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The Energy Industry: Past, Present And Future

The energy industry figures prominently in many states' economies. In Texas, for example, the energy industry produces about 12 percent of gross state product. For Wyoming, the figure exceeds 25 percent.¹

Because the United States is an energy-importing country, its economy is hurt by rising oil prices. In fact, the economies of 41 states and the District of Columbia suffer when oil prices rise. Nine states—Alaska, Colorado, Kansas, Louisiana, New Mexico, North Dakota, Oklahoma, Texas and Wyoming—benefit from rising oil prices. In six of these states—Alaska, Louisiana, New Mexico, Oklahoma, Texas and Wyoming—the response to an oil price change is much stronger than in the average state. In fact, oil price movements in the 1970s and 1980s had such pronounced effects on

economic activity in some of these states that observers proclaimed energy “the tail that wagged the dog.”

Since the early 1980s, however, state economies have become less sensitive to and more alike in their responses to changes in oil prices. These changes are the result of trends in the energy industry that are likely to continue throughout the 1990s.

Forces Shaping the Energy Industry

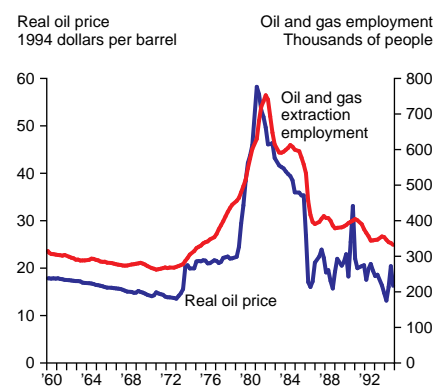
Several forces have shaped the U.S. energy industry's recent history. The most apparent are prices, which are determined by world oil market conditions, and resource depletion. Government regulation, taxes and technology have also affected the industry.

The past 25 years have brought four price shocks, three long-lasting and one rather short-lived. The first shock came in 1973 after the Organization of Petroleum Exporting Countries (OPEC) announced production cutbacks and an embargo of oil supplies to the United States in retaliation for U.S. support of Israel in the Arab-Israeli war. By January 1974, world oil prices had more than tripled.

The Iranian revolution led to another sharp increase in world oil prices in 1979. The subsequent

Chart 1

Real Oil Price and U.S. Oil and Gas Extraction Employment



Iran-Iraq war continued to exert upward pressure on prices. Prices climbed to \$39 per barrel by 1981.

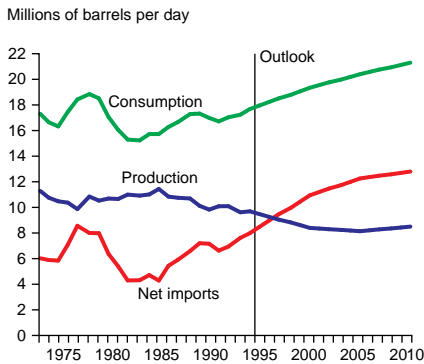
Over the next few years, however, increased prices led to fuel-switching, energy conservation and increased oil production outside of OPEC. A loss of market share exacerbated by slow world economic growth led to a breakdown of OPEC solidarity. World oil prices plummeted to \$11 per barrel in 1986. In recent years, oil has generally traded in a range from \$17 to \$20 per barrel, with a brief spike to \$30 per barrel during the 1990–91 Persian Gulf war.

I N S I D E

**Can Currency Boards
Prevent Devaluations and
Financial Meltdowns?**

Just Say Yes to Chile

Chart 2
U.S. Petroleum Production,
Consumption and Net Imports



Although current oil prices are near \$20 per barrel, real (inflation-adjusted) oil prices are just above preshock 1973 levels. Chart 1 shows how closely employment in oil and gas extraction tracks oil prices. As the price of oil rises and falls, so does U.S. employment in oil and gas extraction.

The United States has produced oil for more than a century, and U.S. fields are considered mature. Peak production was in 1970 when output reached 9.6 million barrels per day. Since then, resource depletion has led to a general decline in domestic production. The general decline was interrupted from the mid-1970s to mid-1980s as oil prices increased and production from the North Slope of Alaska began.

Because the United States has mature oil fields, production is from a large number of small wells. In 1991, the United States had more than 600,000 wells, with an average production of 12 barrels per day. In contrast, Saudi Arabia had 1,400 wells with an average production of nearly 6,000 barrels per day. With mature fields, the outlook for U.S. production is continued decline, at a rate of about 2 percent per year.

The demand for oil responds to its price and to economic growth. Oil consumption surged in the 1970s as the economy expanded (*Chart 2*), but higher oil prices reduced consumption in the early 1980s. Since 1985, economic growth and lower oil prices have contributed to

a general increase in oil consumption, although usage dipped slightly in 1991. The Federal Reserve Bank of Dallas predicts that continued economic growth, coupled with moderate price increases, will stimulate oil consumption over the coming decades.

With rising oil consumption and declining domestic production, the United States has been importing a greater percentage of the oil it consumes. Oil imports are expected to surpass domestic production in the next few years. Although oil imports have been rising, the ratio of energy consumption to gross domestic product (GDP) has been declining over time, reducing worries about U.S. dependence on foreign energy sources.

In the U.S. market for refined products, output in domestic refineries has closely tracked consumption in the U.S. market. This tight relationship may not be maintained in the future. The U.S. Department of Energy (DOE) expects that current environmental regulations will prevent much expansion of domestic refining as the U.S. market expands. Instead, DOE expects new refineries to be built in the Caribbean region, where environmental restrictions are less stringent. In contrast, some energy industry analysts believe

domestic refineries will retain a constant share of the U.S. market. The principal factors in this differing outlook are weaker demand growth and the relatively higher cost of transporting products compared with crude oil.

One reason for concern about rising oil imports is dependence on oil from politically unstable parts of the world. World oil reserves are approximately 1,000 billion barrels (*Map 1*). OPEC countries hold 770 billion barrels or (77 percent) of these reserves. Within OPEC, 66 percent of world reserves are in the Middle East. North America has 8 percent of world reserves. At 50 billion barrels (or 5 percent), Mexico has the seventh largest reserve base in the world, and the former Soviet Union has about 6 percent of world reserves.

As the reserve levels suggest, much world oil production comes from OPEC—more than 40 percent in 1994. As world oil consumption grows and resources are depleted elsewhere, OPEC's share of world oil production will grow over time. In recent years, however, non-OPEC supplies have surged, particularly in the North Sea. Lower taxes and improved technology have kept North Sea oil production higher than many analysts anticipated.

Map 1
World Reserves

Billions of barrels

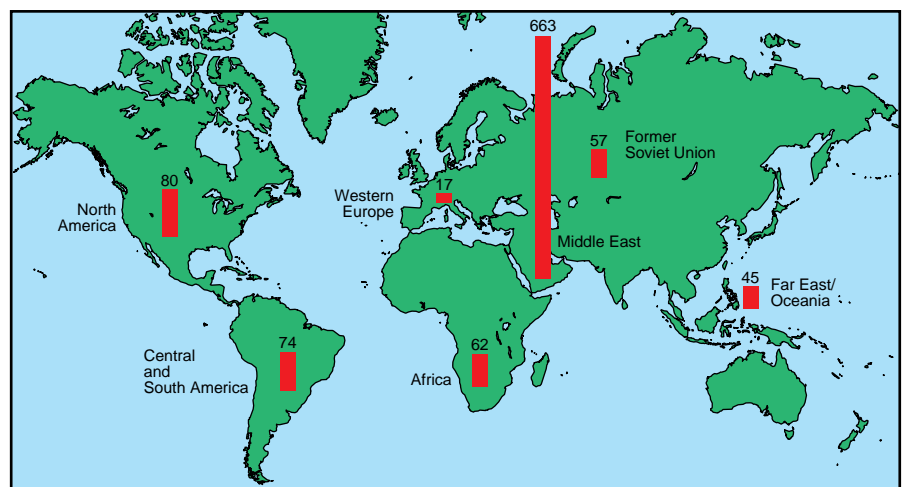
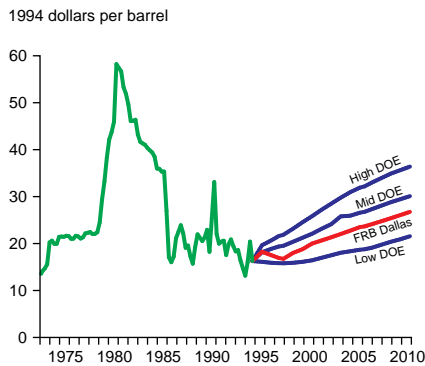


Chart 3
Real Oil Price Outlook



That is not the case for the former Soviet Union, where output has been declining. Physical and institutional problems suggest that no reversal of this downward trend is likely until 2000. In the United States, the decline in oil production is unlikely to reverse, unless the drilling restrictions in environmentally sensitive areas, such as the Alaska National Wildlife Reserve and California coast, are eased.

The dynamics at work in the energy industry make it difficult to predict oil prices. Nevertheless, Chart 3 presents several forecasts: three from the U.S. Department of Energy (DOE) and one from the Federal Reserve Bank of Dallas. All these forecasts abstract from a political disruption. The Dallas Fed forecast expects oil prices to be soft for the next five years and to remain in a range between \$17 to \$20 per barrel (1994 dollars) through 2000. This outlook is consistent with the futures market, and it reflects current excess capacity and the return of Iraqi oil to international markets by 1997.

The Dallas Fed forecast relies on the expectation that OPEC will reach full capacity around 2000, as world oil demand grows and non-OPEC supply declines. After that, the forecast predicts oil prices will generally rise, reaching about \$27 per barrel in 2010. Higher oil prices seem necessary to overcome political and economic obstacles to obtaining the investment needed to expand

OPEC capacity. The Dallas Fed price outlook falls below the Department of Energy's midrange forecast. We expect that oil prices lower than those forecast by DOE will attract the required investment.

The uppermost and lowest forecast lines reflect the Department of Energy's reasonable upper and lower bounds for oil prices. Major technological breakthroughs or a lack of demand growth could lead to prices below the range shown here, but the probability of a sustained price below the lower bound is quite small.

It would be surprising to see prices sustained above the Department of Energy's upper bound. The upper bound path is reminiscent of the typical forecast made in the 1980s when increasing scarcity meant oil prices were expected to escalate from their current levels at some real interest rate. Such a price path forecast typically fails to take into account technological improvement and the effect of higher prices in stimulating supply and curtailing demand. Nonetheless, supply disruptions could lead to temporary excursions above the range.

As shown in Chart 4, the movements in natural gas prices mirror those of oil. Research by Yücel and Guo (1994) shows that oil and natural gas prices move together over long periods of time, while natural gas prices remain below oil prices for an equivalent amount of

Chart 4
Real Natural Gas Wellhead and Crude Oil Prices

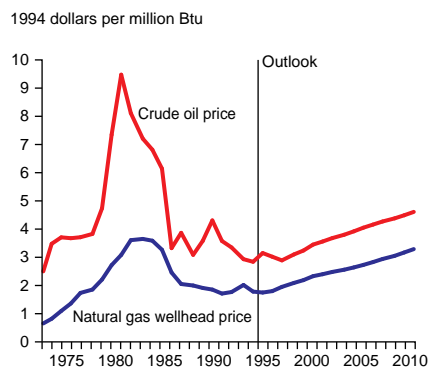
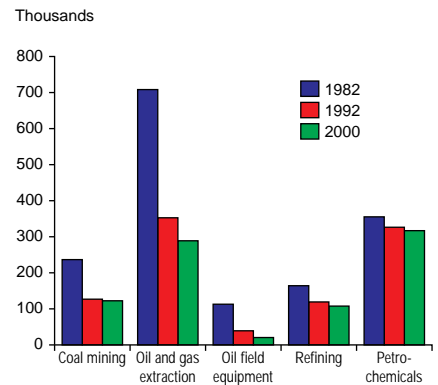


Chart 5
U.S. Energy-Related Employment



energy.² Natural gas prices did not move fully with crude oil prices in the 1970s because price controls restricted the movement of well-head prices for natural gas. Looking forward, the relatively flat outlook for oil prices suggests a similar outlook for natural gas prices.

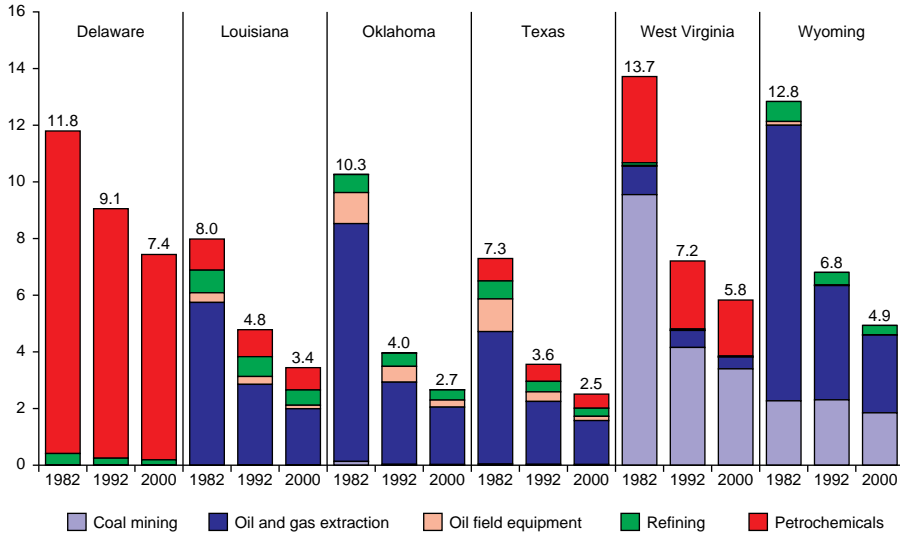
Implications of Changes in the Energy Industry

Our research indicates that changes in the energy industry can affect how regional economic activity responds to oil prices.³ Changes in the response to oil prices could alter the regional flavor of the debate over U.S. energy policy. In the past, debate over energy policy had a regional tone. Energy-producing states favored policies, such as restrictions on oil imports, that would increase domestic prices. Energy-consuming states favored policies, such as price controls, that would reduce domestic prices. Dallas Fed research indicates that the grounds for these regional divisions may be lessening.

In the 1970s and early 1980s, the U.S. energy industry grew to keep pace with increasing demand and sharply rising oil prices. As Chart 5 shows, in 1982 five key energy industries—coal mining, oil and gas extraction, oil field equipment, petroleum refining and petrochemicals—accounted for 1.6 million jobs (0.8 percent of total U.S. non-farm employment).

Chart 6
Energy-Related Employment for Select States

Percent of total non-agricultural employment



The decline and later collapse of oil prices in the 1980s touched off a drastic downsizing of oil and gas extraction and related services. Coal prices also fell, and coal mining was reduced. Continued adjustment to earlier increases in oil prices, more stringent government regulation and productivity gains led to falling employment in refining and petrochemicals.

By 1992, employment in the five key energy industries had fallen by more than 600,000 jobs. More than 350,000 jobs were lost in oil and gas extraction alone. At the same time, U.S. nonfarm employment grew by 23 percent. By 1992, the share of total nonfarm employment represented by the five key energy industries was halved to 0.9 percent. Projections suggest that by 2000, employment in the five key energy industries will further decline while total nonfarm employment expands.

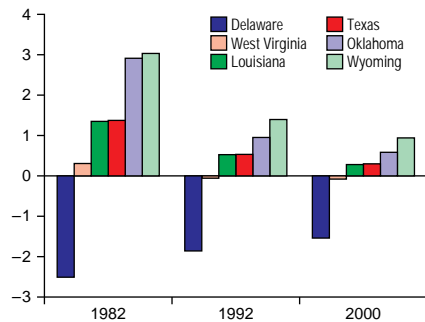
While energy-related industries have been shrinking, individual state economies have increasingly diversified away from energy-intensive and energy-producing industries. Since the early 1980s, nearly every state has become less dependent on the five key energy industries. Chart 6 illustrates the point for select

energy-intensive states. From 1982 to 1992, employment in the five key energy industries declined in each of the nine states. The Dallas Fed projects the trend will continue throughout the 1990s but at a slower rate.

Chart 7 depicts the implications of continued diversification away from energy-intensive and energy-producing industries. The estimates underlying this chart take into account how higher oil prices would affect each of the five key industries, as well as the rest of each state's economy. From 1982 to 1992 and 2000, the effects of the same percentage increase in oil prices on each state diminish. States also are

Chart 7
Employment Response to a 10-Percent Oil Price Increase

Percent change



becoming more similar to each other and the national average in their response to oil price changes. However, as the chart shows, the rate of change is slowing.

The Dallas Fed projects that the response to oil prices in Alaska, Delaware, Louisiana, New Mexico, Oklahoma, Texas and Wyoming will remain substantially different from the national average. Energy is and will continue to be an important difference between the nation and these energy-intensive states.

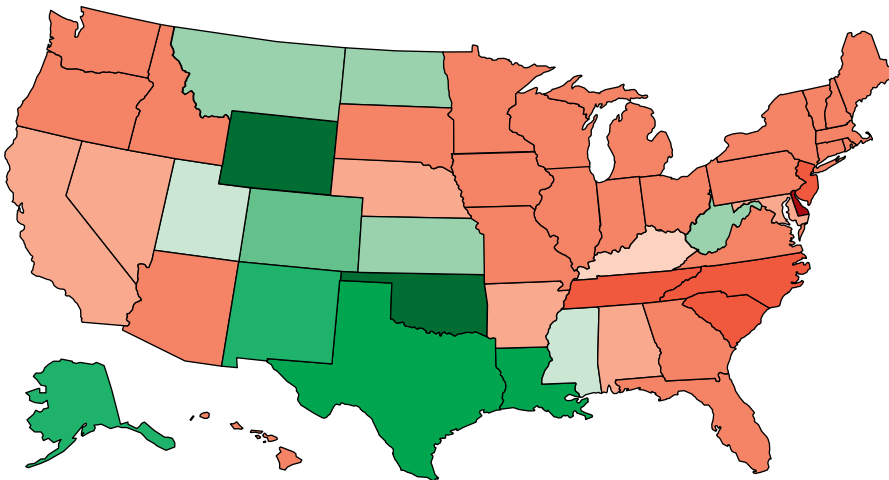
The Changing Environment For U.S. Energy Policy

The next three maps extend our analysis nationwide to examine the economic environment for U.S. energy policy (*Maps 2, 3 and 4*). On each map, red indicates states that are hurt by rising oil prices. The darker the red, the greater the impact. Delaware is the state hurt most by rising oil prices. Green indicates states that are helped by rising oil prices. The darker the green, the greater the gain. In 1982, Oklahoma and Wyoming benefited most from rising oil prices.

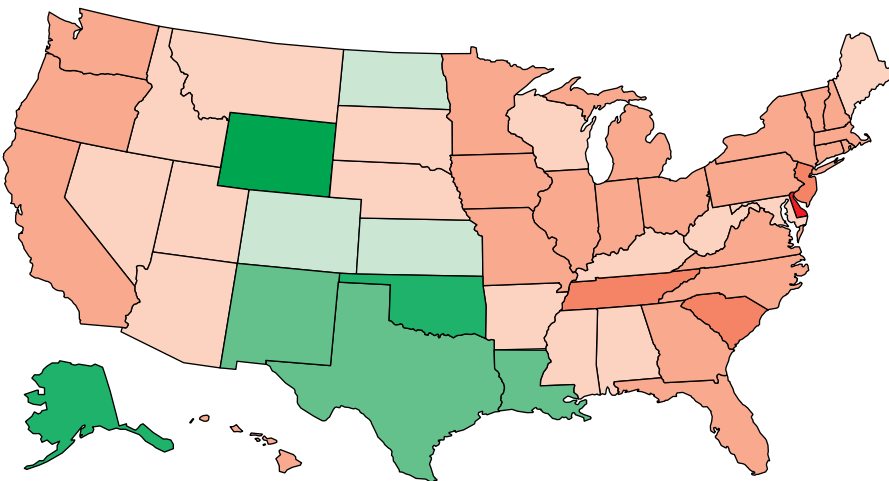
The pattern depicted in Map 2 illustrates why regional divisions have developed in the debate over energy policy and why the resolution of conflicts may have tended to favor consumers over producers. As the map shows, 13 states would have been helped by higher oil prices in 1982. The other 37 and the District of Columbia would have been hurt.

Between 1982 and 1992, as Map 3 shows, Utah, Mississippi, West Virginia and Montana diversified away from energy production to the extent that they no longer benefit from higher oil prices. The map also shows that the states have become less sensitive and more similar in their response to oil prices. These changes suggest that the grounds for regional divisions in the debate over energy policy have lessened since the early 1980s.

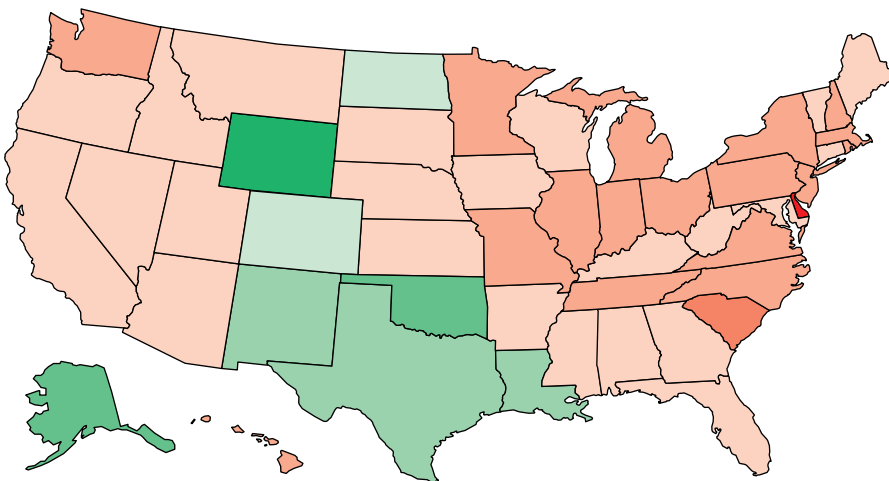
Map 2
Oil Price Sensitivity, 1982



Map 3
Oil Price Sensitivity, 1992



Map 4
Oil Price Sensitivity, 2000



As shown on the map for 2000 (*Map 4*), the Dallas Fed projects Kansas will no longer be helped by higher oil prices and that states generally will continue to become less sensitive to and more alike in their response to oil price movements. These changes suggest the grounds for regional divisions in the debate over energy policy are likely to diminish further in the 1990s.

Conclusions

Market fundamentals suggest that oil prices are unlikely to rise or fall sharply for a sustained period during the next decade. Political events could lead to temporary deviations from this outlook. Natural gas prices will move in concert with oil prices but will remain below oil prices for equivalent amounts of energy. Regulatory constraints could hinder the growth of the domestic refining industry as the U.S. market for refined products expands.

Since 1982, state economies have become less sensitive and more similar to each other in their response to oil price movements. The convergence suggests that the grounds for regional divisions in the debate over national energy policy have lessened since the early 1980s. These trends are likely to continue in the 1990s but at a slower pace.

— Stephen P. A. Brown
Mine K. Yücel

Notes

- ¹ These percentages were true for 1991, the most recent year for which data are available.
- ² See Mine K. Yücel and Shengyi Guo, "Fuel Taxes and Cointegration of Energy Prices," *Contemporary Economic Policy* 21 (July 1994): 33–41.
- ³ See Stephen P. A. Brown and Mine K. Yücel, "Energy Prices and State Economic Performance," Federal Reserve Bank of Dallas *Economic Review*, Second Quarter, 1995.

Can Currency Boards Prevent Devaluations And Financial Meltdowns?

To the surprise of most, if not all, analysts and economic advisors, Mexico's December 1994 currency crisis quickly spread to other emerging economies. Investors' fears that those economies would devalue soon became evident in a swift, massive and indiscriminate outflow of capital from Latin America that observers dubbed the *tequila effect*.

As the tequila effect rippled across the continent, living standards deteriorated for millions of Mexicans and other Latin Americans. Mexico's heightened risk of debt default prompted a bailout by the International Monetary Fund and the United States.

Some observers contend that the Mexican crisis and its damaging spillover effects might have been avoided had Mexico had a currency board. Their arguments may sound convincing, but they presume that once a currency board system is in place, a country will adhere to it forever. This assumption is as unrealistic and naive as the belief that a wedding ring guarantees an everlasting marriage.

Stubborn adherence to a currency board exposes societies to severe and protracted credit crunches, as in the Great Depression. Rising unemployment and consequent

erosion of political support might tempt governments to abandon currency boards during financial stress. Then, the policies governments impose to replace currency boards may lead to the same devaluations and financial crises the boards were designed to prevent.

The recent experience of Argentina suggests that currency boards are not the panacea their advocates claim. (See the sidebar.)

A Historical Perspective

Advocates claim there have been many successful currency board experiences. For example, Hanke and Schuler (1994, 54) assert that "approximately 70 countries have had currency boards...." They fail to mention that most of those 70 countries were British colonies in Africa, Asia, the Caribbean and the Middle East.

Few currency boards have ever operated in independent countries. Those that did—North Russia, Danzig and Malaya—never lasted more than four years. No orthodox currency board operates today in any independent country. The so-called Singapore currency board is actually a department of the Monetary Authority of Singapore, which has the formal powers and responsibilities of a central bank. Argentina's current regime is perhaps the closest to an orthodox currency board that exists today.

The institutional arrangements of all the British colonies' currency

boards suggest that they may have successfully prevented devaluations solely because they were run by foreign powers. Indeed, currency matters in those colonies were the responsibility of the British Secretary of State for the Colonies, who issued currency board regulations and appointed board members.

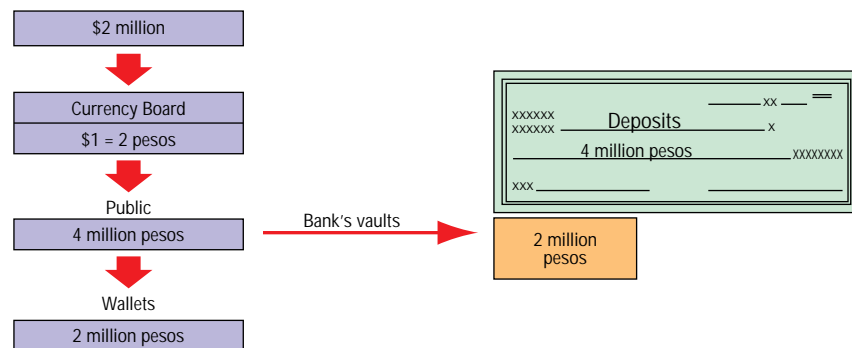
Obviously, monetary policy in Mexico would be more credible were it administered by the Bundesbank. Hanke and Schuler's proposed model for a modern currency board confirms the suspicion that currency boards succeeded not because of their structure but because foreign powers controlled them. According to Hanke and Schuler (1994, 81), currency boards should be run by "foreign directors appointed by commercial banks." It is difficult to conceive how the authority of foreign directors could be enforced against eventual popular opposition. Enforcement could require military intervention by a foreign power, something that might be unacceptable to the international community.

Currency Boards and the Money Supply

The currency board is a rule for money creation: the currency board issues money only against a designated reserve currency at a fixed exchange rate. Two common reserve currencies are the U.S. dollar and German mark.

The example in Chart 1 relies on

Chart 1
Money Creation in a Currency Board System



the U.S. dollar as the reserve currency. An investor (foreign or domestic) decides to invest \$2 million in a country with a currency board. To buy the local goods, machines and labor required for the investment, the investor needs the local currency and to that end, hands over \$2 million to that country's currency board. In exchange, the local currency board gives the investor local currency (say, pesos) at the rate established by the fixed exchange rate (say, 2 pesos per dollar). In other words, the currency board gives the investor 4 million pesos of the currency board's money in exchange for the investor's \$2 million. This currency board money is nothing but the bills and coins people carry in their wallets. These bills and coins are actually the currency board's liabilities—that is, upon demand the currency board must exchange those bills and coins for the reserve currency.

Part of the fiduciary money issued by the currency board will remain in the public's wallets, but the rest will be deposited in commercial banks. Those bills and coins (that is, the currency board's liabilities in the form of money) in the banks become the commercial banks' cash reserves, which they use to make loans and create deposits through the standard money multiplier.

Chart 1 depicts a hypothetical economy in which half the money created by the currency board stays in the public's wallets and the rest is deposited in commercial banks. Typically, the public withdraws only a fraction of the banks' cash reserves on any given day. In this example, banks must satisfy, on average, daily cash withdrawals of only half their cash reserves, or 1 million pesos. One million pesos, then, would be left idling in the banks' vaults. Of course, profit-driven bankers will lend that money by opening accounts against which borrowers can issue checks for up to 2 million pesos.

In this example, total deposits in the banking system after the loans

Argentina's Currency Board During a Financial Crisis

Argentina's recent experience demonstrates what can happen with a currency board during a financial crisis. Argentina's monetary policy has operated very much as a currency board would have since April 1, 1991, when the country's congress approved a convertibility law.

The law obligated the central bank to issue domestic currency (the peso) only against the dollar value of foreign reserves. The law also fixed the exchange rate at 1:1, or \$1 per peso. This standard is the basic rule for money creation under a currency board arrangement.

Under the convertibility law, Argentina's base money and foreign reserves should move very much in tandem, as they do in Chart A. This pattern is typical of currency board regimes, under which base money increases as foreign reserves rise and decreases as foreign reserves fall.

As the chart shows, foreign reserves started to fall in Argentina in January 1995, when the tequila effect spread and investors withdrew capital from the country in fear of a devaluation. The chart makes apparent that currency boards are not seen as everlasting protection against devaluation. The reason is because the same currency board features that prevent devaluations can exacerbate fears that the currency board will be abandoned. Under a currency board, a relatively minor Orange County-like liquidity crisis can become a full-blown financial panic almost overnight. This is what happened in Argentina. In such circumstances, governments come under rising pressure to restore the lender of last resort function that is part of monetary policy under a central bank but is incompatible with a currency board regime.

Argentina's problem started with a liquidity squeeze in Bank Extrader, a small bank that held barely 0.2 percent of all the deposits in Argentina's financial system. Extrader was heavily exposed in Mexican bonds and securities. When the value of those assets fell dramatically in the aftermath of Mexico's December 20, 1994, peso devaluation, the bank could no longer cover its short-term liabilities, particularly time deposits. This shortage triggered a bank run, making matters even worse. On January 18 the central bank was forced to liquidate Extrader. Suddenly, the effect seen elsewhere in Latin America spilled into Argentina's domestic financial markets. Fear that other banks were also heavily exposed to the collapsing Latin American capital markets led depositors to withdraw their money from the banks for the security of their mattresses or accounts abroad.

By April 30, the financial system had lost 18 percent of the deposits it had before the Mexican peso devaluation. To cover the withdrawals, the banks were forced to liquidate assets. One liquidation method was not to renew lines of credit to consumers and businesses. Many businesses and consumers could not pay off the loans on such short notice. When they did, it was by not paying other obligations. In turn, the beneficiaries of those debts could not meet their obligations, and so on.

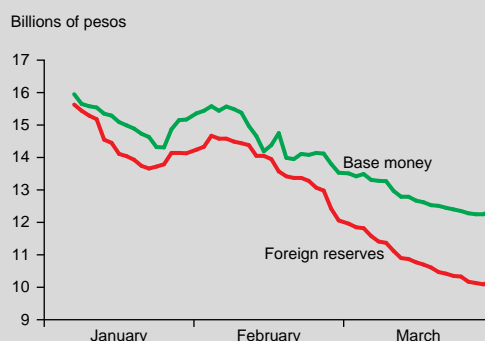
In the wake of this panic, many banks had to suspend the payment of deposits. Some investors—foreign and domestic alike—have not yet been able to recover their savings. Real economic activity in Argentina has followed the decline of financial indicators. Sales of cars, apparel and consumer electronics had fallen 20 to 40 percent by the end of April. Although currency boards are supposed to prevent the kind of financial meltdown Mexico experienced, Argentina found itself in a crisis despite its monetary policy.

Given the magnitude of Argentina's credit crunch, one wonders why Argentina has not followed Great Britain's example and suspended its currency board arrangement until the financial crisis is resolved. The answer, as a great deal of economic research suggests, lies in the monetary authority's credibility.

Argentina lacks the distinguished track record that the Bank of England had when it suspended the gold standard. In fact, Argentina has made into the *Guinness Book of World Records* for its historically high inflation rates and, in particular, its hyperinflations of 1989–90, when inflation rates reached 200 percent per month. Therefore, it's likely that investors would perceive a temporary suspension of the currency board announced by the monetary authority as permanent. Such a perception would weaken investor confidence and make the reconstruction of the financial sector more difficult and protracted, which, in turn, would validate the perception that the suspension was not temporary but permanent.

Argentina's bad credit history is what motivated policymakers there not to follow the British example but to stand by the currency board, even at the risk of defeat in the recent presidential election. The hope is that investors will recognize that a country willing to endure a severe recession and soaring unemployment rates to preserve its commitment to avoid inflation has set aside policies of the past and achieved reform.

Chart A
Argentina: Base Money and Foreign Reserves, 1995



are 4 million pesos: (1) 2 million pesos of the original deposit plus (2) the 2 million pesos of the accounts opened to borrowers. The cash reserves are 2 million pesos, exactly enough to cover presumed cash withdrawals for 50 percent of the deposits. In other words, the 2 million pesos of cash reserves support twice as much in deposits. If, however, all depositors simultaneously decided to cash in their checking account balances, the financial system would not be able to satisfy the demand for 4 million pesos in cash.

The difference between the money created by the currency board (actual bills and coins) and the money created by the commercial banks is important: the currency board's money is fully backed by foreign reserves. In other words, the currency board is able to buy back all of its liabilities (bills and coins) in exchange for foreign currency at the established fixed exchange rate.

In contrast, deposits in the private financial system are not backed by the currency board's foreign reserves. The currency board is not responsible for these deposits because they are *private money*, money created by private financial institutions and, therefore, the private banks' liabilities. In particular, this means that the currency board does not exchange checks for reserve currency. Anyone who wants to carry out such a transaction will first have to go to the bank, exchange the private money (check) for the currency board money (bills and coins) and then go to the currency board window to exchange the cash for the reserve currency at the fixed exchange rate.

In sum, the currency board's money is the *base money*, or in less technical terms, the bills and coins in the public's pockets. Under a currency board, the base money is fully backed by foreign reserves because the currency board prints money only against the reserve currency at a fixed exchange rate.

Moreover, the bills and coins issued by the currency board are fully convertible on demand at the fixed exchange rate into the reserve currency, and vice versa.

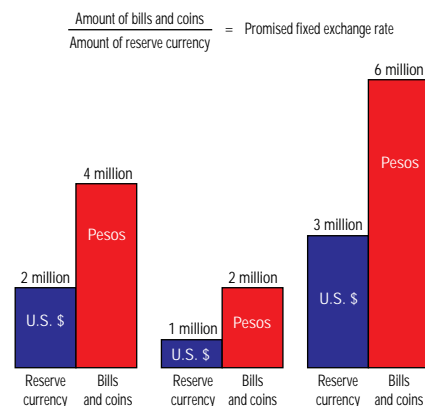
Because a currency board views the money issued by banks (deposits) as the banks' private business, currency boards do not regulate, supervise or provide any lines of credit to financial institutions. Financial institutions make their own credit policies and their own decisions about how much to maintain in cash reserves. Under a currency board, financial institutions are on their own. There is no discount window they can go to if they have a sudden and severe liquidity problem. This is why countries with currency boards are more prone to bank runs and financial panics than countries with full-fledged central banks.

Armor Against Devaluation

Why, then, are currency boards seen as protection against devaluation? The reason is because the base money is fully backed by foreign reserves. If reserves shrink by \$1 million, the money base has to shrink by that amount times the exchange rate. In the example shown in Chart 2, this loss of reserves means the currency board reduces bills and coins in circulation by 2 million pesos (\$1 million times 2 pesos per \$1). If foreign reserves increase instead by \$1 million (from \$2 million to \$3 million), the base money increases by 2 million pesos.

In other words, under a currency board, the mechanism for expanding and contracting the money supply ensures that the proportion of base money to reserves stays constant at the fixed exchange rate. As Chart 2 shows, a currency board keeps the base money (bills and coins) and the reserve currency proportionate, the proportion implicit in the fixed exchange rate. For example, the ratio of the base money to foreign reserves is always 2:1, which means that the currency

Chart 2
The Currency Board Rule



board can always buy back the base money at the fixed exchange rate of 2 pesos per dollar. There will never be devaluations.

Central Banks and Devaluation

If a monetary authority does not follow the strict rule of printing money only against foreign reserves, it is no longer a currency board. It's a central bank. When the monetary authority prints money that is not backed by reserves, the country risks devaluation.

Central banks can issue money through the discount window to provide funds to financial institutions with short-term liquidity problems. In effect, this action adds to the base money (*Chart 3*) without adding foreign reserves and breaks the delicate balance between them. This imbalance introduces the possibility that the central bank will be forced to devalue the currency. If the public decides to exchange all the base money in circulation for foreign currency, the central bank will not be able to defend the current exchange rate.

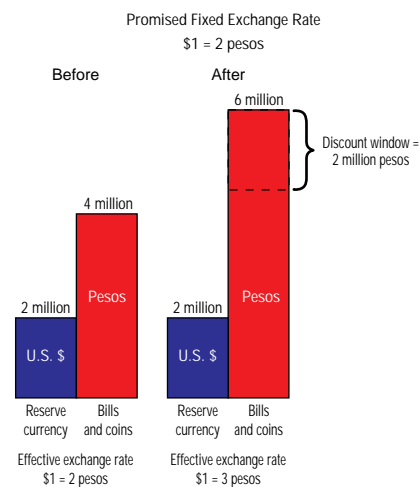
In the case of Chart 3, the central bank would need \$3 million to buy back the base money of 6 million pesos at the exchange rate of 2:1. The central bank, however, has only \$2 million of foreign reserves, so it must exchange at the rate of 3 pesos per \$1. Thus, the local currency has devalued 50 percent.

Armor or Straitjacket?

The armor against devaluation provided by a currency board can become a straitjacket in times of financial panic. As explained earlier, private banks typically keep only a fraction of their deposits in cash. With a currency board, banks do not have the safety net of a discount window when they need to borrow short-term funds to face transitory liquidity problems. Under a currency board regime, the deposits and the banking system are literally running on the confidence of depositors. When that confidence is broken, a bank panic can ensue quickly. The mere suspicion that a bank is insolvent can cause depositors to fear for their savings because a bank typically does not have enough cash to cover all outstanding deposits (See Chart 1). This fear will trigger a run against the bank, whose failure will create fears of other bank failures, in a chain reaction that can end up in a full-blown financial panic.

Bank runs are less frequent and severe with a central bank system. With a central bank, an essentially solvent bank with short-term liquidity problems will not automatically go under as it would in a currency board system because it can appeal to the discount window to cover the temporary cash shortage.

Chart 3
Devaluation: Central Bank Lends to Banks



Given the serious recessions that usually follow the credit crunches associated with bank panics, it is easy to understand why countries will be tempted to abandon currency boards and similar systems during financial panics. In fact, that is precisely what Great Britain did on three occasions with its gold standard, which works much like a currency board, but with gold playing the role foreign reserves play under a currency board system. In 1847, 1857 and 1866, Great Britain suspended the gold standard to abort incipient financial panics.

Scholarly research has shown that, in Great Britain's case, investors expected convertibility to resume eventually (Bordo and Kydland 1995). Argentina's current financial crisis raises the question of whether Argentina could do as England did and temporarily suspend its currency board without hurting its credibility. The answer is probably not, because Argentina's monetary policy track record is not what Great Britain's was at the time the gold standard was suspended.

Conclusions

A currency board does not magically restore the credibility of a country's economic policies, as some advocates claim. The reason is because currency boards can be abandoned. When investors fear a government is about to abandon its currency board, they take their capital out of the country, and financial panic typically ensues, as it recently did in Argentina. In such circumstances, the armor against devaluations that a currency board supposedly provides becomes a suffocating straitjacket societies and their governments will be tempted to cast off.

Behind these issues is a deeper one. Are there political and economic institutions that can guarantee governments will never break their promises? Economists and social scientists are still trying to answer

this question. In the meantime, two facts are evident.

First, if there are such institutions, the currency board is not one of them. Currency boards can be abandoned, and the fallacy behind their alleged effectiveness is the assumption they will never be.

Second, the track record of a country seems far more important for policy credibility than the particular label (central bank or currency board) of the institutions that conduct policy. The monetary policy of a central bank in a country that has always shown fiscal and monetary discipline and never defaulted on its debts will be far more credible than the monetary policy of a currency board in a country that has a history of letting inflation run unleashed, confiscating deposits and defaulting on its debt.

A currency board might help an inflation-addicted country avoid a devaluation, but only if the country maintains the currency board at all costs. Countries adopting currency boards must be ready to endure the severe financial crisis and high unemployment that come with the credit crunch that is sure to follow a financial panic. Such panics are likely because a currency board is not a magic pill that restores credibility instantly and painlessly. When recommending currency boards, their advocates should warn policymakers that currency boards will not spare them the time and economic hardships necessary to restore the credibility lost at the hands of bad policies of the past.

—Carlos E. Zarazaga

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Beyond the Border

Just Say Yes to Chile

A Commentary by William C. Gruben

Research Officer

Federal Reserve Bank of Dallas

Negotiations began in June to add Chile to the North American Free Trade Agreement. But in the United States, naysayers from both sides of the political spectrum have begun to quibble about voting for fast-track authority, which would allow the administration to negotiate a trade agreement subject to congressional vote but without congressional amendment.

U.S. officials have from time to time complained that the glacial procedures of the General Agreement on Tariffs and Trade kept us from agreeing to mutually beneficial trade openings as large as U.S. policymakers would prefer with all countries. The United States has for years been urging developing countries toward free trade and has invoked sanctions when they didn't move fast enough. The central theme of the Summit of the Americas last year in Miami was Western Hemispheric economic integration.

Now is the time for the United States to send a message that it isn't kidding about free trade, even when a potential partner is a developing nation that can't use our country as a safety valve for its unemployment problems. Fast-track authority for negotiations with Chile would send a message to the rest of Latin America about the commitment the United States professes.

A free trade agreement with Chile ought to be a no-brainer. In the last decade, Chile has privatized the great majority of its public corporations, liberalized investment markets, slashed tariffs and moved from a military government to a democ-

racy. A commonly used statistical measure of corruption places the country at the same level as the United Kingdom and Denmark.

Chile has already solved policy problems that have kept other Latin American nations at the chalkboard. As a result, Chile, unlike other countries in the region, has had 11 years of uninterrupted growth.

The purpose of liberalizing trade with any country is efficiency. Trade protectionism at any level really means that government is bestowing uncompetitively high profits on some industries, the protected ones, at the expense of the buying public. But trade protectionism also means that, because of these uncompetitively high profits, capital and labor are misdirected to firms and industries that are profitable because they don't compete and directed away from firms and industries that can compete without such interference. With freer trade, capital and labor will go where they are most productive, instead of to a profitable but less productive use. With free trade, market signals will bring greater efficiency, which is simply more total output from the same capital and labor.

With fewer than 14 million people, Chile is a small country, considerably less populous than the state of Texas. It nonetheless holds opportunities for greater efficiency, and the message Chile's membership in NAFTA would send is a cheap form of advertising for more open trade with much larger Latin American countries.

Regional Update

The economy of the Eleventh District is continuing a gradual slowdown that began earlier in the year. After growing at an annualized rate of 2.6 percent in the first quarter of 1995, employment in Louisiana, New Mexico and Texas slowed further in April and May, to an annual growth rate of 1.9 percent for the two-month period.

The slowdown in employment growth became evident in the service sector during the first quarter and has now spread to manufacturing. In May, manufacturing employment fell 3 percent in Texas and 7.4 percent in New Mexico. Manufacturing employment in Louisiana accelerated in May to 4.5 percent. Much of the slower growth in manufacturing

has been centered in sectors supplying single-family construction, such as lumber, furniture, brick, glass and primary metals. Employment has declined as well in other industries, such as paper, apparel, and food products. Employment in fabricated metals and computer-related industries continues to grow strongly. Texas industrial production in manufacturing fell 1.3 percent in March and 4.9 percent in April, the first two months of consecutive decline since June of 1991.

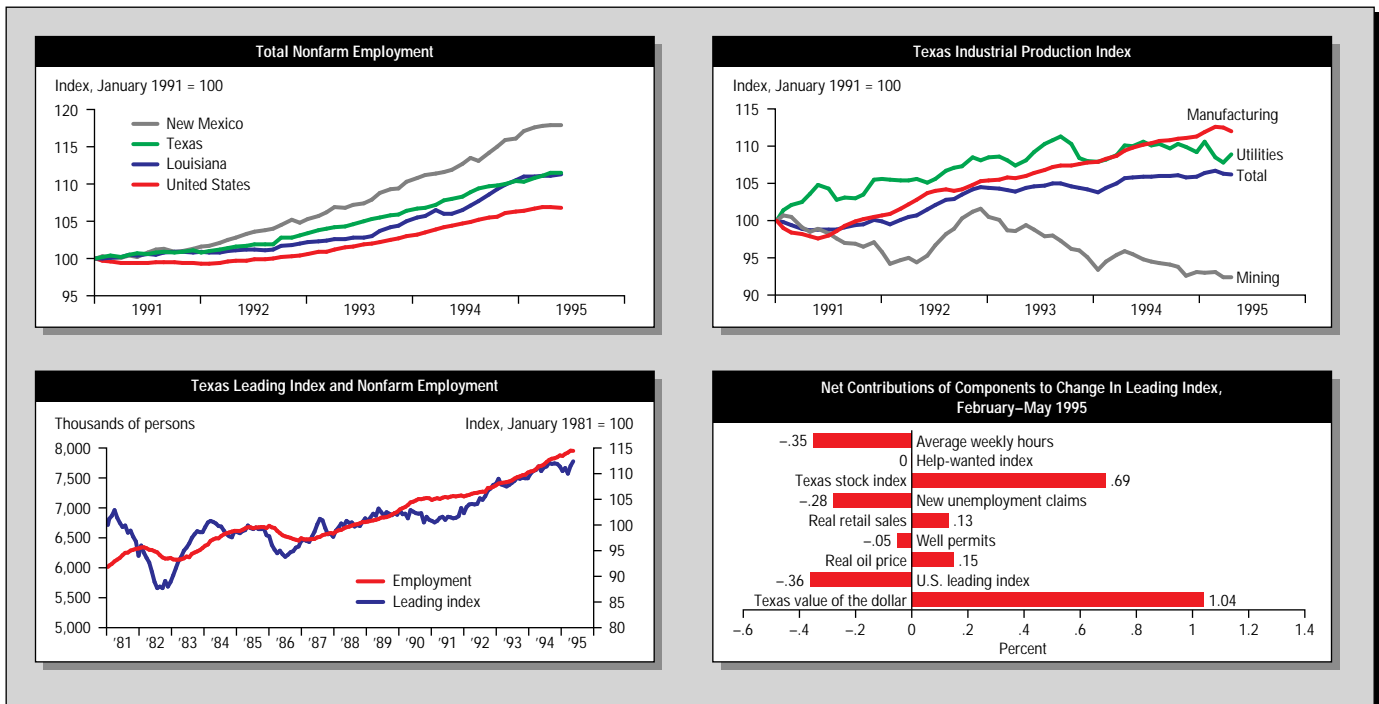
Despite the recent slowing in employment, the District economy still shows signs of strength. Falling mortgage rates have sparked a rebound in District residential construction. After declining in

April, single-family permits rose in May to their highest level since January 1994.

The recent decline in the Texas value of the dollar is another sign of regional economic strength. After surging from November to March, the real peso-dollar exchange rate dropped sharply in April and May. While the real peso-dollar exchange rate was 36 percent higher in May than in November 1994, the depreciation of the dollar relative to Texas' other export markets has resulted in only a 7.7-percent appreciation in the Texas-export weighted value of the dollar.

The Texas index of leading economic indicators rebounded in April and May, following a decline in the index since last November. Recent movements in the index suggest that the District economy's gradual slowing will continue in the second half of 1995 but that growth will remain positive.

—Fiona Sigalla



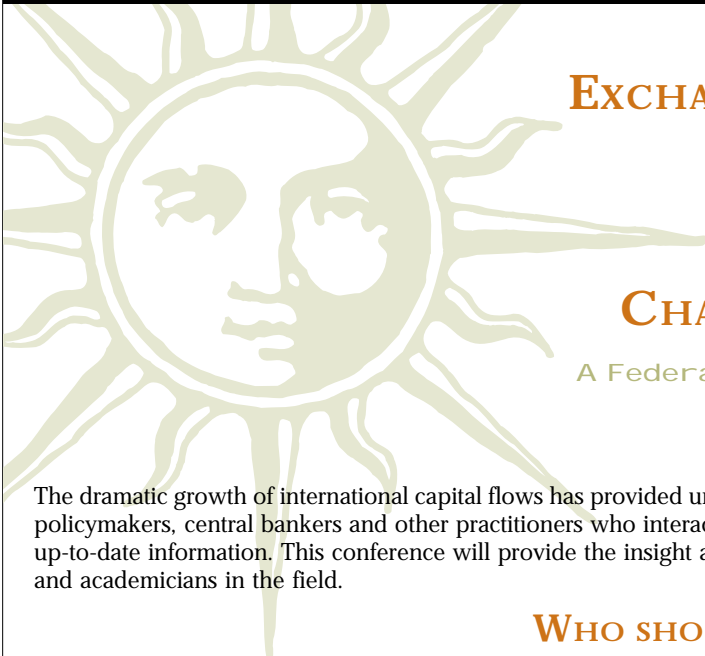
REGIONAL ECONOMIC INDICATORS

Texas Leading Index	Texas Employment							Total Nonfarm Employment		
	TIPI Total	Mining	Construction	Manufacturing	Government	Private Service-Producing	Texas	Louisiana	New Mexico	
5/95	112.4	118.5	156.4	399.5	1,030.3	1,435.1	4,930.1	7,951.4	1,787.0	686.0
4/95	111.5	118.5	156.8	400.5	1,032.9	1,434.2	4,930.7	7,955.1	1,783.2	685.8
3/95	110.0	118.6	157.3	403.1	1,031.4	1,430.5	4,900.5	7,922.8	1,784.4	685.3
2/95	111.1	119.1	157.0	404.8	1,028.8	1,430.8	4,880.7	7,902.1	1,782.4	684.3
1/95	110.5	118.9	157.0	405.4	1,024.5	1,429.2	4,851.4	7,867.5	1,781.8	681.5
12/94	111.4	118.3	157.8	398.5	1,022.7	1,426.1	4,870.8	7,875.9	1,774.5	675.3
11/94	111.9	118.2	159.7	393.3	1,021.1	1,420.7	4,851.5	7,846.3	1,764.0	674.2
10/94	112.0	118.5	160.7	389.9	1,020.2	1,418.3	4,838.9	7,828.0	1,755.1	669.0
9/94	111.9	118.4	163.1	387.9	1,017.7	1,417.9	4,834.4	7,821.0	1,743.8	664.5
8/94	112.1	118.4	162.9	383.1	1,014.3	1,423.5	4,817.7	7,801.5	1,729.3	658.3
7/94	111.4	118.3	162.5	380.3	1,010.6	1,414.4	4,797.2	7,765.0	1,719.4	660.2
6/94	111.2	118.3	162.8	376.9	1,007.4	1,417.0	4,759.5	7,723.6	1,710.3	655.4

FURTHER INFORMATION ON THE DATA

For more information on employment data, see "Reassessing Texas Employment Growth" (*Southwest Economy*, July/August 1993). For more information on TIPI, see "The Texas Industrial Production Index" (Dallas Fed *Economic Review*, November 1989). For more information on 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).

On-line economic data and articles are available on the Dallas Fed's electronic bulletin board, FEDFLASH (214-922-5199 or 800-333-1953).



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