

the Southwest ECONOMY

THE FEDERAL RESERVE BANK OF DALLAS

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Money: Its Effect on the Southwest Economy

When a change occurs in the nation's money supply, the effects felt in the Southwest will vary from state to state because each state's economy differs in composition.

As early as the 1950s, Milton Friedman observed that changes in the money supply have a greater impact on some sectors of the economy than others.¹ Recent econometric analysis confirms Friedman's observation. Durable goods manufacturing is the type of industry most sensitive to changes in the money supply. Service-producing industries are the least sensitive. This research has important implications for the economy of the Southwest.

The economies of Louisiana, New Mexico and Texas differ in composition from one another, as well as from the national economy. For example, durable goods manufacturing represents a smaller proportion of Louisiana's economy than of the national economy. New Mexico's manufacturing sector is smaller than that of the nation, and the Texas service sector is smaller

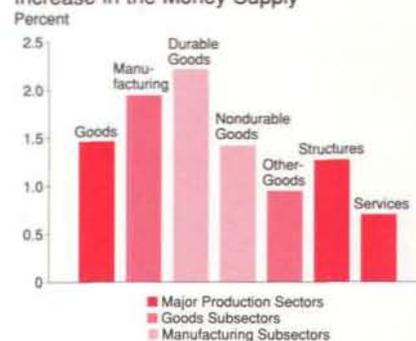
than its national counterpart. Examining how the U.S. economy differs from the economies of Southwestern states reveals how effects of money-supply changes can vary from state to state.

How Money Affects the U.S. Economy

As Chart 1 shows, research indicates that the U.S. economy's sensitivity to changes in the money supply varies by sector. The goods-producing and structures-producing sectors are more sensitive to a money supply change than is the service-producing sector.² Within the goods-producing sector, money-supply changes affect manufacturing much more than the other-goods sector. Also within the manufacturing sector, durable goods industries are more sensitive to these changes than nondurable goods industries.³ (See *"Why Money Has Differential Effects" inside for explanations of these findings.*)

Chart 2 provides a further breakdown of the manufacturing sector. The chart ranks manufacturing industries according to the degree to which money growth affects their output. The bars indicate the peak-percentage increase in output that will occur in response to a 1-percent increase in the money supply in a given year. Seven of the 10 industries most affected by money-supply changes are durable goods industries. The lumber, nonelectrical machinery, electrical and elec-

Chart 1
Peak Response of U.S. Output to a 1-Percent Increase in the Money Supply



Source of original data: Peter Kretzmer (1989).

tronic machinery and primary and fabricated metals industries are among those most affected. Industries least affected tend to be nondurables such as food and kindred products, tobacco, printing and publishing and petroleum and coal.

The estimated industry responses, combined with the composition of the U.S. economy, indicate that the peak impact of a 1-percent change in the money supply is a boost of 1.11 percent in the national total of real gross state product (*Table 1*). After the second year, however, the positive relationship between money growth and output begins to reverse. Over a 4-year period, a given money-supply increase leaves real output in each sector unaffected.⁴ But if other money-supply changes occur, and in all likelihood they will, the further stimulus will override the reversal of the first change.

How Money Affects the Texas Economy

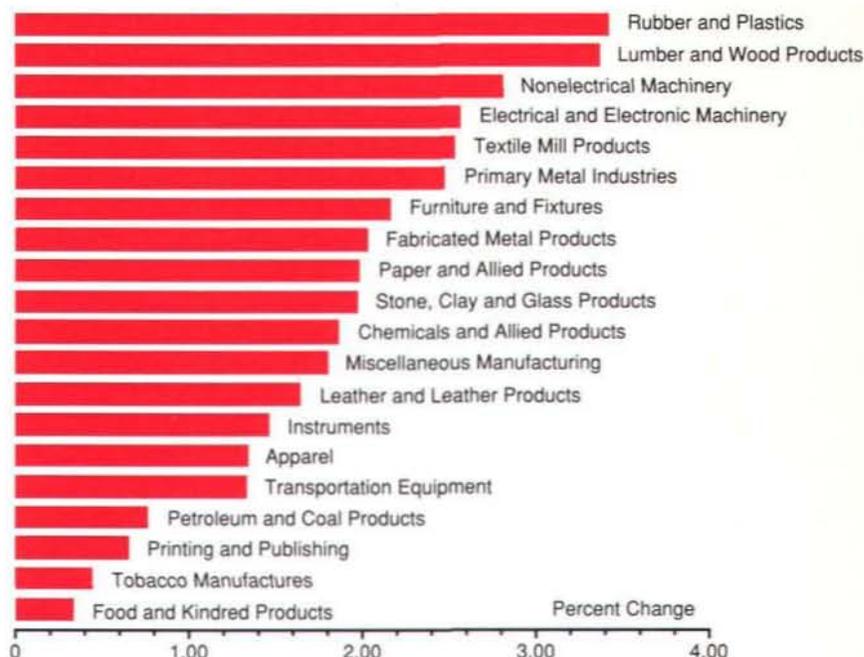
Texas is more sensitive to changes in the money supply than the nation is. To understand why, consider the nature of the state's economy. Roughly 61 percent of Texas industries fall into the goods and structures categories, as Table 2 indicates. The comparable figure for the United States is only 54 percent. Because the goods- and structures-producing sectors are the two sectors most affected by changes in the money supply, and because these two sectors represent a larger share of the Texas economy than of the nation's economy, Texas is more affected by money-supply changes than is the nation.

The Texas manufacturing sector is fairly evenly split between durable and nondurable goods industries. In contrast, durable goods industries comprise about 64 percent of the U.S. manufacturing sector, and nondurable goods industries make up 36 percent. Because Texas has a lower percentage of durable goods industries, and because these industries are most affected by money-supply changes, the Texas manufacturing sector is less affected by changes in the money supply than its national counterpart.

Within the durable goods sector, nonelectrical machinery and electrical and electronic machinery comprise the

Chart 2

Peak Response of Manufacturing Output to a 1-Percent Increase in the Money Supply



Source of data: Peter Kretzmer (1989).

largest proportion of Texas manufacturing output. As Chart 2 shows, changes in the money supply strongly affect these two industries. Petroleum and coal, food and kindred products and printing and publishing are among the largest nondurable goods industries. These industries are the least affected by money-supply changes. Thus, the Texas economy consists of some of the most sensitive and least sensitive manu-

facturing industries. On balance, the effect of money-supply changes on Texas manufacturing is slightly less than it is for the nation.

Money-supply changes affect Texas manufacturing less than national manufacturing because durable goods industries constitute a smaller percentage of the manufacturing sector in Texas than in the nation. However, the overall proportion of output from production of goods and structures is larger for Texas than for the nation. As a result, money-supply changes affect output in Texas slightly more than in the nation.

How Money Affects the Louisiana Economy

The Louisiana economy is just slightly less sensitive to changes in the money supply than is the nation. Goods- and structures-producing industries make up 61 percent of Louisiana's economy (Table 3), in contrast to the nation's 54 percent. As in Texas, this breakdown suggests that Louisiana would be more affected by money-supply changes than the nation. However, within the goods sector,

Table 1

Peak Effect on Output of a 1-Percent Increase in the Money Supply United States

Industry:	Percentage of total real GSP	Percent change*
Goods	49.17	1.466
Manufacturing	25.35	1.949
Durable	16.22	2.219
Nondurable	9.13	1.424
Other	23.82	0.953
Structures	5.25	1.270
Services	45.58	0.707
Total	100.00	1.110

*based on Kretzmer's estimates, where M1 is the money-supply measure.

Source: Survey of Current Business, "Total Gross State Product, by Component, for States and Regions for Selected Years, 1963-86." BEA, U.S. Department of Commerce, May 1988.

Louisiana's manufacturing is dominated by nondurable goods industries, which are little affected by money-supply changes.

The breakdown of durable and nondurable goods industries in Louisiana is almost exactly opposite that in the United States: output from durable goods industries in the state comprises approximately 34 percent of total manufacturing output, while output from nondurable goods industries comprises roughly 66 percent. This analysis indicates that the effect of money-supply changes on manufacturing is much less for Louisiana than for the nation. Further, three of the four largest industries in Louisiana are petroleum and coal, food and kindred products and transportation equipment. These industries are all located near the bottom of Chart 2, indicating that Louisiana's nondurable goods industries are among those least affected by changes in the money supply.

Because a fairly large proportion of Louisiana's output comes from production of goods and structures, aggregate output in Louisiana should be somewhat more affected by money shocks than national output would be. However, Louisiana's manufacturing sector consists primarily of nondurable goods industries that remain relatively unaffected by money-supply changes. Thus, even though the goods-producing sector is proportionally larger in Louisiana, it is less sensitive to changes in the money supply than the nation's goods-producing sector. The combination of these effects cause Louisiana to be just slightly less affected by money-supply changes than the United States.

How Money Affects the New Mexico Economy

The New Mexico economy is less sensitive to changes in the money supply than the nation. The breakdown of New Mexico's output into goods, services and structures indicates that aggregate state output should be affected to the same degree as the United States. This is because, as Table 4 shows, output in the goods and structures industries constitutes 56

percent of the New Mexico economy—nearly the same percentage as for the nation. However, the state's manufacturing sector provides only 20 percent of total goods production, whereas manufacturing is one-half of the nation's goods-producing sector. Thus, the goods-producing sector in New Mexico, which includes manufacturing, is less sensitive to changes in the money supply than the nation.

Durable goods industries—those industries most sensitive to money-supply changes—make up 54 percent

of manufacturing in New Mexico, compared to the nation's 64 percent. These figures suggest that output for New Mexico's manufacturing sector is somewhat less affected by money-supply changes than is output in the nation's manufacturing sector.

To summarize, 56 percent of New Mexico's output comes from production of goods and structures, an amount about equal to that of the nation in these sectors. This implies that the effect of money-supply changes would be the same in New Mexico as in the

Table 2
Peak Effect on Output of a 1-Percent Increase in the Money Supply
Texas

Industry:	Percentage of total real GSP	Percent change*
Goods	54.91	1.393
Manufacturing	19.25	1.896
Durable	10.97	2.370
Nondurable	8.28	1.329
Other	35.66	1.122
Structures	5.63	1.270
Services	39.46	0.820
Total	100.00	1.160

*based on Kretzmer's estimates, where M1 is the money-supply measure.

Source: Survey of Current Business, "Total Gross State Product, by Component, for States and Regions for Selected Years, 1963-86." BEA, U.S. Department of Commerce, May 1988.

Table 3
Peak Effect on Output of a 1-Percent Increase in the Money Supply
Louisiana

Industry:	Percentage of total real GSP	Percent change*
Goods	55.79	1.291
Manufacturing	13.61	1.609
Durable	4.63	2.160
Nondurable	8.98	1.336
Other	42.18	1.188
Structures	5.37	1.270
Services	38.84	0.803
Total	100.00	1.100

*based on Kretzmer's estimates, where M1 is the money-supply measure.

Source: Survey of Current Business, "Total Gross State Product, by Component, for States and Regions for Selected Years, 1963-86." BEA, U.S. Department of Commerce, May 1988.

nation. However, New Mexico's manufacturing sector constitutes a fairly small proportion of its goods-producing sector, and durable goods industries make up only a small share of manufacturing. These factors combine to make New Mexico less sensitive to money-supply changes than the nation.

Summary

Because Texas, Louisiana and New Mexico differ from the nation in sectoral composition, changes in the money supply affect each of these states differently than the nation. Money-supply changes affect Texas slightly more than the nation, Louisiana just slightly less than the nation and New Mexico somewhat less than the nation. These results are based on the peak effects of money on output in the major sectors of each of these economies. Although these effects begin to reverse themselves after two years, a change in the money supply clearly has an initial impact on output. In many cases, subsequent reinforcing changes in the money supply will occur. Therefore, continual increases in money can assist a region's growth—but at the cost of inflation.

—Cara S. Lown and D'Ann M. Ozment

¹ See Milton Friedman, *Essays in Positive Economics*, Chicago: University of Chicago Press, 1953.

² See Jean Gauger and Walter Enders, "Money Neutrality at Aggregate and Sectoral Levels," *Southern Economic Journal* (January 1989): 771–78, and Peter Kretzmer, "The Cross-Industry Effects of Unanticipated Money," *Journal of Monetary Economics* (March 1989): 275–96.

³ See Kretzmer (1989). Kretzmer used M1 as his money-supply measure and only allowed for unanticipated changes in M1 to have an effect on output.

⁴ Kretzmer (1989).

Table 4

Peak Effect on Output of a 1-Percent Increase in the Money Supply
New Mexico

Industry:	Percentage of total real GSP	Percent change*
Goods	48.53	1.236
Manufacturing	9.22	1.627
Durable	4.98	2.209
Nondurable	4.24	0.943
Other	39.31	1.145
Structures	7.67	1.270
Services	43.80	0.782
Total	100.00	1.040

*based on Kretzmer's estimates, where M1 is the money-supply measure.

Source: Survey of Current Business, "Total Gross State Product, by Component, for States and Regions for Selected Years, 1963–86." BEA, U.S. Department of Commerce, May 1988.

Why Money Has Differential Effects

Three arguments can be offered to explain why changes in the money supply may have a greater impact on the goods and structures sectors of the economy than on the service sector. One explanation is that these first two sectors produce output whose purchase is interest-rate sensitive. Purchases of goods and structures are mainly financed through loans or by issuing debt; high interest rates discourage such financing. Thus, to the extent that changes in interest rates result from money-supply changes, purchases of these items will be affected.

Furthermore, within the manufacturing sector, money-supply changes have a larger effect on durable goods industries than on nondurable goods industries. This can be explained by the fact that, as mentioned above, changes in the money supply affect interest rates, and durable goods spending is more interest-rate sensitive than nondurable goods spending. Another explanation is that a change in the money supply affects personal income temporarily. A money-supply increase has a small, positive impact on a person's income before prices adjust and real income returns to its previous level. This temporary increase in income, called *transitory income*, is often spent on goods that provide a future stream of benefits to the con-

sumer. Only durable goods can provide such a stream, so a change in the money supply will most likely affect purchases of durable goods.

A second argument offered to explain why money-supply changes impact the goods and structures sectors of the economy maintains that these sectors consist of large firms, where wage rates are set through labor contracts. Over any short-run period, wages cannot rise in response to an increase in the money supply. Instead, a money-supply increase stimulates demand, and hence output, of goods in these sectors. Over time, however, wages and prices increase, demand slows and output returns to its previous level.

A final argument is that money-supply changes affect firms that are large and have substantial market power. These firms respond to changes in demand for their products by adjusting the amount of output produced, not by adjusting prices.¹ Neither of these latter two arguments apply to firms in the service sector, because this sector is generally composed of smaller, less concentrated industries.

¹ See Robert Hall, "Market Structure and Macroeconomic Fluctuations," *Brookings Papers on Economic Activity* 2 (1986): 285–322.

Economic Commentary

by William H. Wallace

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Improving Education: The Role For Business

That the American educational system has severe problems is neither overstatement nor revelation. Statistic after statistic verifies the tremendous declines in performance that continue despite increased school spending and numerous attempts at reform. In addition, school financing is inequitable, denying some students their right to a good education. If we do not implement substantial reforms expeditiously, past failures—coupled with changes in the world economy—will cause the decline of the United States as a social and commercial power.

The effects of a poorly educated populace threaten the nation's well being; therefore, educators, parents and business people must join forces to produce effective reforms. Changes designed to recapture dropouts and retain current students are essential, as is improving the quality of instruction. Equity must be achieved, but it must rely on the equalization of quality—not spending.

Why Should Business Care?

Business has a substantial stake in the nation's schools. As we enter the 1990s, the U.S. economy is undergoing significant changes—changes that make an educated workforce more important to business. Increasing foreign competition requires U.S. producers to meet international standards of quality and innovation. Services and high technology goods are becoming the cornerstone of the economy. Jobs of the future will demand more skills. Business already is facing higher training expenses.

But, even as jobs of the future demand more skills, skilled workers will be more difficult to find. As baby boomers age, fewer individuals will enter the labor force, and more of them will be minorities. Minority dropout rates are high, especially in Texas. A poorly educated work force will cost business—in training costs, in lost opportunities and in increased social costs.

Elements of Good Schools

To create a better educated, more competitive work force, the quality of our schools must improve. Increased spending is not the answer. John Chubb of the Brookings Institution, an authority on education reform, finds that quality schools have clear objectives, strong leadership, excellent teachers and autonomy. Clear objectives provide focus and encourage teamwork. Strong leadership puts the focus on excellent teaching. Most essential, good schools have good teachers.

Because needs are diverse, autonomy is the linchpin of excellence. Autonomy gives the power to the school and its teachers. As such, it invites decentralized decisionmaking, a fundamental characteristic of excellent management. With autonomy, clear objectives, strong leadership and excellent teaching are more likely to flourish.

Making Schools Better

We can take a number of steps to improve our schools. Some will be more difficult than others. First, parents, educators and business must work together to define objectives for schools. Objectives may vary from community to community, but all must provide a strong focus. Only after a school's objectives are set can other steps toward progress be made.

The next steps are more difficult. They require introducing incentives for excellence into the school system. These reforms include merit pay, parental choice of schools and the break up of large school districts. Identifying and rewarding good teachers encourages excellence. Current merit systems generally reward credentials—not good teaching. To improve our schools, we must make merit pay reward good teaching.

Parental choice allows parents to select their child's school. With choice, schools must compete for students. As such, choice introduces market incentives for excellence in education. Those schools not providing a quality education will lose enrollment. Parents will send their children elsewhere.

Large, bureaucratic school districts prevent autonomy and limit choice. Smaller districts promote decentralized decision-making. Educators can solve problems faster, allocate resources better and decrease costs. Teachers can focus on teaching, not on paperwork and politics. In addition, if choice is to be meaningful parents must have options. Large school districts limit choice by their sheer size and uniformity.

Business and Reform

Business must become more involved in educational reform. Currently, business participates primarily through volunteer programs. These programs are important, but they are not enough. Business must take a more active role in its own and society's future.

Business can participate in many ways. Business can communicate its needs as a future employer to educators. As managers, business can help schools develop objectives and implement decentralized decisionmaking. As citizens, business people can pressure legislatures to enact reform.

Most important, business can demand an excellent education of its employees. High school transcripts show grades and course selections and are better indicators of performance than diplomas. If each business simply requires transcripts for employment, students will be forced to improve their transcripts and get a better education in the process.

I have hope for American education. We can reform and we can compete, but we must act decisively and with vision. Failure in schools precedes the failure of the nation. Therefore, business, parents and educators must work together.

Accept the challenge and make the difference.

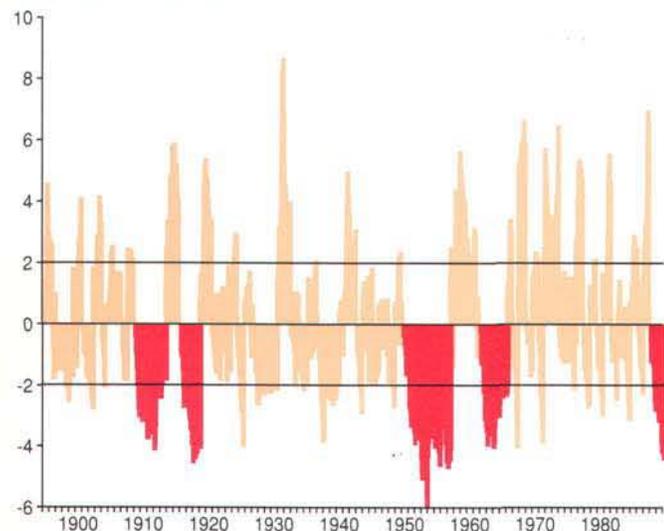
South Texas Drought Remains Severe

Harsh weather in 1989 created many hardships for Southwest farmers and ranchers, particularly early in the year when drought, hail and flooding damaged crops. While conditions improved in most areas, South Texas continues to suffer from drought (see map). Conditions are critical between San Antonio and Laredo, where the now-extreme drought of 1989 prolongs unusually dry conditions that lowered the output and incomes of farmers and ranchers for the past two years.

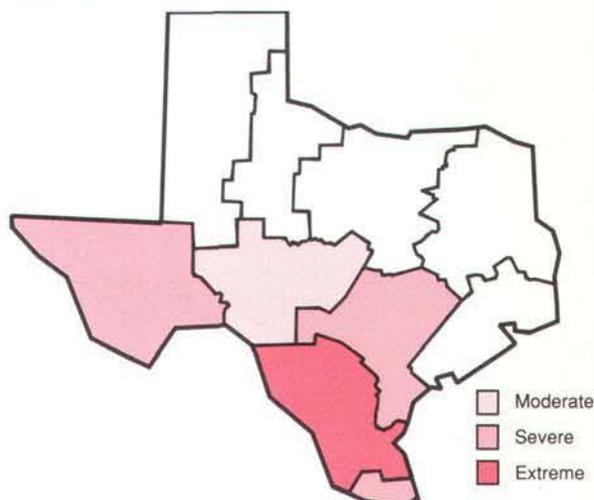
Drought is a normal part of agricultural production. The length and severity of a drought, however, can be abnormal. The chart below depicts the historical soil moisture conditions for the area of South Texas that is now in extreme drought.¹ Soil moisture is measured using the Palmer Drought Severity Index; conditions are "wet" when the index is above zero and "dry" when the index is below zero. The range between 2 and -2 is considered close to normal. As the index shows, South Texas endured several periods of prolonged drought in this century, including a major drought in 1950-57. Droughts in 1909-12, 1916-18, and 1962-65 are also significant because of their length and severity. The current drought, which started in 1988, is the first period of prolonged dryness in 29 years.

Dry conditions virtually halted South Texas agricultural production and are likely to affect spring planting. Dryland producers were unable to harvest crops this year, while irrigated farmers had poor yields and increased costs. Livestock producers are also affected; insufficient water and forage forced most ranchers to liquidate their herds. Most farmers cannot afford to plant next spring without additional moisture, but the region is not likely to receive significant rainfall during the winter.

Palmer Drought Severity Index, 1895-1989
Texas Climatic Division 9



Palmer Drought Severity Index
November 11, 1989



Many agricultural producers temporarily ceased operation while waiting for rain. Although a few producers quit farming permanently, most of them turn to off-farm jobs to supplement their income until agriculture becomes profitable. Disaster assistance in 1988 and 1989 helped agricultural producers cover their costs. Federal disaster funds, however, are subject to increasing political scrutiny, and many farmers are skeptical about the availability of disaster funds in 1990. If the region receives enough moisture this spring to plant, most farmers are affected to purchase crop insurance.

—Fiona Sigalla

¹ Source of data: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, National Climatic Data Center.

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