

El Paso Business Frontier



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U.S.–Mexico Trade: Are We Still Connected?

Trade between the United States and Mexico slowed sharply between 2001 and 2003, primarily because of slower growth in both countries. During this period, gross domestic product (GDP) growth fell to 1.6 percent per year on average in the United States and 0.6 percent in Mexico. Consequently, U.S. exports to Mexico fell 4.4 percent on average per year for 2001–03. U.S. imports of goods and services from Mexico grew only 0.6 percent on average per year over the same period.

Currently, with both countries again growing strongly, U.S.–Mexico trade seems to be back on track, rising at an annual rate of 13.5 percent since January. This article looks at how trade between the United States and Mexico has increased synchronization of the two economies, examines both countries' trade by industry and explores how enhanced trade between these countries affects border economic growth.

ECONOMIC SYNCHRONIZATION THROUGH TRADE

Inter-industry trade refers to countries exporting and importing the products of different industries based on comparative advantage provided by their national characteristics or initial endowments. This is the standard concept of trade taught in every elementary economics textbook, describing how opening trade between two countries unequivocally enhances the welfare of both.

Three important results follow from this theory of inter-industry trade. First, after trade opens, a country will export goods that are relatively intensive in abundant domestic factors. The United States will export technology because of its relative abundance of skilled labor or wheat because of its farmland. It will import goods like textiles or apparel that are intensive in scarce, low-wage labor. Second, trade benefits the

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abundant factors (skilled labor, farmers) and hurts the scarce factor (low-wage labor). The country as a whole gains, but there are well-defined losers. Third, export industries expand while industries competing with imports contract, perhaps causing extensive unemployment and long-term readjustment.

There is another form of trade, however, that is not based on the competition between scarce and abundant factors. *Intra*-industry trade occurs within industries and even between countries making the same good and using similar factors of production.¹ This trade can arise because goods are similar but not identical—Japanese car manufacturers are known for quality, U.S. automakers for innovations like the minivan and sport utility vehicle. Opening intra-industry trade can spread fixed cost across countries as one or the other develops a cost advantage. Unlike inter-industry trade, where there are well-defined and broad classes of winners and losers, intra-industry trade does not carry implications of massive readjustment across industries. Innovations can arise anywhere, and the location of fixed factors may simply be an accident of history.²

Although opening trade implies new linkages between countries, there is no consensus about whether increased trade leads to more or less correlation of business cycles across trading partners. However, recent empirical research suggests that if the integration of trading-partner economies is the result of growing intra-industry versus inter-industry trade, business cycles will become more positively correlated.³ The experience of the European Union and other economically integrated regions shows that the structural-adjustment processes induced by trade liberalization are less disruptive if the adjustment follows intra- rather than inter-industry patterns.⁴

Maquiladora-led U.S.–Mexico trade is primarily intra-industry trade. Most industries experienced large increases in intra-industry trade over the first five years of the North American Free Trade Agreement (NAFTA).⁵ From 1993 to 2003, U.S.–Mexico total trade increased 189 percent, from \$81.4 billion to \$235.5 billion. About 80 percent of U.S. trade with Mexico is intra-industry, a fact that may have played a role in the countries' increased economic synchronization, especially after NAFTA took effect in 1994 (*Chart 1*). From 1980 to 1993, the correlation coefficient between the coincident indexes of economic activity in the United States and Mexico was 0.73. The same correlation coefficient increased to 0.96 between 1993 and 2004. More formal studies by Mexico's central bank provide evidence that production linkages between Mexico and the U.S. manufacturing sectors strengthened after NAFTA's enactment, and as a consequence, business cycles in these countries became more synchronized.⁶

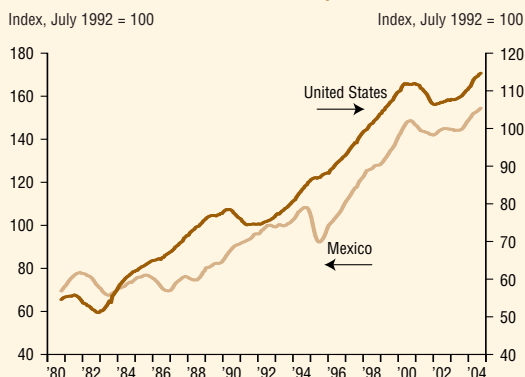
WHAT ARE MEXICO AND THE UNITED STATES TRADING?

Table 1 lists the 15 largest U.S. exports to Mexico plus the top 15 U.S. imports from Mexico in 2003. Eleven categories appear on both lists, indicating extensive intra-industry trade. Computer and electronic products, for example, were the top U.S. export to Mexico and also the second-largest import from Mexico. Transportation equipment was the second largest U.S. export to Mexico but also the top U.S. import from Mexico. This two-way exchange implies each country is sending the other the same product, just at different stages of production. In the computer and electronic products category, the United States may send Mexico chips and software, while Mexico sends assembled computers back to the United States—an example of U.S.–Mexico trade through the maquiladora industry.

Originally, maquiladora plants were allowed to temporarily import duty-free supplies, parts, machinery and equipment necessary to produce goods and services in Mexico, as long as the output was exported back to the United States. The United States, in turn, taxed only the value-added portion of the manufactured product. The top three maquiladora sectors—transportation equipment, electronics, and textiles and apparel—together compose 75 percent of total maquiladora employment and are well represented in our list of 15 leading goods traded between the two countries.

Table 2 shows U.S. exports to Mexico for the 10 leading exporting states in 2003. Texas is the most important exporter to Mexico, with almost 43 percent of the total (\$41.6 billion), followed by

Chart 1
U.S. and Mexico Get Synchronized
(Coincident indexes of economic activity)



SOURCE: Federal Reserve Bank of Dallas.

Table 1
U.S. Trade with Mexico, 2003
(Billions of U.S. dollars)

Exports				Imports			
Rank	NAICS code	Product	Amount	Rank	NAICS code	Product	Amount
1	334	Computer and electronic products	21.533	1	336	Transportation equipment	35.458
2	336	Transportation equipment	12.356	2	334	Computer and electronic products	29.557
3	325	Chemicals	9.175	3	211	Oil and gas	14.439
4	333	Machinery, except electrical	8.511	4	335	Electrical equipment, appliances, and component	10.997
5	335	Electrical equipment, appliances, and component	6.184	5	315	Apparel and accessories	7.177
6	326	Plastics and rubber products	4.826	6	333	Machinery, except electrical	5.642
7	311	Food manufacturing	4.165	7	332	Fabricated metal products, NESOI	3.710
8	332	Fabricated metal products, NESOI	4.041	8	339	Miscellaneous manufactured commodities	3.567
9	111	Agricultural products	3.586	9	111	Agricultural products	2.972
10	331	Primary metal manufacturing	2.854	10	325	Chemicals	2.370
11	313	Textiles and fabrics	2.718	11	331	Primary metal manufacturing	2.342
12	322	Paper	2.701	12	312	Beverages and tobacco products	1.747
13	324	Petroleum and coal products	2.323	13	316	Leather and allied products	1.721
14	339	Miscellaneous manufactured commodities	2.269	14	327	Nonmetallic mineral products	1.673
15	315	Apparel and accessories	1.656	15	311	Food manufacturing	1.394
		Subtotal:	88.898			Subtotal:	124.766
		All other:	8.559			All other:	13.306
		Total	97.457			Total	138.072

SOURCE: U.S. International Trade Commission.

California at 15 percent (\$14.9 billion) and Michigan with 4.1 percent (\$4 billion). Texas' leading exports are computer and electronic products, transportation equipment and chemicals. California exports computer and electronic products, machinery, and plastics and rubber products, while Michigan mainly exports transportation equipment, computer and electronic products, and chemicals.

TRADE AT THE BORDER

In 2003, trade through land ports along the U.S.–Mexico border represented about 83 percent of the trade between the countries. Together, the top 10 ports of entry account for 98 percent of trade passing through the border (*Table 3*). Laredo was by far the leader with a 40.5 percent share, or \$79 billion in cargoes. Second-place El Paso had about half the exports of Laredo, at \$40 billion, or 20.2 percent. With \$152 billion in land trade with Mexico, Texas surpassed other states by far: California (\$30 billion), Arizona (\$12 billion) and New Mexico (\$1.1 billion). Growth in U.S.–Mexico trade in the 1990s, as well as the increased economic interdependence along the border, is easily explained by the stellar performance of the maquiladora industry during the decade. For instance, Mexico's total maquiladora trade reached \$136 billion in 2003, or about 41 percent of the country's total trade. This figure was up fivefold from 1990, when it was only \$24 billion.

The positive impact of maquiladora growth for the U.S. side of the border has two main sources: (1) the spillovers from maquiladora-associated income growth in neighboring Mexican cities, such as retail sales, and (2) the shift of many U.S. maquiladora suppliers to border cities from their traditional base in the Midwest.⁷ In recent years, we have seen how rising real wages in Mexico and foreign competition have reduced the prospects for maquiladora growth in some sectors, and now we are seeing foreign competition make inroads into the maquiladora supply chain. This raises the possibility of slowing, or even

Table 2
U.S. Exports to Mexico by Top 10 States, 2003
(Billions of U.S. dollars)

State	Total exports
All United States	97.457
1 Texas	41.561
2 California	14.872
3 Michigan	4.006
4 Arizona	3.229
5 Illinois	2.153
6 Indiana	2.105
7 Ohio	2.102
8 Florida	1.814
9 Louisiana	1.776
10 New York	1.705

SOURCE: World Institute for Strategic Economic Research.

reversing, the growth of U.S. border-city suppliers to the maquiladora industry.

Throughout the 1990s, the vast majority of imported inputs to the maquiladora industry came from the United States. In 2000, 90 percent of maquiladora inputs were from the United States and 9 percent were from Asia, with China contributing only 1 percent (*Chart 2*). By 2003, 69 percent came from the United States and 28 percent from Asia, including 8 percent from China. The United States remains the majority supplier, but this rapidly moving trend continued to run in favor of Asia into 2004.

It may be that U.S.-based suppliers are simply being replaced by global competitors, mainly from Asia. Alternatively, perhaps U.S.-based suppliers are having their inputs partially or completely produced in Asia to take advantage of cheaper labor, then sent to Mexico for final assembly in the maquiladoras. Either way, maquiladora imports from the United States have fallen, even though Mexico's maquiladora exports remain almost completely (98 percent) destined for U.S. consumption.

Unfortunately, data are not available on exactly which inputs are being displaced, making it difficult to assess the impact on Texas border communities. Did production move to the border in the 1990s because the inputs being produced were time-sensitive, making it hard for Asian firms to compete? Or are Texas suppliers, like more distant suppliers in the Midwest, seeing a rapid production shift to Asia?

Recent research suggests it is still too early to write off the established supplier networks on the border, in spite of rising wages in Mexico. Competitive advantages continue in sectors that place a premium on proximity to both markets and sup-

Table 3
U.S.–Mexico Trade by Top 10 Land Ports, 2003
(Billions of U.S. dollars)

City	Total trade
1 Laredo, TX	78.812
2 El Paso, TX	39.334
3 Otay Mesa–San Ysidro, CA	19.747
4 Hidalgo, TX	14.432
5 Nogales, AZ	10.356
6 Brownsville–Cameron, TX	10.147
7 Calexico, CA	8.898
8 Eagle Pass, TX	5.739
9 Del Rio, TX	2.772
10 Santa Teresa, NM	1.089
Total for 10 ports of entry	191.326

SOURCE: Texas Center for Border Economic and Enterprise Development, Texas A&M International University.

plier networks.⁸ More specifically, the established competitive supplier networks of the border maquiladoras, and the developed border infrastructure that links the maquiladoras to the large U.S. market, can offset the initial disadvantages of higher labor costs and a leveling of tariff policies. With a continued strong presence of cross-border interdependence, the border region can remain the pioneer and leader with respect to manufacturing processes.

SUMMARY

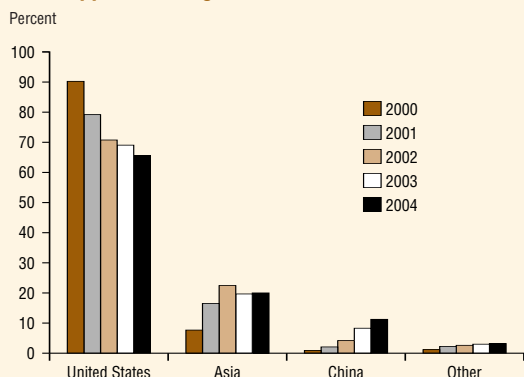
U.S.–Mexico trade is growing again at rates experienced before the recent economic slowdown. In addition, the top products traded by these countries have not changed, implying that trade expansion may have a less disruptive effect in both countries as a result of the intra-industry nature of their trade relationship. This relationship may also be a key factor in the economic synchronization of the U.S. and Mexican business cycles. Recent data suggest that U.S. suppliers to the Mexican maquiladora industry are rapidly being replaced by global competitors, mainly from Asia. Data are not available to specifically assess this trend's impact on Texas suppliers, but research suggests that proximity and infrastructure remain significant assets for maquiladora suppliers located in Texas border cities.

—Jesus Cañas
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Chart 2
U.S. Suppliers Losing Market Share in Mexico



NOTES: 2004 data are for January through April; Asia excludes China.

SOURCES: Banco de México; authors' calculations.

considered. And others may find new opportunity in the general economic housecleaning that a recession brings. One study found that the oil bust in Texas and Louisiana cities led to a quick surge in the number of proprietors, but that it took several years for a large increase in proprietors' income to follow.⁵ Recessions are also sometimes compared to forest fires, leaving the seeds of economic regeneration on the forest floor after they pass. These proprietorships may well be the seeds of future growth.

CONCLUSION

Despite the controversy at the national level over which employment series to follow, we could find little evidence that the more optimistic, less watched household series really offers trustworthy news about additional job growth in El Paso and surrounding cities. The exception is perhaps in new proprietorships, where the self-employed added from 0.5 percent to 1 percent to total employment in the first year of economic recovery.

Even if this proprietor job growth carried over into 2003 and 2004, adding a percentage point to growth in El Paso or Texas or the United States, the numbers remain disappointing. The primary factors still shaping job growth at present are the short-run, job-depressing effects of productivity, along with some structural readjustments to the 1990s tech boom and bust. We are still waiting for the long-term, job-growing benefits of higher productivity growth that seem sure to follow.

—Robert W. Gilmer

Gilmer is a vice president and senior economist at the Federal Reserve Bank of Dallas.

NOTES

- ¹ The December 2004 issue of *Houston Business*, published by the Federal Reserve Bank of Dallas, contains a similar but more detailed analysis of the same problem for Houston and other Texas Triangle cities.
- ² For a summary of the controversy, including a number of issues not touched on in this article, see "Employment from the BLS household and payroll surveys: summary of recent trends," on the BLS web site at www.bls.gov/cps/ces_cps_trends.pdf.
- ³ "Examining the Discrepancy in Employment Growth Between the CPS and CES," by Mary Bowler, Katie Kirkland, Jurgen Kropf, Thomas Nardone and Signe Wetrogan, a paper prepared for the Federal Economics Statistics Advisory Committee, Washington, D.C., October 17, 2003.
- ⁴ The total number of proprietors is taken from Schedule C of IRS Form 1040 on gains and losses from business, and a partnership count from Form 1065, U.S. Partners Return of Income. Limited partnerships for oil and gas and real estate are handled separately.
- ⁵ See "Finding New Ways to Grow: Recovery in the Oil Patch," by R. W. Gilmer, *Houston Business*, July 1996.

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NOTES

- ¹ The seminal work on this subject is *Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products*, by H. G. Grubel and P. J. Lloyd, New York: John Wiley, 1975.
- ² For an introduction to the subject, see "The Nature and Significance of Intra-Industry Trade," by Roy J. Ruffin, Federal Reserve Bank of Dallas *Economic and Financial Review*, Fourth Quarter 1999, pp. 2–9.
- ³ "The Endogeneity of the Optimum Currency Area Criteria," by Jeffrey Frankel and Andrew Rose, *Economic Journal*, vol. 108, July 1998, pp. 1009–25.
- ⁴ "Intra-Industry Trade: Current Perspectives and Unresolved Issues," by David Greenaway and Chris Milner, *Weltwirtschaftliches Archiv*, vol. 123, no. 1, 1987, pp. 39–57.
- ⁵ "Intra-Industry Trade Between the United States and Mexico: 1993–1998," by Don P. Clark, Thomas M. Fullerton Jr. and Duane Burdorf, *Estudios Económicos*, El Colegio de México, vol. 16, no. 2, 2001, pp. 167–83.
- ⁶ See "Bilateral Trade and Business Cycle Synchronization: Evidence from Mexico and United States Manufacturing Industries," by Daniel Chiquiar and Manuel Ramos-Francia, Working Paper no. 2004-05, Dirección General de Investigación Económica, Banco de México, October 2004. Also see "La Relación de Largo Plazo del PIB Mexicano y de sus Componentes con la Actividad Económica en los Estados Unidos y con el Tipo de Cambio Real," by Daniel G. Garcés Díaz, Documento de Investigación no. 2003-4, Dirección General de Investigación Económica, Banco de México, marzo de 2003.
- ⁷ See "El empleo en la frontera de Texas y el crecimiento de las maquiladoras," by Jesus Cañas, Roberto Coronado and Robert W. Gilmer, *Acontecimientos Recientes sobre Desarrollo Económico Fronterizo*, Colegio de la Frontera Norte, forthcoming.
- ⁸ See "Maquila Sunrise or Sunset? Evolutions of Regional Production Advantages," by Stephan Weiler and Becky Zerlentes, *Social Science Journal*, vol. 40, no. 2, 2003, pp. 283–97.



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