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# THE BINATIONAL IMPORTANCE OF THE MAQUILADORA INDUSTRY



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MEXICO'S MAQUILADORA INDUSTRY is part of a worldwide phenomenon more commonly known as production sharing. Through the maquiladora framework, foreign manufacturers—predominantly U.S. companies—are able to locate labor-intensive operations in labor-abundant Mexico, thus achieving lower labor costs in the overall production process. Mexico, in turn, receives investment—factories, machinery and equipment, state-of-the-art production technology—from countries such as the United States that have a relative abundance of capital. Thus, Mexico is able to attract some of the foreign direct investment it needs to grow.

Maquiladoras have not only become an increasingly significant component of the Mexican economy, they are also an important part of U.S. corporate strategy in achieving competitively priced goods in the world marketplace. As a result, consumers worldwide reap the benefits of maquiladora production in the form of lower-priced goods. This article examines the importance of the maquiladora industry for both the U.S. and Mexican economies.

**Table 1**  
**Maquiladora Industry Key Indicators**

	1998	Percent change year ago	January– June 1999	Percent change year ago
Plants	2,983	9.8	3,219	10.8
Employment	1,008,031	12.2	1,096,619	11.8
Total raw materials (billions of U.S. dollars)	39.1	8.8	21.3	16.1
Imported	38.1	8.4	20.7	15.8
Domestic	1.1	28.2	.6	26.9
Value added (billions of U.S. dollars)	10.6	19.4	6.2	22.6
Exports (billions of U.S. dollars)	52.9	17.0	29.2	16.4

SOURCES: Instituto Nacional de Estadística, Geografía e Informática. Export data, Banco de México.

## Importance for Mexico

**Jobs, Exports and Foreign Exchange.** In 1998, the maquiladora industry stood at nearly 3,000 plants with over a million workers, and growth continues strong this year. During the first six months of 1999, plants and employment grew at 10.8 percent and 11.8 percent, respectively, relative to the year-earlier period. Table 1 summarizes the industry's key indicators for 1998 and the first six months of 1999. Chart 1 shows the industry's principal sectors: electronics, transportation equipment, and textiles and apparel. Together, these three

sectors represented over 74 percent of maquiladora employment and nearly 80 percent of maquiladora production during the first six months of 1999.

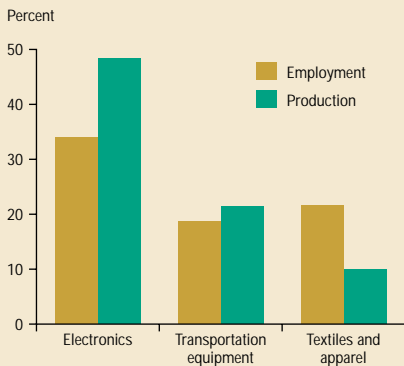
The maquiladora industry's importance for the Mexican economy has been increasing over time, especially in the areas of job creation, exports and foreign exchange. Chart 2 shows the industry's employment growth trend from 1983 through 1998. During this period, maquiladora employment grew at an average rate of 14.1 percent per year. Maquiladora employment growth has been so dynamic, especially vis-à-vis growth in the Mexican economy, that its share in formal and manufacturing

employment has risen considerably.<sup>1</sup> In 1998, maquiladoras provided almost 8 percent of Mexico's formal employment, up from just over 2 percent in 1983. They accounted for a greater share of the country's manufacturing employment—almost 28 percent—up from 7.2 percent in 1983. Undeniably, maquiladoras have been very important to Mexico in job creation.

As a key component of Mexico's export platform, the maquiladora industry also contributes to enhancing the country's place in the world economy. Chart 3 depicts the industry's export growth since 1983. On an average annual basis, maquiladora exports grew 20.4 percent during 1983–98 and totaled almost \$53 billion last year. During the first six months of this year, maquiladora exports grew 16.4 percent relative to the year-earlier period and represented almost 46 percent of the country's total exports and the majority—51.1 percent—of its manufacturing exports.

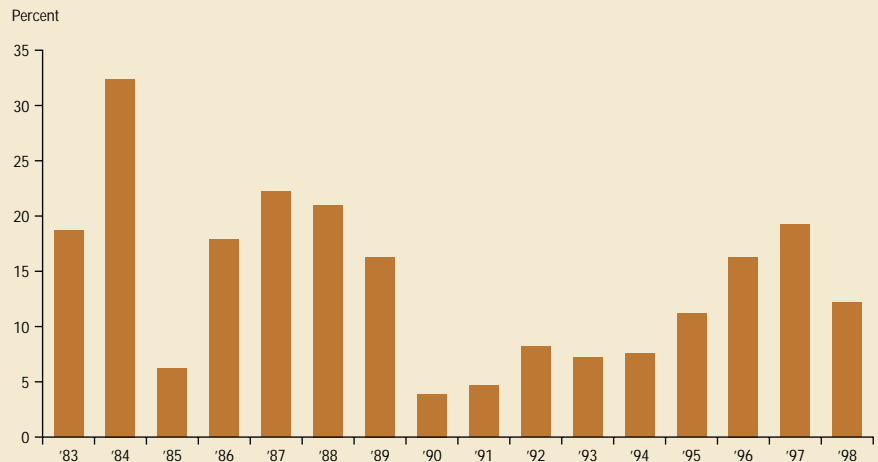
The maquiladora industry's solid export record has placed it among Mexico's top foreign exchange generators, affording the country a stronger position in its external-sector accounts. As Chart 4 shows, since the early 1980s maquiladoras have been Mexico's second-largest source of foreign exchange, after oil. However, in 1998, because of the precipitous drop in the oil price—and the maquiladora industry's continued

**Chart 1**  
**Maquiladora Employment and Production Shares in Principal Sectors, January–June 1999**



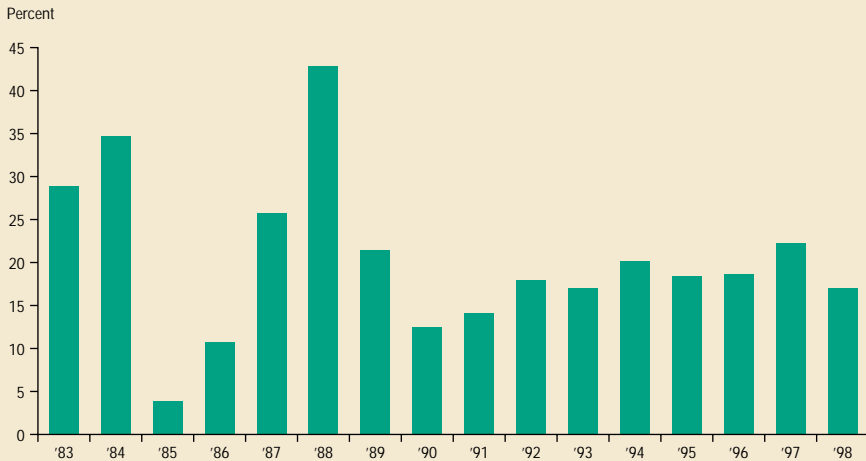
SOURCE: Instituto Nacional de Estadística, Geografía e Informática.

**Chart 2**  
**Maquiladora Employment**  
*(Annual growth rates)*



SOURCE: Instituto Nacional de Estadística, Geografía e Informática.

**Chart 3**  
**Maquiladora industry Exports**  
*(Annual growth rates)*



SOURCE: Banco de México.

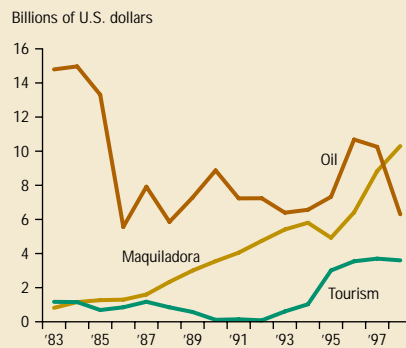
robustness last year—foreign exchange generated through oil fell behind that of maquiladoras for the first time, making maquiladoras the country's top foreign exchange source. Last year, maquiladoras contributed \$10.3 billion in foreign exchange for Mexico. The figure for the first six months of this year is \$6 billion, signaling that maquiladora value added at year-end will likely surpass the 1998 total.

**Regional and Technological Development.** The maquiladora industry has also contributed to Mexico's regional and technological development. Maquiladoras are concentrated in Mexico's northern border states, specifically in cities adjacent to the United States. The two most important locations are Ciudad Juárez, Chihuahua (across from El Paso, Texas), and Tijuana, Baja California (across from San Ysidro and San Diego, California). Together, these two cities represented 35 percent of Mexico's total maquiladora industry employment in 1998 and 39 percent of its maquiladora production. For all border cities combined, 1998 maquiladora employment and production shares were 65.5 percent and 73.4 percent, respectively.

Before the maquiladora program's implementation, cities along Mexico's northern border had among the highest unemployment rates in the country, typically in double digits. Because of

the industry's settlement in these cities and its consistent employment growth, these two locations now have among the nation's lowest unemployment rates. Last year, the open unemployment rate in Ciudad Juárez and Tijuana was more than 2 percentage points below the national average (*Chart 5*).<sup>2</sup> The maquiladora industry has become so important in border cities that in Ciudad Juárez, for example, more than 57 percent of all jobs came from maquiladora companies in 1998. Moreover, the overwhelming majority of the city's manufacturing

**Chart 4**  
**Top Foreign-Exchange Generators for Mexico**



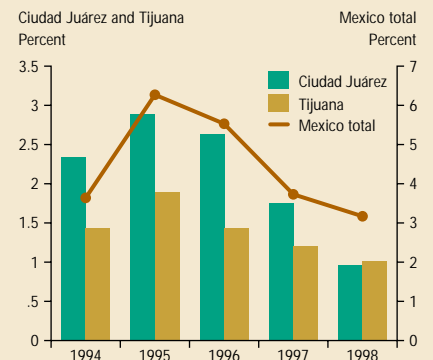
SOURCES: For the oil sector, data through 1987 are from PEMEX; remaining oil data are from Banco de México, Secretaría de Hacienda y Crédito Público and Instituto Nacional de Estadística, Geografía e Informática. Maquiladora and tourism data are from Banco de México.

jobs—85.4 percent—was attributable to these companies.

When Mexico's maquiladora program began in 1965, most maquiladora companies were basically assembly operations requiring unskilled labor. The industry has evolved significantly over the years to where the maquiladora factory floor now involves much more sophisticated production techniques. Concomitantly, maquiladora operations have increasingly required much more skilled labor. For example, during January–June 1999, technicians represented 12.1 percent of maquiladora employment, compared with 8.8 percent in 1975. Moreover, the skill level of the maquiladoras' largest labor component—direct line workers<sup>3</sup>—has been upgraded to suit newer technologies.

Some of the highest state-of-the-art production technology in Mexico today is found in maquiladora companies. Research and design centers are now part of the maquiladora landscape as well. A key example of this is the Delphi Mexico Technical Center in Ciudad Juárez. This center, which until recently was part of the General Motors maquiladora production infrastructure, is dedicated to the research and design of auto parts used by General Motors cars throughout the world. Considered the most advanced of 27 such centers around the world, it employs some 21,500 workers at 15 plants in Ciudad Juárez. Opened in April 1995, the center doubled capacity within four years. Mexico is thus proving to be a formidable production site at

**Chart 5**  
**Open Unemployment Rate**



SOURCE: Instituto Nacional de Estadística, Geografía e Informática.

all levels of the manufacturing technology spectrum.

The regional and technological development that maquiladoras have brought to the border is spreading to Mexico's interior as more and more maquiladoras locate there.<sup>4</sup> Maquiladora growth in the interior is helping alleviate some of the physical and social infrastructure pressures that dynamic growth has brought to the border cities. However, because border growth is still very strong, it continues to attract people from the interior. This has created problems for some border locations, such as insufficient or inadequate housing for maquiladora workers. Maquiladora companies are now working with the Mexican government to build adequate and affordable housing for workers and assist them with financing. The first such program was launched by Delphi Automotive in 1997. Since then, other large maquiladora companies have followed with similar programs.

## Importance for the United States

### International Competitiveness.

Maquiladoras have offered an important investment option for U.S. companies wanting to locate in Mexico. Since its inception, the maquiladora program has allowed for the duty-free importation of materials into Mexico<sup>5</sup> and for 100 percent foreign ownership of operations. These features—which predated Mexico's current policy of freer foreign trade and investment by almost three decades—plus Mexico's availability of low-cost labor relative to the United States resulted in U.S. companies creating maquiladoras for their labor-intensive manufacturing processes. Examples of industries that have a labor-intensive work component are the top three maquiladora production sectors mentioned earlier: electronics, transportation equipment, and textiles and apparel. By generating important labor-cost reductions through their maquiladora operations, U.S. companies have been able to remain competitive in the world marketplace and thus have retained or even increased their world market share in the production of goods in these and other sectors.

A case in point is the U.S. auto industry. During the mid- to late 1970s, the U.S. auto industry faced intense competition from Japanese carmakers and, as a result, saw its world market share fall. In response to these developments, the U.S. auto industry restructured to become more competitive internationally, and part of its restructuring strategy involved more use of production-sharing operations. Thus, as their maquiladora operations grew from the early 1980s onward, U.S. automakers were able to regain some of the market share they had lost and maintain a stable share since—despite continued intense competition from Asian and other foreign carmakers.

Maquiladora production ultimately garners the largest benefits for the U.S. consumer—indeed, the world consumer—since this strategy results in lower-priced consumer goods than would be the case if the goods were produced entirely in the United States. The price of U.S.-brand-name cars today is lower because the U.S. automobile industry—like the auto industry in the rest of the world—has made extensive use of production-sharing operations. If U.S. automakers were forced to produce cars entirely in the United States, they would face wage rates that in 1998 were almost \$22 per hour. Under maquiladora production-sharing operations, they can achieve wage rates on their labor-intensive production operations of around \$5 per hour. Clearly, such cost benefits in a competitive environment have translated into lower-priced cars for the consumer.<sup>6</sup>

**Production Sharing, U.S. Content and U.S. Jobs.** Mexico's maquiladoras are just one example of the production sharing that takes place between U.S. companies and countries throughout the world. However, maquiladoras represent the preferred production-sharing strategy of U.S. producers. Moreover, given the proximity of maquiladoras to the United States, these operations have a high degree of U.S. content (raw materials and components originating in the United States).

In 1997, over 36 percent of total U.S. production-sharing imports came from Mexico. The next highest source was Japan, with 20 percent, followed by the

Dominican Republic, with 3.4 percent.<sup>7</sup> For certain products, the maquiladora share of U.S. imports coming from Mexico is almost absolute. For example, 99.7 percent of total 1997 U.S. imports of motor vehicles from Mexico and 99.8 percent of television receivers came from maquiladoras. Indeed, through its maquiladora industry, Mexico is the leading exporter of television sets to the United States.<sup>8</sup>

Mexico's use of U.S. components relative to U.S. production-sharing operations in other parts of the world is substantial. In 1997, 58 percent of the value of U.S. components incorporated in worldwide production-sharing operations was derived in Mexico. In the case of motor vehicles, while U.S.-made parts represented 56 percent of the value of finished vehicles imported from Mexico under production sharing, they represented only 1 percent of the value of vehicles imported from Japan and Germany.

This high degree of U.S. content in Mexican maquiladoras highlights, in yet another way, the production sharing between maquiladoras and U.S. producers. According to the U.S. International Trade Commission, 82 percent of the materials imported by maquiladoras and similar operations are of U.S. origin.<sup>9</sup> This translated into \$31 billion worth of U.S. components used by the industry in 1998. Moreover, these U.S. supplier industries are usually higher-tech manufacturers that employ thousands of high-skilled workers throughout the United States. In fact, a 1988 survey of maquiladora companies in Ciudad Juárez alone showed that maquiladoras in this city had suppliers in every U.S. state except Hawaii.<sup>10</sup> Even though the nature and importance of suppliers varied across the different maquiladora companies surveyed, there were substantial linkages with the U.S. economy.

Thus, maquiladoras support U.S. jobs through their extensive use of U.S. suppliers. Because U.S. production-sharing operations in East Asia are not as reliant on U.S. suppliers as are maquiladoras, the positive impact on U.S. employment of these more distant operations is either absent or not as significant. Also, because some U.S. companies have been able to stay in business as a result of

their maquiladora production-sharing strategy, we can assume that without such a strategy and unable to cope with intense international competition, these companies would likely have closed and the direct U.S. jobs they now support would not exist. Hence, for all these reasons, maquiladoras help preserve U.S. jobs and generate new jobs in the long run.

**Border Development.** The maquiladora industry's large presence on Mexico's northern frontier has resulted in important benefits to U.S. border cities. Because of the maquiladora industry's large trade flows going through border ports of entry, transportation and customs services and the industrial real estate sectors have flourished on the U.S. side. Maquiladoras also create jobs in the legal, accounting and financial professions. Even the hotel, car rental and restaurant industries in border cities profit from maquiladoras since corporate personnel and other maquiladora visitors usually stay and eat on the U.S. side.<sup>11</sup>

Beyond the service industry, however, the U.S. border is increasingly benefiting from maquiladoras in manufacturing. Because maquiladora companies use the just-in-time inventory system, they have been urging and even requiring their suppliers in the United States and elsewhere to locate closer to them. This has prompted maquiladora suppliers to expand or even relocate their operations to cities like El Paso. An example of a maquiladora supplier industry that has been attracted to El Paso is plastic-injection molding.

In 1998, there were over 50 plastic-injection molding companies in El Paso with some 3,700 employees. These companies mostly service the maquiladora industry across the border in Ciudad Juárez in sectors that range from automotive and computers to medical and consumer goods. Moreover, employment in plastics manufacturing in El Paso—up 85 percent since 1990—is highly skilled. From 1990 through 1998, for example, the hourly compensation rate paid by this sector was, on average, 21.5 percent higher than the apparel sector, El Paso's largest and most established manufacturing sector.<sup>12</sup>

For a city like El Paso, which, like

most U.S. border cities, has a high unemployment rate relative to the nation, its maquiladora linkages are important to the extent that they raise the city's overall employment level. Also, since the jobs that maquiladoras create in El Paso are in the white-collar professions or in higher-skilled manufacturing, maquiladoras also work to move the city up the economic ladder.

## Conclusion

Overall, the maquiladora industry is an important positive force behind the growth and development of both the Mexican and U.S. economies. It has proved to be a consistent engine of job, export and foreign exchange growth in Mexico. Maquiladoras have also contributed to Mexico's regional and technological development. For the United States, the maquiladora industry has proved to be a vehicle by which U.S. industry has retained or even enhanced its international competitiveness and has resulted in lower-priced goods for consumers. Moreover, the high degree of U.S.-generated content in maquiladora operations reflects important production and employment linkages between maquiladoras and producers throughout the United States. For U.S. border cities—traditionally high-unemployment locations—the presence of maquiladoras across the border has translated into more abundant and better-paying jobs. Although under NAFTA the maquiladora industry faces new North American rules of origin for their imported inputs in 2001, these changes are not expected to derail the industry's pattern of solid growth into the next century.

—Lucinda Vargas

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## Notes

A version of this paper was first presented on April 28, 1999, in El Paso, Texas, at an international economic forum, "A Look at the Economies of Brazil, Mexico and El Paso del Norte," sponsored by the El Paso Branch of the Federal Reserve Bank of Dallas.

- <sup>1</sup> Formal employment refers to employment registered with Instituto Mexicano del Seguro Social (IMSS), the Mexican social security system.
- <sup>2</sup> The definition of open unemployment in Mexico is narrow; it is derived from considering as employed anybody who may have worked at least one hour during the unemployment survey week. However, even when considering broader definitions of unemployment, border cities have lower rates than the rest of the nation. For a complete list of definitions of all the unemployment indicators used in Mexico, see *Business Frontier*, Federal Reserve Bank of Dallas, El Paso Branch, Issue 1, 1999, p. 5.
- <sup>3</sup> Direct labor represented 80.8 percent of total maquiladora employment during the first six months of this year. Although the majority of these workers—56 percent—was female, this share is down considerably from 78.3 percent in 1975. In fact, when looking at specific locations, the female share has dropped even lower. For example, during January–June 1999, Ciudad Juárez showed an almost even split between female (50.4 percent) and male (49.6 percent) workers, while Tijuana showed males holding a slight majority (50.7 percent) over female workers.
- <sup>4</sup> Examples of specific cities in the interior that have witnessed important maquiladora industry growth are Hermosillo, Sonora and Torreón, Coahuila. In the last five years, the number of maquiladora plants in Hermosillo grew over 126 percent, and employment grew nearly 246 percent. The corresponding figures for Torreón are 84 percent and 198 percent, respectively. Also, the state of Jalisco has been so successful in attracting higher-tech maquiladoras, especially in the electronics industry, that the area is now being dubbed the Silicon Valley of Mexico.
- <sup>5</sup> As of 2001, the North American Free Trade Agreement will impose North American rules of origin to determine duty-free status on inputs imported by maquiladoras into Mexico. This action will replace the maquiladora program's current rule of allowing duty-free importation of inputs regardless of country of origin.
- <sup>6</sup> For a comprehensive look at the current state of the U.S. auto industry, see Randall Miller, *The Road Ahead for the U.S. Auto Industry*, U.S. Department of Commerce, Office of Automotive Affairs, March 1999. Also, for information on wages in the Mexican auto industry, see *Fifth Annual Report to Congress Regarding the Impact of the North American Free Trade Agreement upon U.S. Automotive Trade with Mexico*, U.S. Department of Commerce, Office of Automotive Affairs, July 1999.
- <sup>7</sup> U.S. International Trade Commission, *Production Sharing: Use of U.S. Components and Materials in Foreign Assembly Operations, 1994–97*, December 1998, p. 1-8.
- <sup>8</sup> *Ibid.*, p. 1-6.
- <sup>9</sup> *Ibid.*, p. 2-2.
- <sup>10</sup> See William L. Mitchell and Lucinda Vargas, "The Economic Impact of the Maquiladora Industry in Juárez on El Paso, Texas, and Other Sections of the United States" (Grupo Bermúdez Industrial Developers, Ciudad Juárez, Chihuahua, 1989, photocopy).
- <sup>11</sup> Delphi Automotive, until last year a part of General Motors, has conducted annual studies since 1996 on the total estimated economic impact on El Paso of Delphi's operations in Ciudad Juárez. In June 1998 this figure was close to \$278 million. Also, the El Paso Foreign Trade Association recently conducted a study on the economic impact of Juárez's overall maquiladora industry on El Paso. The results will be available soon.
- <sup>12</sup> In 1990, hourly compensation rates were estimated at \$6 for apparel and \$7.50 for rubber and miscellaneous plastics. In 1997, the estimates were \$8.60 for apparel and \$11.10 for plastics. The compensation differential between the two subsectors was smaller in 1998, with apparel's compensation rate at \$10.90 and plastics at \$11.40. Affecting apparel's much higher compensation performance in 1998 was the sector's smaller employment base, which apparently generated higher overtime payments.

# AMERICA'S TRADE DEFICIT: THE LATEST FALSE ALARM

*A Commentary by W. Michael Cox and Richard Alm*

ONCE AGAIN, AMERICA is worried about its trade deficit. A quick look at the numbers shows why. Through June, the red ink in goods and services totaled \$119 billion, up from \$66 billion for the first six months of 1998. The gap between imports and exports is certain to eclipse last year's \$164.3 billion, itself a record. In the growing trade deficit, pessimists say they've found the Achilles' heel of this decade's low-inflation, high-growth, low-unemployment economy. They wonder how the economy can be strong when the United States keeps falling further behind in international competition. Anguish about the situation wouldn't be complete without disaster scenarios in which bloated trade deficits lead to a weaker dollar, higher interest rates and eventually a severe recession.

In recent years, the Federal Reserve Bank of Dallas has argued against those who persist in finding failure amid America's economic success. We've put into perspective concerns about layoffs, eroding living standards and declining real wages. When it comes to the trade deficit, the pessimists are once again wringing their hands and once again wrong—not just in their predictions but in their economic logic.

Trade deficits aren't a sword of Damocles hanging over America's economy. For two decades now, the country has prospered with merchandise trade deficits—some in the 1980s larger than this year's as a percentage of GDP. Yet our success is not a matter of luck, which someday might run out. The U.S. economy has grown stronger with big trade deficits because they reflect one of our economy's greatest strengths—its attractiveness to the world's investors.

The antidote to alarm about trade deficits lies in understanding how na-

tions track their business dealings with each other. In international financial accounts, the balance of payments always balances. The dollar value of what goes out equals what comes in, except for minor statistical discrepancies. This is true for a big, powerful country like the United States, just as it is for small, developing nations.

The statistics that show the United States heading toward a record trade deficit this year tell only half the story. They show only the nation's international transactions in goods and services. What's missing are capital flows, grown larger in recent years as nations dismantled barriers to commerce and investors discovered the global economy.

The goods and services account shows the United States had a deficit of \$164.3 billion last year. The U.S. capital account, however, doesn't show a nation awash in red ink. Quite the contrary. In 1998, foreigners invested \$502.6 billion in

the United States and Americans sent \$292.8 billion overseas—leaving this country with a healthy surplus of \$209.8 billion (*Table 1*).

While comprehensive international accounts will always sum to zero, transaction categories typically show surpluses or deficits. For the United States, surpluses in cross-border capital flows offset deficits in goods and services plus net income paid to foreigners. By the time this year's numbers are final, they doubtlessly will show the same pattern.

The headline we've seen so often—"America's Trade Deficit on Record Pace"—could just as easily read: "Foreign Investment in America Jumps."

Pessimists use the trade deficit to portray the United States as weak, a nation losing sales and jobs to other nations. But the surplus in the U.S. capital account leads to a quite different conclusion, one that ought to be welcomed by most Americans.

**Table 1**  
**U.S. Balance of Payments, 1998**

(Billions of dollars)

Merchandise exports	670.2	
Merchandise imports	-917.2	
Merchandise balance	-247.0	
Services exports	263.7	
Services imports	-181.0	
Services balance	82.7	
<b>Overall goods and services</b>		<b>-164.3</b>
Income from abroad	258.3	
Income paid out to foreigners	-270.5	
<b>Net investment income</b>		<b>-12.2</b>
Foreign investment in the U.S.	502.6	
U.S. foreign investment	-292.8	
<b>Net inflow of capital</b>		<b>209.8</b>
<b>Unilateral transfers</b>		<b>-44.1</b>
<b>Statistical discrepancy</b>		<b>10.8</b>
<b>Net balance on account</b>		<b>0</b>

Savvy investors put money into economies with the best prospects for profit. The calculus depends on any number of factors, but there's no doubt that the most important are fast growth, stable financial markets and cutting-edge technology. In the past two decades, no country has done a better job than the United States of offering all three.

Over time, the net inflow of investment capital provides a mirror image of the trade deficit (*Chart 1*). During the first three decades after World War II, an era of minimal trade and cross-border investment, the two accounts hovered close to balance.

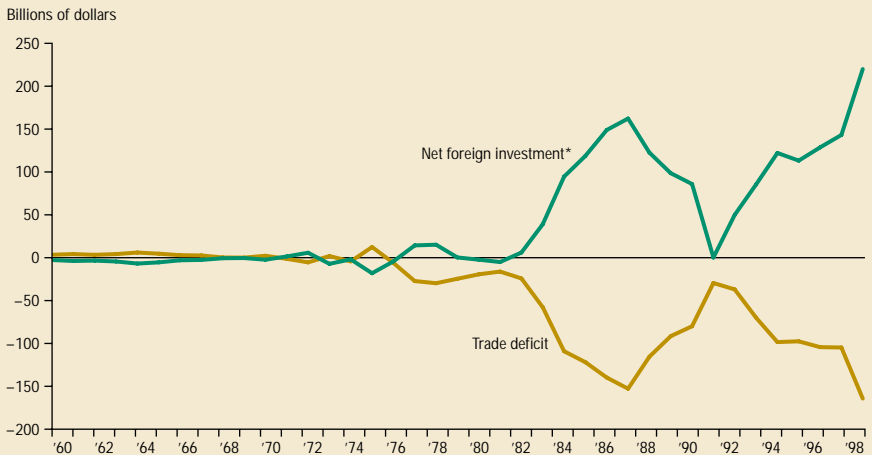
In the early 1980s, that changed. Foreign money rushed into the United States, creating a capital-account surplus and a trade deficit. The timing wasn't accidental. The 1970s brought a revolution in technology, led by the invention of the microprocessor. Investors figured—correctly, as it turned out—that the United States had the entrepreneurial fire and economic system to take advantage of the new technology.

Both the capital surplus and the trade deficit shrank from 1988 to 1992—a time when Europe revived with the fall of the Berlin Wall and the United States lapsed into a brief recession. What was happening? Investors shifted their funds to Europe, Russia and the Third World. The United States received less investment, so the hydraulics of the balance of payments brought our trade deficits down.

As the United States recovered and prospects dimmed for developing nations, U.S. trade deficits and capital surpluses once again ballooned. It's no secret why. Investors are buying into the world's most dynamic economy. America in the 1990s has offered strong growth, low inflation and exciting new technologies.

Ultimately, what gets brokered on world markets is the attractiveness of a nation's business climate—its willingness to embrace new technologies and undergo the economic churn that is capitalism's path to progress. Countries that endure the constant economic makeover—in Joseph Schumpeter's words, "creative destruction"—will prosper. Those that don't, won't. Admittedly, it can be an unpleasant

**Chart 1**  
U.S. Trade Deficit and Capital Flows, 1960–98



\* Includes statistical discrepancy.

SOURCE: Bureau of Economic Analysis, *Survey of Current Business*.

process, full of the hardships of downsizing, layoffs, corporate mergers, restructurings and bankruptcies. Even so, the United States has accepted the short-term pain to reap the long-term benefits of a system based on competition, incentives, opportunity, and free and open markets.

The equality in international accounts punctures the pessimists' biggest worry. They argue that trade deficits destroy U.S. jobs by moving production overseas. After all, if Americans spent an additional \$200 billion on U.S. goods, more Americans would be working, right? Wrong. What's left out of their argument, once again, is the capital account and the restructuring of the U.S. economy that it helps finance. When foreigners invest in the United States, they help spur growth by endorsing new and stronger U.S. industries—with more and better jobs for American workers. If it weren't that way, the nation's unemployment rate wouldn't have fallen from nearly 10 percent in the early 1980s to just over 4 percent today. If it weren't that way, real income per capita in America wouldn't have grown by over a third since the early 1980s.

Americans hear too much about the trade deficit and too little about the nation's surplus in international capital flows. Too bad. Our ability to attract investment reflects the strength of the

U.S. economy and explains why trade deficits persist at a time when nearly all barometers of the nation's economy are positive.

The real problem with focusing on the trade deficit lies in the misconception that other countries are taking advantage of us, that Americans aren't getting a fair shake in the international marketplace. This belief can lead to foolhardy policy. It's tempting for a nation fixated on red ink in trade to lash out at imports. Protectionism, though, will only sap America's economic vitality.

The United States could generate a trade surplus if it chose to. What's required is a smaller surplus in international capital flows. Making America less attractive to investors would do the trick. How about a severe recession? Perhaps excessive taxation? Either way, neither Americans nor foreigners would be eager to invest here. As a result, capital would flow out instead of in, and Americans would end up shipping out more goods and services than they import.

Would anyone celebrate? We hope not.

*Cox is senior vice president and chief economist in the Research Department at the Federal Reserve Bank of Dallas. Alm is a business reporter for the Dallas Morning News.*

# SPEEDING UP THE BROADBAND WAGON

**T**HE U.S. ECONOMY is undergoing a profound transition as the Internet does for communication what the railroad did for transportation in the 1800s. Just as the railroad's revolutionary impact depended on building track capable of supporting fast trains across the nation, today's information revolution depends on upgrading the telecommunications infrastructure to support the new electronic commerce made possible by the Internet. The revolution's next step requires the network to rapidly deliver vast quantities of voice, data and video—broadband Internet access.

Railroad tracks were laid across the nation by the federal government, which raised the necessary funds by selling land adjacent to the tracks. Today, it's not the government but giant corporations that are building the nationwide broadband tracks. And this process is being held back not by the technology but rather by regulations designed for the telecom industry long before the Internet emerged.

Acting on industry requests and their own desire to promote competition, policymakers are seeking to dismantle the regulations that prevent broadband's rapid deployment. But they are finding that old regulations die hard. This article describes broadband, the current regulatory environment and the high costs of delaying broadband access.

## Broadbanding the Internet

"Broadband is about to change the Internet again and usher in an era of electronic magic."<sup>1</sup> These words by Ivan Seidenberg, chief executive officer of Bell Atlantic Corp., sum up the next step in the continuing Internet revolution.

It is difficult to precisely define broadband, but roughly it means faster access to everything the Internet has to offer. The Progress and Freedom Foundation and others use "the analogy of

'fat pipes,' meaning vastly more digital information can flow through them at ever higher speeds, as opposed to narrowband 'skinny pipes' that still make up much of the old public switched telephone network and work well only for voice."<sup>2</sup>

Seidenberg describes broadband as having three unique attributes: capacity, speed and "always on." Broadband not only enables the Internet to offer seamless voice, data and video, it also changes how people use the Internet. Imagine surfing the Internet 100 times faster than most modems allow, without waiting to dial into any network. Imagine talking on the phone while your spouse conducts a stock trade and your teenager watches his favorite episode of "Seinfeld"—all through the same "pipe."

Americans wasted an estimated 2.5 billion hours last year waiting for web pages to download. Surveys show that households with broadband access increase their Internet usage fourfold,<sup>3</sup> probably because broadband drastically reduces that frustrating "world wide wait."

The Internet's chief constraint is bandwidth—and broadband lifts that constraint. Bandwidth used to refer to the range of frequencies in the broadcast spectrum occupied by a signal. In the digital economy, bandwidth is how fast information can be digitized, that is, reduced to bits of binary information (combinations of 0s and 1s), transmitted and then interpreted. Bandwidth is measured in bits per second. A 28.8-kbps modem operates at 28,800 bits per second. Today's broadband is available at speeds of 3 million bits per second—the "fat pipes" described above.

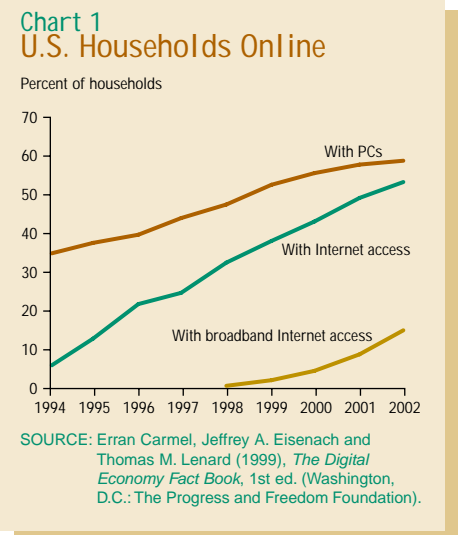
Several industries have developed technologies to capitalize on the convergence of voice, data and video. This new competition is producing an industry convergence as well, since any company with "pipes" now seeks to be consumers' provider of choice. Long-distance, local service and cellular phone companies, cable television companies

and satellite operators are all positioning themselves to provide broadband, but they claim telecom regulations are standing in their way.

## Ghosts of Regulations Past

The broadband industry operates under remnants of a regulatory regime designed for a different era, when phone service was a government-protected monopoly. Although the 1984 court-ordered breakup of AT&T and the Telecommunications Act of 1996 did much to encourage competition and improve the regulatory environment, legislative legacies continue to distort investment incentives for broadband. Ironically, the methods employed decades ago to ensure affordable local phone service for all Americans are one deterrent to broadband's spread.

The first president of AT&T, Theodore N. Vail, began using the term universal service in 1907 to mean the unification of local service providers into a regulated monopoly. Universal service gradually came to mean government efforts to ensure widespread access to telephone networks at affordable rates.<sup>4</sup>





Over the years, long-distance rates have been kept high to subsidize local calls and thus provide universal service. Before its dismantling in 1984, AT&T simply charged higher prices for long-distance calls. Since then, local exchange carriers have levied access charges above economic costs on companies such as long-distance providers for accessing the local networks. (See box entitled “By Market or Mandate?”)

This system of rate subsidies is difficult to unravel. Lowering access charges would raise local phone-service prices and could be infeasible politically. However, failure to address the economic inefficiencies of this system appears to encourage the regional Bells to invest in each other rather than in broadband Internet access.<sup>5</sup>

The Telecommunications Act of 1996 expanded the concept of universal service to include the rapid deployment of advanced telecommunications capability to all Americans, such as enabling Internet access for schools, hospitals and rural areas. But the question remains how to pay for it. The broadband industry fears the government will impose more fees that will continue to distort prices. The industry prefers new ways of achieving affordable broadband for all.<sup>6</sup>

For example, a consortium of non-profit organizations, major corporations and federal agencies called PowerUP recently launched a multimillion dollar initiative to give underserved children access to Internet technology and guidance on how to use it. PowerUP partners will “provide technology, funding, trained personnel, in-kind support and other resources to help close the divide between young people who have access to computer-based information or technology-related skills and those who don’t.”<sup>7</sup>

## The Cost of Wrong Regulations

The regulatory legacies described above distort investment decisions in the new broadband technologies and likely slow their deployment. Only 2 percent of U.S. households enjoy broadband Internet access today, and by some projections broadband will only

## By Market or Mandate?

It’s difficult to determine whether government regulation and the Bell monopoly were necessary to achieve universal telephone service. But some facts about the early telephone industry raise the possibility that the market could have delivered what the government mandated.

- The United States had local phone service competition early this century. In 1904, dual service was available in over 60 percent of American cities with populations larger than 5,000. Almost 2,300 cities enjoyed competition in telephone service. The Bell System targeted large markets with business customers; independent companies provided service in small, rural areas.

- Telephone service, though expensive, spread rapidly before the Communications Act of 1934 established the federal regulatory apparatus and Bell monopoly. In 1920, one in three U.S. households had telephone service.

- Telephone service in the United States, which had competition in the beginning, spread much more rapidly than in Europe, where telephone companies were state monopolies from the start. The United States had 10 times more phones in service than Europe just before the start of World War I. Europe did not reach the 1920 U.S. household penetration rate until 1960.

SOURCE: Thomas J. Duesterberg and Kenneth Gordon (1997), *Competition and Deregulation in Telecommunications: The Case for a New Paradigm* (Indianapolis: Hudson Institute), pp. 48–49.

reach 15 percent of households by 2002 (see Chart 1). Although fast by historical standards, this pace limits the Internet’s economic potential.

The Federal Communications Commission has adopted a hands-off approach to broadband, though it is monitoring broadband’s progress carefully. An October 1999 FCC report states: “Broadband deployment in this country is growing and will likely grow exponentially in the years to come. The rapid deployment of this technology to consumers will depend in large measure, however, on the level of investor interest and regulatory incentives provided to industry by local and federal governments. One of our most significant preliminary findings is that the Com-

mission’s policy of restraint on broadband regulation has helped to create a fertile environment for growth.”<sup>8</sup>

Fortunately, policymakers in Congress also recognize policy flaws and are working with the FCC to prevent outdated regulations from deterring broadband investment. But the clock is ticking. As Seidenberg stated in his speech, “Innovation *delayed* is the same as innovation *denied*.” The FCC delayed the licensing of cellular telephony for nearly two decades, costing the American economy over \$85 billion by some estimates.<sup>9</sup> It is imperative that policies be changed not on government time, but on Internet time.

—Meredith Walker

*Walker is an economist in the Research Department at the Federal Reserve Bank of Dallas.*

## Notes

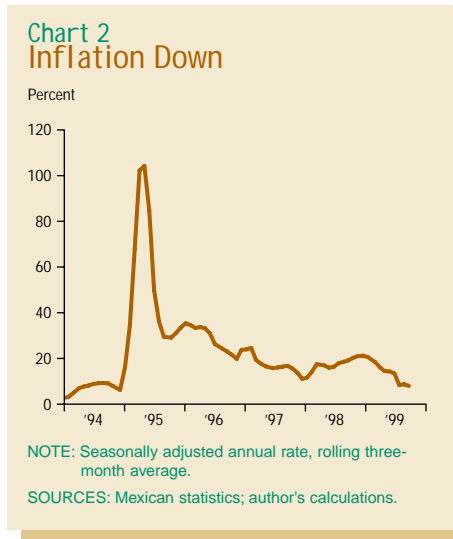
- <sup>1</sup> Ivan Seidenberg, “The Digital Revolution and the World Economy,” speech presented at the Progress and Freedom Foundation conference “Cyberspace and the American Dream VI,” August 23, 1999.
- <sup>2</sup> Erran Carmel, Jeffrey A. Eisenach and Thomas M. Lenard (1999), *The Digital Economy Fact Book*, 1st ed. (Washington, D.C.: The Progress and Freedom Foundation), p. 34.
- <sup>3</sup> Seidenberg, “The Digital Revolution and the World Economy.”
- <sup>4</sup> Thomas J. Duesterberg and Kenneth Gordon (1997), *Competition and Deregulation in Telecommunications: The Case for a New Paradigm* (Indianapolis: Hudson Institute), p. 48.
- <sup>5</sup> Wes Basel, “Another Road for Telecom Competition,” *www.dismalscience.com*, September 1, 1999.
- <sup>6</sup> Telecommunications Industry Association, *Public Policy Report and Agenda*, 1999, p. 14.
- <sup>7</sup> “Major ‘Digital Divide’ Initiative Launched,” *Business Wire*, November 8, 1999.
- <sup>8</sup> Deborah A. Lathen (1999), “Broadband Today” (Staff report to chairman of Federal Communications Commission on Industry Monitoring Sessions convened by Cable Services Bureau, October).
- <sup>9</sup> Duesterberg and Gordon, p. 5.

## Can Mexico Weather Its Next Election Cycle?

**O**VER THE LAST 25 years, Mexico has suffered a financial crisis toward the end of three of its four presidential terms. Because problems during election years have become so common in Mexico, people are naturally anxious about the potential for a crisis during next year's Mexican presidential election—despite government claims that things will be different this time. The question for Mexico—and, of course, for Texas businesses that depend on trade with Mexico—is how will the country fare during its next election cycle?

I first review Mexico's economic performance since the 1994–95 peso crisis. Second, I examine vulnerability indicators for Mexico and compare Mexico's economic situation 10 months before its next presidential election with the same period before previous elections. Next, I assess factors that could contribute to a crisis in the coming year, given the political and economic changes in Mexico over the last five years. I conclude with an assessment of the potential for economic turbulence in Mexico through its elections in July 2000.

The bottom line of the analysis is that developments in Mexico since 1995, especially the adoption of a flexible ex-



change rate and better debt management, make economic turbulence in 2000 less likely than in the past.

### Recent Economic Performance

Overall, the Mexican economy has done remarkably well during the last four years. As shown by the bars in Chart 1, real GDP growth averaged more than 5 percent from 1996 to 1998. Real GDP per capita, shown by the line, now exceeds its level before the peso crisis by about 4 percent.

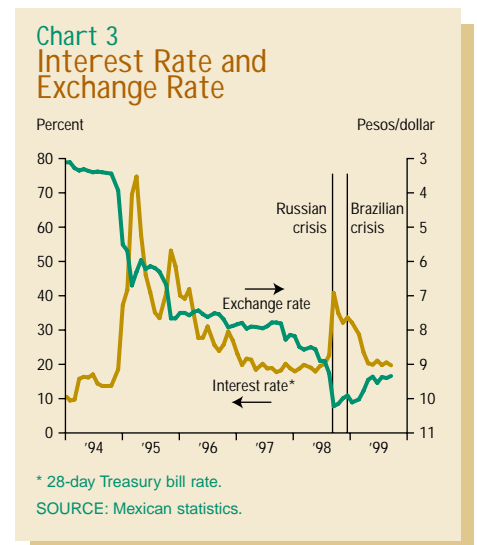
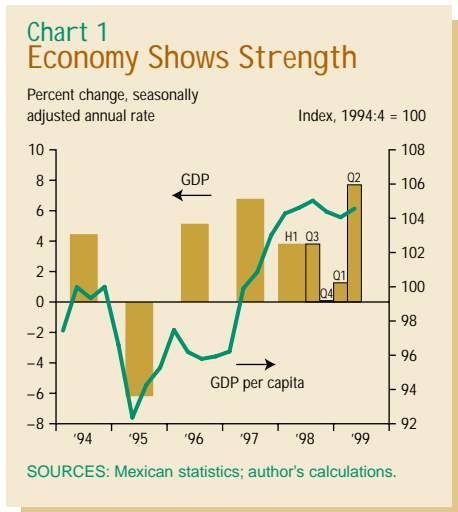
Although last year's Russian crisis stalled the economy in fourth quarter 1998, growth resumed in the first quarter of this year and showed strength in the second quarter, growing by nearly 8 percent at a seasonally adjusted annual rate.

As shown in Chart 2, during the peso crisis in early 1995 inflation rose above 100 percent at a seasonally adjusted annual rate but declined to less than 15 percent in 1997. Inflation moved up to nearly 19 percent for 1998 as a whole, largely because of a sharp peso depreciation. In response to the weak peso and inflation pressures during 1998, the

Bank of Mexico pursued a tight monetary policy and has since reversed the trend of higher inflation. Since January, inflation has been under 16 percent.

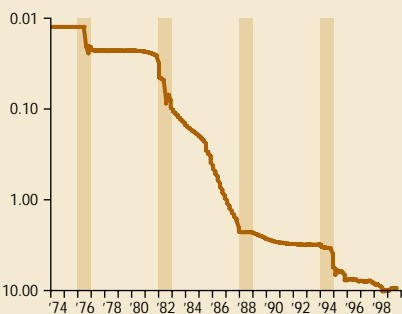
Short-term domestic interest rates, shown in Chart 3, had been falling since 1995 but jumped to over 40 percent in 1998 after the Russian crisis. Similarly, the peso depreciated nearly 15 percent against the dollar in the aftermath of Russian financial turbulence. Domestic interest rates started falling, and the peso strengthened in fourth quarter 1998, although those trends were temporarily reversed when the Brazilian crisis struck in January of this year.

Despite predictions of a lingering period of volatility, the Brazilian crisis resulted in only a relatively minor setback on Mexico's path to recovery. Although real GDP growth stalled in fourth quarter 1998, it has shown signs of a moderate recovery in the first half of 1999. The fallout from Brazil's devaluation was limited in part by Mexico's willingness to raise interest rates quickly to avoid a sharp fall in the peso and consequent inflationary pressure and in part by precautionary adjustments investors had made during the Russian turbulence six months earlier.



**Chart 4**  
**Nominal Exchange Rate**

Pesos/dollar, ratio scale



NOTE: Bars indicate election years.  
SOURCE: Mexican statistics.

As Brazil has stabilized, Mexico has benefited from renewed capital inflow. Mexico is expected to continue to recover, but questions loom about the country's vulnerability to economic turbulence during its 2000 election year.

## The Pattern of Mexico's Election-Year Crises

Major devaluations and financial crises have followed most Mexican elections since 1976, as shown in Chart 4. In three of the last four elections—1976, 1982 and 1994—a major devaluation and economic crisis occurred around an election. The 1988 election was an exception, as Mexico had not fully recovered from its 1982 election-year crisis. In addition, the peso had depreciated earlier under high inflation and midterm turbulence following oil price declines and the 1985 earthquake.

Why do financial crises occur in election years? A confluence of forces makes the economy vulnerable to crisis. Incumbent governments in Mexico, like those in many other countries, have the incentive to keep the economy growing in an election year to attract as many votes as possible. The more rapid the growth, the better voters feel and the more likely they are to vote for the incumbent party. Consequently, going into an election year, the government tries to sustain or increase fiscal spending. Monetary policy is kept loose and the pace of lending to the public and pri-

vate sectors is maintained.

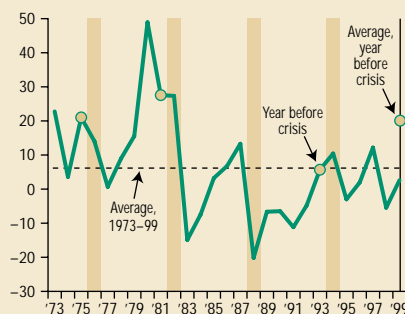
These actions cause inflationary pressures and—given a highly managed nominal exchange rate, which Mexico has had for much of its history—lead to appreciation of the real exchange rate. An overvalued real exchange rate reflects a drop in international competitiveness, resulting in reduced exports and increased imports. This, in turn, generates a widening current account deficit and increases speculation of an impending devaluation, which drains international currency reserves as capital flees the country. Eventually, under mounting pressures, a balance-of-payments crisis erupts and the currency is devalued.

## Vulnerability Indicators

To assess whether Mexico will fall into another election-year crisis, I examine major vulnerability indicators and compare their current behavior with that during past election cycles. Vulnerability indicators attempt to measure an economy's susceptibility to crisis. I examine the following indicators: the growth in real government expenditure, an indicator of fiscal imbalance; the growth in domestic credit relative to GDP, an indicator of monetary stimulus and inflation pressures; real exchange-rate appreciation, a measure of how internationally competitive the country is; and, finally, the current account balance, an indicator of how reliant the country

**Chart 5**  
**Growth in Real Government Expenditure**

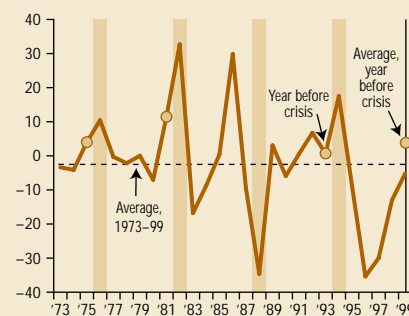
Percent



NOTE: Bars indicate election years.  
SOURCES: Mexican statistics; author's calculations.

**Chart 6**  
**Growth in Domestic Credit/GDP**

Percent



NOTE: Bars indicate election years.  
SOURCES: Mexican statistics; author's calculations.

is on foreign capital inflows to fund imports of goods and services. In general, countries with high growth in government expenditure, rapid expansion of domestic credit relative to GDP, overvalued real exchange rates and large current account deficits are susceptible to financial crises.

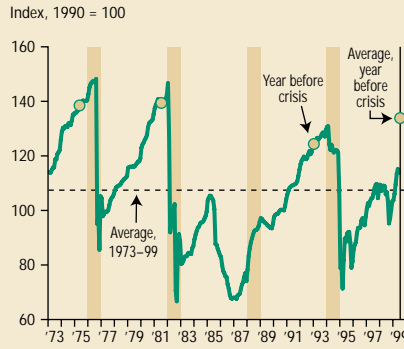
Chart 5 shows the growth of real government expenditure, which is fiscal spending deflated by the price level. The dashed horizontal line indicates the average value of real government expenditure over the sample period. The circles on the plotted line mark the year before a balance-of-payments crisis. The average value of the growth of real government expenditure the year before crisis is shown with a circle on the right axis. As mentioned earlier, 1988 is not classified as an election-year crisis because a major devaluation did not occur.

In the years prior to elections, fiscal spending accelerates. On average, the growth in real fiscal spending was 18 percent before crises. In contrast, real fiscal spending for 1999 is projected to increase by only about 3 percent from 1998 levels.

The increase in fiscal spending prior to crises was usually accompanied by an acceleration in domestic credit relative to GDP, a measure of monetary stimulus and price pressures (Chart 6). Monetary expansion was especially evident in 1982 and to a lesser degree in 1976 and 1994. On average, as shown on the right axis, the year before crisis domestic credit relative to GDP grew by

*In the year prior to crisis, the real exchange rate was about 26 percent higher than its long-run average.*

**Chart 7**  
Real Exchange Rate



NOTE: Bars indicate election years.  
SOURCES: Mexican statistics; author's calculations.

about 5 percent, while so far this year it has fallen 5 percent.

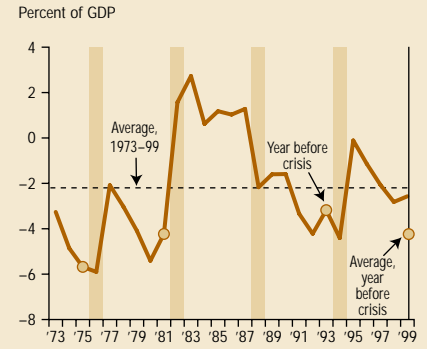
The accumulated price pressures before crises, stemming from fiscal and monetary expansion, along with a highly managed nominal exchange rate, generally led to an appreciating real, or inflation-adjusted, exchange rate (Chart 7). The real exchange rate appreciates when domestic prices increase faster than foreign prices and cause the country to become less competitive internationally. In the year prior to crisis, the real exchange rate was about 26 percent higher than its long-run average. Notice that in 1988, the only election year that didn't suffer a crisis, the rate was below its long-run average. Currently, the rate is only about 7 percent above its long-run average.

Reflecting all these vulnerabilities, international trade and funding imbalances generally deteriorate in the run-up to balance-of-payments crises. As shown in Chart 8, the average current account deficit before crises was about 4.5 percent of GDP. The deficit is now about 2.5 percent, slightly below its long-run average but much better than during past periods leading up to crisis.

### Crisis Assessment

Mexico's current situation appears better than in past pre-election years, but there is a wide variation across election years. Moreover, history shows that these indicators can worsen over the ensuing 10 months. Since the 1994-95

**Chart 8**  
Current Account Balance

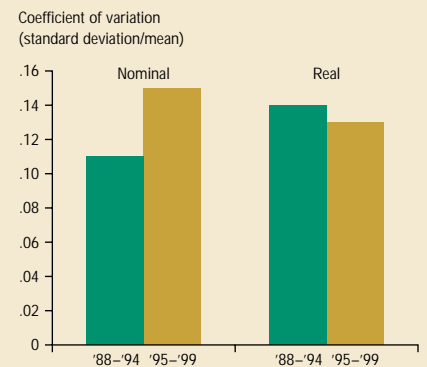


NOTE: Bars indicate election years.  
SOURCES: Mexican statistics; author's calculations.

election-year crisis, however, several key factors have changed, suggesting that turbulence is less likely now than in the past. These factors include a floating exchange rate, which can limit real exchange rate overvaluation; a weak banking sector, which is unlikely to be a source of rapid credit expansion; greater political competition, which may restrain fiscal spending; and better debt management.

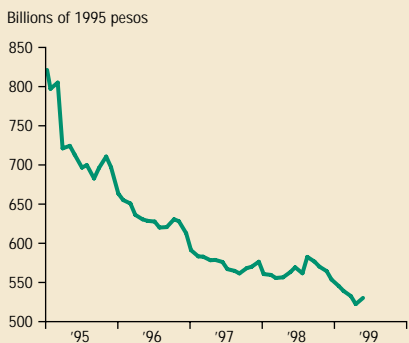
Since Mexico floated its exchange rate in December 1994, the nominal exchange rate has become more volatile, as one would expect under a floating regime (Chart 9). At the same time, the volatility of the real exchange rate has declined. Increased flexibility in the nominal exchange rate has acted as a shock absorber to external turbulence, permitting adjustments to changing

**Chart 9**  
Exchange Rate Volatility  
(Bilateral against U.S. dollars)



SOURCE: Mexican statistics.

**Chart 10**  
**Real Bank Lending**  
**Remains Weak**  
*(Commercial banks)*



SOURCE: Mexican statistics.

pressures rather than allowing them to build up. Consequently, the real exchange rate has become less overvalued and less volatile, which has decreased the likelihood of a large discrete devaluation. Much the same happened during Mexico's period of exchange-rate flexibility in the years before its 1988 election and was probably an important factor in averting a major devaluation that year.

Bank credit expansion was a source of vulnerability in past crises, particularly in 1994. Historically, the banking sector has amplified the boom-and-bust cycle by extending easy credit to marginal borrowers when asset prices are high and then withdrawing that credit when asset prices fall. In 1994, before the peso crisis struck, expansionary bank lending fueled unsustainable spending.

Recently, however, the banking sector is less a factor in excessive growth simply because it has never recovered from the peso crisis. Large corporations still have access to international capital markets, but individuals and small businesses are credit constrained. The level of real bank loans outstanding has continued to fall since the peso crisis (Chart 10), while the level of nonperforming loans as a share of total loans is still relatively high, at about 15 percent.

Over the last 14 years the political dynamics in Mexico have changed dramatically, with mixed implications for the coming year. As Chart 11 shows, Mexico has moved from a one-party system, in which the PRI dominated the government, to a multiparty system with less concentrated power. As a result, the

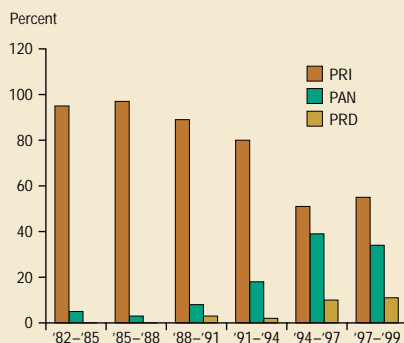
2000 elections could give the PAN, the conservative and second most popular party, the best chance it has ever had to win the presidency. The PRD, the most liberal of the top three parties, has little chance of winning the election by itself and is unlikely to join a coalition with the PAN.

As a result of greater political competition, the PRI has become more aggressive in producing a candidate who can win election. In a major change from its tradition of allowing the president to handpick his successor, the PRI held a primary on November 7, in which the candidate was chosen by popular election. This has produced a candidate who has had to appeal to a larger electorate than in the past. The economic implication is that increased political rivalry between parties may generate pressures for more election-year spending. However, because power is now shared in the Congress, there are more checks in the system, which may limit excessive spending.

Another factor bolstering Mexico's stability is the shift away from reliance on volatile portfolio capital inflows, which is investment in the stock and money markets, to more stable foreign direct investment, which is property, plants and equipment. As Chart 12 indicates, portfolio investment is much more volatile than direct investment. Foreign direct investment has grown relative to portfolio investment since 1997, and consequently, its importance for funding the current account deficit has grown as well. In the most recent

***Bank credit expansion was a source of vulnerability in past crises, particularly in 1994.***

**Chart 11**  
**Share of Municipalities**  
**Governed by Political Party**



SOURCE: Mexican statistics.



**Robert D. McTeer, Jr.**  
President and Chief Executive Officer

**Helen E. Holcomb**  
First Vice President and  
Chief Operating Officer

**Harvey Rosenblum**  
Senior Vice President and  
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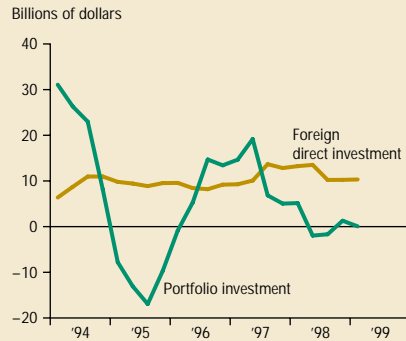
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**Chart 12**  
Foreign Direct and  
Portfolio Investment



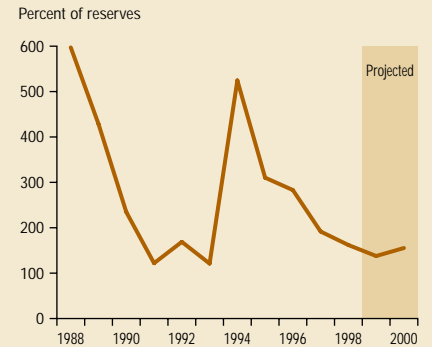
NOTE: Four-quarter moving sum.  
SOURCES: Mexican statistics; author's calculations.

four quarters, foreign direct investment corresponded to 75 percent of the current account financing needs, substantially better than in previous years before an election.

Chart 13 shows external debt service as a share of international reserves, which is a gauge of the ability to make foreign debt payments should international capital markets dry up. Mexico's external debt service as a share of reserves has fallen markedly since 1994, to just over 160 percent in 1998. If current levels of debt and reserves are maintained, debt service through the year 2000 is projected to remain below 155 percent of reserves—relatively low by developing-country standards.

The external debt service projection reflects the new financial package Mexico announced on June 15. Mexico will receive a \$4.1 billion standby agreement from the International Monetary Fund (IMF), which essentially rolls over the remainder of Mexico's 1995 IMF loan until 2001. In addition, loans of \$5.2 billion from the World Bank and \$3.5 billion from the Inter-American Development Bank will allow Mexico to ease pressures on public-sector funding. These loans, in addition to a \$4 billion credit line from the U.S. Export-Import Bank, will cover nearly 80 percent of the public sector's expected external debt service in 2000. The \$6.8 billion swap line associated with the North American Framework Agreement is a potential source of assistance should Mexico fall into crisis.

**Chart 13**  
External Debt Service  
Is Manageable



NOTE: Includes private and public sector amortization and interest and *Tesobono* (Mexican treasury) debt.  
SOURCES: Mexican statistics; author's calculations.

## Conclusion

Mexico has repeatedly suffered balance-of-payments crises around election years. Part of the reason was the political incentive to stimulate the economy to garner votes for the incumbent government. Excessive spending in combination with a rigid exchange rate regime and lax supervision and regulation of the banking sector created unsustainable economic imbalances that eventually led to balance-of-payments crises.

While the potential for economic turbulence still exists in this coming election year, several factors have changed, reducing the chance of a crisis similar to those in the past. In particular, the exchange rate is much more flexible, which decreases the likelihood of an overvaluation and a large discrete devaluation; the banking sector is not a source of excessive spending; and foreign debt is more manageable. Overall, Mexico is better positioned this year, compared with previous election cycles, to weather most storms on the horizon.

—David M. Gould

*Gould, former senior economist and policy advisor in the Research Department at the Federal Reserve Bank of Dallas, is now a senior economist at the Institute of International Finance in Washington, D.C.*

# Regional Update

**T**HE TEXAS ECONOMY grew strongly in the third quarter, with employment increasing at a 3.4 percent annualized rate after rising at a 1.6 percent annual rate in the first half. A strong service-producing sector, a stable energy industry and steady growth in the construction sector have all boosted the regional economy.

Employment in service-producing industries increased at an annualized 4.6 percent rate in September. The distribution, business services and FIRE (finance, insurance and real estate) sectors showed especially robust growth. The strong national economy continues to fuel the distribution sector. Employment growth in temporary worker services (a subsector of business services) was very high, with demand coming mainly from the high-tech and energy industries.

Higher oil prices have helped lift the energy industry out of the doldrums. The oil and gas extraction industry gained jobs in September for the third month in a row. The rig count,

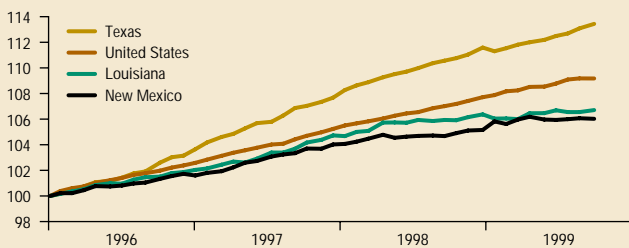
which has been on the upswing for the past six months, increased by another 12 rigs in October. While producers are more active, they are unwilling to undertake expensive or risky projects. The increased drilling remains shallow, vertical and land-based.

Employment growth in the construction sector is steady, but construction contract values have flattened, cooling from very high levels. Falling residential and nonresidential contract values are bringing the total down, while nonbuilding construction (roads) is providing the strength needed to keep statewide construction on an even keel. Construction employment grew at a 5.3 percent annualized rate in the third quarter but only 3.7 percent in September, possibly signaling a slowing of growth but also reflecting a continuing tight labor market.

—Mine Yücel

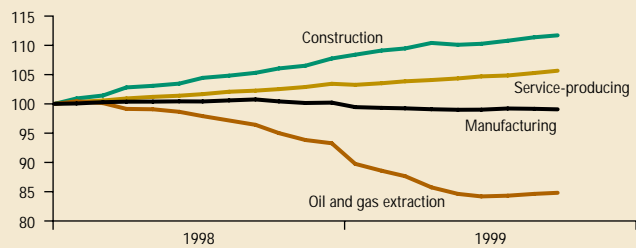
## Total Nonfarm Employment

Index, January 1996 = 100



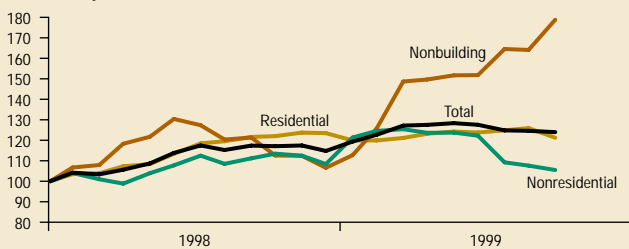
## Texas Employment

Index, January 1998 = 100



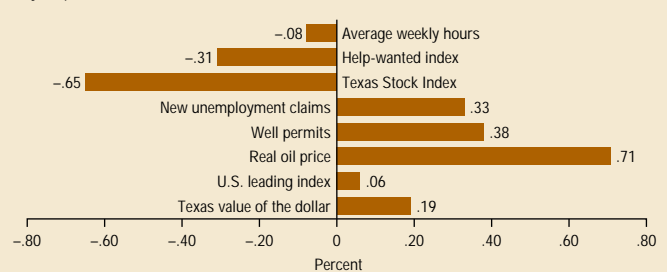
## Texas Construction Contract Values Index

Index, January 1998 = 100



## Net Contributions of Components to Change in Leading Index

July–September 1999



## Regional Economic Indicators

	Texas Leading Index	TIPI† total	Texas employment*					Total nonfarm employment*		
			Mining	Construction	Manufacturing	Government	Private service-producing	Texas	Louisiana	New Mexico
9/99	125.0	127.4	145.9	533.4	1,094.2	1,545.6	5,909.3	9,228.4	1,909.5	730.4
8/99	124.9	126.8	145.7	531.8	1,095.2	1,537.9	5,889.4	9,200.0	1,906.7	730.7
7/99	125.3	126.4	145.1	529.0	1,095.8	1,524.4	5,873.2	9,167.5	1,906.7	730.2
6/99	124.2	125.2	144.9	526.5	1,093.6	1,524.4	5,862.1	9,151.5	1,909.2	729.8
5/99	123.3	125.9	145.6	525.7	1,093.4	1,524.7	5,837.4	9,126.8	1,905.2	730.0
4/99	123.7	125.5	147.3	527.2	1,094.4	1,522.8	5,819.9	9,111.6	1,905.1	731.5
3/99	121.9	126.5	150.4	522.7	1,096.1	1,522.7	5,804.6	9,096.5	1,896.9	730.0
2/99	121.8	127.2	151.9	521.0	1,097.0	1,520.8	5,783.2	9,073.9	1,897.8	727.6
1/99	122.0	127.2	153.8	517.6	1,098.4	1,521.2	5,763.5	9,054.5	1,897.6	729.0
12/98	121.3	127.6	159.2	514.5	1,106.9	1,518.8	5,778.6	9,078.0	1,903.5	724.4
11/98	120.7	128.3	160.0	508.6	1,106.2	1,510.6	5,748.0	9,033.4	1,899.6	724.1
10/98	122.3	128.6	162.0	506.4	1,109.2	1,506.6	5,726.5	9,010.7	1,895.3	722.7

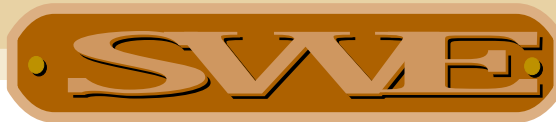
\* in thousands

† Texas Industrial Production Index

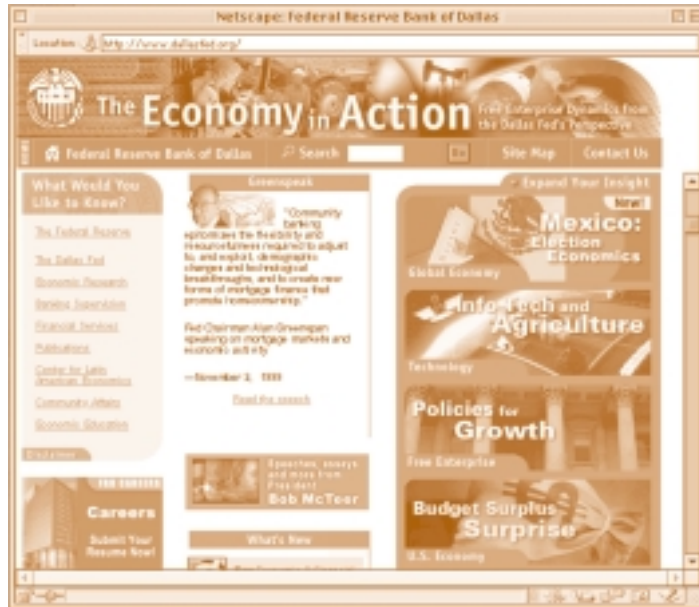
## Further Information on the Data

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).

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