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FEDERAL RESERVE BANK OF ST. LOUIS

Review

A study of movements in member bank reserves from 1950 to early 1962 and their relationship to changes in the nation's money supply.

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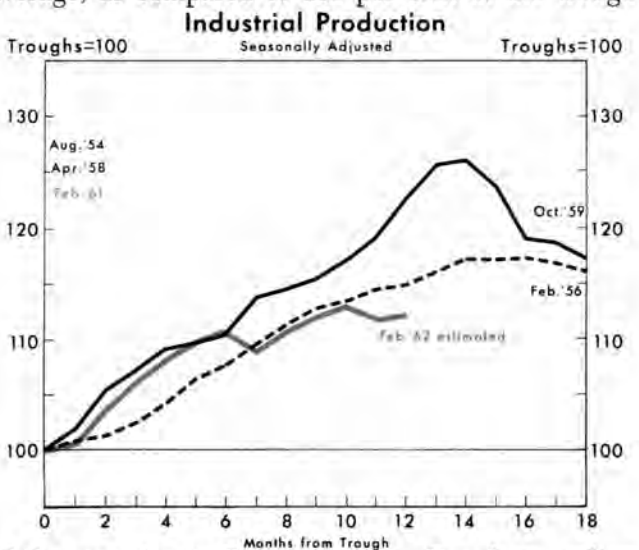
A Year of Recovery

SINCE TURNING UP about a year ago, business activity has risen substantially, but according to most measures at a slower pace than in the first twelve months following the two previous recessions. Prices and interest rates have remained relatively stable over the period. An increase in the money supply and a large Government deficit probably contributed to the expansion in economic activity.

Industrial Production

Output of the nation's mines, factories, and utilities in January was about 114 per cent of the 1957 average, as compared to 102 per cent at the trough



of the recession in February 1961. Based on preliminary data for February this year, especially on steel production, the increase in industrial output during the first year of the current recovery was 12 or 13 per cent. This compared with gains in industrial production of 22 and 15 per cent, respectively, in the first year of the 1958-59 and 1954-55 upturns.

Employment

The first year of recovery also produced a substantial reduction in unemployment, mostly in recent months. The proportion of the civilian labor force unemployed, was 5.8 per cent at mid-January 1962, as compared to 6.7 per cent in February 1961. In the two previous periods of business expansion there was a greater decline in unemployment. During the like months of the 1958-59 upturn unemployment fell from 7.4 to 5.6 per cent; in the comparable 1954-55 period the decline was from 6.0 to 4.1 per cent. Clouding the picture of improvement in late 1961 and early 1962 were indications that to a greater extent than in the two previous recoveries the decline in the unemployment rate did not result from employment increases but from persons leaving the labor force. The declines in unemployment during the 1958-59 and 1954-55 periods were accompanied by substantial rises in employment levels.

Prices

A feature of current economic developments which has received considerable attention is the relative stability of average prices during the year following the February 1961 trough. Based on developments through January, the wholesale price index declined about one-half of 1 per cent during the first year of

recovery. During the same period the index of consumer prices probably rose less than 1 per cent, a decline in food prices nearly offsetting rises in other commodities and services. A similar pattern of price stability was recorded in the twelve months following each of the two previous recessions.

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Member Bank Reserves

During the year from February 1961 to February 1962 member bank reserves increased at a relatively rapid rate. Monetary reserves of member banks, that is, total reserves less those held behind Treasury deposits, rose an estimated 3.8 per cent. Expansion of such reserves in the first year of the 1958-59 and 1954-55 recoveries was more moderate, 3.0 and 1.4 per cent, respectively. The growth in reserves during the first year of the current recovery was a result principally of net System open market purchases of U. S. Government securities; money market factors, primarily gold outflows and an increase of currency in circulation, tended to reduce member bank reserves.

Bank Credit

Reflecting the marked growth in bank reserves and time deposits (which require less reserves than demand deposits), commercial bank credit expanded an estimated 7 per cent during the year ending with February. Both loans and investments shared in this expansion. By contrast, bank credit increased by more moderate amounts during the first year of the two previous economic recoveries.

Money Supply

The quantity of money (demand deposits plus currency outside banks) increased an estimated 2.8 per cent from February 1961 to February 1962, a sharp rise since last August following little change last spring and summer. This was a somewhat smaller increase than during the first twelve months of the 1958-59 and 1954-55 upturns. As a consequence of the greater growth of commercial bank time and savings deposits, however, the money supply defined

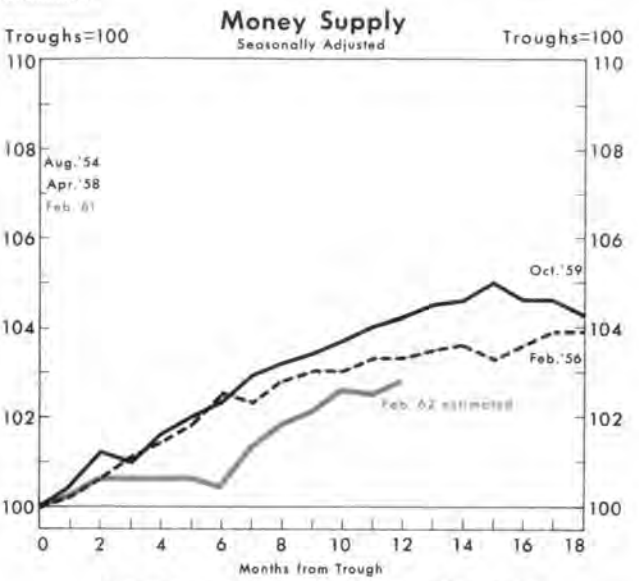
Per Cent Change During First Year of Recovery[1]

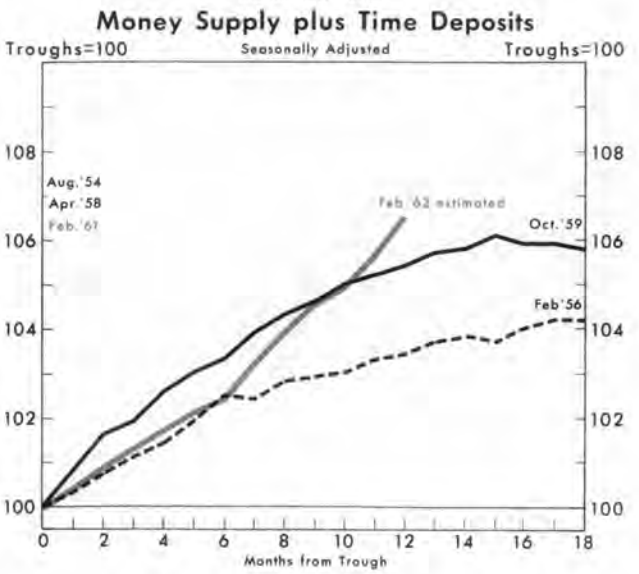
	1954-55	1958-59	1961-62*
Monetary Reserves	+1.4%	+3.0%	+3.8%
Total Reserves	+1.4	+3.3	+3.3
Bank Credit	+4.8	+5.8	+7.0
Money Supply	+3.3	+4.2	+2.8
Money Supply Plus Time Deposits	+3.4	+5.4	+6.5

Annual Rates of Change from Sixth to Twelfth Month of Recovery

	1954-55	1958-59	1961-62*
Monetary Reserves	-0- %	+2.2%	+5.8%
Total Reserves	—0.7	+3.3	+5.8
Bank Credit	+2.1	+7.0	+8.2
Money Supply	+1.5	+3.7	+4.7
Money Supply Plus Time Deposits	+1.8	+4.0	+8.1

[1] August 1954-August 1955, April 1958-April 1959, February 1961-February 1962.
* Estimated





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broadly to include such deposits increased about 6.5 per cent in the year following last February's trough. This expansion was markedly greater than the 1958-59 and 1954-55 counterparts.

Interest Rates

Although recent months have witnessed some rise in yields, the year from February 1961 to February 1962 was marked by a high degree of interest-rate stability. Rates normally rise during the first year of an economic recovery as the demand for credit increases more rapidly than the supply. During the current recovery the rise of yields on most marketable securities has been much less pronounced than in either of the last two recoveries.

Fiscal Activities

The Federal Government was an important contributor to the expansion of total demand in the first year of the current recovery. Government cash expenditures in the first four quarters of the upturn, ending with March 1962, probably will total about $109 billion, 13 per cent higher than during the previous four quarters. In the comparable intervals of the 1958-59 and 1954-55 recoveries, Government cash expenditures increased 13.5 per cent and declined 1.5 per cent, respectively. Outlays of the Federal Government as measured in the national income and product accounts show a rise of about 10 per cent for the first four quarters of the current upturn, compared to an increase of 9.4 per cent for the corresponding 1958-59 period.[1]

The cash deficit of the Government (excess of expenditures over receipts) was a stimulative factor. The deficit in the first four quarters of the current recovery probably will amount to $8.4 billion, or a $9.7 billion change from the slight cash surplus in the previous year. During the first four quarters of recovery in 1958-59, the Government's cash deficit amounted to $12.6 billion, $11.9 billion larger than in the previous year. In the 1954-55 upturn the cash deficit was smaller in the year following the trough quarter than in the preceding year.

The national income and product accounts likewise indicated a stimulative Government fiscal position during the first year of recovery. These accounts are expected to yield a Government deficit of about $2 billion during the year following the trough quarter. The deficit for the previous four quarters was about $0.2 billion. In the like periods of the 1958-59 experience, the deficit increased from $4.4 billion to $5.3 billion.

[1] Comparable data are not available for the 1954-55 economic recovery.

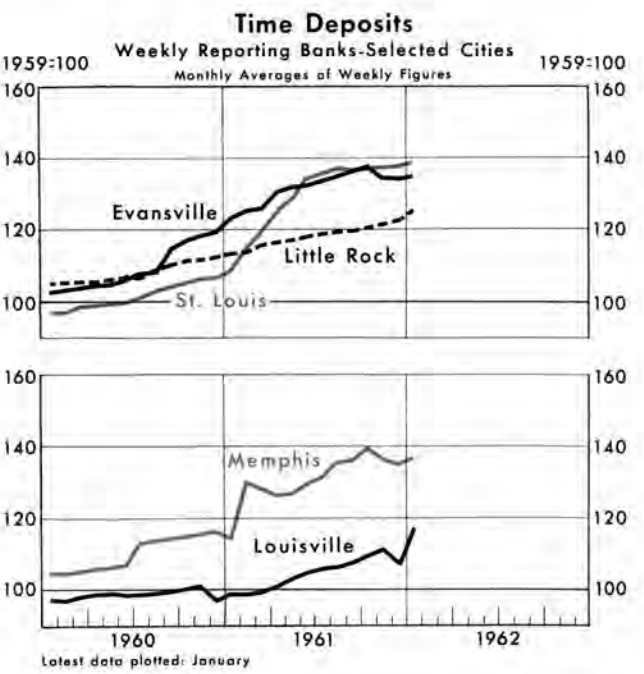
Recent District Banking Developments

Deposits

TOTAL DEPOSITS in Eighth Federal Reserve District member banks averaged about the same in January and early February as in December, after adjustment for seasonal factors. The leveling off of deposit growth was in sharp contrast to the rapid increase which characterized the previous four or five months. Demand deposits, the major component of total district deposits, declined moderately in recent weeks; this was offset by a marked expansion of time deposits.

The increase in time deposits occurred at banks throughout the district, including those in the major metropolitan centers. Sharp increases occurred at banks in Little Rock and Louisville while time deposits rose less markedly at banks in St. Louis, Memphis and Evansville. Demand deposits, seasonally adjusted, declined slightly at most centers.

(Continued on page 12)



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Member Bank Reserves and the Money Supply

Introduction

CHANGES in the nation's stock of money since 1950 were discussed in the October 1961 issue of this *Review*. The analysis is here carried further by considering changes in member bank reserves. Bank reserves influence the quantity of bank credit, bank deposits, and the money supply.[1] With a greater volume of reserves banks are able to expand credit and deposits, and, hence, the money supply. The relationship between changes in reserves and changes in the money supply is significant but not constant.

This article examines movements in member bank reserves from 1950 to early 1962 and discusses their relation to movements in the money supply. An attempt is made to explain large divergences. As background information, the article outlines the factors affecting member bank reserves and discusses reasons why a given change in reserves may not result in an exactly corresponding change in deposits.

Factors Affecting Member Bank Reserves

Changes in total reserves of member banks arise from three sources: fluctuations in money market factors, changes in member bank borrowing from Reserve Banks, and Federal Reserve purchases and sales of Government securities and bankers' acceptances. Among the money market factors which can affect member bank reserves are changes in currency in circulation and changes in Treasury deposits at Reserve Banks. A movement of currency into circulation reduces bank reserves, and the return flow into banks adds to reserves. A shift of Treasury deposits from member banks to Reserve Banks reduces bank reserves; expenditures from Treasury balances at Reserve Banks contribute to bank reserves. Other market factors, which add to bank reserves, include gold flows into the country, expansion in float (Reserve Bank credit extended on checks and other items in process of collection), and reduction in foreign-held balances in Reserve Banks. Opposite movements in these factors cause a reduction in bank reserves.[2]

Member bank borrowing from Reserve Banks raises total reserves while repayment of such borrowings reduces reserves. Changes in total reserves resulting from changes in borrowing are at the initiative of individual banks, but such changes are influenced in large measure by the interest rate charged on these advances, or by the relationship between this and other short-term interest rates.

Open market operations of the Federal Reserve change total member bank reserves. Purchases of Government securities by the Federal Reserve System add to reserves. Sales of securities by the System subtract from reserves.[3] In determining the amount of Government securities to buy or sell, in order to produce a change in bank reserves, bank credit, and the money supply consistent with the needs of the economy, the System takes into account the effects of money market and borrowing factors outlined above.

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[1] Member banks of the Federal Reserve System are required to maintain reserves equal to a certain fraction of their deposits. Banks are required to hold these reserves either on deposit with the Reserve Banks or as cash in vault. Since the reserves are only a fraction of deposits (about one-seventh on the average), a change in reserves usually results in a multiple change in deposits. For a complete discussion of how a change in reserves affects bank credit and the quantity of bank deposits, see *The Federal Reserve System, Purposes and Functions,* Board of Governors of the Federal Reserve System.

The money supply is defined as demand deposits plus currency outside banks.

[2] For a more thorough analysis of the factors affecting member bank reserves, see *Modern Money Mechanics, A Workbook on Deposits, Currency and Bank Reserves,* Federal Reserve Bank of Chicago.

[3] The Board of Governors of the Federal Reserve System can also change legal reserve requirements of member banks within prescribed limits. An increase in reserve requirement percentages lowers the amount of bank credit and money that can be supported by a given reserve base. A decrease has the opposite effect.

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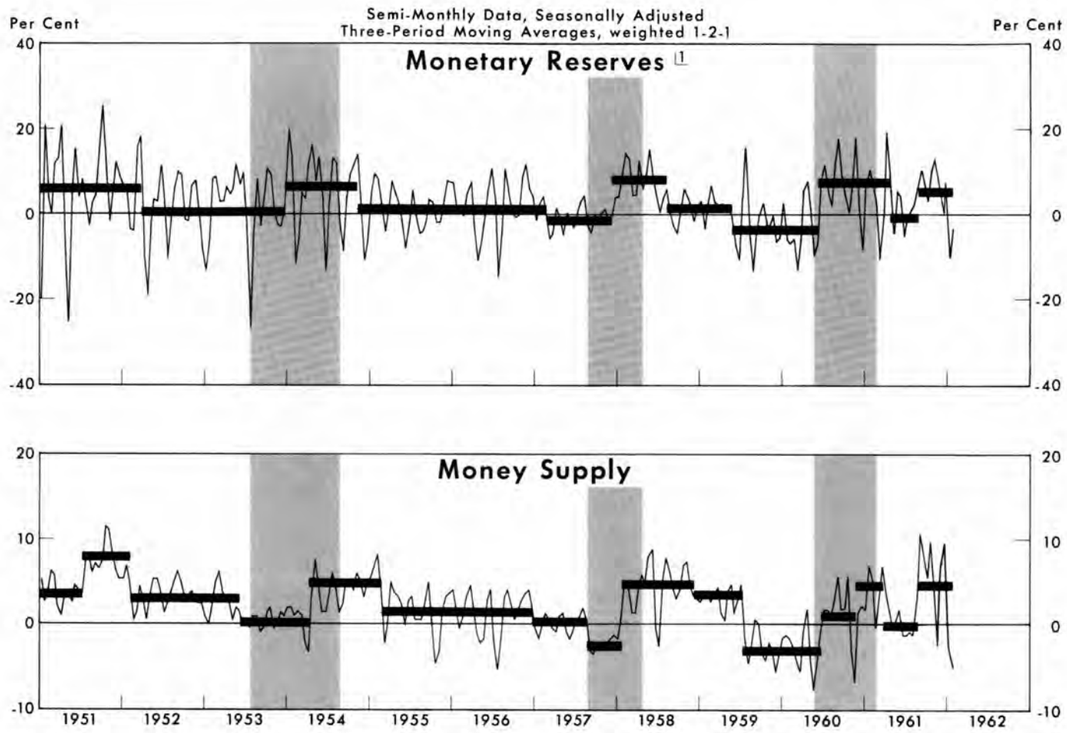
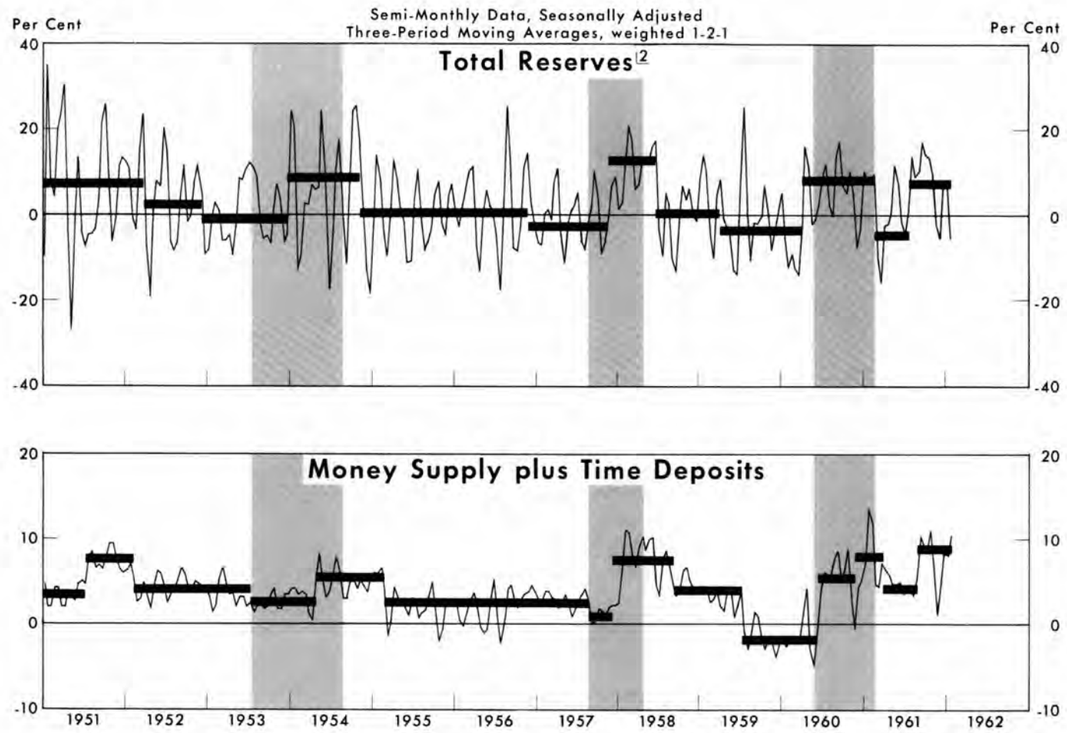
Bank Reserves and Money Supply 1951-1962

ANNUAL RATES OF CHANGE





Periods of No Marked or Sustained Change

Represented by Bars on Charts

MONETARY RESERVES[1]

		Period Changes at Annual Rates
2nd half Dec. '50	2nd half Mar. '52	+5.9
2nd half Mar. '52	2nd half Dec. '53	+0.3
2nd half Dec. '53	1st half Nov. '54	+6.4
1st half Nov. '54	2nd half Feb. '57	+1.2
2nd half Feb. '57	1st half Dec. '57	—1.4
1st half Dec. '57	1st half Aug. '58	+8.1
1st half Aug. '58	2nd half May '59	+1.5
2nd half May '59	1st half June '60	—3.5
1st half June '60	2nd half Apr. '61	+7.6
2nd half Apr. '61	2nd half Aug. '61	—0.8
2nd half Aug. '61	1st half Feb. '62	+5.2*
Average Annual Rate of Increase 1951-1961		**+2.7**

* Preliminary

MONEY SUPPLY

		Period Changes at Annual Rates
2nd half Dec. '50	1st half July '51	+3.5
1st half July '51	1st half Feb. '52	+7.9
1st half Feb. '52	1st half June '53	+3.0
1st half June '53	1st half Apr. '54	+0.1
1st half Apr. '54	2nd half Feb. '55	+4.8
2nd half Feb. '55	2nd half Dec. '56	+1.3
2nd half Dec. '56	2nd half Aug. '57	+0.1
2nd half Aug. '57	2nd half Jan. '58	—2.6
2nd half Jan. '58	1st half Dec. '58	+4.7
1st half Dec. '58	1st half July '59	+3.4
1st half July '59	2nd half June '60	—3.1
2nd half June '60	2nd half Nov. '60	+0.9
2nd half Nov. '60	2nd half Mar. '61	+4.5
2nd half Mar. '61	2nd half Aug. '61	—0.3
2nd half Aug. '61	1st half Feb. '62	+4.6*
Average Annual Rate of Increase 1951-1961		**+2.1**

[1] Total reserves less reserves required behind Treasury deposits. Adjusted for reserve requirement changes.

TOTAL RESERVES[2]

		Period Changes at Annual Rates
2nd half Dec. '50	2nd half Mar. '52	+ 7.3
2nd half Mar. '52	1st half Dec. '52	+ 1.4
1st half Dec. '52	2nd half Dec. '53	— 1.0
2nd half Dec. '53	1st half Nov. '54	+ 8.7
1st half Nov. '54	2nd half Nov. '56	+ 0.3
2nd half Nov. '56	2nd half Nov. '57	— 1.7
2nd half Nov. '57	2nd half June '58	+12.9
2nd half June '58	1st half Apr. '59	+ 0.2
1st half Apr. '59	1st half Apr. '60	— 3.7
1st half Apr. '60	2nd half Feb. '61	+ 8.2
2nd half Feb. '61	2nd half July '61	— 4.7
2nd half July '61	1st half Feb. '62	+ 7.4*
Average Annual Rate of Increase 1951-1961		**+ 2.6**

[2] Adjusted for reserve requirement changes.

MONEY SUPPLY PLUS TIME DEPOSITS

		Period Changes at Annual Rates
2nd half Dec. '50	1st half July '51	+ 3.4
1st half July '51	1st half Feb. '52	+ 7.6
1st half Feb. '52	1st half July '53	+ 4.1
1st half July '53	2nd half Apr. '54	+ 2.6
2nd half Apr. '54	2nd half Feb. '55	+ 5.4
2nd half Feb. '55	2nd half Aug. '57	+ 2.2
2nd half Aug. '57	1st half Dec. '57	+ 0.9
1st half Dec. '57	1st half Sept. '58	+ 7.5
1st half Sept. '58	1st half July '59	+ 3.9
1st half July '59	1st half June '60	— 1.8
1st half June '60	2nd half Nov. '60	+ 5.4
2nd half Nov. '60	2nd half Mar. '61	+ 8.0
2nd half Mar. '61	2nd half Aug. '61	+ 4.2
2nd half Aug. '61	1st half Feb. '62	+ 8.8*
Average Annual Rate of Increase 1951-1961		**+3.7**

* Preliminary

SHADED AREAS ON CHARTS represent periods of business recession: Prerecession Peaks: July 1953, August 1957, May 1960; Recession Troughs: August 1954, April 1958, February 1961. National Bureau of Economic Research reference dates are used. Latest data plotted: second half of January 1962 which includes first half of February preliminary.

Supporting data for the above charts can be obtained from: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF ST. LOUIS, P. O. Box 442, ST. LOUIS 66, MISSOURI.

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Relationship Between Reserves and Money

Changes in reserves do not always cause a corresponding change in money. Among the factors which cause a lack of correspondence between changes in reserves and changes in money are: (1) movements of deposits between private accounts and Treasury accounts, (2) changes in excess reserves, (3) shifts in deposits between banks with different reserve requirements, (4) shifts between time and demand deposits, (5) changes in deposits of nonmember banks, (6) changes in interbank deposits, and (7) movements of currency between banks and the public. These factors are discussed in the following paragraphs.

(1) A shift in deposits between the U. S. Treasury and the public results in a change in the money supply although total and required reserves remain unchanged. Treasury deposits are not included in the money supply, but member banks are required to hold reserves to support all deposits, including those of the United States Treasury.

Changes in "monetary" reserves, i.e., total reserves less reserves required to support Treasury deposits, relate more closely to changes in the money supply than do changes in total reserves. The historical analysis in this article will center on changes of monetary reserves, eliminating the need to discuss movements in Treasury balances at commercial banks. The conclusions of this article would be substantially the same if total reserves were analyzed, but the timing and magnitude of the changes would differ.

(2) Changes in excess reserves cause divergences between changes in total reserves and changes in the money supply.[4] At any time banks have a desired level of excess reserves which may be greater or less than actual excess reserves.[5] Banks generally strive to keep excess reserves at a low working level since they are a nonearning asset, but the level is influenced by short-term interest rates, demands for bank credit, and the general climate of economic activity. Expansions and contractions in bank credit and the money supply occur as individual banks seek to equate their actual reserve balances with their desired levels.

(3) Movements of deposits among classes of banks may cause a lack of correspondence between reserve changes and money changes. Shifts of demand deposits from reserve city banks (16.5 per cent reserve requirement) to country banks (12 per cent reserve requirement) decrease the amount of reserves required to support a given volume of money. As a result of such shifts, aggregate excess reserves rise temporarily, but as banks employ these funds, bank credit and the money supply expand and the amount of money rises relative to reserves. Conversely, a shift in deposits from country banks to reserve city banks increases average reserve requirements and may produce a contraction in money without a change in total reserves.

(4) Movements from time deposits to demand deposits affect the money supply without changing total bank reserves. Time deposits are not here included in the money supply, while demand deposits are the major element of the money supply. Initially, the money supply increases by the amount of the decline in time deposits, but, since reserve requirements on demand deposits are higher than the 5% requirement on time deposits, excess reserves decline. As banks adjust to the lower level of excess reserves, bank credit and demand deposits are likely to contract. After the banking system has fully adjusted to the shift in deposits and after excess reserves have returned to their previous level, the money supply probably will have expanded slightly, while bank credit and money plus time deposits will have decreased. A shift from demand deposits to time deposits would have the opposite effect, expanding bank credit and contracting money.

(5) Increases or decreases in demand deposits of nonmember banks cause a change in the money supply without a change in reserves. Demand deposits in nonmember banks are included in the money supply; but increases or decreases in these deposits may occur without a change in member bank reserves, since legal reserves of nonmember banks are not required to be in the same form as those of member banks.

(6) Although interbank balances are excluded from the money supply, changes in the volume of interbank deposits may also produce a change in the money supply without a change in total reserves. When a country member bank deposits funds with a reserve city bank, the country bank is entitled to a 12 per cent reserve credit on these funds. On the other hand, the reserve city bank is required to support these deposits with reserves equal to 16.5 per cent of the deposits. For the banking system as a whole, excess reserves will have declined temporarily, and as the banking system accommodates itself to the new reserve positions, bank credit and the money supply

[4] Excess reserves are the difference between total reserves and required reserves. Required reserves, in turn, depend upon the amount and distribution of deposits.

[5] We speak here of the net result of the desires of all member banks. The large banks generally succeed in operating with relatively small excess reserves while many smaller banks have substantial amounts of such reserves.

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contract. If on the other hand, country banks reduce their balances at reserve city banks, net excess reserves of the banking system will rise initially, and as banks expand credit the money supply increases.

(7) Movements of currency into and out of banks may affect both reserves and money but not in equal proportions. These flows have no immediate effect on the total money supply since owners merely are substituting deposit balances for currency. As pointed out in the section on factors affecting member bank reserves, a movement of currency into banks adds to bank reserves. Based on these reserves, the banking system can expand credit and deposits, but the deposit expansion is offset partially by a contraction in the currency component of the money supply. Thus the net expansion in the money supply would be less (about one-seventh) than if the increase in reserves had come from another source. On the other hand, a reserve contraction caused by a movement of currency out of banks will produce a smaller contraction of the money supply than if the reserve contraction were induced by another factor.

Method of Analysis

Annual rates of change of total reserves, monetary reserves, money supply, and money supply plus time deposits for semi-monthly periods from December 1950 to February 1962 are presented in the accompanying charts. The rates of change were computed from seasonally adjusted data. In order to reduce the effects of random fluctuations, a three-period moving average was applied to the data. The two series on reserves have been adjusted for the effect of changes in legal reserve requirements.

The two series on member bank reserves have been divided into a number of time periods. These periods represent intervals in which no marked and sustained change was observed in the rate of change of total and monetary reserves. The rather wide short-run fluctuations in rates of change in the quantity of reserves make the determination of these periods somewhat arbitrary.[6] It is believed, however, that most analysts would arrive at substantially similar periods. The average annual rate of change for each period is shown by bars superimposed on the line charts and in the accompanying tables.

The periods in which the rates of change of the money supply and the money supply plus time deposits demonstrated no marked and sustained change were set forth in the October issue of this *Review*. The tables and charts for these two series are reproduced in this article in order to facilitate comparisons with the rates of change in total and monetary reserves. General movements in the rates of change of money and money plus time deposits have been similar during the past decade, despite differences in timing and magnitude. In order to simplify the discussion, this article discusses primarily the relationship between changes in the rate of change of monetary reserves and changes in the rate of change of the money supply. Readers interested in making comparisons using changes in total reserves and changes in the money plus time deposits may make reference to the charts and tables on pages 6 and 7 (center spread).

Also, a chart on page 10 shows excess reserves and member bank borrowing. Movements in excess reserves are an important source of difference between the rates of change of reserves and money. Changes in borrowings are a significant source of fluctuation in bank reserves.

Historical Analysis

Monetary reserves increased at a rapid rate, 6 per cent per year, during 1951 and the first three months of 1952, a period of high economic activity. The money supply increased during the first half of 1951 at a 3.5 per cent annual rate and from mid-1951 to February 1952 at an 8 per cent rate. The rate of increase of reserves declined markedly in the spring of 1952. In early 1952 the rate of increase of the money supply also declined significantly, from an 8 per cent annual rate to a 3 per cent rate.

Monetary reserves were about unchanged on balance from March 1952 to the end of 1953, while the money supply continued to rise at a moderate rate from February 1952 to June 1953. The increase in the money supply along with constant monetary reserves resulted in large measure from a decline in excess reserves. The decline in excess reserves probably reflected a decline in the banking system's demand for liquidity in the form of excess reserves. Rising interest rates during the period increased the alternative cost of holding nonearning excess reserves. The rapid development of the Federal funds market probably enabled the banking system to utilize their reserves more efficiently.

Monetary reserves began to increase markedly about five months after the business downturn of July 1953. During the late summer and fall of the year there were greater than seasonal open market purchases of securities by the Federal Reserve System, but member banks reduced their borrowings from

[6] Rates of change of reserves may at times be usefully described in terms of trends rather than of discontinuous levels. The analysis here presented is not meant to preclude such a view. However, in the interest of simplicity, the analysis has been confined to the use of plateaus of rates of change.

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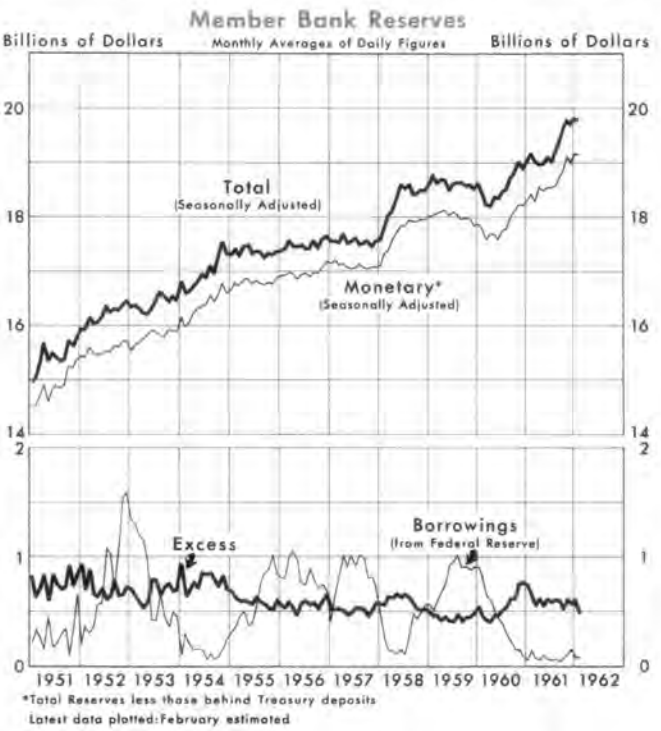
Reserve Banks. The money supply did not begin to rise until the spring of 1954, about four months after reserves began to rise rapidly and four months prior



to the recession trough. The rise in reserves without a corresponding increase in money in early 1954 was accounted for in part by an increase in excess reserves.

Both monetary reserves and the money supply continued to expand at relatively high rates for several months following the August 1954 trough in business activity. In late 1954 the annual rate of increase of reserves declined sharply, while the money supply continued to rise rapidly for about three months. Most of the disparity between the change in the rate of increase of reserves and of money was probably accounted for by a sharp drop in excess reserves. The decline in excess reserves in this period was associated with rising interest rates and economic expansion.

For almost two years, from early 1955 to mid-winter 1956-57, both monetary reserves and the money supply increased at annual rates of slightly more than 1 per cent. At the end of this period the rates of change of both reserves and money decreased further. During most of 1957 monetary reserves were declining moderately as the Federal Reserve reduced its holdings of Government securities, but, reflecting in part a further decline in excess reserves, the money supply was virtually unchanged during the first eight months of the year. After the economic recession began, in August 1957, monetary reserves continued to decline for three months while the money supply began a decline which continued for five months.

The decline in monetary reserves in late 1957 appears to have resulted in large part from a decline in member bank borrowings, despite a reduction of discount rates, which more than offset net System purchases of securities. The more rapid decline in the money supply than in reserves in the late summer and fall of 1957 resulted partially from a shift from demand to time deposits.

Toward the end of 1957, about midway in the recession, the rate of change of monetary reserves shifted from a moderate decline to a rapid rate of increase, about 8 per cent per annum. Sizable purchases of Government securities by the System contributed to the expansion in bank reserves. Partly because of an increase in excess reserves and a rise in time deposits, the money supply did not begin to expand until early February 1958.

The very rapid rate of expansion of monetary reserves continued for eight months until August 1958 (four months after the recession trough), but then declined sharply. The money supply, which did not increase as rapidly as reserves in early 1958, continued expanding at a relatively high rate until near the end of the year when the rate of increase declined slightly. In the early summer of 1959, the rates of change of both reserves and money decreased markedly. From May 1959 to June 1960 monetary reserves declined at an annual rate of 3.5 per cent, and from June 1959 to June 1960 the money supply contracted at a rate of 3.1 per cent. The major part of the decline in reserves was accounted for by a reduction in borrowings from the Federal Reserve Banks and an outflow of gold. In addition, the System sold Government securities on balance from September 1959 to March 1960.

Shortly after the recession began, in the early summer of 1960, monetary reserves began to rise at a rapid rate. In the period from mid-1960 to April 1961, two months after the recession trough, monetary reserves increased at an annual rate of 7.6 per cent. A net increase in System holdings of Government securities was a major factor in the rise in reserves. The money supply, which had declined for about 12 months, rose slightly from midsummer to the late fall of 1960. From November to the end of March 1961 the money supply increased at a rate of 4.5 per cent. The lag between the rapid expansion in reserves and in money resulted in part from a marked increase in time deposits and a rise in excess reserves.

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The rate of expansion of monetary reserves and money decreased sharply in the spring of 1961. Reserves declined slightly from April to August 1961, and the money supply was about unchanged. Beginning about August 1961 both reserves and money began rising again at a relatively rapid rate. From August to February 1962 both monetary reserves and the money supply increased at a 5 per cent rate.

Conclusion

Changes in money supply do not correspond exactly with changes in monetary reserves. An examination of the record of the past eleven years seems to indicate, however, that the factors creating discrepancies do not prevent a rather high degree of correspondence between changes in reserves and changes in money. Of the many factors that may account for differences in timing or magnitude, most have been relatively minor.

During the three most recent business cycles, the rate of increase of monetary reserves has generally been lowest in the months preceeding the peaks and in the early months of recession. Reserves have increased rapidly during the late recession and early recovery phases and have expanded moderately during the expansionary phases.

Movements in the money supply have generally followed changes in monetary reserves after a few months. Significant divergences between changes in the rate of change of monetary reserves and changes in the rate of change of money supply can generally be attributed to movements of excess reserves and time deposits. There were other factors producing a lack of correspondence, but these were usually less important.

Excess reserves tend to rise during recessions and to fall during periods of rapid business expansion. Such a pattern may be explained in large measure by changes in the banking system's demand for liquidity. Banks, like individuals, increase their demand for liquidity during periods of business uncertainty or when short-term interest rates (the alternative cost of holding excess reserves) are low. Conversely, in periods of prosperity, confidence, and generally higher interest rates, liquidity demands fall and excess reserves decline.

Such commercial bank behavior suggests that expansion of monetary reserves will usually have to be larger during a period of recession than during rapid recovery in order to achieve the same rate of growth in the money supply. Stated differently, any rate of reserve expansion would produce a smaller rate of expansion of money during a recession than during a business expansion.

At the stage of the business cycle when banks are increasing their excess reserves, the public, for somewhat similar reasons, is generally trying to expand its holdings of liquid assets. During a recession, an objective of monetary policy will be to supply the public with a greater quantity of money in order to reduce the contraction in total demand for goods and services and ultimately foster recovery. During periods of rapid business expansion, when the public's desire for liquid assets is generally falling, it is usually necessary to supply money at a lesser rate.

In order to satisfy both the banking system's increased desire for excess reserves and the public's increased desire for money, bank reserves have to be increased at a relatively rapid rate during recession. Conversely, during periods of rapid expansion when the banking system's desire for excess reserves is falling and when the public's desire to hold money is falling, reserves have to be increased at a relatively low rate.

Financing Manufacturing Corporations

THE FEDERAL RESERVE BANK OF CLEVELAND examines in the February 1962 issue of its *Monthly Business Review,* the financing of manufacturing corporations during the decade 1950-1960. In this period, manufacturing corporations in the United States acquired $229 billion of capital. The greatest amount—nearly 70 per cent—was obtained from retained earnings and depreciation allowances. In the two years 1954 and 1958, these internal sources of funds were greater than the total capital obtained, and a part was used to reduce a portion of outstanding capital raised externally. External sources accounted for about $68 billion of net new capital raised by manufacturing corporations in the eleven year period; nearly half was short-term credit, about a third was long-term credit, and about a sixth was stock.

Copies of the study can be obtained without charge by writing the: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF CLEVELAND, FEDERAL RESERVE STATION, CLEVELAND 1, OHIO.

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Recent District Banking Developments—*(Continued from page 4)*

The recent behavior of time and demand deposits at district banks was similar to the movements of deposits at banks throughout the nation. Demand deposits declined from December to January in both the district and nation, while time deposits expanded even more rapidly in the nation than in the district. The expansion in time deposits may be, in part, a consequence of higher rates paid on these accounts; the higher rates were permitted by the recent change in Regulation Q.

Loans and Investments

Loans and investments shared in the December to January rise in total bank credit at Eighth District banks. Business loans, seasonally adjusted, declined moderately while most other categories of loans increased somewhat. There was a small increase in district bank investments during January.

The sharpest increase in loans was at banks in the St. Louis and Evansville metropolitan areas. Total loans also rose fractionally at Little Rock banks, were unchanged at banks in the Louisville area and declined at Memphis banks. Business loans rose markedly at banks in Evansville and St. Louis in contrast to the decline in these loans which occurred at banks in Louisville, Memphis, and Little Rock. Investments rose at banks in the Little Rock and Louisville areas, were about unchanged at banks in the St. Louis and Memphis areas, and declined at banks in Evansville.

BANK DEBITS[1]
Seasonally Adjusted

Reporting Centers	Three Months Ending with Jan. 1962 (In Millions)	Percentage Change from Previous Three Months	Percentage Change from Like Three Months a Year Ago
Arkansas			
El Dorado	$ 104	–0–%	+ 3%
Fort Smith	226	+ 3	+15
Helena	47	— 9	+15
Little Rock	818	+ 2	+ 9
Pine Bluff	202	+ 8	+13
Texarkana	89	–0–	+ 6
Illinois			
Alton	143	+ 1	+ 3
East St. Louis & Nat'l Stock Yards	416	–0–	— 6
Quincy	174	— 1	+ 9
Indiana			
Evansville	591	+ 3	+ 4
Kentucky			
Louisville	3,076	+ 2	+ 9
Owensboro	187	+ 2	+ 8
Paducah	126	+ 4	+ 7
Mississippi			
Greenville	116	+ 1	+ 7
Missouri			
Cape Girardeau	68	+ 5	+ 1
Hannibal	43	+ 1	+ 2
Jefferson City	558	— 4	+35
St. Louis	9,236	+ 2	+ 7
Sedalia	65	+ 1	+ 8
Springfield	383	+ 1	+ 8
Tennessee			
Jackson	111	+ 9	+ 5
Memphis	3,278	+ 3	+ 8
Total	$20,073	+ 2%	+ 8%

[1] Debits to demand deposit accounts of individuals, partnerships, and corporations and states and political subdivisions.

SUBSCRIPTIONS to the MONTHLY REVIEW *are available to the public without charge, including bulk mailings to banks, business organizations, educational institutions, and others. For information write: Research Department, Federal Reserve Bank of St. Louis, P. O. Box 442, St. Louis 66, Missouri.*

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