seemed to provide a boost to U.S. imports from Mexico, which accelerated sharply after the implementation of the treaty. Texas imports did not follow suit; real surface freight imports from Mexico grew only 1 percent in 1994. Without data on prior years, we cannot know whether this figure represents an acceleration in import growth, but it seems unlikely.

In sum, the import and export data suggest that, so far, NAFTA has had a

“The outlook is bright for Texas trade with Mexico.”

moderate effect on Texas trade with Mexico. However, NAFTA is being implemented in stages. While many tariffs dropped to zero on January 1, 1994, other decreases are being phased in over a 15-year period. As tariffs fall, the treaty’s effects should expand and become more evident.

Effects of the Peso Crisis

The unexpected peso devaluation and economic volatility that accompanied it have had much more obvious and dramatic effects on Texas–Mexico trade than has NAFTA. Not surprisingly, exports to Mexico declined sharply in the wake of the December 1994 devaluation. In the first half of 1995, Texas exports to Mexico declined at a 37-percent annual rate. Meanwhile, surface freight imports from Mexico increased at a 9.4-percent annual rate (*Chart 6*). Since then, however, Mexico’s economy has regained ground, Texas exports have resumed their robust growth and Texas imports have fallen.

Again, we use forecasts from the model of U.S. trade to estimate the effects of the peso devaluation and

its aftermath on total Texas exports to Mexico. As *Chart 7* illustrates, the peso crisis damped what should have been steep Texas export growth in 1995. We estimate that Texas exports to Mexico would have been approximately 31 percent higher had there been no peso crisis.

The effects of the peso crisis seem to have varied dramatically across industries (*Chart 8*). For example, the crisis appears to have had a much smaller effect on exports of electronics and electrical equipment than on exports of transportation equipment or industrial machinery and computers. The relative insensitivity of electronics exports to fluctuations in the exchange rate and Mexican income implies that maquiladoras have an especially large influence on Texas exports of electronics to Mexico.

Once again, the lack of data makes it difficult to pin down import effects. It is unlikely that all the increased Texas import growth in early 1995 is attributable to the peso crisis. Some of that pickup may reflect the influence of trucking deregulation or NAFTA.³ However, a plausible upper bound on the effects of the peso crisis would be

the difference between actual imports since December 1994 and the level of imports that would have occurred if imports had continued to grow at their 1994 rate. By this criterion, the peso devaluation and subsequent Mexican business cycle fostered less than 3 percent in additional imports from Mexico. As a lower bound, if Texas mirrored the U.S. pattern, the effect of the peso crisis on Texas imports from Mexico was negligible.

Conclusions and the Outlook for Trade

Texas’ recent history of trade with Mexico suggests that both NAFTA and the peso crisis have affected the state’s exports much more than its imports. If NAFTA continues to have a greater influence on exports than imports, future tariff reductions under the treaty should boost Texas net exports as well as the total volume of trade. Similarly, as the peso crisis runs its course and the Mexican economy improves, both Texas net exports and the volume of Texas trade with Mexico should grow. Thus, the outlook is bright for Texas trade with Mexico.

—Jeremy Nalewaik
Lori L. Taylor

Chart 8
Top Texas Export Industries to Mexico

Different Reactions to Peso Crisis

Index, 1990:1 = 100



SOURCE: MISER.

Notes

- ¹ Throughout this article, we measure exports using data based on the state of origin of movement to port. All the trade data are adjusted for inflation with 1995 as the base.
- ² Nationally, transborder surface freight represents 92 percent of exports to Mexico and 86 percent of imports from Mexico.
- ³ Before deregulation, the wedge between interstate and intrastate trucking rates pushed warehousing activity out of the state. Firms would supply Texas from warehouses just over the state line in Arkansas, Oklahoma and New Mexico. Trucking deregulation in January 1995 made it more attractive for firms to supply Texas customers from warehouses in Texas. Because surface freight imports are apportioned to the states according to their shipping destinations, a shift toward Texas warehousing would increase the Texas import numbers.

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 than 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

Billions of U.S. dollars



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

Billions of U.S. dollars



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

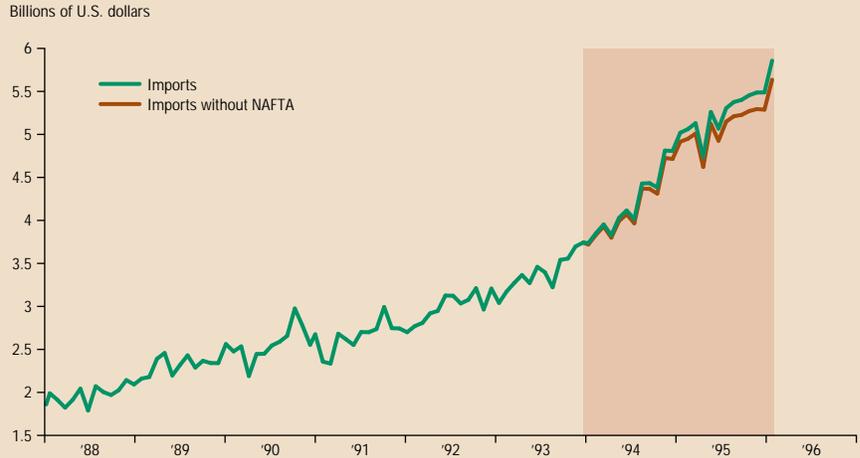
NAFTA. Charts 2 and 3 show the estimated effects of NAFTA on bilateral trade flows between the United States and Mexico. As the green line in Chart 2 indicates, exports are estimated to have grown faster than they would have, had there been no trade agreement. On average, U.S. export growth is about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

“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

Billions of U.S. dollars



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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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

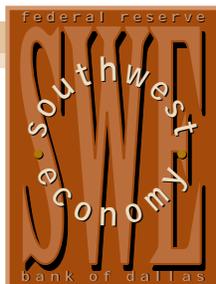
Notes

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 authors' 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.



Southwest Economy Issue 5 is special both because of its NAFTA coverage and because it debuts a new design. Go online and tell us your thoughts about the content and format—and find back issues about NAFTA and many other aspects of the economy—at www.dallasfed.org

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:

$$M_t = \alpha + \alpha_1 M_{t-1} + \alpha_2 I_{t-1}^* + \alpha_3 I_{t-1} + \alpha_4 E + \alpha_5 \bar{M}_{t-1} + \alpha_6 \bar{X}_{t-1}^* + \alpha_7 D88 + \alpha_8 N + \varepsilon, \text{ and}$$

$$X_t = \beta + \beta_1 X_{t-1} + \beta_2 I_{t-1}^* + \beta_3 I_{t-1} + \beta_4 E + \beta_5 \bar{X}_{t-1} + \beta_6 \bar{M}_{t-1}^* + \beta_7 D88 + \beta_8 N + \mu,$$

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.

Regional Update

AFTER A WEAK first quarter, Eleventh District employment accelerated in the second quarter to just above its long-run average growth rate of 3 percent. Economic activity is now showing signs of decelerating slightly, however. The expansion is being dampened by a slightly slower national economy and a brief second-quarter jump in mortgage rates. Still, continuing expansion of most high-tech industries and the recovering Mexican economy will help keep job growth in the second half of the year above the rate averaged in the first half. (Growth rates have been annualized.)

After 2-percent job growth in the first quarter, District employment growth jumped to 3.2 percent in the second quarter. The surge in job growth occurred entirely in Texas, where employment growth increased from a sluggish 2 percent to 3.7 percent. In contrast, Louisiana employment growth slipped from 1.1 percent to 0.3 percent, while New Mexico's job growth took a respite from a torrid 5.4 percent in the first quarter to 4.3 percent in the second quarter.

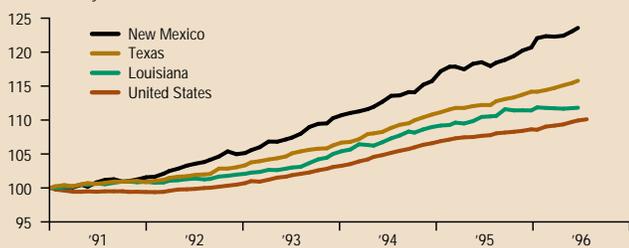
Employment growth in Texas gained momentum as the national economy bounced back in the second quarter. The state's job growth in the electronics industry was an exception to this trend, however, as weaker than expected demand for computers and an oversupply of semiconductors led to several layoff announcements. The construction sector also began to show signs of deceleration, although single-family homebuilding remained at very high levels. Construction employment growth slowed to 1.5 percent, after surging to 5.8 percent in 1995.

In the second half of the year, District employment will likely grow near its long-run average rate. The Texas Leading Index declined in May and June, after showing strong gains through the first four months of the year. Declines in the leading index suggest some moderation in the second half from growth posted in the second quarter. Growth should remain stronger than the 2.6 percent posted in the first half, however, and faster than that of the rest of the country.

—Fiona Sigalla

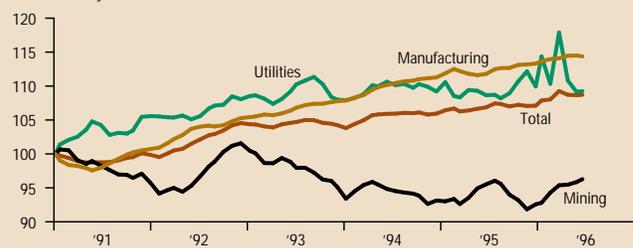
Total Nonfarm Employment

Index, January 1991 = 100



Texas Industrial Production Index (TIPI)

Index, January 1991 = 100



Texas Leading Index and Nonfarm Employment

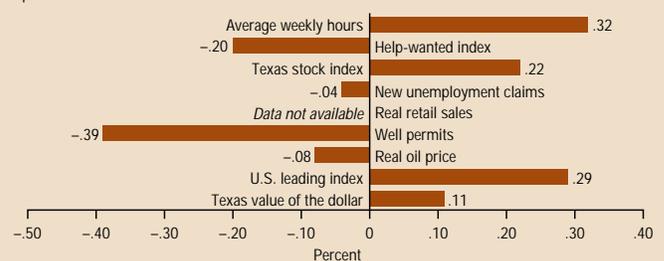
Thousands of persons

Index, January 1981 = 100



Net Contributions of Components to Change in Leading Index

April–June 1996



Regional Economic Indicators

| | Texas employment | | | | | | | Total nonfarm employment | | |
|-------|---------------------|------------|--------|--------------|---------------|------------|---------------------------|--------------------------|-----------|------------|
| | Texas Leading Index | TIPI total | Mining | Construction | Manufacturing | Government | Private service-producing | Texas | Louisiana | New Mexico |
| 6/96 | 116.3 | 121.4 | 153.3 | 424.6 | 1,044.4 | 1,472.6 | 5,161.3 | 8,256.2 | 1,794.5 | 718.9 |
| 5/96 | 116.6 | 121.3 | 153.5 | 424.0 | 1,043.3 | 1,469.9 | 5,142.1 | 8,232.8 | 1,793.5 | 716.0 |
| 4/96 | 116.8 | 121.4 | 152.4 | 422.9 | 1,042.0 | 1,468.2 | 5,122.8 | 8,208.3 | 1,792.2 | 712.2 |
| 3/96 | 116.2 | 122.0 | 153.2 | 423.0 | 1,039.5 | 1,466.1 | 5,098.9 | 8,180.7 | 1,793.1 | 711.4 |
| 2/96 | 115.0 | 120.6 | 154.1 | 423.0 | 1,040.5 | 1,464.2 | 5,076.5 | 8,158.3 | 1,794.0 | 711.8 |
| 1/96 | 114.1 | 120.5 | 152.2 | 422.9 | 1,043.1 | 1,461.4 | 5,061.0 | 8,140.6 | 1,795.3 | 710.1 |
| 12/95 | 113.6 | 119.6 | 154.1 | 418.8 | 1,038.5 | 1,461.4 | 5,068.4 | 8,141.2 | 1,788.1 | 702.1 |
| 11/95 | 113.7 | 119.6 | 154.3 | 416.1 | 1,034.0 | 1,457.8 | 5,047.9 | 8,110.1 | 1,788.4 | 699.5 |
| 10/95 | 114.4 | 119.8 | 154.8 | 413.5 | 1,031.1 | 1,455.4 | 5,026.0 | 8,080.8 | 1,788.2 | 694.8 |
| 9/95 | 115.0 | 119.5 | 155.4 | 412.0 | 1,032.1 | 1,452.9 | 5,011.9 | 8,064.3 | 1,791.1 | 691.5 |
| 8/95 | 115.0 | 119.9 | 155.3 | 408.1 | 1,029.3 | 1,458.9 | 4,989.6 | 8,041.2 | 1,775.1 | 689.1 |
| 7/95 | 114.7 | 120.0 | 155.1 | 404.9 | 1,026.3 | 1,449.3 | 4,965.5 | 8,001.1 | 1,774.1 | 686.2 |

Further Information on the Data

For more information on employment data, see "Reassessing Texas Employment Growth" (*Southwest Economy*, July/August 1993). For TIPI, see "The Texas Industrial Production Index" (Dallas Fed Economic Review, November 1989). For the Texas Leading Index and its components, see "The Texas Index of Leading Indicators: A Revision and Further Evaluation" (Dallas Fed Economic Review, July 1990).

Online economic data and articles are available on the Dallas Fed's BBS, Fed Flash, (214) 922-5199 or (800) 333-1953, and WWW home page, www.dallasfed.org.

Announcing

Examiner WORKSTATION

A New Tool to Increase Examiner Efficiency

Federal Reserve bank examiners are beginning to use new software to make examinations more efficient and less burdensome for financial institutions. Called *Examiner Workstation*, this new tool allows examiners to utilize electronic data from the financial institutions' databases, eliminating the need for time-consuming manual transcription.

In Release 1.1, *Examiner Workstation* contains functionality for the electronic accumulation of loan data. The application will eventually encompass all facets of the bank examination, including the analysis of the securities portfolio, the electronic completion of work papers, report-generation activities and financial analysis based on the bank's Call Report.

With the electronic accumulation of data, examiners can analyze this data off-site and use it to help focus on-site work on larger issues, such as risk management. "Bankers encouraged us to use technology more effectively during the exam process," says Dallas Fed Vice President W. Arthur Tribble. "Loan analysis is a very manual function and takes a lot of time. We think we have a product that is a win-win for the banker and the examiner: less time spent in the bank with better analysis and insight."

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