

Interest Rates and Monetary Growth

by JERRY L. JORDAN

JUDGING from comments in newspapers and reports on numerous "outlook conferences" that have taken place recently, there is a clear consensus among economic analysts that 1973 will be a year of continued strong economic growth. The main areas of disagreement appear to be with regard to the outlook for interest rates and prices on one hand, and the appropriate monetary stance on the other.

This article reviews financial and monetary developments during 1972 with emphasis on a few of the more important factors that have contributed to the growth of monetary and reserve aggregates. The discussion concentrates on movements in interest rates and savings deposits at financial intermediaries. The magnitudes discussed are seen as being interrelated, and the implications for 1973 emphasize the apparent short-run trade-offs involved in both achieving a moderate monetary growth and dampening a tendency for interest rates to rise.

INTEREST RATE-MONEY RELATION

An essential element for assessing the factors contributing to the growth of monetary aggregates in 1973 is an evaluation of the prospects for market interest rates — especially rates on short-term securities. The analysis presented here suggests that there is considerable reason to expect market forces to result

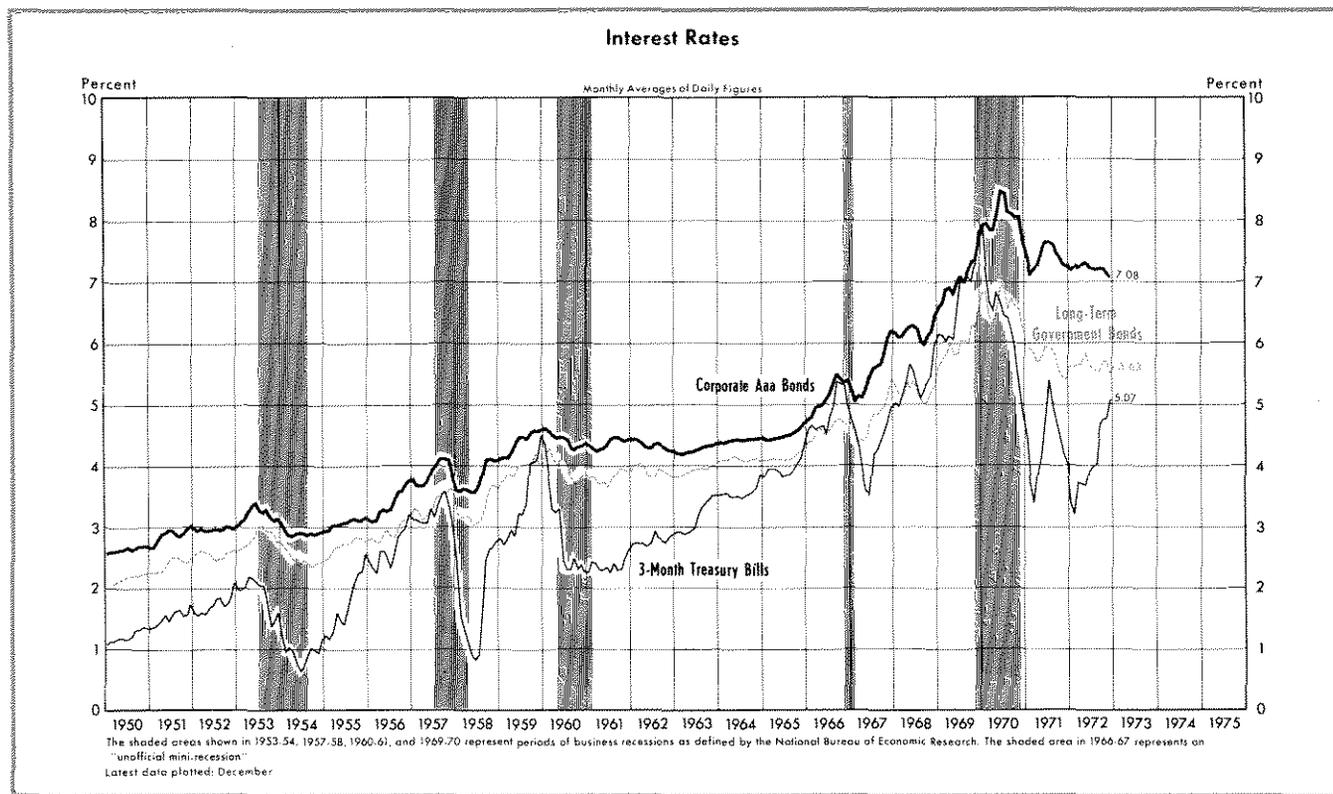
in upward pressure on short-term interest rates in the near future.

There are two ways in which past tendencies for interest rates to rise have influenced growth of the nation's money stock. First, a primary short-run objective of central bank policy for many years has been to moderate any tendencies for market interest rates to change sharply.¹ On previous occasions when there has been substantial upward pressure on market rates, policymakers have responded by increasing purchases of securities in the open market, thereby increasing bank reserves and loanable funds which temporarily dampens the rise in rates. Such actions increase the amount of Federal Reserve credit and monetary base extended to the economy.² Over a period of several months, the rate of growth of the money stock is similar to the growth of the base.

The second way in which movements in interest rates have influenced the growth of money has been by influencing savings flows to commercial banks. During past periods when market interest rates have risen

¹For annual reviews of monetary actions of the Federal Open Market Committee for the years 1966-1971, see the following reprints from this Bank's *Review*: 22, 28, 39, 57, 68 and 76.

²Leonall C. Andersen and Jerry L. Jordan, "Monetary Base — Explanation and Analytical Use," this *Review* (August 1968), pp. 7-11.



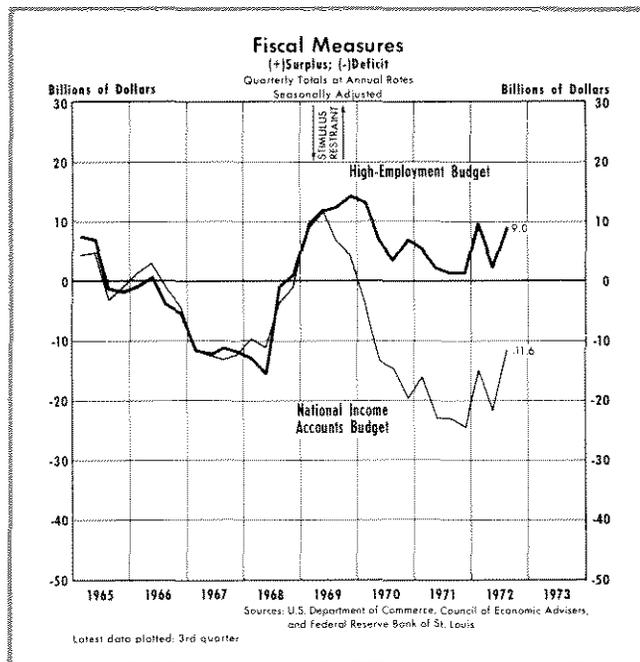
significantly compared to the rates banks have been permitted to pay on time and savings deposits — such as 1966 and 1969 — the growth of these deposits has slowed considerably. A slowing in the growth of these deposits results in an increase in the “money supply multiplier.”³ This means that the growth rate of money would tend to accelerate compared to the growth of the base as the growth of time and savings deposits slows.

INTEREST RATE MOVEMENTS

This section presents a discussion of interest rate movements during the current economic expansion and an assessment of some of the factors that will influence the pattern of market interest rates in 1973. In addition, it includes an analysis of the interrelation between the financing of Government deficits and changes in interest rates.

Two striking characteristics of the past few years are the sharp movements in the yields on marketable short-term Treasury securities and the persistence of huge deficits in the Federal Government's

budget. On the surface, the decline in the interest rates on Treasury bills that occurred in late 1971 seems to conflict with what one would expect in a period of growing Government deficits and strong economic growth. Other things equal, increases in the supply of Government securities to the market tend to put upward pressure on market interest rates. However,



³For a discussion of the multiplier, see Jerry L. Jordan, “Elements of Money Stock Determination,” this *Review* (October 1969), pp. 10-19, and Albert E. Burger, *The Money Supply Process* (Belmont, California: Wadsworth Publishing Company, Inc., 1971).

analysis of factors influencing the demand for short-term U.S. Government securities provides an explanation of recent developments and may be useful in assessing the forces influencing market rates in the near future.

Short-Term Yields

The yields on short-term marketable securities fell markedly following the onset of the economic contraction of 1969-70. As in previous recessionary episodes, the decline in short-term interest rates was much greater than the decline in long-term rates. Early in 1971 the movement of short-term rates reversed sharply, and the rise in these rates through July of that year was as steep as the preceding decline.

Then in August 1971 the market forces influencing supplies of and demands for all types of goods, services, and assets—including financial—were given a shock by the dramatic Governmental imposition of a "New Economic Program." Over the subsequent few months the yields on short-term securities, such as Treasury bills, tumbled to or below their lows of a year earlier. This development was in the direction consistent with the effects of uncertainty associated with the surprise announcement of a "wage and price freeze" followed by a control program.⁴ Also, part of the downward adjustment in market interest rates may have been in response to a reduction in the anticipated rate of future inflation. Moreover, the foreign aspects of the program contributed to the rapid decline in short-term interest rates.

As a part of the "New Economic Program," the President announced that the United States was suspending until further notice its commitment to convert dollar holdings of foreign central banks into gold and other reserve assets. Although in practice there had been only limited exchanges of gold for dollars since early 1968, the announcement officially "floated" the dollar in international exchange markets. The result of this action was to broaden speculation that the exchange rates between the dollar and other major currencies would change. Consequently, there were opportunities for realizing capital gains and avoiding capital losses by moving out of dollar assets and into foreign assets.

⁴One effect of the announcement of the freeze and forthcoming control program was to create considerable uncertainty about output prices, costs of inputs to production, and competitive factors. In such a situation, businessmen and participants in securities markets usually choose to move to relatively more liquid positions in their portfolios of earning assets. The effect is to increase the relative demand for highly liquid short-term marketable securities such as Treasury bills.

In 1971 both foreign and U.S. private investors shifted from a broad spectrum of earning assets in this country (for example, common stocks and bonds) and into assets denominated in foreign currencies (such as stocks and bonds sold for domestic currencies on foreign stock exchanges).⁵ This activity tended to increase the dollar prices of foreign currencies in exchange markets. Foreign central banks, in an effort to moderate the rise in their exchange rates, responded by acquiring dollars in exchange for their domestic currencies.

After foreign central banks acquire dollars in international exchange transactions, they normally purchase U.S. Treasury bills and other Federal debt instruments. In the past three years foreign official agencies acquired extremely large quantities of short-term Government securities. As the chart entitled "Ownership of Federal Government Debt" shows, almost all of the huge increase in net Federal debt⁶ since mid-1970 has been acquired by foreigners.

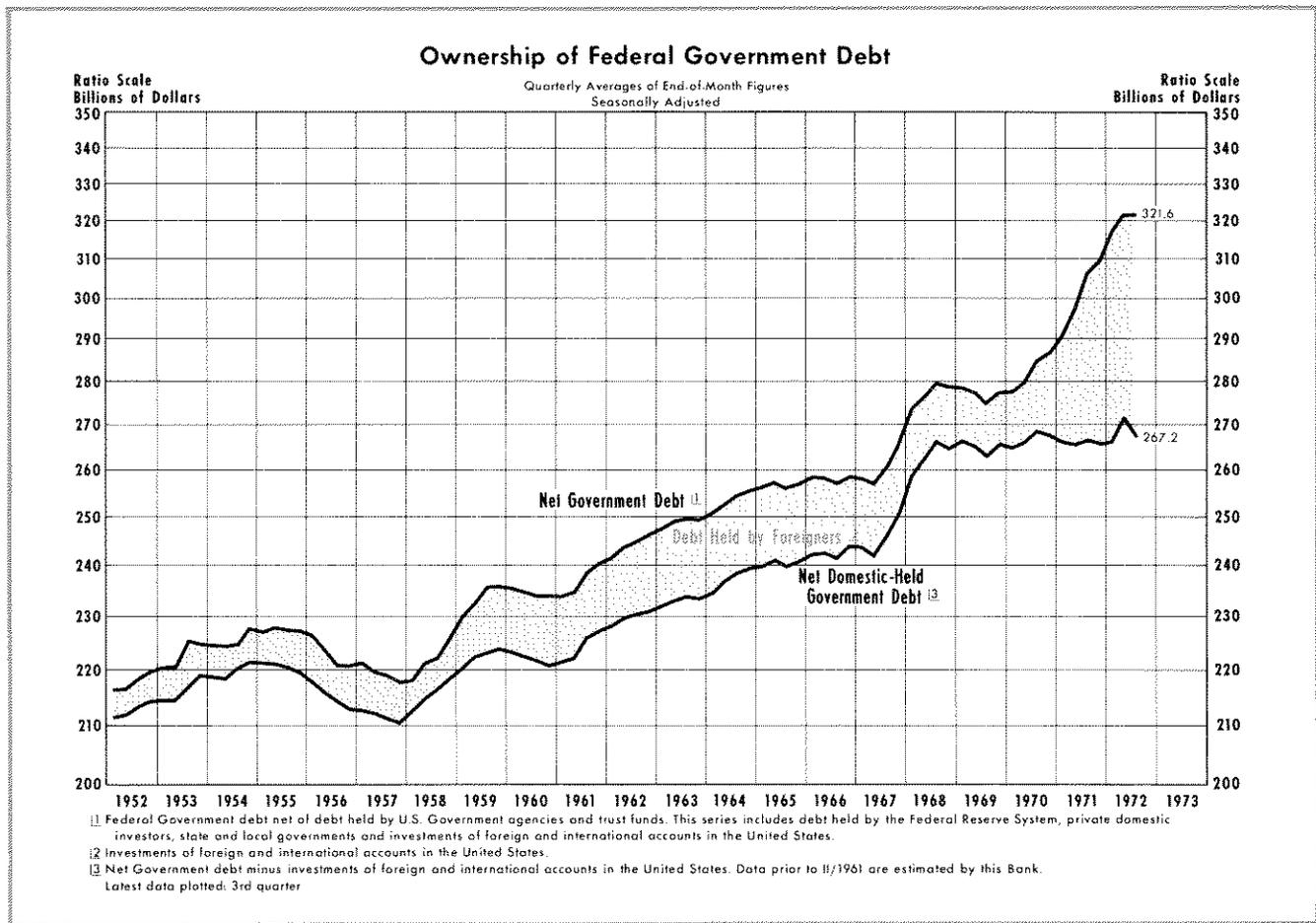
In summary of this point, during the past few years private foreign and U.S. investors increased their holdings of earning assets denominated in foreign currencies. These actions led foreign central banks to acquire increasing amounts of dollars as they attempted to maintain relatively fixed parities in exchange rates. The greatly increased demand for short-term U.S. Government securities by these foreign institutions resulted in lower market yields on these securities relative to other marketable securities than had previously been the case. This development occurred in spite of the large U.S. Government deficits that prevailed in the period.

Long-Term Yields

The average of selected yields on highest grade long-term corporate bonds changed little in 1972. There was a slight tendency for these interest rates to fall during the year, but the variation was less than in any year since the mid-1960s. At an average of about 7.2 percent for the year, this measure of private bond yields was somewhat below the prior year and

⁵For an extended discussion of the relationship between short-term international capital flows and domestic market interest rates, see Anatol Balbach, "Will Capital Reflows Induce Domestic Interest Rate Changes?," this *Review* (July 1972), pp. 2-5.

⁶Net Government debt is Federal Government debt net of debt held by U.S. Government agencies and trust funds. This series includes debt held by the Federal Reserve System, private domestic investors, and state and local governments, as well as investments of foreign and international accounts in the United States.



well below the historic peak of about 8.5 percent reached in mid-1970.

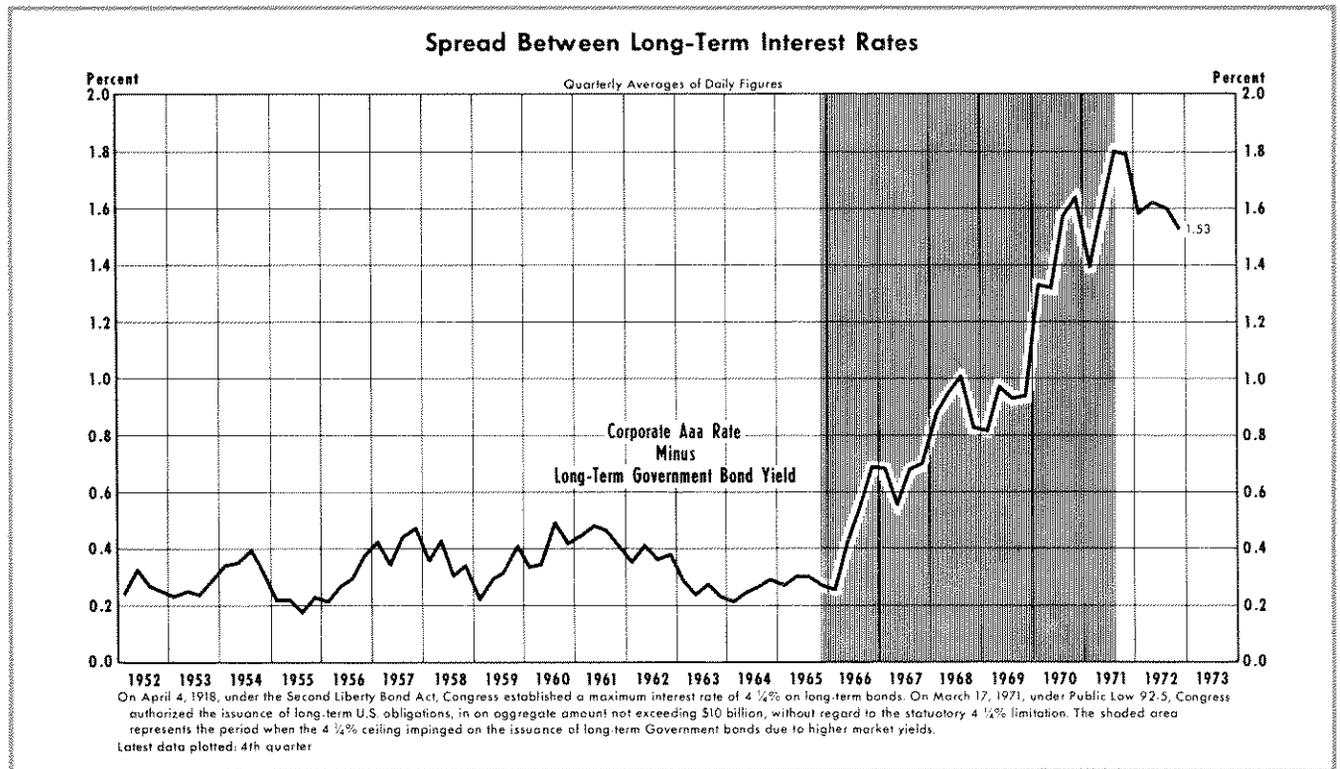
The average yield on long-term U.S. Government securities remained unchanged on balance last year. Since the yields on Aaa corporate bonds edged downward, the differential between these series narrowed. As the chart on yield spreads between these long-term securities shows (see page 6), throughout the post-war period until 1966, the differential between these series had remained in a fairly narrow range of no more than one-half of one percentage point. This difference evidently reflected the market's evaluation of the difference in risk and liquidity associated with the bonds.

In the mid-1960s the average yield on long-term bonds began rising significantly. Increases in long-term market interest rates are often viewed to be a result of rising anticipations of greater inflation in the future. In view of the acceleration in the rate of increase in the consumer and general price indexes that was observed beginning in the mid-1960s, it is generally assumed that savers began to demand a

higher nominal yield in order to compensate for the erosion of purchasing power attributable to the inflation. At the same time, borrowers were willing to pay higher interest rates since they anticipated repaying indebtedness with depreciated dollars some years in the future.

From early 1966 until late 1971, the interest rate differential between highest grade corporate bonds and long-term Government bonds became increasingly wide. The sharp rise in this spread in the second half of the 1960s resulted from both the rising market interest rates and a long-standing statute prohibiting the Federal Government from paying yields greater than 4.25 percent on debt maturities of over seven years.⁷ Once the market yields had risen to the level that a 4.25 percent coupon rate on long-term Government obligations was no longer competitive, the U.S. Treasury ceased to issue long-term securities.

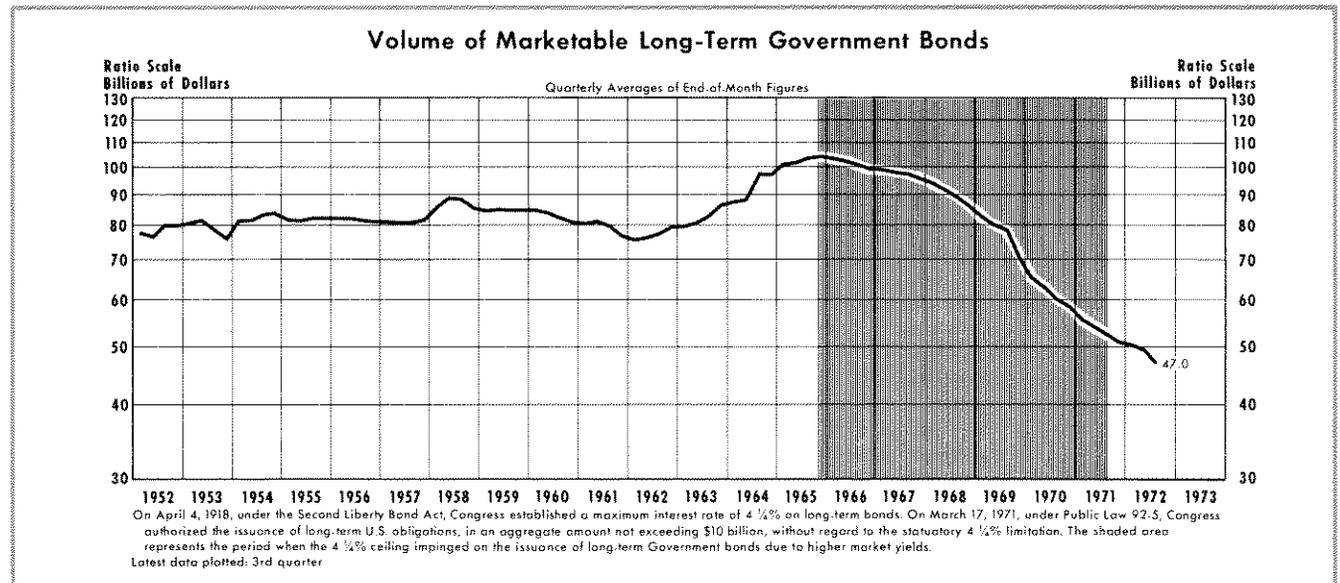
⁷On April 4, 1918, under the Second Liberty Bond Act, Congress established a maximum interest rate of 4.25 percent on long-term bonds. On March 17, 1971, under Public Law 92-5, Congress authorized the issuance of long-term U.S. obligations, in an aggregate amount not exceeding \$10 billion, without regard to the statutory 4.25 percent limitation.



The outstanding volume of long-term Government bonds began to decline in early 1966. Of the outstanding debt, a portion was maturing at regular intervals, but the Treasury was unable to refinance with new long-term obligations. The total amount of Government debt rose substantially in subsequent years, but all new issues of Treasury securities carried maturities of less than seven years.

Thus, there has been a steady decline in the outstanding stock of long-term Government bonds since

early 1966. Presumably there was also some decline in the demand (shift of the demand schedule) for these bonds since the yields on close substitute earning assets became increasingly more attractive. However, various financial institutions, such as insurance companies and banks, for legal or traditional reasons choose to hold some portion of their portfolios of liquid assets in the form of Treasury bonds. Consequently, in view of the steady decline in the outstanding volume of these bonds, investors were willing



to pay increasingly greater relative prices (accept lower relative yields) for Treasury bonds as compared to corporate bonds.

In 1971 Congress passed legislation suspending the ceiling on the interest rate the Treasury was allowed to offer on a limited volume of bonds with maturities of more than seven years.⁸ Also, in 1971 the yield spread between seasoned corporate and Government bonds reached a peak and since has begun to narrow. The newly issued long-term Treasury securities in 1972 and early 1973 carried coupon yields that were significantly higher than the market yield on the outstanding bonds.

In 1972 the Treasury continued to finance most of its deficits and refinance maturing obligations by issuing short-term securities. The yields in the market on short-term instruments were significantly lower than yields on long-term bonds, and therefore the interest cost to the Treasury was lower. Also, as of early January 1973 the Treasury had issued about \$7.5 billion out of an authority of \$10 billion for bonds bearing coupon rates greater than 4.25 percent.

Analysis of supply and demand factors suggests that as the yields on short-term securities rise further, the Treasury would have increasing incentive to seek proportionally greater amounts of its financing requirements through the issuance of longer-term obligations. Such a development would tend to result in an upward trend in the average yield of Treasury bonds as long as the interest rate on the newly issued bonds is greater than the average of outstanding bonds. However, the Treasury is already close to the \$10 billion limitation and, unless additional authority is obtained, the outstanding volume of long-term debt will continue to decline.

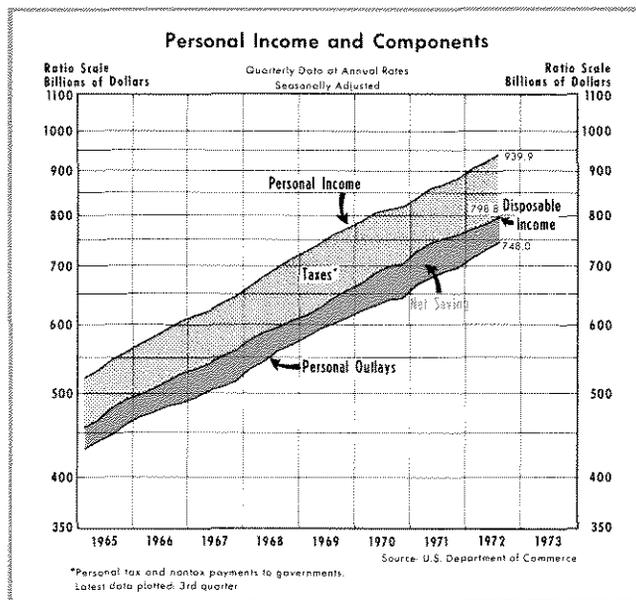
GROWTH OF INCOME AND SAVINGS

Income

The current expansion has been marked by a strong growth in pre-tax personal income.⁹ From the third quarter of 1971 to the third quarter of 1972, personal income rose 8.3 percent, compared with a 6.7 percent rise in the previous four quarters. Adjusted for the effects of inflation, the growth in the most recent four quarters was 5.9 percent, more than twice the 2.7 percent rise from the third quarter of 1970 to the third quarter of 1971.

⁸See footnote 7.

⁹For a description of this and related series, see the screened section on page 8.



Growth of disposable (after-tax) personal income recently has been somewhat less rapid. Since the third quarter of 1971 disposable income in current prices has risen only 6.4 percent, down from both the 7.3 percent of the prior year and the 8.7 percent from the third quarter of 1969 to the corresponding quarter in 1970.¹⁰ The slower growth of disposable income in 1972 may be partially attributable to overwithholding of personal income taxes. In real terms disposable income rose at a 4.2 percent rate in the most recent four quarters, up from 3.3 percent in the prior year and the same as the rate prevailing for the period from third quarter 1969 to third quarter 1970.

Saving

The recent acceleration in the growth of income has been accompanied by a slowing in the growth of personal saving.¹¹ Even though there has been an increase in the proportion of personal income that has gone to taxes, the rates of growth of personal outlays in recent years have been similar to the growth of personal income before taxes. Consequently, the saving rate has fallen fairly sharply in the last year. The proportion of disposable income that was saved fell from mid-1968 to mid-1969, mainly as a result of the imposition of a surcharge on personal and corporate Federal income taxes. Saved income then returned

¹⁰Throughout most of this section, time period references avoid the fourth quarter of 1970 because of the distortions caused by the major labor strike in the auto industry that occurred at that time.

¹¹For an economic discussion of saving and its relation to income and wealth, see Armen A. Alchian and William R. Allen, *University Economics*, 3rd ed. (Belmont, California: Wadsworth Publishing Company, Inc., 1972), especially pp. 189-190.

Disposable Personal Income and Related Items*

"Disposable personal income is the income remaining to persons after deduction of personal tax and nontax payments to general government. Personal income consists of income from all sources: Wage and salary disbursements, other labor income, proprietors' income, rental income, dividends, personal interest income, and transfer payments, minus personal contributions for social insurance. Personal tax and nontax payments consists of tax and nontax payments to general government (other than contributions for social insurance) which are not deductible as expenses of business operations, and other general government revenues from

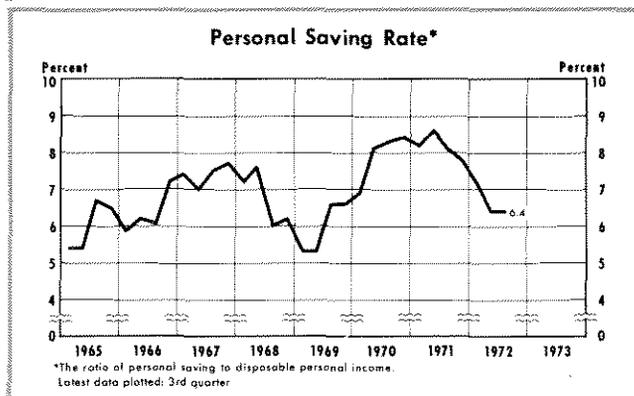
*U. S. Department of Commerce, Office of Business Economics, *Business Cycle Developments* (July 1968), p. 79.

individuals in their personal capacity. The principal taxes are income, estate, inheritance, gift, motor vehicle, and personal property taxes paid to Federal, State, and local governments. Nontax payments include passport fees, fines, donations, penalties, and tuition fees, and hospital fees paid to State and local governments.

"Personal saving is obtained by deducting personal consumption expenditures, interest paid by consumers, and personal transfer payments to foreigners from disposable personal income.

"The ratio of personal saving to disposable personal income [personal saving rate] is obtained by dividing personal saving by disposable personal income."

to previous ratios as tax rates were gradually lowered. On balance during the decade prior to 1968, individuals allocated an increasing share of their income to saving. For historical comparison, personal savings increased at almost a 7 percent average annual rate from 1957 to 1967, about one percentage point faster than the growth of personal income during the same period.



Savings Deposits

The growth of savings-type deposits at financial intermediaries remained strong in 1972, despite the decline in the personal saving rate. Net time deposits at commercial banks¹² rose 13 percent from December 1971 to December 1972, somewhat slower than the 17 percent increase in deposits at savings and loan associations and mutual savings banks. On balance, the growth of deposits in banks and nonbank thrift institutions has been very rapid since early 1970. In 1969 the growth of these savings-type deposits was greatly

curtailed as a result of the relatively high interest rates available on short-term marketable securities, as compared to the yields that banks, savings and loan associations, and mutual savings banks were allowed to offer.¹³

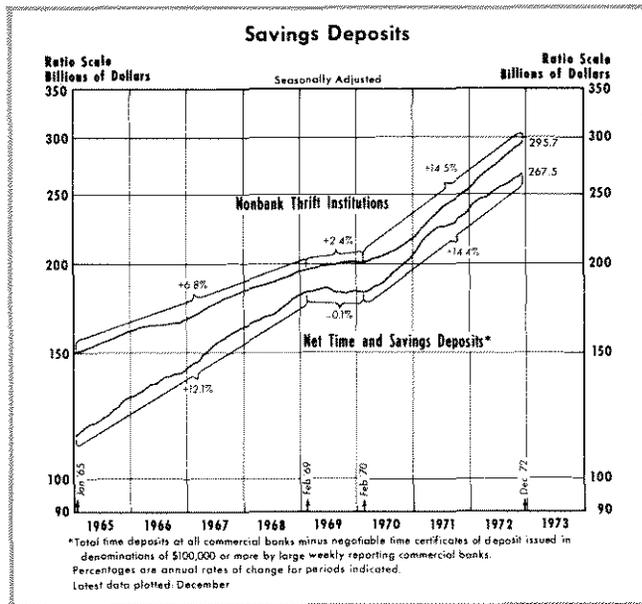
Other interest bearing liabilities of commercial banks consist mainly of marketable certificates of deposit in denominations of \$100,000 or more. During 1969 the outstanding volume of the large-size bank time deposits fell sharply since the maximum rates banks were allowed to pay on these deposits were significantly below the yields available on alternative marketable earning assets. Since early 1970 these deposits have grown rapidly.

The interest rates paid by banks on these large denomination deposits rose substantially in 1972, but prevailing offering rates were still well below legal maximums at year-end.¹⁴ The movement in the yields

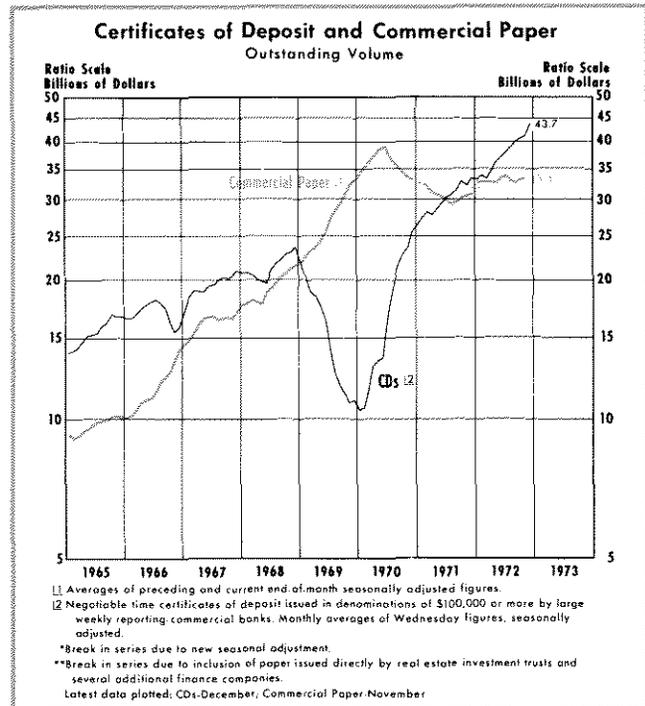
¹²Total time deposits at all commercial banks minus negotiable time certificates of deposit issued in denominations of \$100,000 or more by large weekly reporting commercial banks.

¹³The Board of Governors, under provisions of Regulation Q, establishes maximum rates which may be paid by member banks of the Federal Reserve System. However, a member bank may not pay a rate in excess of the maximum rate on similar deposits under the laws of the state in which the member bank is located. Beginning February 1936, maximum rates which may be paid by nonmember insured commercial banks, as established by the Federal Deposit Insurance Corporation, have been the same as those in effect for member banks. Beginning September 1966 rates paid by Federally insured mutual savings banks were brought under the control of the FDIC, and rates paid at savings and loan associations were brought under the control of the Federal Home Loan Bank Board. That legislation also required the three regulatory agencies to consult with each other when considering changes in the ceiling rates. For a discussion of interest rates and Regulation Q, see Clifton B. Luttrell, "Interest Rate Controls—Perspective, Purpose, and Problems," this *Review* (September 1968), pp. 6-14, and Charlotte E. Ruebling, "The Administration of Regulation Q," this *Review* (February 1970), pp. 29-40.

¹⁴See p. 13 of this *Review*.



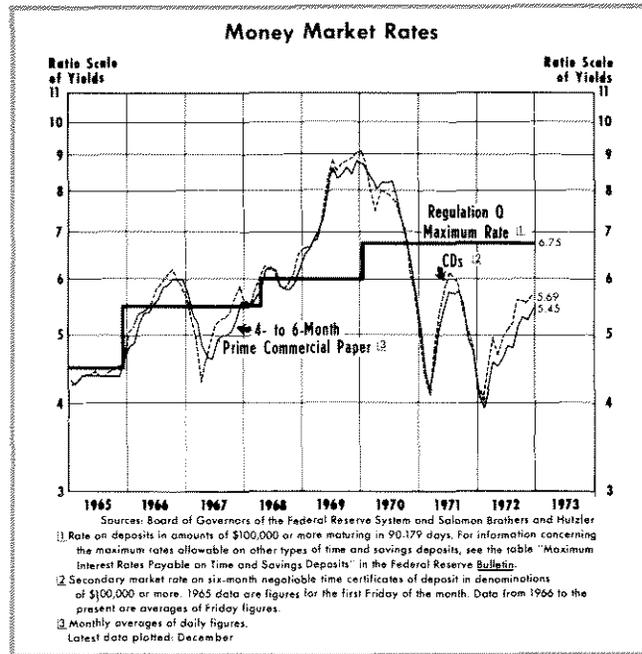
on bank-issued CDs since early last year has accompanied the rise in interest rates available on other short-term marketable securities.



The primary factor determining the trend growth of money is the monetary base.¹⁵ From late 1966 to late 1971 the base rose at a 5.8 percent trend rate, compared with the 5.9 percent trend rate of growth of money in the same period. In 1972 the base increased 8.3 percent, not much different than the rise in money.

Several factors contributed to the rapid growth of the monetary base last year. The table on page 12 of this *Review* summarizes the net changes in the source components of the base since the end of 1971. Some of the major factors contributing to the change in the base were monetization of gold, an increase in member bank borrowings, growth of Federal Reserve holdings of Government securities, and lower average reserve requirements.

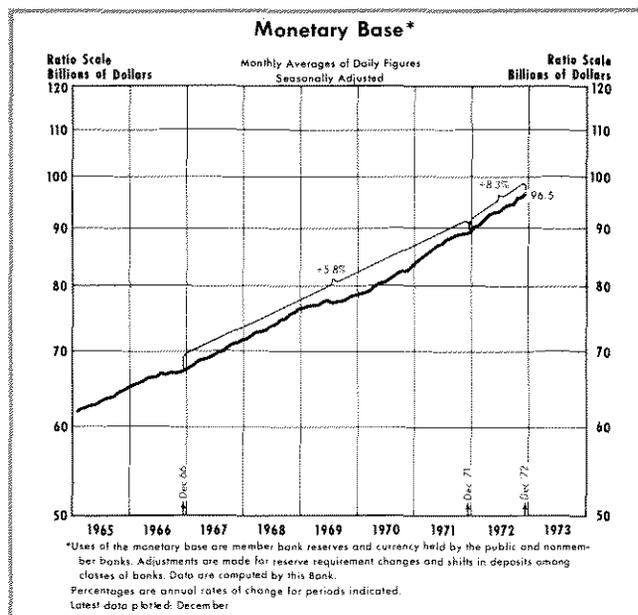
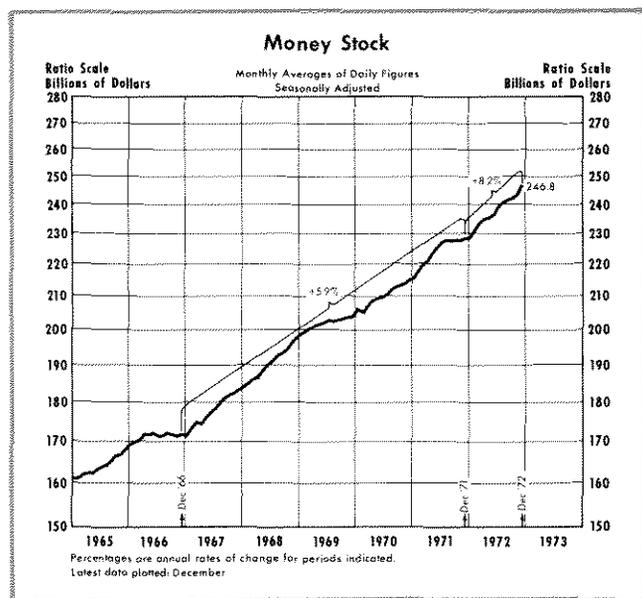
The increase in the monetary base that resulted from the monetization of gold was a one-time effect that occurred in May 1972 after Congress approved a



MONETARY AGGREGATES

The growth of the nation's money stock has been successively greater in each of the past four years. In 1972 the money stock increased 8.2 percent, compared with 6.2 percent in 1971, 5.4 percent in 1970, and 3.2 percent in 1969. The pattern of money growth has been quite uneven within recent years. Generally money has grown more rapidly in the first half of the year than in the second (on a seasonally adjusted basis).

¹⁵The monetary base is defined as the net monetary liabilities of the U.S. Treasury and the Federal Reserve System held by commercial banks and the nonbank public. These monetary liabilities are member bank reserves and currency in the hands of the public. The monetary base is derived from a consolidated balance sheet of the Treasury and Federal Reserve "monetary" accounts. For a more detailed discussion of the monetary base, see Andersen and Jordan, "Monetary Base," pp. 7-11; Jordan, "Money Stock Determination," pp. 10-19; Jane Anderson and Thomas M. Humphrey, "Determinants of Change in the Money Stock: 1960-1970," *Monthly Review*, Federal Reserve Bank of Richmond (March 1972), pp. 2-8; John D. Rea, "Sources of Money Growth in 1970 and 1971," *Monthly Review*, Federal Reserve Bank of Kansas City (July/August 1972), pp. 3-13.



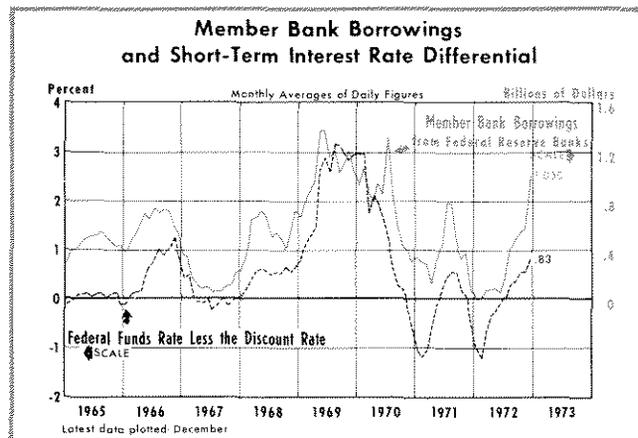
change in the price of gold from \$35 to \$38 per ounce. For the year, the net effect on the base of changes in gold was only \$278 million, even though the effect of the devaluation of the dollar in terms of gold was over \$800 million. The difference is due to the fact that in the first two months of last year, the U.S. gold stock declined as the Treasury fulfilled prior obligations.

Member bank borrowings from the Federal Reserve Banks were at very low levels at the beginning of 1972 since short-term market interest rates were well below the System's 4.5 percent discount rate. As the year progressed the yields in the market rose and borrowings by banks from the Federal Reserve moved to higher average levels. On balance for the year (December 1971 to December 1972) member bank borrowings rose almost \$950 million which, other things equal, accounted for about 23 percent of the total rise in the source base.¹⁶

Federal Reserve holdings of U.S. Government securities are determined by open market operations in accord with the instructions of the Federal Open Market Committee. A purchase (sale) of securities in the market results in an increase (decrease) in bank reserves. By buying Government securities, the Federal Reserve monetizes the debt and, in effect, reduces the outstanding stock of publicly held interest-bearing Treasury liabilities.

¹⁶The "source base" refers to a consolidation of Treasury and Federal Reserve monetary accounts. The monetary base is equal to the source base plus an adjustment for the amount of reserves that are released or absorbed by changes in effective required reserve ratios. Further explanation is available from this Bank on request.

In November 1972 the Federal Reserve implemented changes in two of its regulations which have a bearing on usable reserves available to the banking system. Effective in two steps beginning November 9, the Federal Reserve revised its Regulation D so that reserve requirement percentages would pertain only to the amount of deposits at each bank. Formerly, the percentage reserve requirements depended mainly on the geographic location of banks. The net effect of the change was to lower average required reserves by about \$3.5 billion from what they otherwise would have been.



Also effective the statement week beginning November 9, the Federal Reserve modified its Regulation J governing the schedules according to which member bank reserve accounts are debited for checks drawn on them. The effect of the change was to reduce the average level of Federal Reserve float — a source of monetary base and bank reserves — by about \$2 billion.

The net effect of the changes in Regulations D and J in November was to release about \$1.5 billion of reserves to the banking system. Prior to these changes the System announced that the November amendments were not intended to have any impact on the stance of monetary policy, and that appropriate off-setting actions would be taken. Such actions would consist mainly of reductions in Federal Reserve System holdings of U.S. Government securities through open market sales.

The net effect of all factors affecting the monetary base in 1972 — including an adjustment for the release of reserves attributable to the reduction in average reserve requirements — was to increase the amount outstanding by \$7.5 billion. This represents a rise of over 8 percent for the year.

CONCLUSIONS

The strong economic growth in 1972 was accompanied by: (1) a rapid growth in deposits at banks and other financial intermediaries; (2) a general tendency for short-term market interest rates to rise; and (3) continued Federal deficits. The analysis here suggests that continued upward pressure on short-term market interest rates is likely.

The outlook for savings-type deposits in banks and thrift institutions is less clear. If market interest rates rise further, the yields mutual savings banks, savings and loan associations, and banks are permitted to pay on time and savings-type deposits would tend to become less competitive. Unless ceilings are then raised, the growth in these deposits is likely to decelerate. In previous episodes of high and rising market rates of interest, such as 1966 and 1969, the growth in time and savings deposits at financial intermediaries slowed for a period, and the outstanding volume of some types of interest bearing deposits actually fell.

The growth of demand deposits at commercial banks — the main component of the money stock — is largely dependent on the rate at which commercial banks acquire reserves to support these deposits. The growth of total bank reserves depends on the growth of the monetary base and the desire of the public to hold currency. The amount of reserves available to support private demand deposits is influenced by the growth of time deposits at commercial banks and short-run fluctuations in demand deposits of the Federal Government at commercial banks. If there is a tendency for the growth of time deposits to slow as market interest rates rise further, these deposits will absorb reserves at a slower rate (increasing the base-money multiplier). Thus, for a given growth of the base or total reserves, more reserves will be available to support growth of demand deposits.

The growth of the base over time is largely determined by Federal Reserve System open market operations and by changes in the amount of member bank borrowings from Federal Reserve Banks. In the past these factors have tended to be related to movements in market interest rates in the short run. The released Record of Policy Actions of the FOMC in recent years has shown a continuation of the desire by monetary authorities to moderate near-term tendencies for market interest rates to rise. As demand forces have tended to raise market rates on past occasions, the System Open Market Account Manager, in accordance with FOMC instructions, has responded by increasing purchases of securities in the market in order to dampen the immediate upward pressure on rates. Such actions have resulted in an increase in the rate of monetary expansion. This observation of past experience indicates there may be problems for policy-makers in achieving their dual objectives of maintaining a moderate rate of growth of the money stock while also seeking to resist tendencies for short-term market interest rates to rise.

