Review

FEDERAL RESERVE BANK OF DALLAS

April 1977

Monetary Policy—

A Changing Relationship Between Money and Income

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By Edward E. Veazey

Historical experience is an important ingredient in the formulation of national economic policy. For the most part, all that can be inferred about the impact of policy alternatives is what similar policies did in like periods in the past. In monetary policy one of the most fundamental historical relationships is that between changes in money and changes in national income. And over time, policymakers have acquired a general knowledge of what changes in economic activity can be expected from different rates of growth in money.

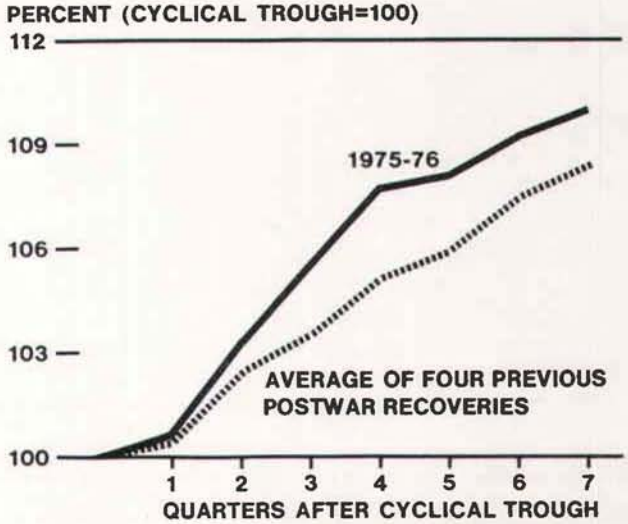
But in the economic recovery beginning in March 1975, an unusual difference appeared between the rate of economic expansion on the one hand and monetary growth on the other. From the first quarter of 1975 to the first quarter of 1976, the value of the nation's output of goods and services increased a little over 13 percent. Narrowly defined money, or M_1, consisting of currency in circulation plus private demand deposits, increased a little less than 5 percent. The difference of 8 percentage points in the growth rates was historically large and suggested a shift in the relationship between money and income.

Financial innovations have enabled many financial assets to substitute better for currency and checking account balances, so that considerably less money is held now than would be expected on the basis of past relationships.

Examination of the evidence confirms the early indication. The relation of private holdings of money to income, interest rates, and prices has changed considerably during the last two or three years. Conventional relationships that had remained fairly stable for 20 years prior to 1973 have changed in recent years.[1] Financial innovations have enabled many financial assets to substitute better for currency and checking account balances, so that considerably less money is held now than would be expected on the basis of past relationships.

This shift in the relation of money to economic activity has complicated monetary policy and raised important questions for further study. The rate of growth in money has been more difficult to control precisely, because the shifting relationships have made it more difficult to determine the level of interest rates necessary to produce a desired expansion of money. There also is more uncertainty as to what the target rate of monetary growth should be

Growth in income velocity of M_1 suggests shift in demand for money

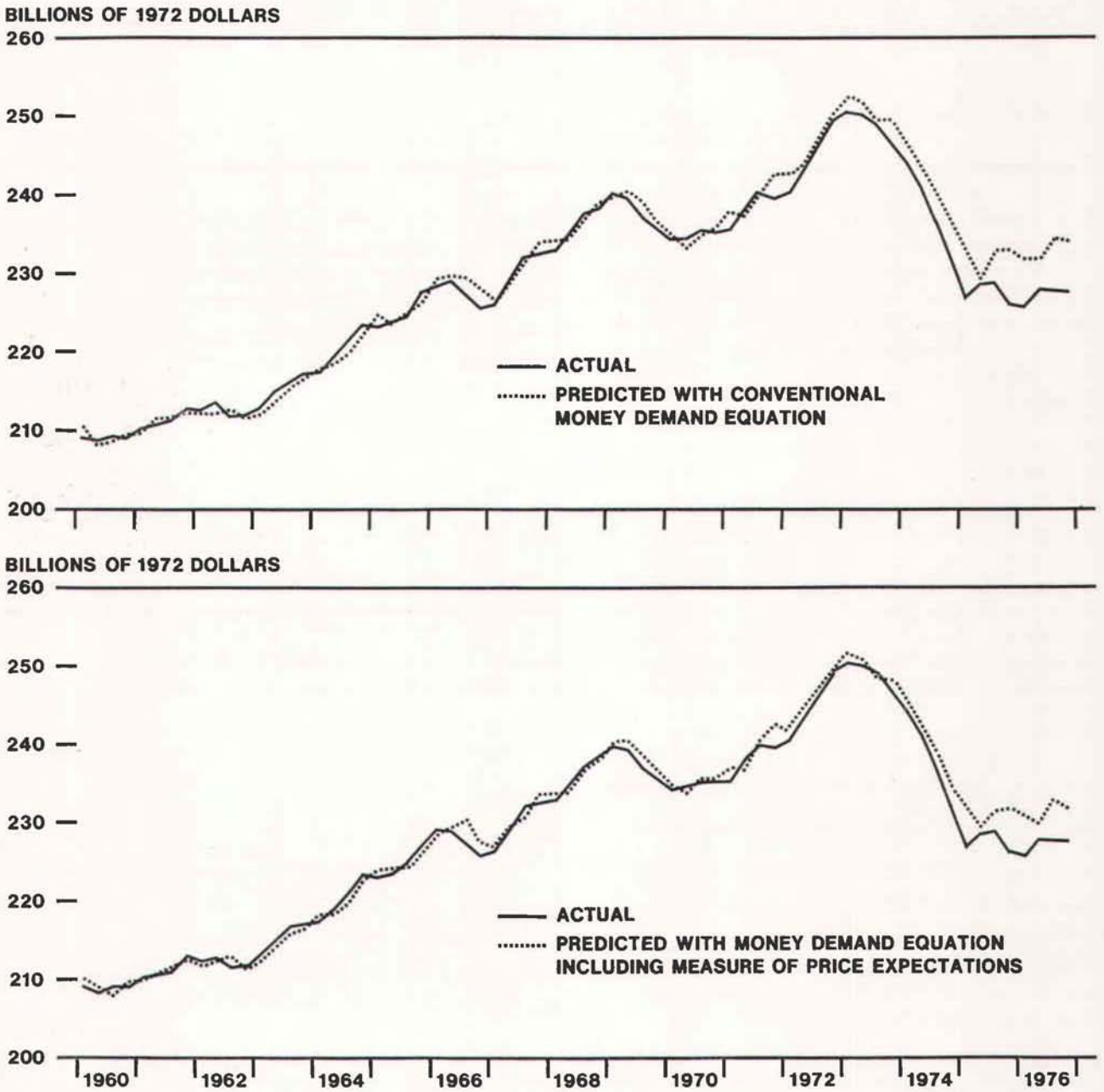


NOTE: Recession trough dates are defined by the National Bureau of Economic Research. The latest recession ended in March 1975. Four previous troughs were in November 1970, February 1961, April 1958, and May 1954.

SOURCES: Board of Governors, Federal Reserve System. U.S. Department of Commerce.

1. For an analysis of the form and extent of the increase in errors in forecasting money, see the accompanying detailed appendix.

Traditional equations overestimate growth of money (M_1)



NOTE: The predicted values in the upper graph were derived from one-period forecasts using the following equation estimated by Goldfeld—
$M = .271 + .193Y + .717M_{-1} - .019RCP - .045RCBP + .414u_{-1}$.
All variables in this equation are in natural logs. Money and income are deflated by the implicit price deflator.
The equation for predicted values in the lower graph is—
$M = .1272 + .166Y + .782M_{-1} - .015RCP - .038RCBP - .657P + .46u_{-1}$.

SOURCES: Stephen M. Goldfeld ("The Demand for Money Revisited," *Brookings Papers on Economic Activity*).
Federal Reserve Bank of Dallas.

and whether the narrowly defined money stock is the most appropriate target. Research may indicate that a broader aggregation of assets, such as M_2 (including time and savings deposits at commercial banks) or M_3 (including deposits at mutual savings banks, savings and loan associations, and credit unions), might be a better target for monetary policy.

Relationship between money and income

The simplest relationship between money and income is called *velocity*. This is the number of times a year money is exchanged for goods and services. It is calculated by dividing gross national product by the money stock. Velocity depends on how much money people hold in relation to the total production of goods and services. While velocity can be calculated for any definition of money, it commonly is based on narrowly defined money, M_1.

The velocity of money has been studied extensively and its behavior carefully charted over the last 100 years. The historical data reveal a recurring pattern in velocity. Money generally increases during cyclical expansions at a slower rate than does income, as measured by gross national product. Velocity therefore rises during cyclical expansions. Conversely, money generally either continues to increase during contractions or falls at a decidedly slower rate than income. Velocity thus falls during cyclical contractions.

This pattern has persisted in recent cycles. Velocity rose in each of the postwar recoveries, but the increase in the first year of the present recovery was exceptionally strong. The 8-percent increase in M_1 velocity in 1975 and early 1976 was larger than the average increase in comparable periods of the other four recoveries in the last 20 years. In the entire postwar period, only the rise in the 1950-51 recovery, associated with the outbreak of hostilities in Korea, exceeded 8 percent.

The main factor behind the recent spurt in velocity appears to have been a shift in the demand for money—consumers and businesses held less money relative to their expenditures. The amount of money held varies with such things as income and interest rates. An increase in income raises the volume of transactions and, thus, the desired volume of money. A rise in interest rates, on the other hand, encourages the conversion of cash balances into interest-earning assets and reduces the amount of money people hold. With a high enough yield on bonds, for example, it becomes worthwhile to invest in bonds rather than hold money idle, even though more inconvenience and expense are involved when money is again needed for transactions.[2]

Rise of alternative financial assets

The rapid increase in velocity in the recovery that began in 1975 aroused interest in the likelihood of a shift in the demand for money. But the demand for money probably began falling the year before.

In retrospect, the shift is not very surprising. High interest rates in recent years have stimulated competition for funds among financial institutions and led to the development of various new financial assets that are close substitutes for money. With the financial innovations have come regulatory changes that expressly permit, forbid, or otherwise control the new assets. The innovations and regulatory changes have altered substantially the historical relationships between M_1 and economic activity. In particular, negotiable order of withdrawal (NOW) accounts at savings and loan associations and mutual savings banks and business savings accounts at commercial banks seem to have had a measurable impact on business and personal holdings of currency and demand deposits.

Negotiable order of withdrawal is the technical name for the check-like instrument that allows depositors to make payments from a savings account the same way they can from a checking (demand deposit) account. A negotiable order of withdrawal looks and functions like a check, providing the convenience of checking while the funds on deposit are earning interest in a savings account. Until the introduction of NOW accounts, depositors had to choose between the convenience of checking accounts and the interest income from a savings account. Payment of interest on checking accounts is prohibited by the Banking Act of 1933.

The idea of NOW accounts was introduced in 1970. In July that year the Consumer Savings Bank of Worcester, Massachusetts, filed a plan with the state banking commissioner to allow customers to withdraw funds by means of the new check-like form instead of the standard passbook. The application was denied, but Consumer Savings brought suit. And in May 1972 the Massachusetts Supreme Judicial Court ruled in favor of Consumer Savings.

After that ruling, NOW accounts spread quickly among savings banks throughout Massachusetts and, a few months later, New Hampshire. Commer-

2. Another explanation of the responsiveness to interest rates emphasizes the speculative motive. If interest rates are low, and therefore expected to rise, money may be a better way to hold assets than bonds. Even though money has no interest return, bonds will decline in market value when interest rates rise.

cial bankers generally opposed the new accounts, partly because Federal Reserve and Federal Deposit Insurance Corporation regulations prevented them from offering similar accounts—putting them at a competitive disadvantage. And they felt that regulatory changes to permit commercial banks to offer NOW accounts would raise the cost of their deposits.

After a year of conflict, competition, and uncertainty for financial institutions and state regulators, Congress enacted legislation in August 1973 that authorized mutual savings banks, commercial banks, savings and loan associations, and cooperative banks in Massachusetts and New Hampshire to offer NOW accounts, beginning in January 1974. Then, after more than two years of experience with the accounts, Congress allowed all depository institutions in New England to offer interest-paying NOW accounts as of March 1, 1976.

The new accounts have had a small but noticeable impact on holdings of M_1. In the Northeast, mutual savings banks are formidable competitors of commercial banks. Total deposits at mutual savings banks in Massachusetts, New Hampshire, and Connecticut are greater than total deposits at commercial banks.

In assessing the nationwide impact of NOW accounts on the narrowly defined money stock, an upper limit can be established by supposing that if NOW accounts were unavailable, all balances held in NOW accounts would be held in checking accounts and, so, would be counted as part of the money stock. In October 1976, NOW accounts in New England totaled $1.8 billion. That was about one-half of 1 percent of the $310 billion money stock. Adding NOW balances to M_1 balances in January 1975 and October 1976 and recalculating the rate of growth of M_1 over that period would increase the growth rate from 5.6 percent to 5.9 percent.

Another way to assess the results is to compare NOW balances with the size of the forecast error in a demand equation for money. After adjustment for inflation, NOW balances (in 1972 dollars) amount to $1.3 billion, or a little more than a fifth of the roughly $6 billion by which the conventional money demand equation overestimates M_1.

More important have been the regulatory changes of November 1975 that permit profit-making organizations to maintain savings accounts at commercial banks. Previously, such accounts had not been available to corporations, partnerships, and other profit-making organizations. The new accounts are limited to a maximum of $150,000, making them particularly suitable for smaller businesses.

By the end of 1976, savings balances of businesses at the roughly 300 large commercial banks for which data are available had grown to $4.4 billion. That accounted for more than a fourth of new savings inflows at these banks.

While the large banks for which recent data are readily available hold more than half of all commercial bank assets and liabilities, they generally hold less than half of business savings accounts. Thus, business savings accounts probably totaled about $9 billion by the end of 1976.

The regulatory changes have all tended to increase the attractiveness of financial assets other than currency and demand deposits; and some of the changes have made time and savings deposits good substitutes for M_1, even as transaction balances.

An upper limit on the impact of these accounts can be estimated by using an analysis similar to that for NOW balances. If all the business savings accounts would otherwise have been held as demand deposits, the growth rate in M_1 since the introduction of the new accounts would have been 8.7 percent instead of 5.8 percent. Moreover, the $6.7 billion (in 1972 dollars) of these new business savings accounts roughly equals the amount by which a conventional equation overestimates M_1.

Other recent regulatory changes have probably had some impact on money growth. Regulations were amended in November 1974 to permit commercial banks to offer savings accounts to governmental units. This change accompanied new legislation providing deposit insurance that covers the new accounts up to $100,000. By the end of September 1976, domestic governmental units held $1.1 billion in savings accounts at large commercial banks.

The Federal Reserve adopted several amendments during 1975 that increase the attractiveness of savings accounts by raising yields or improving services to savers. Beginning in April, telephone transfers were allowed. With telephone transfers already permitted at some thrift institutions and nonmember banks, the Federal Reserve authorized member banks to accommodate telephone requests from their customers to withdraw funds from savings accounts

Recent legislative and regulatory changes affecting the demand for money

May 1972
The Massachusetts Supreme Judicial Court affirmed the right of banking institutions to establish new methods of withdrawal. In June, mutual savings banks in Massachusetts began offering negotiable order of withdrawal (NOW) accounts.

August 1973
Congress authorized mutual savings banks, commercial banks, savings and loan associations, and cooperative banks in Massachusetts and New Hampshire to offer NOW accounts on an experimental basis. Commercial banks, S&L's, and cooperative banks began offering NOW accounts in January 1974, after a framework was established for regulation and supervision of the experiment.

August 1974
The National Credit Union Administration authorized share drafts at Federal credit unions. Share drafts, which look and function like checks, enable a credit union member to draw on his share account with a draft cleared through the credit union's bank.

November 1974
The Federal Reserve amended Regulation Q to permit governmental units to open savings accounts at member commercial banks.

April 1975
The Federal Reserve authorized member banks to transfer depositors' funds from savings accounts to checking accounts by telephone order.

April 1975
The Federal Home Loan Bank Board adopted a regulation permitting Federal S&L's to offer bill-paying services that would allow the associations to accept orders from their depositors to pay third parties for any purpose.

September 1975
The Federal Reserve amended Regulation Q to permit member banks to offer a service for making third-party payments through preauthorized transfers of funds from depositors' savings accounts.

October 1975
State legislation permitted state-chartered thrift institutions in Maine to offer personal checking accounts.

November 1975
The Federal Reserve amended the definition of savings deposits in Regulations D and Q to permit business savings accounts, up to $150,000, at member banks.

December 1975
State legislation permitted thrift institutions in Connecticut to offer personal checking accounts.

February 1976
Congress authorized all depository institutions in New England to offer interest-paying NOW accounts.

May 1976
State legislation authorized consumer demand deposits at state-chartered mutual savings banks and S&L's in New York.

Pending final Federal Reserve Board action
Authorization permitting member banks to transfer depositors' funds from savings accounts to cover demand deposit overdrafts.

or to transfer funds from a savings account to a checking account. Such practice had been prohibited since 1936.

In September 1975, banks were authorized to offer their customers bill-paying services through preauthorized transfers of funds from savings accounts. This arrangement also was already available at thrift institutions, but bill-paying services at commercial banks had previously been limited to payments related to real estate loans or mortgages.

Certain time deposits were made more attractive. Two amendments in December 1975 facilitated the establishment and growth of Individual Retirement Accounts (IRA's) that are established under the Employee Retirement Income Security Act of 1974. Under this statute, an individual may defer income tax payments on up to $1,500 or 15 percent of his gross income (whichever is less) by depositing the funds to an IRA. One amendment permits early withdrawal from such an account without the usual interest rate penalty when the transaction is in accordance with certain age or disability conditions and conforms with the IRA agreement between the bank and depositor. The other amendment waives the $1,000 minimum-denomination requirement for time deposits with maturities of four to six years.

The impact on holdings of cash balances of most of these latter regulatory changes has probably been very small.[3] Nevertheless, they have all tended to increase the attractiveness of financial assets other than currency and demand deposits; and some of the changes have made time and savings deposits good substitutes for M_1, even as transaction balances.

Implications

A shift in money demand creates two problems for policymakers. It makes monetary control less precise because some of the relationships the Federal Reserve relies on to help control money under present operating procedures have changed. The growth rate of M_1 has been one of the Federal Reserve's targets for some time, and since early 1975 the target growth rates have been publicly announced.

However, the Federal Reserve does not control the volume of money directly. It influences the money stock indirectly—principally by buying and selling U.S. Government securities, which changes the volume of bank reserves and the level of short-term interest rates. Under present operating procedures, the Federal Reserve relies to a considerable extent on interest rate changes to influence money growth. An increase in interest rates generally slows money growth in the near term by increasing the attractiveness of alternative assets. A decrease in interest rates stimulates money growth by decreasing the yield on alternative assets. Shifting demand for cash balances makes it more difficult to determine the interest rate level corresponding to a particular rate of money growth.

The unusually slow growth in M_1 normally would have been interpreted as restrictive, but as financial innovation accelerated, growth in M_2 and M_3 correctly indicated ample accommodation of the cyclical expansion.

Monetary policy, of course, is forward-looking and is heavily influenced by economic forecasts. When the appropriate interest rate is uncertain, economic forecasts are also uncertain. In 1975, for example, most forecasts indicated interest rates would rise if money growth were kept within the announced target range of 5 to 7½ percent. Since higher interest rates would increase the cost of borrowing and dampen economic growth, most forecasts based on money growth within the target range were unduly pessimistic.

This is related to the second problem raised by the new money substitutes and the shifting demand for currency and checking account balances—selection of the appropriate target of monetary policy. An increase in the rate of growth of the money stock is usually followed after some months by an increase in the level of economic activity. And too rapid a rise in money produces inflation. Agreement on those general statements is nearly unanimous.

Financial innovation has complicated the monetary policy process by raising questions about what to include as "money." There are various criteria for defining money, based on the functions that money performs. But exactly which assets to include has always been a somewhat fuzzy question because the same functions are provided to some extent by many different assets.

One definition of money is based on its role as a medium of exchange in payment for goods and debts.

3. Detailed estimates are available in John Paulus and Stephen H. Axilrod, "Recent Regulatory Changes and Financial Innovations Affecting the Growth Rate of the Monetary Aggregates," a Federal Reserve Board staff memorandum of November 2, 1976.

Under this criterion, currency and coin are certainly included in the money stock. Checking account balances at commercial banks also are now generally considered money under this definition, although at one time the issue aroused intense controversy.

Financial innovations have created several other assets that function as media of exchange but are not generally included as part of the money stock—travelers' checks and money orders, for example. These are sufficiently differentiated from currency and checking account balances to have been excluded from "money." But with the introduction and rapid growth of NOW accounts, which are hardly distinguishable from checking accounts except that they earn interest, another asset available as a medium of exchange is now vying for inclusion in the money stock.

Money traditionally serves also as a store of purchasing power. In addition to facilitating transactions, it serves as a store of wealth between transactions. On this basis, time and savings accounts at commercial banks, including the new business savings accounts and NOW accounts at these institutions, are counted in the widely known broader definition of money, M_2. NOW accounts and other deposits at mutual savings banks, savings and loan associations, and credit unions are included in the even broader definition of money, M_3.

If all financial assets were closely related and their growth rates were in proportion to the growth rate of M_1, then any one of them would serve equally well as an indicator of money growth and, hence, monetary stimulus. However, when the growth of various assets is not proportional, as occurred in the recent period of accelerated financial innovation, different indications are given as to the extent of monetary stimulus. The unusually slow growth in M_1 during this period normally would have been interpreted as restrictive, but growth in M_2 and M_3 correctly indicated ample accommodation of the cyclical expansion.

More data will have to accumulate before the relative merits of the different measures can be accurately assessed in the new institutional environment. However, particularly if financial innovation continues to cause rapid and unpredictable changes in the near term, it is reasonable to expect increasing attention to be devoted to the broader definitions of money.

Appendix
Stability of demand for money (M_1)

The remarkable rise in velocity during the present economic recovery led to widespread speculation that money demand had undergone a fundamental shift—that the money demand equation that had adequately explained monetary growth for most of the postwar period no longer would do so. Responsiveness of money demand to interest rates or to income might have changed. Or there might have been a change unrelated to these two factors in the amount of money demanded. To investigate these possibilities, we reexamined an equation that was formulated and estimated four years ago by Stephen Goldfeld in the course of a comprehensive study of money demand that gave explicit consideration to the stability question.

In that study, responsiveness of money demand to income and interest rates was estimated over 12 sample periods, all starting in 1952 but successively ending in the 12 years from 1961 through 1972. The results of each estimation period were then used to forecast the next four quarters. In general, the estimated responsiveness of money demand to changes in income and interest rates exhibited reasonable stability throughout the periods. And, overall, the predictive ability of the equation also reflected general stability. In 5 of the 12 years, the errors for the forecast period as measured by the root mean-squared error (RMSE) were, on average, no worse than those from within the sample. And the errors in all 12 periods generally seemed to be of the same order of magnitude. The conclusion drawn on the basis of the study was that "on the whole, the money demand function does not exhibit marked short-run instability."[1]

We repeated Goldfeld's test to include more recent years, using the same estimation technique and same money demand equation.[2] Major data revisions in recent

1. Stephen M. Goldfeld, "The Demand for Money Revisited," *Brookings Papers on Economic Activity*, 1973, no. 3, p. 590.
2. The real value of the narrow money stock, M_1, was the dependent variable. It was measured as a quarterly average of monthly data deflated by the implicit GNP deflator. The regressors were real GNP, the interest rate on commercial paper, the interest rate on time deposits, and the lagged value of the dependent variable. All variables were in log form. Estimates were obtained with least squares regression, using the Cochrane-Orcutt technique to adjust for serial correlation.

Table 1

MONEY DEMAND EQUATION—SUMMARY STATISTICS FOR ESTIMATES

End of estimation period	Estimated percent change in money demand resulting from a 1-percent change in			Root mean-squared error, billions of 1972 dollars	
		Interest rates on			
	Income	Commercial paper	Time deposits	Sample period	Four-quarter *ex post* forecast
1965 . . .	.311	−.013	−.054	1.10	1.74
1966 . . .	.292	−.013	−.056	1.14	3.29
1967 . . .	.332	−.015	−.060	1.16	2.24
1968 . . .	.357	−.016	−.057	1.17	1.22
1969 . . .	.357	−.016	−.059	1.17	.61
1970 . . .	.358	−.016	−.056	1.14	1.44
1971 . . .	.335	−.011	−.055	1.20	2.75
1972 . . .	.358	−.010	−.056	1.22	1.03
1973 . . .	.348	−.008	−.058	1.23	6.00
1974 . . .	.348	−.009	−.061	1.34	6.34
1975 . . .	.405	−.007	−.054	1.41	.82
1976 . . .	.394	−.006	−.047	1.40	—

years make strict comparability impossible. But estimating with revised data for the period considered by Goldfeld produced results that generally support his conclusions. The responsiveness of money to interest rates and income was estimated over 11 sample periods. Each sample started in the second quarter of 1952. The end of the sample was moved by one-year intervals from the fourth quarter of 1965 to the fourth quarter of 1975. Results are given in Table 1.

The estimates before 1972 generally reconfirm previous results. The responsiveness of money demand to a change in income and interest rates remained, with few exceptions, in the same general range. The income coefficient stayed close to .33. Interest rate coefficients were negative and nearly equal in all estimation periods before 1972, indicating that a rise in rates encouraged a switch from money to interest-earning deposits about equally for all estimating periods.

For periods beyond 1972, the coefficients seem to exhibit reasonable stability, reflecting continued domination of the estimates by the data from earlier years; but there is a dramatic change in the size of forecast errors after 1973. When the money demand equation was estimated for 1952 through 1973 and the results were used to forecast 1974, the RMSE for the four-quarter forecast rose to $6 billion, from an average value of less than $2 billion in prior periods. Similar errors prevailed in 1975. By 1976 the measured errors were small once again, but by then the measured responsiveness to the interest rate and income variables had changed considerably.

The extent of the changes in money demand is depicted in the large chart accompanying the main text. Predictions of money demand based on both the conventional equation and one incorporating a measure of price expectations, which might be expected to perform better during years of fluctuating inflation rates, are shown. By the end of 1976, both equations overpredict the volume of the real money stock by $5 billion to $7 billion.

In an attempt to isolate the source of the change, the money demand equation was reestimated with three dummy variables designed to identify three possible changes in money demand—a change in response to income, a change in response to interest rates, and a change in the amount of money

Table 2

MONEY DEMAND EQUATION—ESTIMATED CHANGES IN COEFFICIENTS

	Coefficients, second quarter of 1952-fourth quarter of 1976			Changes in coefficients, 1975-76		
	Constant	Income	Interest rate	Constant	Income	Interest rate
Assumption 1 ...	3.135	.346	−.009	2.431	−.354	.027
	(11.05)	(8.03)	(−1.72)	(2.28)	(−2.37)	(1.06)
Assumption 2 ...	3.329	.311	−.006	−.017		
	(8.74)	(5.77)	(−1.19)	(−2.65)		
Assumption 3 ...	3.332	.311	−.006		−.002	
	(8.80)	(5.79)	(−1.19)		(−2.68)	
Assumption 4 ...	3.284	.316	−.005			−.008
	(8.12)	(5.58)	(−1.10)			(−2.36)

NOTE: The estimates were obtained from least squares regression of the following basic equation, with Cochrane-Orcutt transformation to adjust for serial autocorrelation—

$M = b_0 + b_1Y + b_2M_{-1} + b_3RCBP + b_4RCP$

Changes in the coefficients were estimated by adding appropriate dummy variables to the basic equation. The change in the constant was measured with a dummy variable, with value 1 for the eight observations in 1975 and 1976 and 0 otherwise. The change in responsiveness to income was measured with a variable having the same value as *Y* in 1975-76 and 0 otherwise. The change in responsiveness to interest rates was measured with a variable having the same value as the commercial paper rate, *RCP*, in 1975-76 and 0 otherwise. It was not possible to test for a change in response to the time deposit rate, *RCBP*, because the value of *RCBP* did not change in 1975-76.

Figures in parentheses are *t* statistics of the regression coefficients.

demand independent of these variables. Results of reestimating the equation under four different assumptions as to the nature of the change are given in Table 2.

The least restrictive assumption allows for the possibility that changes occurred in all three coefficients. Estimates under this first assumption indicate a large drop in the responsiveness of money to income. In fact, the estimated change, –.35, offsets the entire estimated value of the coefficient, implying that during the 1975-76 period money demand did not respond to income changes. And the positive change in the interest rate coefficient under this same assumption more than offsets the estimated negative value of the coefficient, implying that in 1975-76, people decreased rather than increased their money holdings in response to a drop in interest rates. Estimates under the first assumption are extremely suspect, however. The eight observations on quarterly data for two years simply do not provide enough information to isolate well the effects of three different variables.

The other three sets of estimates in the table constrain the shift in 1975-76 to changes in the three possible coefficients taken one at a time. Smaller and seemingly more plausible changes show up in these estimates. When all the change that took place in 1975 and 1976 is assigned to a change in response to the income variable, for example, the coefficient changes by –.002, which is relatively small but nevertheless statistically significant by the usual t test. Responsiveness to interest rates increases by a relatively large amount when all the change is constrained to that coefficient.

When the change is constrained to be unrelated to income and interest rates, that coefficient changes by –.017, which, in terms of purchasing power, implies a decline in real money demand of about $3.9 billion in 1972 dollars. This amount directly measures the approximate magnitude of the shift in money demand. More data will have to accumulate before the source of the shift can be identified with any reasonable degree of confidence.

New member bank

First National Bank, Socorro, New Mexico, a newly organized institution located in the territory served by the El Paso Branch of the Federal Reserve Bank of Dallas, opened for business March 1, 1977, as a member of the Federal Reserve System. The new member bank opened with capital of $178,575, surplus of $178,575, and undivided profits of $198,641. The officers are: Ellis McPhaul, Chairman of the Board; Robert T. McNiel, President; E. S. Caldwell, Vice President and Cashier; Genevie Baca, Assistant Cashier; Florabelle Coulloudon, Assistant Cashier; Mike Piccinini, Assistant Cashier and Manager, Magadalena Branch; and Emma E. Pino, Assistant Cashier.

New par banks

Bank of Santa Fe, Alta Loma, Texas, a newly organized insured nonmember bank located in the territory served by the Houston Branch of the Federal Reserve Bank of Dallas, opened for business February 22, 1977, remitting at par. The officers are: Charles T. Doyle, Chairman and President; Tom A. Doyle, Executive Vice President and Cashier; E. Q. Rogers, Vice President; and Gary N. Cayce, Assistant Cashier.

Security State Bank, Abilene, Texas, a newly organized insured nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, opened for business February 28, 1977, remitting at par. The officers are: Leldon Clifton, President; Hank Hankins, Vice President and Chairman of the Board; Lyndell L. Rogers, Vice President and Cashier; James Clifton, Assistant Cashier; and Betty Palmer, Assistant Cashier.

Federal Reserve Bank of Dallas
April 1977

Eleventh District Business Highlights

TEXAS EMPLOYMENT REVISION BETTERS RECOVERY PICTURE

The Texas economy continues to make a broad-based recovery from the recession. But revised employment data released recently by the Texas Employment Commission indicate a much stronger rate of economic recovery than was suggested by data released prior to February 1977.

According to revised figures, total employment in the state grew 6.9 percent from February 1975 to November 1976—the last month for which the unrevised data were reported. That is nearly double the previous estimate of 3.6 percent and well above the 5-percent rise in total employment for the United States.

Revised figures show the civilian labor force grew at about the same rate as total employment. Consequently, there were only relatively small revisions in the unemployment rate.

During much of the recovery, the unemployment rate averaged about 5.7 percent. But when the recovery stalled last year, the jobless rate rose in May to a high of 6.2 percent, seasonally adjusted. Since then, the unemployment rate has trended down and stood at 5.3 percent in February.

Revised nonagricultural employment also shows a much stronger rate of growth during the first two years of the recovery. And much of the revision centers in the goods-producing industries—construction, mining, and manufacturing.

The industry hardest hit by the recession was contract construction, but it has exhibited the strongest growth during the recovery. Construction employment dropped 8.8 percent from June 1974 to May 1975. But since then, the number of construction workers has increased 16 percent, or over three times faster than earlier data indicated.

Much of the increased demand for building tradesmen has been in residential construction, as the level of housing starts in Texas has more than doubled since the recession. In some cities, such as Houston, the pace of home building was so rapid that temporary shortages of skilled labor developed. And for a time, builders found it necessary to actively recruit workers from outside the state to fill the shortfall in supply.

Employment in the mining industry in Texas was not affected by the recession as increased exploration and development of oil and gas fields have provided a growing number of new jobs, even during 1974. Employment in the industry has increased an additional 10.6 percent in the past two years.

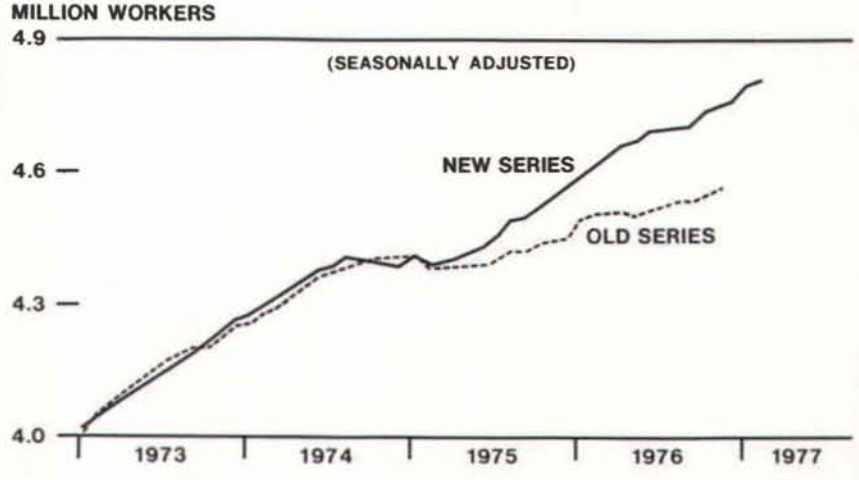
The employment decline in manufacturing in Texas during the recession was less than half that for the United States. Factory employment in the state fell 4.3 percent, with much of the weakness occurring in the durable goods industries. But with recovery, manufacturing employment has climbed 8.7 percent, or nearly twice as much as suggested by the unrevised data.

Most of the gain in manufacturing employment has centered in the nondurable goods industries, where petroleum refining, paper, food and kindred products, and textiles led the advance. Smaller gains were posted in the apparel, printing and publishing, and chemical industries.

The growth in employment in durable goods manufacturing has

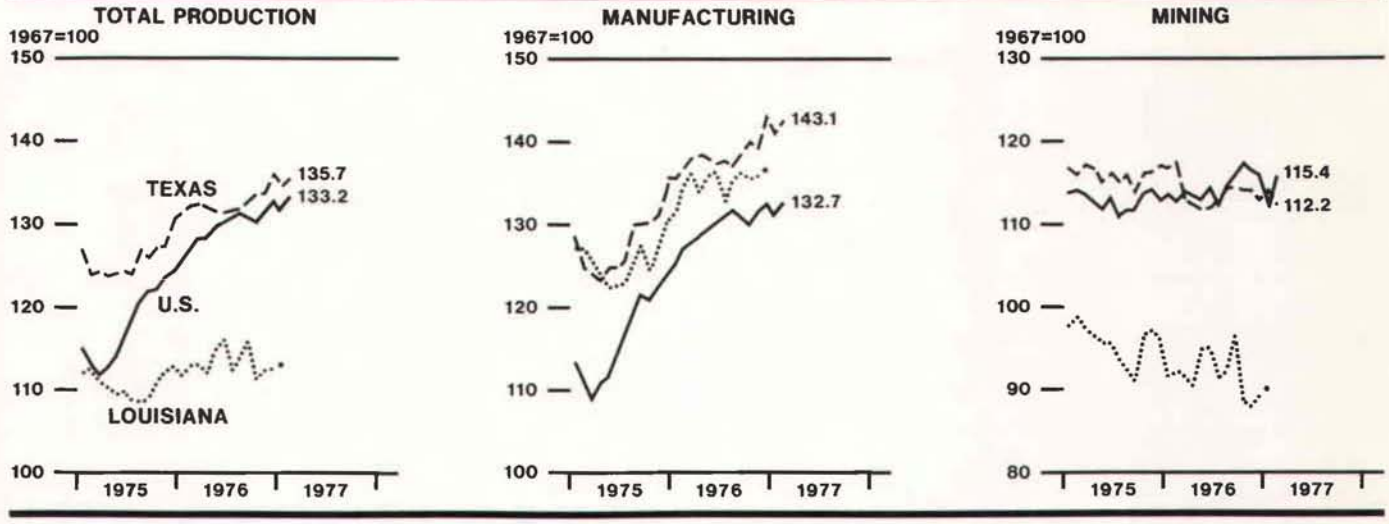
(Continued on back page)

REVISED NONAGRICULTURAL EMPLOYMENT SERIES INDICATES MUCH STRONGER ECONOMIC RECOVERY IN TEXAS



SOURCES: Texas Employment Commission.
Federal Reserve Bank of Dallas (seasonal adjustment).

INDUSTRIAL PRODUCTION
(SEASONALLY ADJUSTED)

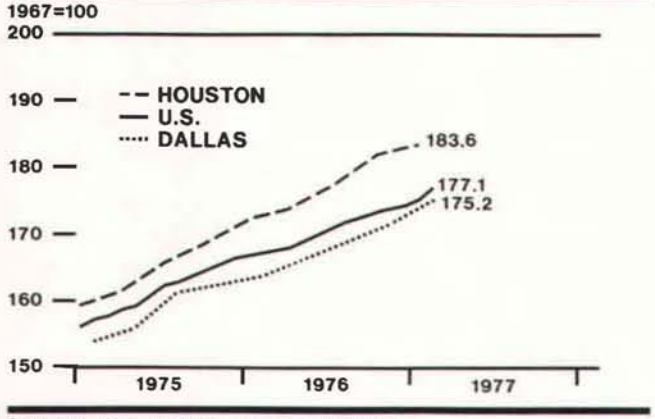


*Estimation of Louisiana industrial production index discontinued pending receipt of revised employment data.
SOURCES: Board of Governors, Federal Reserve System.
Federal Reserve Bank of Dallas.

EMPLOYMENT AND UNEMPLOYMENT
FOUR SOUTHWESTERN STATES[1]
(SEASONALLY ADJUSTED, BY FRB)

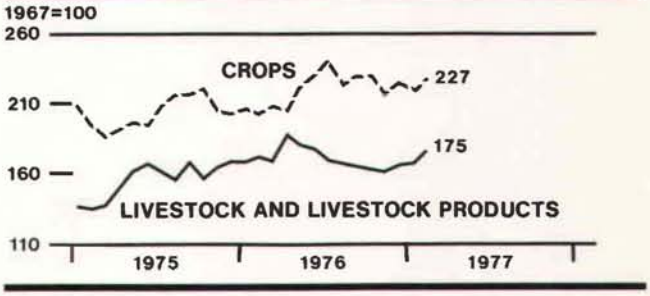
1. Louisiana, New Mexico, Oklahoma, and Texas.
SOURCE: State employment agencies.

CONSUMER PRICES



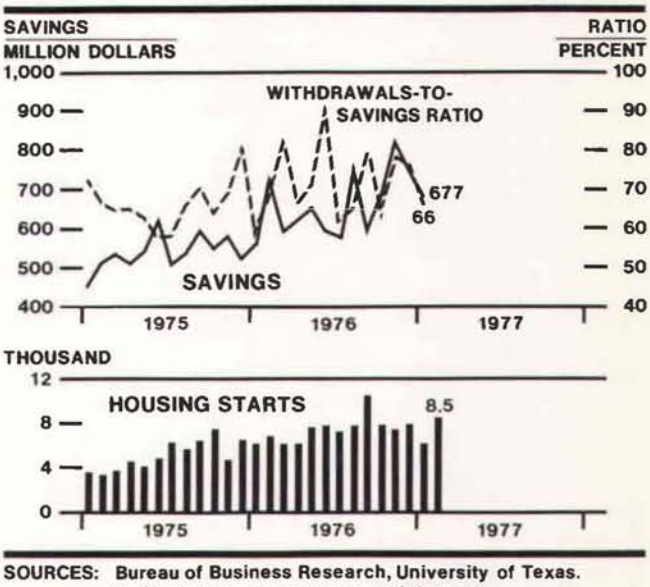
SOURCE: U.S. Bureau of Labor Statistics.

PRICES RECEIVED BY TEXAS FARMERS



SOURCE: U.S. Department of Agriculture.

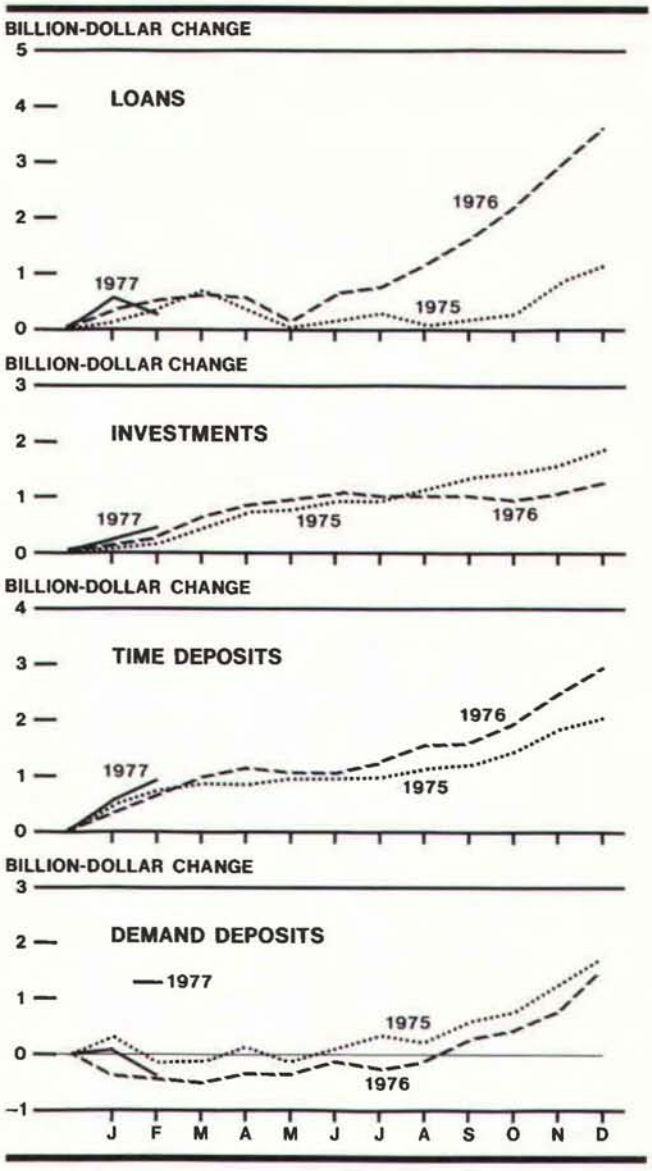
SAVINGS AND LOAN ASSOCIATION ACTIVITY AND HOME BUILDING IN TEXAS
(SEASONALLY ADJUSTED, BY FRB)



SOURCES: Bureau of Business Research, University of Texas.
Federal Home Loan Bank of Little Rock.

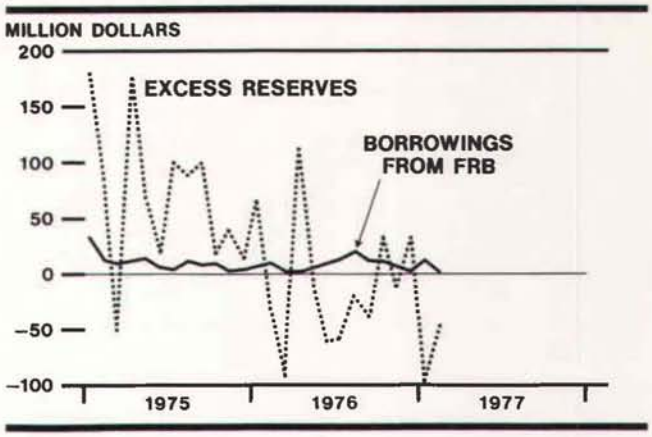
CONDITION STATISTICS OF ALL MEMBER BANKS

ELEVENTH FEDERAL RESERVE DISTRICT
(CUMULATIVE CHANGES)



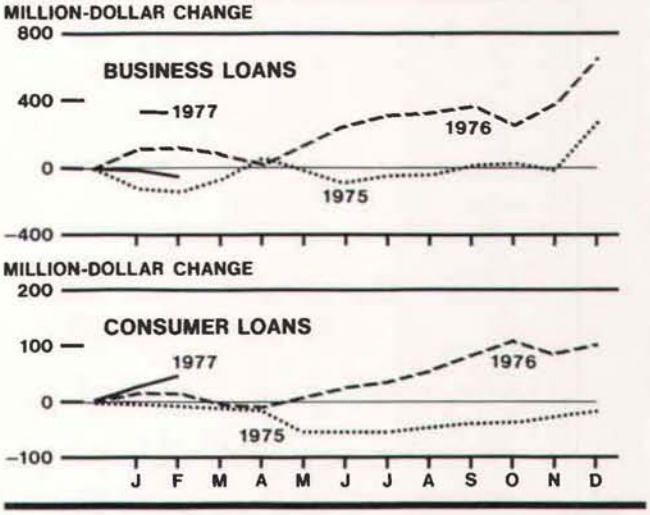
RESERVE POSITION OF MEMBER BANKS

ELEVENTH FEDERAL RESERVE DISTRICT
(MONTHLY AVERAGES OF WEEKLY DATA)



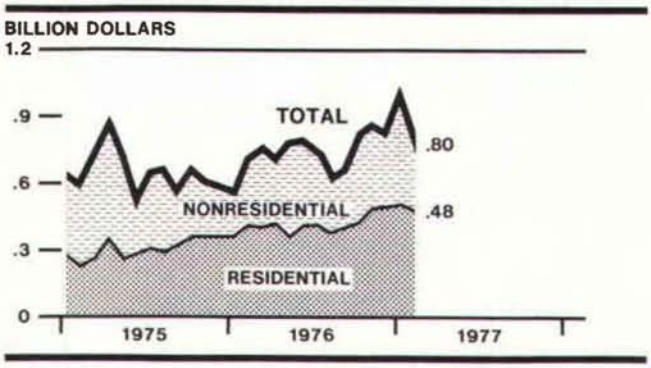
LOANS AT WEEKLY REPORTING BANKS

ELEVENTH FEDERAL RESERVE DISTRICT
(CUMULATIVE CHANGES)



BUILDING CONTRACTS

FOUR SOUTHWESTERN STATES[1]
(SEASONALLY ADJUSTED, BY FRB)

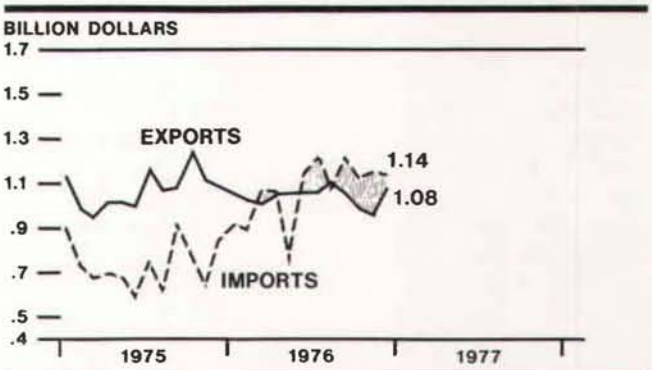


1. Louisiana, New Mexico, Oklahoma, and Texas.

SOURCE: F. W. Dodge, McGraw-Hill, Inc.

FOREIGN TRADE

HOUSTON CUSTOMS REGION
(SEASONALLY ADJUSTED, BY FRB)



SOURCE: U.S. Department of Commerce.

lagged the increase in nondurable goods manufacturing. Only in the transportation equipment industry has employment continued to decline.

While some of the biggest gains in employment in Texas have occurred in the goods-producing industries, two-thirds of all the jobs in the state are in the service-producing industries. And most of these jobs are more insulated from cyclical variations in the demand for labor than are those in the goods-producing industries.

The strongest growth in employment in the service-producing industries has been in services and trade (wholesale and retail), with increases of 12 percent and 11 percent, respectively, in the past two years. Those rates of growth are three times faster than with the unrevised series.

The number of workers in the finance, insurance, and real estate industries was revised downward. However, the new series indicates that employment in the industry rose nearly 8 percent in the past two years, or twice as much as the old figures suggested.

Employment in government and in the transportation and public utility industries was not revised substantially. The number of government jobs has risen about 7 percent during the recovery, or slightly faster than the previous rate of 6.6 percent. On the other hand, the growth in employment in the transportation and public utilities industry was revised downward slightly, but the increase still averaged about 1 percent.

Despite the fact that most of the employment series were revised upward sharply, the outlook for further gains in employment in Texas is improved. Consumer buying and business investment in new plant and equipment in the state appear to be on the upswing, and oil field activity continues at a record level. With strength in these major sectors of the economy, a growing number of new jobs should be created for a growing labor force.

In addition to revising total employment, the Texas Employment Commission slightly revised the number of average weekly hours worked in the major industries. With these new series, the Texas industrial production index was recomputed.

The revisions show that industrial production in the state has climbed 8.7 percent in the past two years. Previously, output was estimated to have risen only about 5 percent.

Most of the increase in industrial production was in nondurable goods manufacturing, where some of the biggest revisions in employment were made. In mining, the large employment gains in the drilling industry were largely offset by the declines in oil and gas production.

OTHER HIGHLIGHTS:

- The Texas industrial production index rose moderately in February, after falling in January. The rise resulted when a strong gain in overall manufacturing output more than offset a decline in the mining sector.

  Increased production of durable goods accounted for all the gain in manufacturing, as production of nondurable goods was off slightly. Electrical machinery posted the largest output increase among the durable goods industries, while nonelectrical machinery suffered the only decline.

  The decrease in nondurable goods production was mainly due to reductions in the petroleum refining and chemical industries. However, production was also down in textiles.

  Decreased crude petroleum production accounted for the output decline in the mining sector. Drilling activity, nevertheless, continued to advance.
- The value of total building contracts in the four southwestern states in February fell back to the December level from the high value posted for January. The decline was largely in nonresidential contracts.

  Housing starts in Texas rebounded to 8,468 units, seasonally adjusted, in February, after declining sharply in January. Except for their one-month run-up last September, starts in February were at the highest level since April 1974.
- Total credit at member banks in the Eleventh District decreased slightly during February, following eight consecutive months of increase. The decrease reflected a moderately lower loan demand—particularly from businesses and nonbank financial institutions. Real estate and consumer loans, however, continued to expand sharply.

  Total deposits at these banks also fell slightly in February as a result of a sizable decline in demand balances. Consequently, the banks acquired securities at a sharply slower rate. But holdings of U.S. Government securities—especially short-term notes and long-term bonds—continued to rise markedly.
- The Dallas consumer price index for February was 2 percent above November 1976 and 7 percent above the year-earlier level. The rise since November was largely due to higher food prices, especially for fruits and vegetables. The only significant decline over the three-month period was in prices for women's and girls' apparel and its upkeep. The biggest increase over a year earlier was in prices for gas and electricity, which rose 30.3 percent.
- The unemployment rate for the four southwestern states was 5.8 percent of the total labor force in February, up slightly from 5.7 percent a month earlier. Total employment continued to climb and was 0.3 percent higher than in the previous month.

  Nonagricultural employment continued its rise but at a slower pace than in January. The mining and service industries posted the highest gains, offset somewhat by decreased employment in construction and in transportation and public utilities. Employment in both durable and nondurable goods manufacturing was up.