the Southwest ECONOMY

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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.

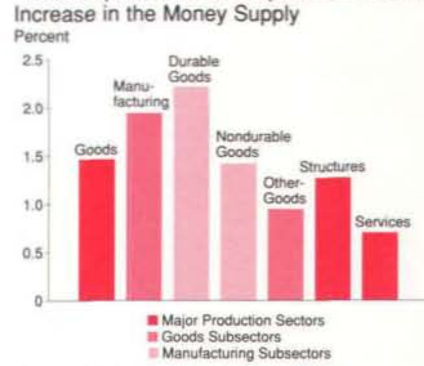
The economies of Louisiana, New Mexico and Texas differ in composition from one another, as well as from the national economy. For example, durable goods manufacturing represents a smaller proportion of Louisiana's economy than of the national economy. New Mexico's manufacturing sector is smaller than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

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



Source of original data: Peter Kretzmer (1989).

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.

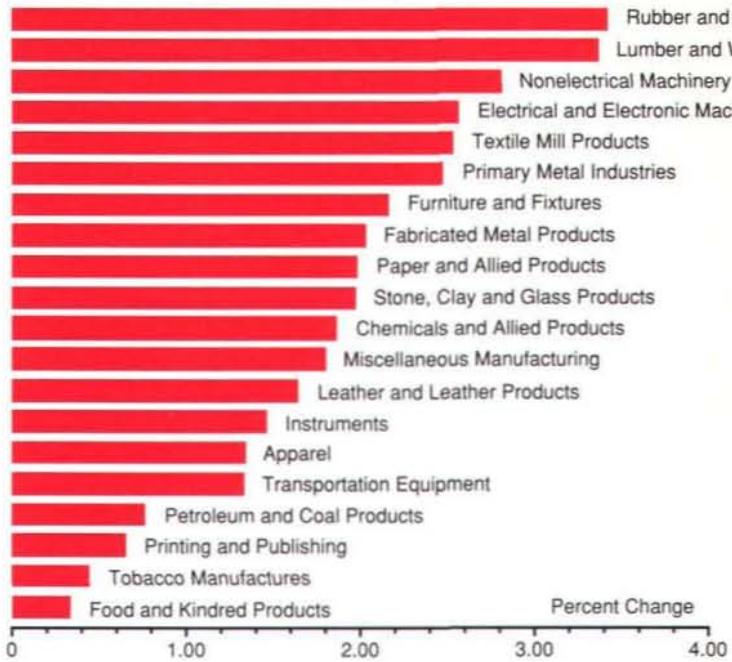
The Texas manufacturing sector is fairly evenly split between durable and nondurable goods industries. In contrast, durable goods industries comprise about 64 percent of the U.S. manufacturing sector, and nondurable goods industries make up 36 percent. Because Texas has a lower percentage of durable 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 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 manufacturing 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.

Chart 2

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



Source of data: Peter Kretzmer (1989).

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.

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, 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 consumer. 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.