Federal Reserve Accounts, Money Supply, and Bank Credit

Over the past 3½ years of economic advance, the nation's commercial banks have added some $64 billion to their loans and investments, and bank deposits have also risen substantially. These increases, which were facilitated and aided by Federal Reserve actions, helped to provide for the credit and liquidity needs of the growing economy. The accompanying set of charts is designed to highlight some of the key quantitative elements and relationships involved in the monetary side of the economic advance.

Any analysis of financial developments in an economy such as ours tends to be complex because of the many interrelationships which exist among the relevant quantities that are to be explained. In order to keep the exposition simple enough to be illustrated by charts, the discussion that follows omits many of these complexities. Some technical points are covered in footnotes to the body of the text, but these can be overlooked without necessarily impairing the reader's understanding of the central theme of the analysis. In the course of the analysis, attention will be drawn to the effect on bank reserves of Federal Reserve open market operations and changes in reserve requirements, to changes in the composition of the money supply and bank assets, and to the role played by nonmember banks.

There are two problems that deserve special mention. One is that it is necessary to select a starting point at which to break into the circular chain of cause and effect. The charts presented here begin with the release of bank reserves by the Federal Reserve and then show how these reserves supported increases in both the money supply and bank credit. An alternative approach would have been to begin with the expansion in bank credit in response to the demands of the economy, then focus on the creation of bank deposits attendant to the credit expansion, and finally to derive the increase in bank reserves needed to support the additional deposits. Still other approaches might well also have been feasible and appropriate.

The second problem relates to the need to distinguish between underlying forces of supply and demand that result in changes in bank deposits and credit, and the actual changes themselves, after these underlying forces have worked through the economy. For example, when the Federal Reserve provides reserves to the banking system, there is no way of knowing precisely what additional volume of the public's deposits these reserves will eventually support. The creation of additional bank credit and thus of deposits on the basis of these reserves is not automatic but depends on actions by the public and the banks, and such actions are influenced by a wide range of economic and financial conditions. Furthermore, the quantitative outcome will depend upon the public's preferences for currency versus deposits, and for demand versus time deposits, and on whether the deposits created end up at reserve city, "country", or nonmember banks.[1] By necessity, the data presented in this article reflect only the final outcome of all these decisions and actions and the preferences actually prevailing during the 3½-year period under study. Since the underlying forces of demand and supply change, the "after-the-fact" relations of any given period cannot necessarily be considered indicative of the effects of future Federal Reserve creation of reserves on commercial bank credit and deposits.

When banks expand credit—and create deposits—in response to demands of the economy, they do so within the limits of available reserves. The availability of bank reserves and the terms on which they are available, in turn, are influenced by Federal Reserve policy actions—open market operations, changes in reserve requirements, and changes in discount policy—as well as by changes in "operating factors" over which the Federal Reserve has only a minor and indirect influence.

[1] The relation between the provision of additional reserves and the deposit-credit expansion under our fractional reserve system can, of course, be quantified in terms of the so-called deposit-expansion multiplier. The standard textbook multiplier, which reflects a weighted average of actual reserve requirement ratios (and perhaps some ratio to allow for other "leakages" such as a marginal demand for currency), generally represents the theoretical maximum expansion of deposits and credit possible with a given increase in reserve availability. The multipliers that could be computed on the basis of the relationships apparent in the charts presented with this article, on the other hand, would reflect the actual outcome of the expansion process that took place over the period with any possible shifts in underlying preferences submerged in the statistical record.

Chart I

CHANGE IN FEDERAL RESERVE ACCOUNTS

February 1961 to September 1964

Millions of dollars

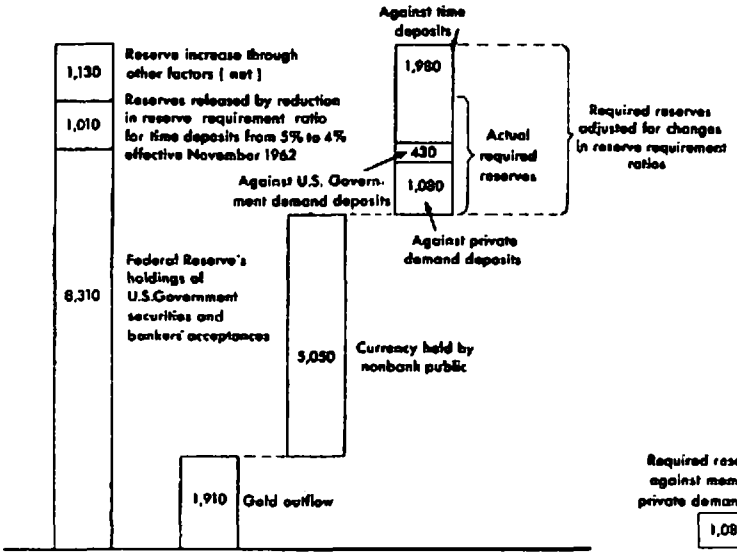


Chart II

CHANGE IN MONEY SUPPLY

February 1961 to September 1964

Millions of dollars

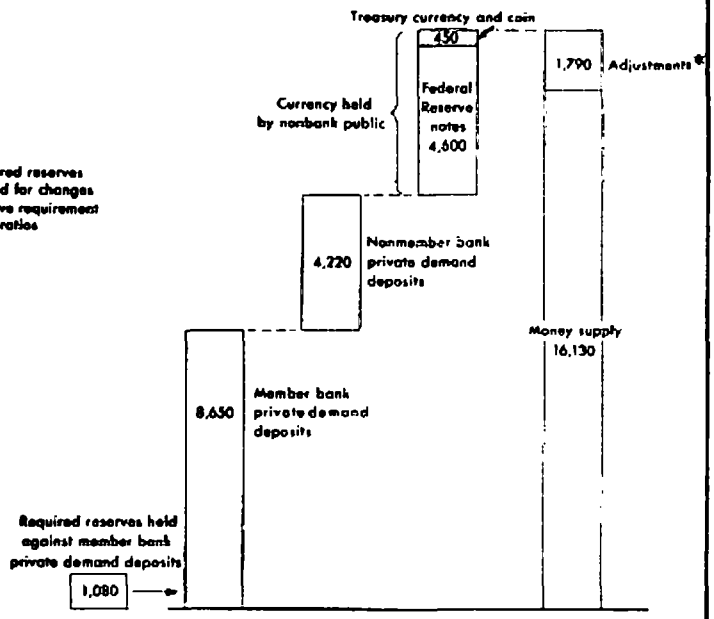


Chart III

CHANGE IN BANK CREDIT AND OTHER ASSETS AND THEIR COUNTERPARTS

February 1961 to September 1964

Millions of dollars

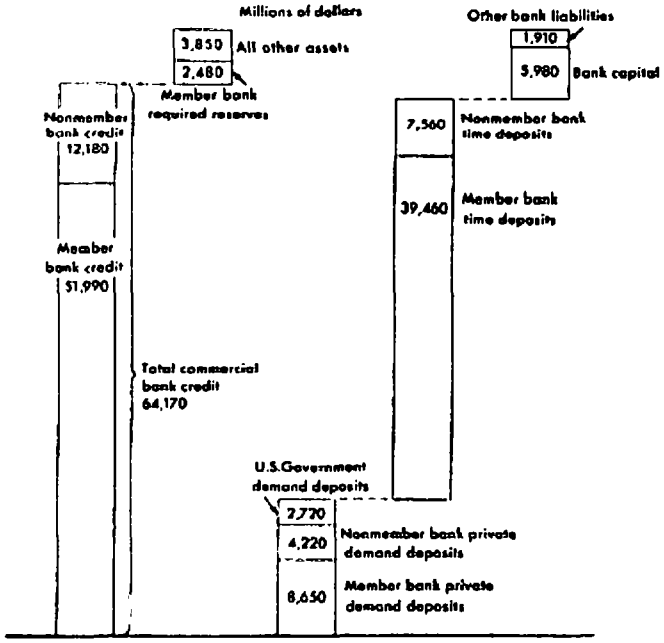


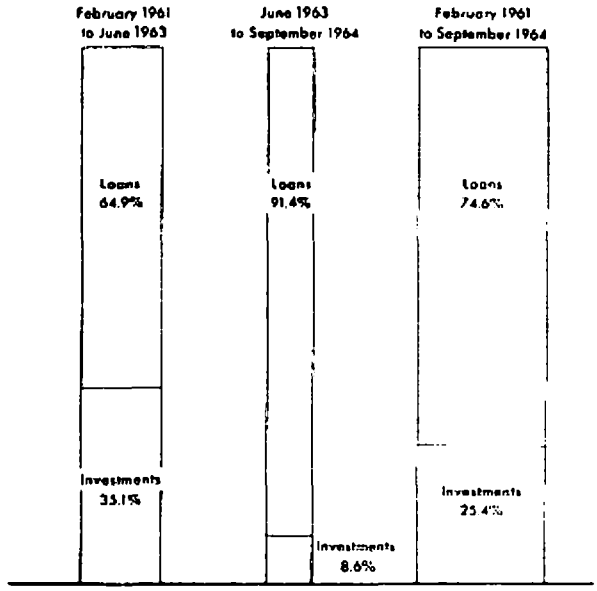
Chart IV

COMPOSITION OF THE CHANGE IN ALL COMMERCIAL BANK CREDIT BY COMPONENTS

February 1961 to September 1964

Per cent

Based on seasonally adjusted data



Note: Dollar amounts rounded to nearest $10 million.

* This and each of the other items are explained in the text.

From the beginning of the current economic upswing in February 1961 through the end of September 1964, Federal Reserve open market operations supplied bank reserves through the net purchase of $8.3 billion of United States Government securities and bankers' acceptances (see Chart I),[2] adding 31 per cent to the System portfolio over the period. A second major factor—which in effect provided additional reserves for the banking system over the period—was the Federal Reserve's reduction of member bank reserve requirements against time deposits from 5 per cent to 4 per cent in November 1962. As a result of this reduction, member bank required reserves at the end of September 1964 were about $1 billion less than they would otherwise have been.[3] Finally, there was a net release over the period of another $1.1 billion in reserves stemming from changes in other Federal Reserve accounts. (Several of these other factors exhibit wide intramonthly fluctuations so that, for a slightly different period, their net impact might have resulted in a net absorption of reserves. The largest components of the net release were a $1 billion increase in Federal Reserve float and a $260 million rise in member bank discounts and advances. Some offsetting absorption resulted from a $470 million increase in Treasury deposits at the Federal Reserve.) Thus, in the aggregate, a little more than $10.4 billion of funds was provided.

Not all these additional reserves were available to support an expansion in member bank deposits. Indeed, over the interval covered, nearly one fifth of the increase in Federal Reserve credit merely offset the reserve loss resulting from the $1.9 billion outflow of gold in partial settlement of the nation's balance-of-payments deficits during the period. There was also a sharp increase in the public's demand for currency; the increase in the amount of coin and currency in the hands of the nonbank public absorbed an additional $5.1 billion in reserves.

Thus, as can be computed from the data in Chart I, only about one third of the $10.4 billion in fact provided the banking system with additional reserves that could be used as the basis for a multiple expansion of bank credit and deposits. In terms of actual developments over the period, about $1.1 billion of these residual reserves may be regarded as having been used to support the expansion in member bank private demand deposits that took place, while another $430 million was required as backing for an increase in United States Government demand balances held with member banks. The underlying forces of public preferences and bank policies also resulted in a very rapid—indeed unprecedented—growth in time deposits over the period. Thus, the remainder of the increase in required reserves, nearly $2 billion (in terms of a total that is adjusted for the change in reserve requirements) was used to "back" the increase in time deposits. (It must be remembered that $1 billion in reserves was released by the reduction in reserve requirements.) The actual increase in required reserves against time deposits amounted to about $970 million over the period. The increase in required reserves against time deposits thus was actually smaller than the rise in required reserves against private demand deposits, despite the far more rapid growth in time deposits than in demand deposits. Any given increase in reserves will support a far larger rise in time deposits than in demand deposits simply because lower reserve requirements apply to time deposits.

The links between the changes in Federal Reserve accounts and the rise in the money supply[4] over the period are examined in more detail in Chart II. The $1.1 billion increase in required reserves held against private demand deposits identified in Chart I was sufficient to support an expansion of over $8.6 billion in member bank private demand deposits.[5] Adding the $4.2 billion increase in private

[2] The amounts indicated in the charts are derived from several different sources. Wherever possible, the estimates are based on weekly averages of daily figures for two statement weeks around the end of February 1961 and September 1964. Where daily average figures are not available, the underlying data are Wednesday figures for the most nearly corresponding period. Given the fairly sizable week-to-week and month-to-month fluctuations in all banking data, the relations shown in the charts might have to be modified somewhat if a slightly different time period were used.

[3] This represents the difference between the actual required reserves against time deposits under the present 4 per cent ratio and the amount of reserves that would have been required against the same volume of deposits at a 5 per cent ratio. At the time the reserve requirements were reduced, the over-all volume of deposits was lower than at present, and the amount of reserves "released" by the action totaled about $0.8 billion.

[4] The money supply as conventionally defined consists of (a) demand deposits at all commercial banks, other than those due to domestic commercial banks and the United States Government, less cash items in the process of collection and Federal Reserve float, (b) foreign demand balances at Federal Reserve Banks, and (c) currency outside the Treasury, the Federal Reserve System, and the vaults of all commercial banks.

[5] Actually private demand balances at member banks measured on a gross basis rose by $12,430 million over the period. Part of this rise is fictitious, however, in that some holders of the deposits had written checks against their accounts which at the time the data were gathered had been deposited with banks but had not yet cleared through the banking system, which results in a double counting of some balances. The figure cited in the text and in Charts II and III is net of the sizable increase that occurred over the period in these so-called cash items in the process of collection—an adjustment consistent with the definition of the money supply noted in the preceding footnote. A similar adjustment is made in the private deposit figure shown for nonmember banks.

demand deposits at nonmember banks gives a growth in total private checkbook money of nearly $13 billion over the 3½-year period.[6] It is interesting to note that even though nonmember bank private demand deposits are at present only about 17½ per cent of total private demand deposits at all commercial banks, their contribution to marginal changes in these deposits is frequently considerably larger. Between February 1961 and September 1964, nonmember banks accounted for nearly 33 per cent of the gain in total private demand deposits.

The next step in building up the components of the change in the money supply is to add to the rise in checkbook money the $5.1 billion increase in Federal Reserve and Treasury notes and coin held by the nonbank public (a total already shown in Chart I). Finally, certain other adjustments must be made (primarily to eliminate from the total the increase in domestic interbank demand balances and the rise in Federal Reserve float). As a result of all these factors, the money supply increased by $16.1 billion over the 3½-year period, or at an annual rate of 3.1 per cent. The relatively more rapid rise in the currency component reflected the public's increased preference for holding currency rather than checkbook money.[7] While currency represented only about one fifth of the money supply at the beginning of the present general business upswing, this component accounted for nearly one third of the total enlargement in the money supply over the period.

The emphasis on demand deposits in the preceding paragraph reflects the fact that only this category of deposits is included in the money supply. Time deposits are not included in the conventionally defined money supply, because they cannot serve directly as a means of payment. Yet, an increase in commercial bank credit can be reflected in a rise in either demand deposits or time deposits (including savings deposits), depending upon public preferences. As it has turned out over the past several years, the public has been quite willing—indeed has preferred—to accept the somewhat lesser degree of liquidity of time deposits in return for the interest income, with the result that the rate of growth in time deposits has substantially exceeded the rate of increase in demand deposits. The change in bank credit—the major item on the asset side of bank balance sheets—and its liability counterparts in deposits and other accounts is examined in more detail in Chart III.

As is shown on the left-hand side of that chart, total bank credit at all commercial banks increased by nearly $64.2 billion over the 3½-year period under study, or at an annual rate of 8.2 per cent. Member banks accounted for 81 per cent of the increase, while nonmember banks contributed the remaining 19 per cent, somewhat more than their relative share of the amount of bank credit outstanding at the beginning of the period. This part of the chart also shows other increases in bank assets, including the rise of about $2.5 billion in member bank required reserves (also shown in Chart I) and other items such as a rise in balances due from other banks and increased investment in banks' premises (on a net basis).

The counterpart of this asset expansion is shown in the three right-hand columns of Chart III. Adding an increase of $2.7 billion in United States Government demand deposits at all commercial banks to the $12.9 billion rise in private demand deposits at member and nonmember banks (already shown in Chart II) brings to $15.6 billion the over-all increase in demand deposits during the last 3½ years. Time deposits, on the other hand, expanded by $47 billion during the period. The bulk of the increase in these deposits occurred at member banks, many of which began issuing negotiable time certificates of deposit during the period. It might be emphasized once again how significant a role in this increase in member bank time deposits and in the corresponding bank credit expansion was played by the reduction in reserve requirements against time deposits. In terms of the end results, it could be said that $25.3 billion of the increase in member bank time deposits was made possible by the reduction in reserve requirements, while $14.2 billion received support from additional required reserves actually required and held against time deposits.[8]

The remaining $7.9 billion of advance in bank assets found its counterpart primarily in a $6 billion rise in bank capital accounts, as shown in Chart III. Net changes in bank liabilities other than deposits, including an increase

[6] Since nonmember banks do not maintain their reserves at Federal Reserve Banks, the figures for required reserves shown in the charts do not include these reserves. These banks do, however, have to comply with state-imposed reserve requirements; and part of the reserves supplied by the Federal Reserve System in effect served to support expansion of nonmember bank deposits and credit.

[7] The factors influencing the public's demand for currency are discussed by Irving Auerbach, "Forecasting Currency in Circulation", this *Review*, February 1964, pp. 36-41.

[8] This calculation involves the arbitrary assumption that the effects of the time deposit reserve requirement reduction showed up exclusively in increases in time deposits. This attribution amounts to an *ex post* accounting device. In fact, the reduction in reserve requirements freed reserves which banks were able to use in support of the expansion of either time or demand deposits, the actual outcome depending on public preferences.

in bank borrowings both from the Federal Reserve and from others, accounted for $1.9 billion.

The last column in Chart IV indicates that, over the 3½-year period as a whole, for each dollar put into investments in securities of all types three dollars went into loans. There was, however, a significant difference between the experience in the early and later portions of the period. Prior to the move by the Federal Reserve in July 1963 toward a somewhat less easy monetary policy, the growth in bank credit was large enough for commercial banks both to meet loan demands and still to increase their investments substantially. Since that time the increase in total bank credit has been accounted for much more heavily by loans. Indeed, until the increases in commercial bank holdings of United States Government securities in August and September 1964 (due partly to the effects of Treasury debt management operations), loan expansion at the banks was in part supported by a net liquidation of investments.