# FEDERAL RESERVE BANK OF ST. LOUIS

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# REVIEW


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## Reprint Series

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# Adjustment of Demand Deposit Series

*The demand deposit component of the money stock has been adjusted to correct for an understatement of these deposits, which arose from an increasing volume of cash items generated by an increasing volume of Eurodollar transactions. The adjusted series indicates that the growth of demand deposits since mid-1967 has been greater than previously reported.*

*The demand deposit component of money is calculated by subtracting several items, including cash items in process of collection, from gross demand deposits. These deductions are made to avoid double counting. The rapidly growing volume of drafts used in transferring or repaying Eurodollar borrowings, usually referred to as "bills payable checks" and "London checks", were not included in gross deposits by the issuing bank. However, these checks were included in the cash items of the receiving bank, and as such were deducted from gross demand deposits. The cash items generated in this manner and deducted from gross demand deposits caused an unwarranted reduction in net demand deposits. As a result there had been a growing understatement of the demand deposit component of money.*

*Regulation D of the Federal Reserve System was revised, effective July 31, 1969, so that bills payable checks and London checks used in the borrowing and repayment of Eurodollars must now be included in gross deposits of the issuing banks, as well as in cash items in process of collection. As a result, since early August the understatement of demand deposits caused by excluding bills payable checks and London checks from gross demand deposits has been eliminated. Revision of the demand deposit data from June 1967 through July 1969 was based on a survey of those banks thought to be most involved in Eurodollar transactions.*

*Before the adjustment, the data indicated that demand deposits had risen at a 1.1 per cent annual rate from last December to July. The adjusted series indicates that demand deposits rose at a 3.3 per cent rate in this period. The revised rate is still substantially less than the 6.2 per cent rise in 1968 in the former series and the 6.9 per cent increase in the new series. Also, both series show a much slower growth in money during the summer than earlier this year.*

*In the near future demand deposit data will be revised again in accordance with the results of an annual review of seasonal adjustment factors and the incorporation of new benchmark adjustments for nonmember bank deposits.*

# STABILIZATION ACTIONS IN 1969 – HOW MUCH RESTRAINT?

TOTAL SPENDING has continued to rise rapidly in 1969 and price increases have accelerated. Monetary and fiscal restraints have been maintained, however, and subject to the lags between policy actions and the response of economic activity, total spending can be expected to show definite indications of slowing later this year. Following a deficit of $25 billion in fiscal 1968, the Federal budget was slightly in surplus in the fiscal year ended in June, and a larger surplus is expected for the current year. The monetary base, bank reserves, and money grew much more slowly in the first half of this year and have shown little or no growth in recent months, after expanding rapidly in 1967 and 1968.

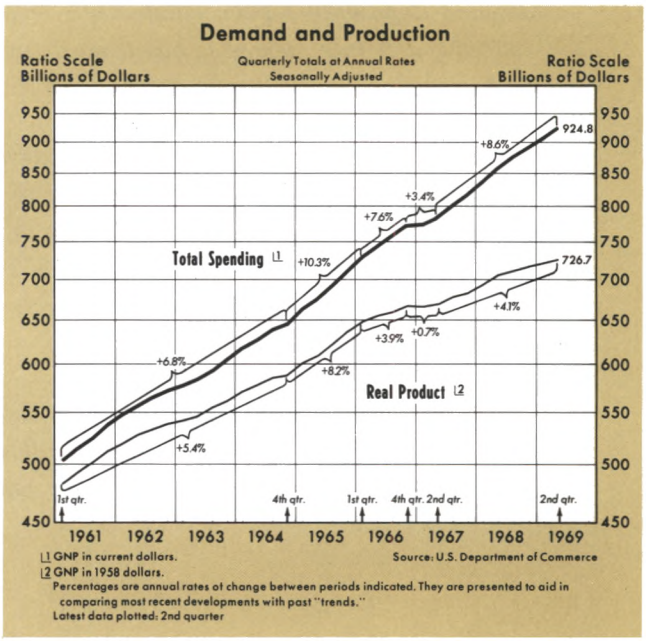
In addition to the lag between stabilization actions and their impact on total demand, there is a further lag before prices respond. Inflationary expectations, apparently entrenched in economic decision-making processes, may have dampened the initial impact of monetary and fiscal restraints on economic activity.

## *Demand, Production and Prices*

Total spending has increased at a 7.7 per cent annual rate since mid-1968, only slightly slower than the 8.6 per cent rate of increase from early 1967 to mid-1968. Growth of spending in 1969 has included a rapid expansion of business investment in plant and equipment, which rose at a 13.5 per cent annual rate in the first half of this year, compared with a 5.1 per cent increase in the previous year. The increase in business investment more than offset declines in residential construction. Housing starts fell from an average annual rate of 1.6 million starts early in the year to a 1.3 million rate in August. During the period of monetary restraint in 1966, housing starts averaged a low rate of 1.2 million.

Consumer spending has continued strong, showing little response to the tax surcharge imposed in mid-1968. Consumption expenditures rose 8 per cent in the year ending in the second quarter, about the same as in the previous year.

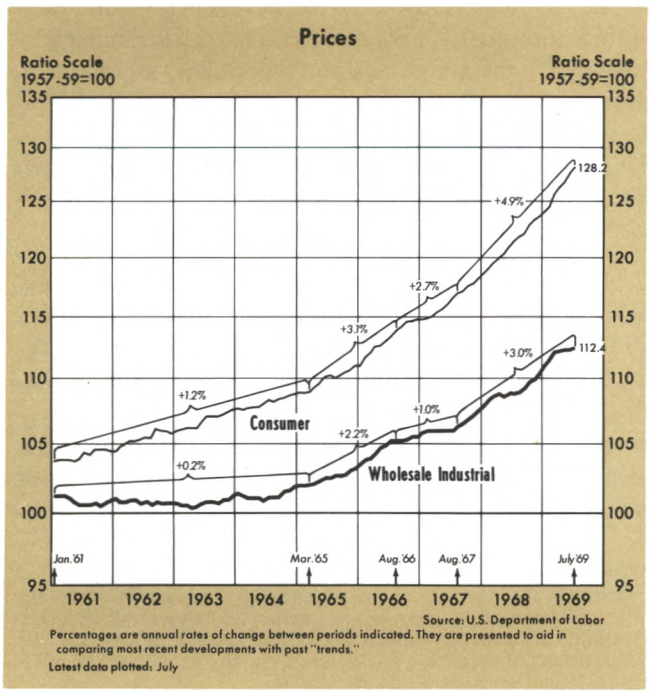
While total spending continues to rise rapidly, growth of output has slowed. Real product growth

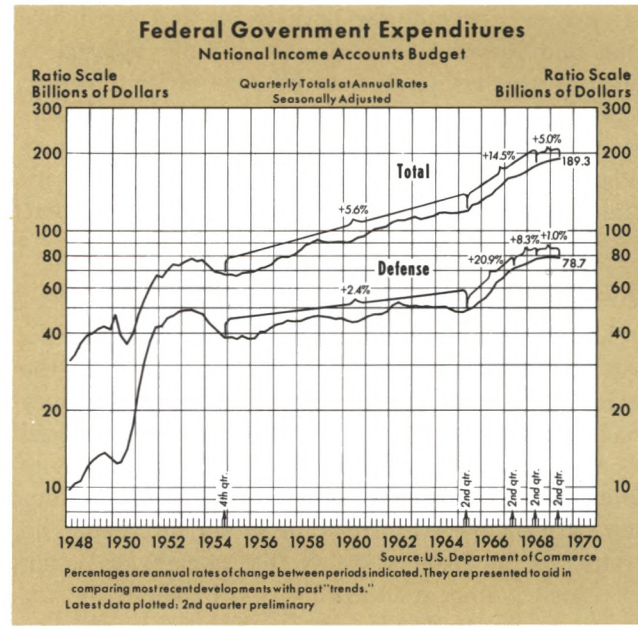


has moderated since mid-1968, slowing to a 2.3 per cent rate in the first half of 1969, compared with a 3.6 per cent rate in the second half of 1968 and a 4.7 per cent rate from early 1967 to mid-1968. The rapid growth in real product until mid-1968 was unsustainable, since it exceeded the rate of increase in productive capacity. Expansion of output in the past year, when the economy was relatively fully employed, has been accompanied by declining productivity. This decline is evident from the slowdown in the growth of real product relative to employment. Most of the decline in productivity has apparently been centered in the output of services, as manufacturing output per man hour has changed only slightly.

Growth of total real product has slowed, but industrial production has increased at a rather steady 6 per cent annual rate from August 1968 to August 1969. Industrial production increased at a 4.9 per cent rate from mid-1967 to August 1968.

Price increases continue rapid in response to excessive total demand. The general level of prices increased at a 1.4 per cent annual rate in the 1960-65 period, at a 3 per cent rate from 1965 to 1967, and then at a 4 per cent rate through 1968. During the first two quarters of this year, overall prices increased at a 5.1 per cent rate, and preliminary data indicate that the trend continued in July and August. Consumer prices have risen at a 7 per cent annual rate in the last six months, compared with a 5 per cent increase in the previous year.




## *Measures of Fiscal Actions*

The Federal budget deficit, on a national income accounts basis, was at a $9.5 billion annual rate prior to enactment of the income tax surcharge and curbs on Federal spending in June 1968, then declined sharply in late 1968. The budget attained balance by the fourth quarter and a surplus rate of $12.5 billion in the second quarter of this year. The magnitude and speed of the shift in budget position suggests a substantial dose of fiscal restraint in the past year.

The information provided by the national income accounts measure of the Federal budget is incomplete and misleading, however, because it fails to take proper account of the effects of cash deficits and surpluses on private borrowing. If the Government attempts to finance a budget deficit by borrowing from the private sector, and the stock of money is unchanged, funds are bid away from private use. Thus, while Government spending in excess of taxes tends to increase total demand, borrowing from the private sector to finance a budget deficit tends to depress private demand. Deficits accompanied by monetary expansion, however, are stimulative since there is little, if any, offsetting effect on private spending. It is in this sense that conventional budget measures may provide a misleading indication of the impact of fiscal actions on total spending; the method of financing a deficit determines the degree of expansiveness of a given fiscal program.[1]

[1]Such criticism also applies to the high-employment budget, which during times of significant unemployment is even further removed from the financing needs of the Government.

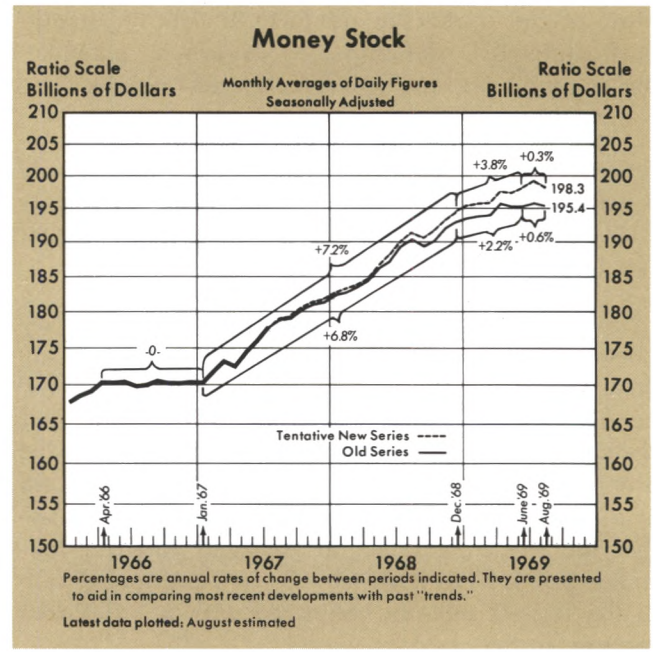
If private demands for both goods and credit are weak and resources are not being fully utilized, a deficit is usually appropriate because of its tendency to promote monetary expansion.[2] But budget deficits are not necessary for monetary expansion. Monetary authorities possess the means to conduct monetary actions independently of the Federal budget position.

## *Measures of Monetary Actions*

The influence of monetary actions on economic activity may be best indicated by movements in the stock of money. If the increase in the stock of money exceeds the growth of demand for money to hold by economic units, those units which have more money than they want to hold will try to reduce their cash balances by spending either for goods and services or for financial assets. The process of spending provides other units with excess balances and the process is repeated. The net result is an increase in aggregate income, and adjustments in interest rates and the value of other assets sufficient to equate the actual stock of money in the economy and the desired stock. In this manner, increases in money at a rate greater than the growth of the demand for money to hold tend to stimulate total spending for goods and services and for financial assets. Conversely, insufficient growth of the stock of money relative to demand leads to an attempt to accumulate cash balances from current income and acts as a brake on total spending.

Monetary actions continued to be stimulative in the last half of 1968, as fiscal policy became restrictive. The money stock, which had grown at a 7.2 per cent rate in the first half of 1968, rose at a 6.9 per cent rate in the second half.

Since December monetary actions have been directed toward restraining total spending and inflation, and these actions have been facilitated by movement of the Federal budget into surplus. The money stock increased at a 3.6 per cent annual rate from December to May and at a 2 per cent rate from May to August. In comparison, money grew at a 7 per cent rate in the previous two years.[3]




The reduced growth of money reflects the moderated growth of Federal Reserve credit, monetary base and bank reserves since December, as shown in the accompanying table. The base has declined at a 1 per cent annual rate since May, after rising at a 5.3 per cent rate in the first five months and following a 6.5 per cent rate of expansion during the 1967-1968 period.

Most interest rates declined during July, and leveled or rose during August and early September. This little change, on balance, probably reflects some weakening in the demand for funds. Business loans at large commercial banks have changed little since May, after increasing at a 16 per cent rate earlier in the year. The fact that interest rates have risen more slowly recently may be a re-

**SELECTED MONETARY AGGREGATES**
**(Annual Rates of Change)**

| | Dec. 67 to Dec. 68 | Dec. 68 to May 69 | May to Aug. 1969 p |
|---|---|---|---|
| Total Reserves* | 7.8 | 2.4 | —11.6 |
| Federal Reserve Credit | 10.2 | 5.6 | 0.9 |
| Monetary Base | 6.5 | 5.3 | —1.0 |
| Money Stock* | 7.0 | 3.6 | 2.0 |
| Demand Deposits* | 6.9 | 2.9 | 0.5 |
| Currency | 7.4 | 6.8 | 6.4 |

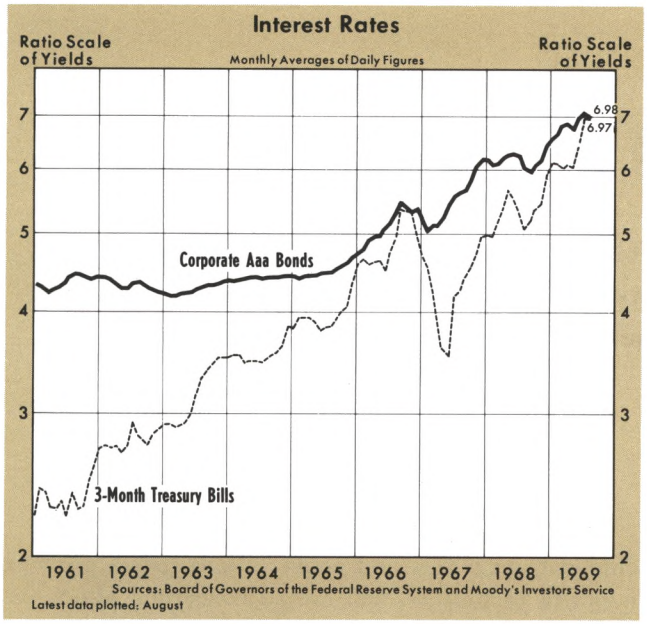
Note: The money and demand deposit series are tentative, subject to further revision in the near future.

p — Preliminary

*Revised series.

[2]See Michael Keran and Christopher Babb, "An Explanation of Federal Reserve Actions (1933-1968)", this *Review*, July 1969.

[3]These figures are based on a revised money stock series, adjusted for the effect of Eurodollar transactions on the demand deposit component of money. Omission of this adjustment led to an understatement of actual money growth. The exact adjustment and its effect on the money stock series is explained on page 3 of this *Review*.




flection of some moderation of economic activity and of credit demand, and is not an indication of easing of monetary restraint.

## *Response to Stabilization Actions*

Growth of real product has slowed since passage of the tax bill, reflecting primarily constraints on the ability of the economy to expand production of goods and services at a high level of resource utilization. The earlier rapid rise in total output forced employment of less efficient resources, and growth of productivity, especially in service industries, could not be maintained.

The prospects for continued long-term economic expansion are reflected in business plant and equipment spending plans. Business investment projects are ventures undertaken to yield a flow of income over the future, and, consequently, businesses must forecast demand for long periods into the future in order to estimate the revenue which can be expected from investment projects. Plans for rapid plant and equipment expansion therefore serve as an indication that businesses expect continued sales growth.

Late in 1968, businessmen expressed plans to increase plant and equipment spending by 14 per cent in 1969, despite the restrictive nature of fiscal policy. This represented a substantial increase from the 5 per cent rise in such spending in 1968. Investment in plant and equipment increased at about a 13.5 per cent rate during the first two quarters of this year, but recent surveys of business investment plans indicate some slowing in the second half of the year. Currently businesses plan to spend 10.5 per cent more for plant and equipment in 1969 than they spent in 1968, which suggests a 5.5 per cent increase in spending during the second half of 1969.

Fear of continuing inflation has apparently caused some individuals and firms to buy goods to avoid expected further price rises. In the last half of 1968 fiscal policy succeeded in slowing the growth of take-home pay by increasing taxes, but economic units compensated by spending a larger portion of their income. The net result was little slowdown in spending.

The impact of monetary restraint in 1969 may have been cushioned somewhat by inflationary expectations. The alternative cost of holding cash has increased as interest rates have risen, giving incentive to economize on cash balances. Expectation of inflation puts upward pressure on interest rates. Users of funds are willing to pay higher rates as they expect to repay their indebtedness with depreciated dollars. Limitation of growth of demand for cash balances resulting from anticipation of inflation offsets some of the restrictive impact of reduced growth of the money stock.

As economic activity slows, the demand for funds usually weakens and, given the supply of funds, interest rates tend downward. The cost of cash balances thus decreases and the quantity of money demanded increases. If monetary expansion continues to be relatively moderate, the restrictive influence of such monetary action would then be intensified.

Forecasts based on relationships presented in the November 1968 issue of this *Review* indicate that growth in the money supply at the 3 per cent rate prevailing since December would lead to a slowing in total spending to a 6 per cent annual rate by the fourth quarter. Past experience suggests, however, that such a slowdown will not be manifested in a moderation of price advance until well into 1970.

## *Conclusion*

Total demand is strong and prices continue to increase rapidly. The prospects are for slowing of economic activity later this year, but little weakness is yet evident in the growth of total spending, employment and production. Monetary restraint has been operative since December, and fiscal restraint since mid-1968, and their effects will probably be progressively manifested in the trend of total spending as time passes.

# Controlling Inflation

**A speech given by DARRYL R. FRANCIS, President, Federal Reserve Bank of St. Louis, at the 75th Annual Convention of the Kentucky Bankers Association, Louisville, Kentucky, September 15, 1969**

OUR NATION has experienced excessive inflation during most of the period since early 1965. With the exception of a few months following a restrictive monetary policy in part of 1966, the rise in the general price level accelerated throughout the period. Since last December consumer prices have increased at a 6 per cent annual rate. Restrictive monetary and fiscal policies have been adopted to curb this excessive demand, but such actions are effective in reducing total demand only after a time lag.

In response to a more restrictive monetary policy, the rate of growth in the stock of money has declined in recent months. Since last December money has risen at a 4 per cent annual rate, compared with a 7 per cent increase during 1968. Passage of the tax bill in mid-1968 resulted in moving the Federal budget to a surplus of about a $7 billion annual rate in the first half of 1969, compared with a deficit of more than a $12 billion annual rate from early 1967 to mid-1968.

While to date these restrictive actions have had no apparent impact on prices, we are seeing some results from these actions. The financial markets have stopped becoming progressively tighter and the growth rate in total spending has decelerated.

In recent months we have heard repeated suggestion and repeated denial that direct government controls of wages, prices, and credit will be necessary to break the inflationary boom. Secretary of the Treasury David Kennedy, in testimony before the Senate Finance Committee in early July, said he opposed controls, but that procrastination in renewing the tax surcharge would bring on these regulations.[1] Even earlier, Secretary of Commerce Maurice Stans concluded from letters and conversations that a growing minority of businessmen are so concerned about the pace of inflation that they would favor controls.[2]

Much to my surprise, my contacts with businessmen in recent months confirm the Commerce Secretary's observation that many are talking favorably of wage and price controls as a solution to the problems of inflation. This line of thinking is direct and avoids theoretical complications. It assumes that, since inflation is a rise in the general price level, direct controls over wages and prices can stabilize prices and thereby prevent the evils of inflation.

The advocates of bureaucratic control of prices assume that such controls are workable alternatives to less expansive monetary policies as a means of halting inflation.

I question the widely assumed "obviousness" of the workability of direct controls of wages, prices, and credit, even under ideal conditions. They are expensive to administer and extremely difficult to enforce. They impair the efficiency of the price system as an allocator of resources and fail to provide an adequate substitute. The arbitrary rationing involved in direct controls is a major infringement on individual liberty and is extremely susceptible to bureaucratic abuses. Direct controls at best are not a solution to inflation but only a partial postponement or masking of price increases in the face of excessive demand.

## *Experience with Direct Controls*

Some of you will require only a reminder of the problems of administering the Office of Price Administration (OPA) during World War II. During that

[1] *Business Week*, July 12, 1969, p. 102.

[2] *Business Week*, June 7, 1969, p. 49.

all-out war effort, conditions much more favorable than at present existed for the implementation of direct controls. In the face of the common enemy, virtually all citizens were united and willing to make sacrifices for successful conclusion of the war. In such an emotionally charged atmosphere, broad industry agreements and press releases may have contributed to limitation of price increases in early 1942. During the year, demand for goods and services continued to rise, and production for civilian use declined as a larger per cent of the nation's resources was demanded by the military. Thus upward pressure on prices became more intense.

By late 1942 specific price schedules were necessary. At this time Price Emergency Regulation No. 2 noted that rents were climbing fast, and rent controls were put into effect.[3] Price Emergency Regulation No. 3 of October 1942 noted that, despite the regulations, wages and farm prices had moved up, forcing continuous amendments and additions to the regulations.

In June 1943, after a hectic 16 months of operating under intense pressure, the OPA was overhauled. The authority for setting prices was passed from the Washington office to the field offices. Numerous advisory committees were appointed, and ration books were issued.

By late 1943 emergence of a black market (selling above OPA price limits) and a shortage of enforcement investigators were noted. The substitution of low-quality goods in the higher-quality price brackets was also apparent. Subsidies to producers became an increasing part of the price control program in the late war years, as set prices were insufficient to provide the necessary incentive for production. Commodities subsidized included coal, lead, copper, tin, petroleum, coffee, and farm products.

The number of workers required to operate and enforce this program was staggering. By 1944, 325,000 price control volunteers,[4] in addition to 65,000 paid employees,[5] were being utilized. This was a period when the country was faced with a labor shortage, and most of these people could have worked at productive jobs, thereby contributing to an increase in total output and a lower rate of inflation. In addition to the number of employees required directly by OPA, the program was a burden to all business establishments. For example, the banking system was handling 5 billion ration coupons per month in 1944.

By 1946 people were no longer willing to make wartime sacrifices, and much of the wartime price control machinery was bypassed. Breaking the law became extremely profitable. Little respect was shown for a law which banned economic transactions that were permitted and morally acceptable in prewar years.

Both for those who had blind faith in the law and for the profit maximizers, the choice of action was easy – the former to obey the law and the latter to ignore it. For other Americans, the decision of whether or not to obey the law was difficult. Before the regulations were finally revoked, most individuals and businesses participated to various degrees in law breaking, including black marketing, gray markets, tie-in-sales, kickbacks, and upgrading.

Few people were disturbed at the illegal aspect of two or more people making a mutually satisfactory deal at prices above the OPA legal limit. For example, those who wanted a freezer of beef often went directly to a farmer friend and made the purchase at an agreed price. The packing house and retailer, where OPA prices were enforced, were bypassed. Store shelves were often empty and our efficient channels of processing tended to collapse. Nevertheless, those who had good contacts with producers managed to satisfy most of their demands, although at a higher cost through this inefficient means of production and marketing. One OPA official reported that while traveling through Texas he stopped in a rural area where a farmer was slaughtering a steer for illegal sale. The official asked the farmer if he didn't know that the practice was illegal. The farmer replied, "I reckon we ain't heard about that law out here."

Finally, in 1946, after a year of post-war domestic crises which included numerous strikes, food shortages, and a high rate of inflation, most of the provisions for direct controls were ended. Rent controls were the last to go, with some lingering on into the 1950's and some even to the present day. Owners found it unprofitable to keep rental property in good condition. By the time most rent controls were finally removed, rental property had already become dilapidated. Those World War II rental apartments which continued under controls into the 1950's now comprise many of our central city slum areas.

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[3]U.S. Office of Price Administration, *Renewal of the Price Control Act*, Congress, House Banking and Currency Committee, April 12, 1944.

[4]Ibid., p. 58.

[5]U.S. Department of Commerce, *Statistical Abstract of the United States, 1946*, p. 207.

## *Function of Price System Impaired*

As an alternative to arbitrary government control, the price system is an automatic and impersonal control mechanism. It allocates resources to various types of production according to demand for individual products, and output is determined according to consumers' willingness to pay for goods and services. Income is allocated to individuals and firms according to their contribution to total output. These allocations are made without personal prejudice and with neutrality with respect to political, religious, or social affiliation. In other words, they are made in a highly objective and democratic manner.

I do not contend that the price system is perfect. In the existing market, some business and some labor groups can exercise greater power than others. This and other imperfections, however, are relatively minor compared to problems created by direct controls.

For example, under direct controls, rationing is generally necessary in order to allocate scarce items, and almost all items are scarce under price controls. Allocations of labor and other resources among industries and firms are determined by arbitrary government rules rather than through freedom of choice. Controls which maintain prices and wages below market levels in any industry offer no inducement for the increase in production necessary to alleviate shortages. Arbitrary wage setting is not likely to provide for payments according to individual productivity; consequently, there is little or no inducement to improve one's skill.

Direct government controls, therefore, offer little inducement for the efficient development and use of resources, and contain no automatic mechanism for resource adjustments and the alleviation of shortages or excesses in production. Rather than being an aid to growth and vitality, they lead to economic retardation and reduced national welfare.

## *Infringement on Freedom*

Equally as important as the economic shortcomings of direct controls is their useless infringement on freedom. Freedom did not come easily to mankind, but we tend to take it for granted. Yet in most of the periods since man's early history he has been forced to bow in both thought and action to harsh taskmasters. More often than not, his social position, his income, his occupation, and his religion were forced upon him.

Some rays of freedom began to be noticed in much of Western Europe about the time that America was discovered. By the late 1600's freedom of thought and action in the Netherlands was well ahead of that in other European Countries. Similarily, economic progress was most noteworthy there.

The streams of Western Europe's citizens which migrated to the American colonies sought both economic and other freedoms. They came from areas where the state controlled their economic life and the church controlled their thoughts.

Roger Williams led the way toward freedom in the American colonies with a constitution in Rhode Island that provided for relatively little governmental interference with the daily lives of the citizens. This philosophy, which subscribes to a maximum degree of individual freedom, was inherent in the thinking of Jefferson, Adams, Madison, and other founders of this nation.

John Locke, about 300 years ago, postulated a state in which men were free and equal before the law and before each other. His ideal government was one which represented majority rule rather than an exclusive structure for a king or dictator at the top. While Locke recognized that most economic problems were self-adjusting, we must come forward to Adam Smith's day, about 200 years ago, before a harmonious theory was developed showing how an economy works most efficiently under relatively free conditions. To the confusion of most people in his day and of our time, Smith argued that most government efforts designed to improve economic activity and welfare actually were retarding influences. Along with other great philosophers in later years, he pointed to a free and efficient enterprise economy. Added to the freedom to select government officials, this system provides by far the greatest freedom from coercion and want of any system that has so far been devised.

Direct wage and price controls are not compatible with freedom. Instead of workers moving voluntarily from job to job for relatively higher pay, under a direct controls system they must be moved by arbitrary action of government. Under direct controls personal income, living costs, and the very necessities of life are determined arbitrarily by government with an army of enforcers. Such a system contains the ingredients for complete dictatorship at the top and complete subservience at the bottom. It is certainly not compatible with freedom as experienced in America during most of our years since independence.

## *Wage and Price Controls — No Solution to Inflation*

In addition to the facts that direct wage and price controls are almost impossible to administer, impair important functions of the price system, and are contrary to our ideals of freedom, they do not provide a solution to inflation. During the period from March 1942 to October 1946, in which direct controls were used, the consumer price index rose 6 per cent a year, and there is fairly general agreement that the index understated the actual rate of inflation because of declining quality of products and black market operations. Wages rose at a slightly faster rate than consumer prices.

The stock of money rose at an 18 per cent rate during this period, as the Federal Reserve System sharply increased bank reserves while conducting supporting operations for U.S. government securities. This very expansive monetary policy, coupled with a reduction in output of consumer goods and services, put great upward pressure on prices, and how much wages and prices would have risen in the absence of controls is unknown.

Even if controls hold back reported price and wage increases for the time being, they do not solve the problem of inflation. If excess demand for goods and services has been created, it continues to exist. Direct controls, like a new paint job over a termite infested house, hide the evidence but do nothing to eliminate the cause of the problem. Unless the basic causes of inflation are eliminated, direct controls can only postpone the inevitable price increases until some future date.

## *Attack the Cause of Inflation*

The best solution to the problem of inflation is to eliminate the cause. Inflation occurs because the stock of money (demand deposits and currency in circulation) increases relative to the amount of money that people want to hold, given their level of wealth and income. Starting from a position of stable prices, if additional money is created faster than it is demanded, people will spend more, thereby reducing the proportion of their wealth held in the form of money. When the rate of spending rises faster than production of goods and services, prices rise. Prices continue up until money incomes and wealth are pushed up to the point at which the public wants to hold the increased stock of money. The growth of money is thus the key to inflation, and appropriate monetary control provides the solution to the problem.

The current inflation can be traced to the course of the stock of money. Money grew at an annual rate of 3 per cent from 1961 to early 1965. This rate of growth in the stock of money was accompanied by generally stable prices, moderate economic expansion, and a decline in the rate of unemployment. From the spring of 1965 to the spring of 1966, the stock of money rose 6 per cent, and both spending and inflation accelerated. From the spring of 1966 to the end of the year, the stock of money remained stable, followed shortly by a decline in the rate of inflation.

Rapid monetary expansion was resumed in early 1967, soon followed by acceleration of spending and inflation. From January 1967 to December 1968 the stock of money expanded at a 7 per cent annual rate, and since the second quarter of 1967, the general price index has risen at more than a 4 per cent annual rate. Since last December the stock of money has risen at a more moderate rate, and I look forward, as a result, to a reduction in the growth of total spending and in the rate of inflation during the months ahead.

Throughout most of economic history, inordinate inflations have been limited because the stock of money was tied to a relatively stable quantity of precious metals. That period in history has largely passed, as precious metals are no longer a restraining influence on money creation. Today, the prevention of inordinate inflations depends upon appropriate limitation of the growth in the stock of money by central banks and treasuries.

In the United States, the Federal Reserve System has the responsibility of formulating monetary policy. It is believed by most monetary analysts that the System can control the stock of money through its power to control Federal Reserve credit and bank reserves. When the Federal Reserve System buys government securities, bank reserves are created. With a larger volume of bank reserves, bank expansion can proceed. As new loans and investments are made, the volume of demand deposits, the major component of our stock of money, rises. Sales of government securities by the Federal Reserve can reverse the process, reducing the stock of money.

Fiscal deficits are often associated with inflations, primarily because of the method used to finance them. If deficits are accompanied by an inordinate expansion of Federal Reserve credit (as is often the case), excessive money is created. But if the deficit is financed without the creation of new money, it will

probably have little impact on prices. Proceeds from the sale of government securities will be removed from the private spending stream and the rise in government outlays will be offset by reduced spending in the private sector. In nearly every country experiencing a major inflation, the cause is the creation of new money to finance government activities. We have no evidence, however, that government deficits which are not monetized will lead to inflations.

Some contend that inflations are caused by "wage push" or "administered price actions." The argument is based on the belief that some wages and prices can be arbitrarily increased because of excessive market power. "Wage push" or "cost push" adherents point out that new wage contracts in the steel industry are followed by steel price increases, which are in turn followed by automobile price increases. This series of events, however, does not lead to inflation unless excess demand has been created through monetary expansion. If, through excessive bargaining power, wages are pushed too high in these industries, output will decline in the absence of monetary expansion. Resources will then be released to other industries where prices will fall. Average prices for all goods and services will remain about unchanged once resources are again fully employed. Monetary expansion must accompany "wage push" or "cost push" actions in order for inflation to occur.

## *Summary*

Our experience during World War II with direct controls on wages and prices was a futile exercise in the economics of admonition and legal restraint. Most price rigidities set up by the OPA caused a breakdown both in our efficient production and marketing channels and in quality standards. Producers who had products which were in great demand, and purchasers who were not satisfied with the rationing process, generally found a way to bypass OPA regulations. Disrespect for the law became the normal pattern of life rather than an aberration. Despite the legal and moral restraints and an army of controllers, prices and wages continued to rise rapidly throughout the war and early postwar years.

If governments were sufficiently strong to set rigid controls on wages and prices, freedom would be greatly reduced. Labor and other resources would be moved from job to job arbitrarily by the government rather than through wage incentives. Much of the managerial function of businesses would shift to the government, and the need for the best managerial talent in the private sector would disappear. Such controls impair the functions of the market system. They eliminate incentive for output increases in areas of rising demand. They are thus conducive to economic retardation rather than progress.

Appropriate monetary policies are the only means that have proved workable throughout history in controlling inflations. When kings and emperors debased their nation's currencies by reducing the precious metal content of money, inflations ensued. Today we debase our currency by excessive creation of paper money and demand deposits. Our means of currency debasement is more sophisticated and less direct than in medieval and ancient ages. Yet, the result is the same – excessive money created relative to production of goods and services lowers its value. The solution requires a proper limitation on the stock of money.

Control over the stock of money in the United States lies chiefly with the Federal Reserve System. Control can be exercised with greater ease when the Federal budget is in balance or surplus, since the Government will not be forced to borrow additional funds in a financial market where credit is restricted by tight monetary policies. Even with stimulative budgetary policies resulting from military or social expenditures, however, the Federal Reserve System can maintain a moderate rate of growth in the stock of money and control over total demand for goods and services through an appropriate rate of money creation.

In contrast to the relatively certain method of controlling inflation through appropriate monetary actions, direct controls on wages and prices do not get at the cause of the problem. To the extent that they retard wage and price increases, they, like an anesthetic, only put the patient to sleep. His malady remains unabated when he is awakened. But in the face of excessive demand for goods and services, the slippages and bypasses, such as black markets, quality distortions, etc., experienced with such controls, create a wide gap between the intent of controls and the actual terms of transactions. This intent to catch all prices and wages in one controls bag, when contrasted to the actual results which have been experienced, reminds me of a short ditty regarding the latest style in bathing suits.

> "Mary had a bathing suit,
> the latest style no doubt,
> but when she got inside it,
> she was more than halfway out."

# A Historical Analysis of the Credit Crunch of 1966

by ALBERT E. BURGER

IN EARLY 1966 the U.S. economy was entering the sixth year of continuous economic expansion. The unemployment rate was at 4 per cent, a level believed almost unattainable two or three years earlier, capacity utilization was close to 90 per cent, and firms were faced with an exceptionally large backlog of orders. The economy had not only reached a state of full employment, but there was every indication that the "boom" would continue. To many, it appeared that the "New Economics" had finally removed the danger of recession or economic slowdown.

The year 1966 was not, however, to be remembered as a year of smooth economic expansion. The real sector of the economy, operating at the full-employment level of real output, was forced to attempt to adjust the mix and amount of real output to meet the increased demands of both the private and government sectors. The two main topics in discussions of economic stabilization policy in 1966 were as follows: (1) the sharply rising level of Government spending for the Vietnam war, and (2) the emergence of inflation. At the start of 1966, firms operating at near capacity with record levels of backlogs of orders, when making plans for future capital expenditures, expected rising aggregate demand, a rising price level, and a "tighter labor market" with rising wage demands. These types of expectations are all precursors to a boom in capital spending.

As corporations and the government sector bid aggressively for funds, financial intermediaries and the securities markets were placed under increasing demand pressure. The aggregate demand for real output, and the ability of various sectors of the economy to acquire funds to make their desired command over real output effective, was such that, at existing prices, the demand for real output exceeded the productive capacity of the economy.

Reflecting demand pressures on the productive capacity of the economy, prices rose rapidly. Over the first nine months of 1966, the consumer price index rose at a 3.7 per cent annual rate, and the wholesale price index rose at a 3.5 per cent rate, compared to rises of 1.7 per cent for consumer prices and 2.0 per cent for wholesale prices in 1965, and compared to an average annual rate of increase of 1.2 per cent for consumer prices and essentially no change for wholesale prices during the 1960-64 period.

In the summer of 1966 a policy of monetary restraint led to conditions popularly called the "Credit Crunch of 1966." The most publicized features of this period were (1) the development in August of an alleged near liquidity crisis in the bond markets and (2) a record decrease in savings inflows into nonbank financial intermediaries and the resulting reduced rate of residential construction. This article focuses on the first of these developments. The role of monetary policy and its impact on the commercial banks and the financial markets is discussed and analyzed.

The 1966 experience has exercised an important influence on monetary policy decisions made since that time and on the procedures for raising funds used by the commercial banks. The possibility of causing another "Credit Crunch," with all of its feared ramifications on the financial markets and the savings and loan and housing industries, acted as an important constraint on a decision to move toward a tighter monetary policy in the last half of 1967. These same fears, combined with overly optimistic expectations on the potency of the fiscal actions taken in mid-1968, constrained monetary policy decision-makers again in 1968.

In 1966, for the first time, commercial banks experienced a period when the Federal Reserve actively used Regulation Q ceiling rates on time deposits as a means to restrict the banks' ability to extend credit. Since that time commercial banks have actively sought new methods, such as Eurodollar borrowings, to obviate the constraint of Q ceilings.

This article is divided into four major sections. The first section discusses conditions in the credit markets in the first eight months of 1966; the second section discusses and analyzes both the intent and impact of Federal Reserve policy during this period; the third section discusses the actions and reactions of the commercial banks during the first eight months of 1966; and then the last section presents a summary of developments in the remainder of 1966.

The Credit Crunch has been discussed in summary form in numerous other short articles. This article attempts to present a more complete exposition and analysis of the period. The article focuses on the specific causes of demand pressures in the markets for funds in 1966, and the role of key institutional developments such as the increased use by banks of certificates of deposits and the increased importance of municipal securities in banks' asset portfolios.

The impact of monetary policy is analyzed within the framework of a specific hypothesis about the money supply and bank credit processes: the Brunner-Meltzer Non-Linear Money Supply Hypothesis. To the author's knowledge this is one of the first attempts, aside from previous work by Professors Brunner and Meltzer, to apply this method of analysis to a specific time period. The basic framework of analysis might be called a portfolio approach to the analysis of monetary policy. This market-oriented approach emphasizes alternative costs and yields of real and financial assets in determining the portfolio actions of economic units.

## Developments in the Money and Capital Markets: First Eight Months of 1966

Some of the most notable features of 1966 were the portfolio adjustment problems, culminating in August, that developed in the money and capital markets. These problems were particularly noticeable among the financial intermediaries as they attempted to adjust their asset holdings to meet the strong demands for funds, and to meet sharp changes in their liabilities.

### *Demand Pressures in the Financial Markets*

During the first eight months of 1966, the business and government sectors placed heavy demands for funds in the money and capital markets. Corporations raised an estimated $13 billion in new cash from the sale of securities, up 25 per cent from the $10.4 billion raised by corporations in the first eight months of 1965.

Much of the large demands in the financial markets resulted from the fiscal devices employed by the Federal Government to reduce the reported budget deficit for the fiscal year ending June 30, 1966. The Administration tried to reduce the impact on the fiscal 1966 budget of increased spending for the Vietnam War and the rapid rise in other Government spending, by: (1) accelerating tax payments, and (2) selling Government-owned financial assets.

The 1964 tax law, designed to put large corporations on the basis of paying taxes on current year's income by 1971, was revised in 1966 to require them to reach this point by 1968. As a result, corporation taxes paid on June 15, 1966, were estimated to be about one-third larger than a year earlier. Additional tax revenues were shifted forward into fiscal 1966 by requiring large corporations to make payments of withheld income and social security taxes on a semi-monthly rather than a monthly basis. Corporations paid an estimated $1.5 billion in taxes in June that would not have been due until July.

To meet the additional cash demands caused by the accelerated tax payment schedule, while at the same time maintaining their high levels of capital spending, corporations drew down their liquid assets and relied heavily on the commercial banking system as a source of funds. Corporations increased their bank loans by $3.9 billion during the second quarter of 1966, compared to an increase of $2.7 billion in the same period of 1965.

The greatest source of pressure in the financial markets coming directly from the Federal Government sector originated in the sale of securities by Federal agencies, not in direct debt financing. The amount sold by Federal agencies was three times as great as the $1.6 billion raised in the first eight months of 1965. In the months of May and June, at the same time that the financial markets encountered heavy demand pressures from corporations to meet their accelerated tax payments, Federal agencies raised $1.7 billion in new cash, about a billion dollars more than in the same two months of 1965. Such security sales were entered as reductions in expenditures in the Federal budget, and thus acted to reduce the reported spending totals and the cash deficit.

In August, the month of the so-called Credit Crunch in the financial markets, corporations and Federal Government agencies placed especially heavy demands for credit. Typically, a lull occurs in new issue activity in the securities markets in August.

Table I

ESTIMATED GROSS PROCEEDS FROM NEW SECURITIES OFFERED FOR CASH IN THE UNITED STATES
(millions of dollars)

| | August 1965 | August 1966 | Per Cent Increase |
|---|---|---|---|
| All Offerings | 2,354 | 3,676 | 56.2% |
| U.S. Government | 371 | 386 | 4.0 |
| State and Local Governments | 718 | 764 | 6.4 |
| Corporations | 930 | 1,712 | 84.1 |
| Federal Agencies | 239 | 799 | 234.3 |

*Source*: Securities and Exchange Commission, *Statistical Bulletin*.

However, in August 1966 the government and private sectors of the economy raised an estimated $3.7 billion in new cash, a substantial increase from the $2.4 billion borrowed in August 1965. As shown in Table I, estimated gross proceeds from new securities offered for cash by the U.S. Government and by state and local governments remained at about the same level as in August 1965. However, compared to the same period of 1965, corporations and Federal agencies issued a much larger volume of new securities. In August, the estimated new cash raised in the securities markets by corporations and Federal agencies was more than twice as great as in August 1965.

## *Rising Interest Rates*

Reflecting primarily the heavy demand for credit in the first eight months of 1966, market interest rates rose to new peaks for the post World War II period. The weekly average of yields on Aaa-rated corporate bonds rose 64 basis points by the end of August. As shown by Table II, yields on long-term Government bonds and state and local securities, and yields on short- and intermediate-term securities, also rose markedly over the first eight months of 1966.

The increased demand for credit by the business sector led to a sharp rise in interest rates on business loans. Commercial bank rates on short-term business loans, as reported in a survey of banks in 19 large cities, rose from an average of about 5 per cent in the first three quarters of 1965 to an average of 5.82 per cent in June of 1966 and then rose to 6.30 in September of that year. Market rates on four- to six-month commercial paper, which averaged 4.35 per cent over the first three quarters of 1965, rose sharply to 5.51 per cent in June 1966, and then increased to 5.85 per cent in August 1966.

Table II

WEEKLY AVERAGES OF ANNUAL YIELDS ON SELECTED SECURITIES, 1966

| | Early Jan. | Peak in Month | | |
|---|---|---|---|---|
| | | June | July | August |
| Corporate Aaa bonds | 4.73% | 5.07% | 5.22% | 5.37% |
| Long-Term Governments | 4.44 | 4.63 | 4.78 | 4.87 |
| State and Local Governments | 3.40 | 3.60 | 3.77 | 3.94 |
| 3-5 Year Governments | 4.92 | 5.02 | 5.25 | 5.79 |
| 3-Month Treasury Bills | 4.50 | 4.59 | 4.89 | 5.06 |
| 4-6 Month Prime Commercial Paper | 4.75 | 5.51 | 5.63 | 5.85 |

*Source*: Federal Reserve *Bulletin*, March 1967.

## *High Interest Rates Did Not Curb Corporate Expenditures*

Once corporations had begun large capital spending programs, they were unwilling to allow rising market rates of interest to bring these programs to a sharp halt. Although by past comparisons interest rates rose to very high levels, many corporations found that even at higher rates of interest the rate of return they could earn on borrowed funds exceeded the cost of borrowing. *Fortune Magazine* (June 15, 1967), in its review of operations of the 500 largest non-financial corporations in the United States, found that in 1966 the median industry return on invested capital was 12.7 per cent, up from 11.8 per cent in 1965. Almost all industry groups in the *Fortune* study showed an increase in their return on invested capital.

The main concern of corporations seemed to be more with the availability of funds than with the cost of these funds. Prime rate customers placed large orders for cash with the commercial banking system. As Jerome Behland, Treasurer of Owens-Illinois, Inc., remarked in an interview with *Business Week* in late August:

> Our general corporate attitude is that you can't stop a $500 million program just because the cost of borrowing goes up. That's part of the cost of the program, and if it is one that is going to produce a more profitable operations for the corporation, then it must proceed.[1]

## Intent and Impact of Federal Reserve Policy: First Eight Months of 1966

In this section we first examine the intent of monetary policy in 1966, and then discuss movements in money and bank credit, two commonly used indicators of the impact of monetary policy on the real sector of the economy. An analytical framework is presented which permits one to determine the impact Federal Reserve policy actions have on money and

[1] *Business Week*, August 27, 1966, p. 23.

bank credit, and to analyze the causes of observed movements in money and bank credit.

## *The Intent of Monetary Policy*

The published records of the Federal Open Market Committee (FOMC) meetings show that the intent of the monetary authorities, beginning in the middle of December 1965, was to move to a progressively "tighter" policy. At the December 14, 1965 FOMC meeting the broad policy goal expressed was:

> . . . to complement other recent measures [an increase in the discount rate] taken to resist the emergence of inflationary pressures . . . while accommodating moderate growth in the reserve base, bank credit, and the money supply.

At the January 11, 1966 FOMC meeting the Committee voted to:

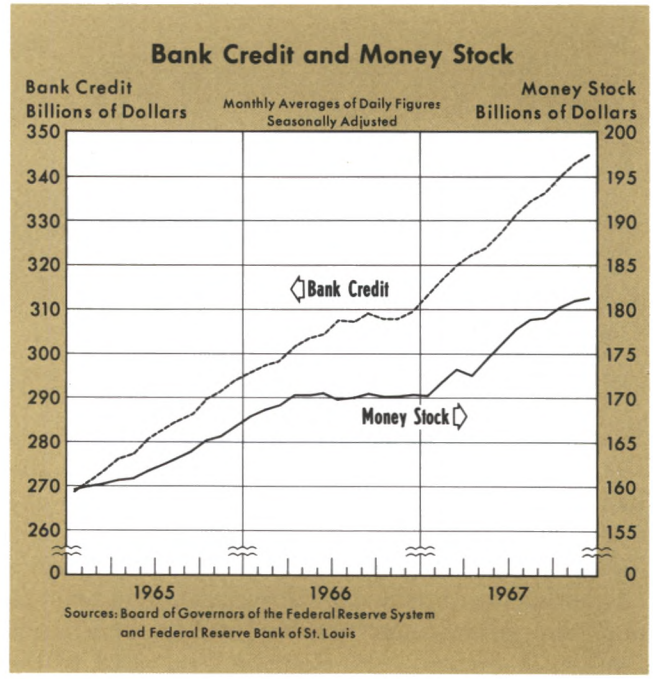
> . . . resist the emergence of inflationary pressures . . . by moderating the growth in the reserve base, bank credit, and the money supply.

At the March 1 meeting the Committee voted to "resist *inflationary* pressures" rather than the *"emergence of* inflationary pressures." In mid-April the FOMC directive called for "restricting" rather than "moderating" the growth in the reserve base, bank credit, and the money supply. The directive subsequently remained little changed until late 1966.[2]

## *Movements of Two Monetary Aggregates*

Two widely used indicators of the effect of monetary policy on the real sector are (1) money, defined as currency plus demand deposits held by the nonbanking public, and (2) bank credit, defined as the loans and investments of commercial banks.

***Money Stock*** — During the last four months of 1965 and through the first four months of 1966 the money stock expanded at a rapid rate. Over the last four months of 1965 the money stock increased by $3.6 billion, or at an annual rate of 6.8 per cent. During the first four months of 1966 the money stock continued to increase markedly, rising at an annual rate of 6.4 per cent. One of the most noticeable features of this rise was that it was a fairly steady month-by-month increase. After April, the money stock showed almost no noticeable change. Through January of 1967 it remained at approximately the level reached in April of 1966.




***Bank Credit*** — Credit extended by commercial banks increased steadily at a rapid rate from early 1965 through June of 1966. Over the last four months of 1965, bank credit expanded at an annual rate of 10.4 per cent. Bank credit continued to rise at a rapid rate over the first four months of 1966, rising at an 8 per cent annual rate. Whereas the growth of the money stock stopped in April 1966, the stock of bank credit continued to grow at an 8 per cent annual rate through July. The growth of bank credit throughout the whole period January 1965 to July 1966 was manifested in a very sharp increase in bank loans.

The growth of bank credit came to a temporary halt in August during the so-called Credit Crunch. By components, this halt reflected a deceleration of the rate of increase in bank loans and a decrease of $0.6 billion in banks' holdings of securities. In September bank credit increased sharply, but following September the growth of bank credit moderated noticeably until near the end of the year.

## *The Impact of Policy Actions on Money and Bank Credit*

The three major policy instruments under the direct control of the monetary authorities are as follows: (1) the discount rate; (2) reserve requirements on member bank deposits; and (3) changes in the Federal Reserve's holdings of Government securities. In addition, a regulatory power of the Federal Reserve, Regulation Q ceilings on interest rates offered by

[2]See Leonall C. Andersen and Elaine Goldstein, "1966 — A Year of Challenge for Monetary Management," Federal Reserve Bank of St. Louis *Review*, April 1967, pp. 8-23.

commercial banks on time deposits, has been used at times since mid-1966 as if it were also a policy instrument.

The Federal Reserve, by its policy actions alone, does not determine the equilibrium level of market interest rates. Likewise its policy actions are not the only factors which enter into the determination of the equilibrium stocks of money and bank credit. The amount of money and bank credit supplied to the economy also depends upon behavioral actions of the commercial banks and the public. To understand how the Federal Reserve, with its policy instruments, can control the money supply and bank credit processes, and to analyze and predict the effects of policy actions on these aggregates, one must use a framework which incorporates the behavioral responses of the commercial banks and the public.

***The Analytical Framework*** — The Brunner-Meltzer Nonlinear Money Supply Hypothesis is such a framework.[3] Money (M), defined as demand deposits and currency held by the nonbanking public, and bank credit (BC) are defined therein as:

$$M = m\, B^a$$
$$BC = a\, B^a$$

where $B^a$ is the adjusted monetary source base, and m and a are multipliers. In this article the monetary source base is adjusted by removing member bank borrowings, and is defined as shown in Table III.[4]

The adjusted monetary source base ($B^a$) is an asset supplied to the private sectors of the economy by the monetary authorities. The uses of the monetary source base by the banks and the public are member bank deposits at the Federal Reserve banks, banks' holdings of vault cash, and currency held by the nonbank public. The source base is considered an important quantity because:

(1) The magnitude of $B^a$, given the portfolio decisions of the banks and the public, determines the size of the stocks of money and bank credit;

Table III

**ADJUSTED MONETARY SOURCE BASE ($B^a$), APRIL 1966**

**(not seasonally adjusted)**

| | (Millions of Dollars) |
|---|---|
| Federal Reserve holdings of U.S. Government securities | $40,758* |
| Float | 1,934 |
| Gold Stock | 13,632 |
| Treasury currency outstanding | 5,768 |
| Less: | |
| Treasury cash holdings | 941 |
| Treasury deposits at Federal Reserve banks | 311 |
| Foreign deposits at Federal Reserve banks | 148 |
| Other (net) | 903 |
| Equals: adjusted monetary source base | 59,789 |
| Federal Reserve holdings of Government securities as per cent of $B^a$ | 68% |

*–Includes $129 million of acceptances not shown separately.

(2) Empirical evidence shows that changes in the amount of base money supplied to the public and banks have been, on average, the major cause of changes in the stocks of money and bank credit; and

(3) From the sources side, the amount of base money supplied is under the complete control of the Federal Reserve.[5]

The monetary base and the multipliers jointly determine the supply of money and bank credit. Given the stock of base money, the value of the money multiplier (m) determines the outstanding money stock. Likewise, the value of the bank credit multiplier (a) determines the amount of bank credit that will be supported by a given stock of base money. For example, if the value of m is 2.5, then each dollar of base money supports $2.50 of currency and demand deposits held by the public. Given a one dollar change in the stock of base money, and assuming the change in base money does not alter the equilibrium value of m, the result will be a change of $2.50 in the stock of money held by the public.

The numerical values of the money and bank credit multipliers are determined by:

(1) Policy actions of the Federal Reserve System. The policy parameters that enter into the de-

[3]For a complete discussion of the Brunner-Meltzer hypothesis, see Albert Burger, *An Analysis and Development of the Brunner-Meltzer Nonlinear Money Supply Hypothesis,* Working Paper No. 7, available from Federal Reserve Bank of St. Louis.

[4]In alternative formulations of this multiplier-base framework, member bank borrowing may be included as a component of the base and the base adjusted for reserve requirement changes. For a more complete discussion of the sources and use of the monetary base, see Leonall C. Andersen and Jerry L. Jordan, "The Monetary Base: Explanation and Analytical Use," this *Review,* August 1968, available as Reprint No. 31.

[5]This does not mean that the Federal Reserve determines Treasury cash policy or that the Federal Reserve determines the surplus or deficit in the balance of payments. It means that, through open market operations, the Federal Reserve can offset any movements in Treasury cash policy and inflows or outflows of gold. Also, this does not mean the Federal Reserve will choose to offset changes in either of these factors affecting the supply of base money. However, by open market purchase and sale of government securities the Federal Reserve has the power, if it wishes to exercise that power, to determine the magnitude of base money supplied to the economy.

termination of the values of the multipliers are: (a) legal reserve requirements on member bank demand and time deposits; (b) the discount rate and administration of the discount window; and (c) Regulation Q interest rate ceilings.

(2) Portfolio decisions by the public. Among these decisions are: (a) the decision of the public as to its desired allocation of bank deposits between demand and time deposits; (b) the decision of the public as to its desired allocation of money balances between bank money and currency, and (c) the public's desired allocation of bank deposits between member and nonmember banks.

(3) Portfolio decisions by the banks. For example, (a) the banks' desired holdings of excess reserves relative to deposit liabilities, and (b) the amount of member bank borrowing from the Federal Reserve given the discount rate.

(4) Treasury policy as to holding of deposits at the commercial banks versus at the Federal Reserve.

Exact forms of the multipliers are given in footnote 6 below.

In this multiplier-base framework, Federal Reserve policy actions have two major effects. First, through its open market operations the Federal Reserve can determine the amount of base money. Secondly, by changing the other policy parameters under its control the Federal Reserve can influence the amount of money or bank credit a given stock of base money will support.

[6]The money multiplier in its explicit form is:

$$m = \frac{1+k}{(r-b)\,(1+t+d)+k}$$

The total bank credit multiplier in explicit form is:

$$a = \frac{(1+t+d)\,[1+n-(r-b)]}{(r-b)\,(1+t+d)+k}$$

where: $k = \frac{\text{currency held by the public}}{\text{demand deposits held by the public}}$

$$t = \frac{\text{time deposits}}{\text{demand deposits held by the public}}$$

$$b = \frac{\text{member bank borrowing}}{\text{total bank deposits}}$$

$$r = \frac{\text{total bank reserves}}{\text{total bank deposits}}$$

$$d = \frac{\text{Treasury deposits at commercial banks}}{\text{demand deposits of the public}}$$

$$n = \frac{\text{capital accounts}}{\text{total bank deposits}}$$

The k, t, b, r, and n ratios reflect behavioral responses of the banks and the public to (1) economic factors; and (2) the policy parameters, legal reserve requirement ratios, discount rate, and Regulation Q, which are determined by the Federal Reserve System. The d-ratio reflects mainly actions by the Treasury.

Table IV

MONTHLY CHANGES IN THE ADJUSTED MONETARY SOURCE BASE AND FEDERAL RESERVE HOLDINGS OF GOVERNMENT SECURITIES*

(millions of dollars)

| | Adjusted Monetary Source Base | Federal Reserve Holdings of Government Securities |
|---|---|---|
| 1965 | | |
| January | — 20 | —442 |
| February | 260 | 368 |
| March | 190 | 263 |
| April | 210 | 322 |
| May | 200 | 474 |
| June | 210 | 729 |
| July | 270 | 409 |
| August | 250 | 69 |
| September | 160 | —210 |
| October | 510 | 493 |
| November | 260 | 527 |
| December | 540 | 757 |
| 1966 | | |
| January | 100 | —259 |
| February | 250 | 9 |
| March | 80 | —237 |
| April | 480 | 231 |
| May | 220 | 500 |
| June | 50 | 543 |
| July | 600 | 549 |
| August | 60 | 59 |
| September | 430 | 455 |
| October | 140 | 102 |
| November | 210 | 510 |
| December | 380 | 413 |

*Not seasonally adjusted

***The Impact of Open Market Operations*** — Federal Reserve holdings of Government securities is the component of the adjusted monetary source base that is under the direct, day-to-day control of the Federal Reserve System. The Federal Reserve does not dictate the administration of the Treasury General Fund. Gold movements reflect principally past movements in the balance of payments, and nonseasonal changes in the level of float reflect mainly such things as weather conditions and transportation disruptions.

To measure the impact of Federal Reserve open market operations on the monetary aggregates, it is not sufficient simply to discuss changes in the System's holdings of Government securities, as shown in Table IV.[7] To the extent that the System's open market operations only offset other factors, such as gold flows, float, and Treasury actions, and no change occurs in the amount of base money, no net expansionary or contractionary effect is transmitted to the monetary aggregates and bank credit.[8]

[7]See "An Explanation of Federal Reserve Actions (1933-68)" by Michael Keran and Christopher Babb, this *Review*, July 1969.

[8]To the extent that open market operations affect market interest rates, and these open-market-induced changes in interest rates affect the multiplier, then open market operations affect the monetary aggregates.

For example, in June 1966 Federal Reserve holdings of Government securities rose by $543 million, but adjusted monetary base increased by only $50 million. Although on balance the System made quite large purchases, expansion of the adjusted source base was only slightly greater than the normal seasonal increase. Hence the *net* expansionary influence of open market operations in June was quite small.

In contrast, in July 1966 the Federal Reserve purchased the same amount of Government securities as in June. However, the increase in the source base in July was 12 times as great as the increase in June. Looking at the $600 million increase in the source base in July, we would assert that the System's open market operations had a very expansionary *net* effect on the monetary aggregates.

***Analysis of Movements in Money*** — A complete analysis of the movements observed in the money supply and bank credit involves not only the analysis of movements in the base, but also changes in money and bank credit resulting from changes in the multipliers.

To analyze the behavior of money and bank credit, we divide the change in each one of these aggregates into two major components: the percentage change resulting from the change in base money, and the percentage change due to the change in the multiplier.[9]

Looking at Table V we see that the expansion of M over the last part of 1965 was wholly a base phenomenon. The multiplier acting alone *decreased*

Table V

MAJOR COMPONENTS OF MONTHLY PERCENTAGE CHANGES IN MONEY*

| | Change in Money (M) | Change in Money Resulting From Change in Monetary Base ($B^a$) | Change in Money Resulting From Change in the Multiplier (m) |
|---|---|---|---|
| 1965 | | | |
| January | .19% | —.04% | .22% |
| February | .25 | .46 | —.21 |
| March | .12 | .34 | —.21 |
| April | .31 | .37 | —.06 |
| May | .12 | .35 | —.23 |
| June | .50 | .37 | .13 |
| July | .43 | .47 | —.04 |
| August | .49 | .43 | .06 |
| September | .49 | .28 | .21 |
| October | .73 | .88 | —.15 |
| November | .30 | .44 | —.14 |
| December | .66 | .92 | —.25 |
| 1966 | | | |
| January | .66 | .17 | .49 |
| February | .42 | .42 | —0— |
| March | .35 | .13 | .22 |
| April | .65 | .80 | —.15 |
| May | —0— | .37 | —.36 |
| June | .12 | .08 | .04 |
| July | —.35 | .99 | —1.33 |
| August | .06 | .10 | —.04 |
| September | .29 | .70 | —.41 |
| October | —.17 | .23 | —.40 |
| November | —0— | .34 | —.34 |
| December | .12 | .61 | —.49 |

*Columns two and three may not add exactly to column one because of the cross product term.

the stock of M in the last three months of 1965. However, an expansionary open market policy resulting in an increase in the stock of base money more than offset the multiplier, and the money stock showed a marked increase.

During the first quarter of 1966 the effect of open market operations was much less expansionary. The base increased at only a 3 per cent annual rate, much reduced from the 7 per cent rate over the last half of 1965. Consequently, the impulse transmitted to money and bank credit by open market actions was considerably reduced.

In the first four months of 1966, the money stock continued to increase. However, in the first three months of this period the increase in M was largely a multiplier phenomenon. Although the stock of base money was increasing at a slower rate, it supported a larger stock of publicly held money balances than previously, due to the rise in the multiplier. Almost one-half of the percentage change in M was accounted for by an increase in the multiplier. The major cause of this increase was a reduction in the desired reserve ratio. As the banks adjusted to the large increase in base money occurring in the last half of 1965, and in response to the higher yields

[9]To partition the effects on money and bank credit of changes in the base and changes in the multipliers, the following expressions were used:

$$\frac{M_t - M_{t-1}}{M_{t-1}} \cdot 100 = \frac{m_{t-1}(B^a_t - B^a_{t-1})}{M_{t-1}} \cdot 100 + \frac{B^a_{t-1}(m_t - m_{t-1})}{M_{t-1}} \cdot 100 + \frac{(B^a_t - B^a_{t-1})(m_t - m_{t-1})}{M_{t-1}} \cdot 100$$

For example, the percentage change in money in February, $\left(\frac{M_t - M_{t-1}}{M_{t-1}} \cdot 100\right)$, is found by letting

$M_{t-1}$ = money stock in January
$B^a_{t-1}$ = adjusted monetary source base in January
$M_t$ = money stock in February
$B^a_t$ = adjusted monetary source base in February

$\frac{m_{t-1}(B^a_t - B^a_{t-1})}{M_{t-1}} \cdot 100 =$ the percentage change in money in period t resulting from the change in $B^a$ in period t assuming no change in the multiplier.

$\frac{B^a_{t-1}(m_t - m_{t-1})}{M_{t-1}} \cdot 100 =$ the percentage change in money in period t resulting from the change in the multiplier in period t assuming no change in $B^a$.

on business loans, banks reduced their desired reserve-to-deposit ratio, and this was reflected in a rise in the stock of bank money. April shows a sharp percentage increase in M, but this is entirely explained by a very large increase in the supply of base money. After April the rapid expansion of the money stock came to an abrupt halt.[10]

During the first three months of 1966 the banks and the public apparently were still reacting to the rapid increase in base money that occurred in the last part of 1965. As the increased stock of base money was absorbed into the asset portfolios of the banks and the public, the growth rate of M slowed. By April the increase in the money multiplier had stopped.

***Analysis of Movements in Bank Credit*** — Referring to Table VI, we see that the increase in bank credit over the last part of 1965 was also primarily attributable to the growth of the monetary base. During the first quarter of 1966 the growth rate of base money slowed, but bank credit continued to expand at a rapid rate. As was the case with M, the increase in bank credit during the first three months of 1966 was not solely a base-dominated phenomenon. The rise in the bank credit multiplier (a) accounted for almost half of the increase in bank credit.

In contrast to the money multiplier, the bank credit multiplier continued to increase after March, contributing significantly to the percentage increase in bank credit from March through June. In the May through June period the percentage increase in bank credit was dominated by the increase in the bank credit multiplier.

The increase in (a) over the first part of 1966, and its continued increase after the money multiplier stopped rising, can be largely explained by the success of commercial banks in acquiring time deposits, which raised the t-ratio. The t-ratio (the ratio of time deposits to demand deposits of the public) is of crucial importance when analyzing the movements of monetary aggregates and bank credit. It is important because, other factors constant, changes in the t-ratio are accompanied by changes in opposite directions of money and bank credit. An increase in the t-ratio lowers the value of the multiplier associated with the money stock and raises the value of the multiplier associated with bank credit. In other words, a decision by the public to hold a larger portion of their bank deposits in the form of time deposits increases the amount of bank credit a given stock of base money can support and decreases the size of the money stock a given amount of base money can support.

Over the last three months of 1965 the t-ratio average 1.1184, compared to an average of 1.0396 over the first three months of 1965. In the first three months of 1966, the t-ratio continued to increase, rising to an average of 1.1264. The t-ratio then rose very sharply over the next three months, reaching an average of 1.1508 over this period.

Given that the Board of Governors raised Q ceiling rates in December, and given the increasing profitability of business loans for banks, the longer lag in adjustment of bank credit is not surprising. As long as banks could acquire funds via time deposits, and as long as the marginal cost of these funds remained

Table VI

MAJOR COMPONENTS OF MONTHLY PERCENTAGE CHANGES IN BANK CREDIT

| | Change in Bank Credit | Change in Bank Credit Resulting From Change in Monetary Base (B[a]) | Change in Bank Credit Resulting From Change in the Multiplier (a) |
|---|---|---|---|
| 1965 | | | |
| January | .67% | —.04% | .71% |
| February | .86 | .46 | .39 |
| March | .92 | .34 | .58 |
| April | .99 | .37 | .61 |
| May | .43 | .35 | .08 |
| June | .46 | .37 | .10 |
| July | .61 | .47 | .13 |
| August | .78 | .43 | .34 |
| September | .56 | .28 | .28 |
| October | 1.29 | .88 | .41 |
| November | .55 | .44 | .11 |
| December | .89 | .92 | —.03 |
| 1966 | | | |
| January | .51 | .17 | .34 |
| February | .61 | .42 | .19 |
| March | .34 | .13 | .20 |
| April | 1.11 | .80 | .30 |
| May | .63 | .37 | .23 |
| June | .36 | .08 | .27 |
| July | .99 | .99 | —0— |
| August | —.13 | .10 | —.23 |
| September | .55 | .70 | —.15 |
| October | —.32 | .23 | —.55 |
| November | —0— | .34 | —.34 |
| December | .55 | .61 | —.07 |

[10]The marked percentage change in money (-1.33 per cent) resulting from the multiplier acting alone in July reflected changes in several components: a sharp rise in the ratio of time to demand deposits (t); an increase in the reserve ratio (r) resulting from the July increase in reserve requirements on time deposits; a marked increase in the currency ratio (k); and a rise in the ratio of Government deposits to demand deposits of the public (d). The percentage changes in the multiplier from June to July resulting from the change in each of these components are as follows:

| | |
|---|---|
| t | —.411 |
| r | —.376 |
| k | —.504 |
| d | —.234 |

less than the marginal revenue from business loans, banks could be expected to continue to bid aggressively for time deposits.

Over the four months from April through July, the banks were using what might be called "the financial slack in the economy" to expand their flow of credit to the business sector. This was accomplished primarily through time deposits.[11] By raising their rates on time deposits, banks induced the public to markedly increase its desired ratio of time-to-demand deposits (t-ratio). The purchase of banks' debt obligations (time deposits) by the public with bank money "freed" reserves from required reserves and permitted banks to expand their flow of credit to business. A crude calculation of the effect of the increasing t-ratio on the supply of bank credit indicates that $3 to $4 billion of the $9.3 billion increase in bank credit from March through July was due to the increase in the time deposits relative to demand deposits.[12]

The bank credit multiplier remained constant in July, and the large increase in bank credit reflected solely the very large increase in base money resulting from the Federal Reserve's open market actions. Although the t-ratio rose sharply in July, by itself increasing the bank credit multiplier, this was offset primarily by a marked rise in the reserve ratio. The rise in the reserve ratio reflected the increase in reserve requirements on time deposits which went into effect in the last part of July. By raising reserve requirements, the Federal Reserve reduced the amount of bank credit a given stock of base money would support. However, at the same time, the Federal Reserve, through open market purchases, permitted the stock of base money to rise by $600 million, thus offsetting the contractionary effect on bank credit of the higher reserve requirements.

In August we observed a marked reversal of the impact of open market operations on the monetary aggregates. The System purchased net only $60 million of securities compared to $550 million in July. Most importantly, this reversal in open market actions resulted in virtually no change in the stock of base money in August. Therefore, open market policy became much more restrictive in August than it had been over the previous four months.

[11]To an extent this was also accomplished by banks reducing their ratio of excess reserves to deposits and liquidating Government securities (see the following section).

[12]This estimate is made by recalculating the total bank credit multiplier for July, substituting the t-ratio value for March. This new value for the multiplier is then multiplied by $B^a$ for July and the new value for bank credit is compared to the actual value for bank credit.

## Actions and Reactions by Commercial Banks: First Eight Months of 1966

This section first presents a historical development of the banks' portfolios as they existed in early 1966. Next, portfolio adjustments by the banks in the months leading up to the Credit Crunch are discussed. The impact of Regulation Q on the banks and consequently on the money supply and bank credit processes is discussed. Finally a discussion of the banks' portfolio reactions in August, the month of the Crunch, is presented.

### *A Historical Development of the Banks' Portfolio Positions in 1966*

To understand the development of the Credit Crunch in August 1966, it is useful to review briefly the historical development of two closely related phenomena. The first of these is the increased use by commercial banks of negotiable time certificates of deposit as a means of acquiring deposits. The second is the growth of state and local government obligations (municipals) as a component of the commercial banks' asset portfolios.

***Negotiable CD's*** – Until the late Fifties commercial banks did not bid actively for time deposits. In the early Sixties large commercial banks, faced with rising loan-deposit ratios and the possible loss of deposits of business firms to other higher-yielding market assets, began actively to seek deposits by issuing large CD's. This action by the banks marked a significant change in banking practice. The banks began to compete for funds in the most interest-rate-sensitive sector of the money market. CD's were in competition with such interest-rate-sensitive assets as Treasury bills and commercial paper. Also, the attitude developed among some banks that CD's could be used as an avenue to borrow funds whenever attractive investment opportunities appeared.

From 1960 through mid-1966 large commercial banks increasingly relied on CD's, especially large denomination negotiable CD's, as a means of attracting deposits. Time deposits, acquired by issuance of large denomination CD's, accounted for 40 per cent of the increase in time and savings accounts at weekly reporting member banks from 1961 to the end of 1965. Total outstanding CD's in denominations of $100,000 or more at member banks rose from $2.9 billion on December 30, 1961 to $17.7 billion on May 18, 1966,

and the number of member banks issuing large CD's rose from 232 to 632.[13]

As commercial banks sought to issue an increased volume of CD's in an environment of generally rising market interest rates, the cost to the banks of acquiring these funds rose. After remaining at around 2.5 per cent through the middle of 1963, the new issue rate on CD's rose steadily, reaching an average of 4.07 per cent in the last quarter of 1964 and then increased to an average of 4.58 per cent in the fourth quarter of 1965. After the increase in Regulation Q ceilings in December 1965, yields offered by banks rose sharply, reaching the Regulation Q ceiling of 5½ per cent in the third quarter of 1966.

The rising cost of acquiring deposits by bidding in competition with other short-term money market instruments meant that the banks had to begin to acquire assets with yields high enough to cover this increased cost. Over the 1961 through mid-1965 period the rate on bank short-term business loans remained very stable at around 5 per cent. The prime rate, which represents a minimum rate on somewhat longer-term business loans, was set at 4.5 per cent by commercial banks in August 1960 and remained at this level until December 6, 1965. Given supply and demand conditions for bank credit by the business sector until mid-1965, commercial banks were unable to employ the funds acquired from CD's at higher yields in short-term loans to business.

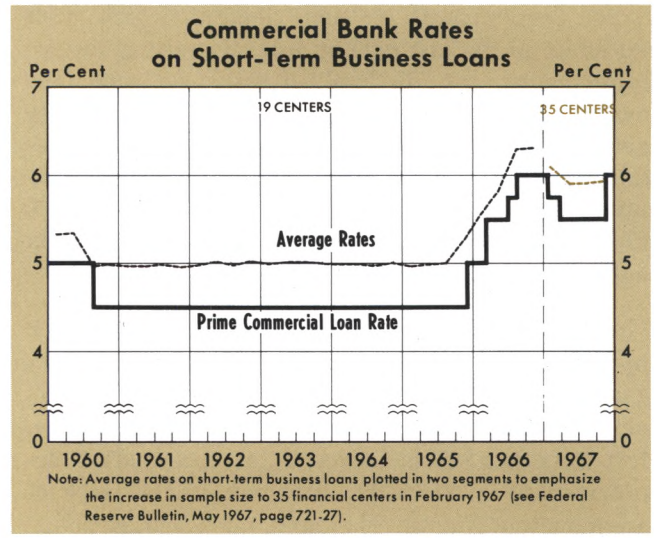
***Banks' Municipal Portfolios Expand*** – Commercial banks, looking for higher yielding assets in the Sixties, increased sharply their acquisition of tax-exempt municipal securities. Prior to the Sixties commercial banks had not held a large portion of newly issued municipals. In 1960 commercial banks had about 7½ cents of every deposit dollar invested in municipals. By mid-1965 banks' municipal portfolios accounted for almost 12 cents of every deposit dollar. From 1961 through mid-1965 commercial banks put 23 cents of each new deposit dollar into municipal securities, an amount large enough to purchase over 50 per cent of the net volume of municipals issued annually.[14]

The average maturity of municipals held by commercial banks lengthened noticeably from 1961 through 1965. For all national banks in 1965, 51.5 per cent of their total portfolio of municipals had a maturity of 5 years or longer; and 25.5 per cent of their portfolio of municipals was over 10 years to maturity. For large commercial banks the figures were even higher, at 54.7 per cent and 33 per cent, respectively.[15]

As we shall see later in this section, the increased reliance by commercial banks on the interest-sensitive certificate of deposit as a means of attracting funds, together with the increased portion of commercial bank portfolios in long-term municipal securities, had important implications for the developments occurring in the money and capital markets in August 1966.

## *Bank Portfolio Adjustments in 1966*

***Higher-Yielding Business Loans Increase*** – During the first eight months of 1966 the commercial banking system faced heavy borrowing demands from the business sector. Over this period the rates on bank business loans rose sharply. The interest rate charged by large commercial banks on short-term business loans rose from 5.27 per cent to 6.30 per cent. The prime rate – the interest rate at which commercial banks extend business loans to their highest-grade business customers – was raised by the banks in December 1965 from 4½ per cent to 5 per cent. This was the first increase in the prime rate since August 1960. During the first eight months of 1966 the prime rate was raised three more times: on March 10 to 5½ percent; on June 29 to 5¾ per cent; and on August 16 to 6 per cent – at that time the highest prime rate in over 30 years.




[13]Parker B. Willis, *The Secondary Market for Negotiable Certificates of Deposit*, Board of Governors of the Federal Reserve System, 1967.

[14]Jack C. Rothwell, "The Move to Municipals," *Business Review*, Federal Reserve Bank of Philadelphia, September 1966, p. 3.

[15]Rothwell, p. 7.

Even with sharply rising interest rates, the demand for bank credit by the business sector remained strong. Commercial banks rapidly expanded their business loans as yields on these loans rose. Over the first seven months of 1966 commercial and industrial loans by large commercial banks increased $6.3 billion, or by 12 per cent.

***Lower-Yielding Assets Decline*** – To take advantage of the rising yields on business loans, commercial banks restructured their asset portfolios. During the first half of 1966, banks switched from lower-yielding securities to higher-yielding business loans. As can be seen from Table VII, this resulted in a sharp reduction in banks' holdings of Government securities, primarily Treasury bills. From the end of December 1965 through June 1966 commercial banks reduced their holdings of Government securities by $6 billion.

Table VII

SELECTED ASSETS — ALL INSURED BANKS

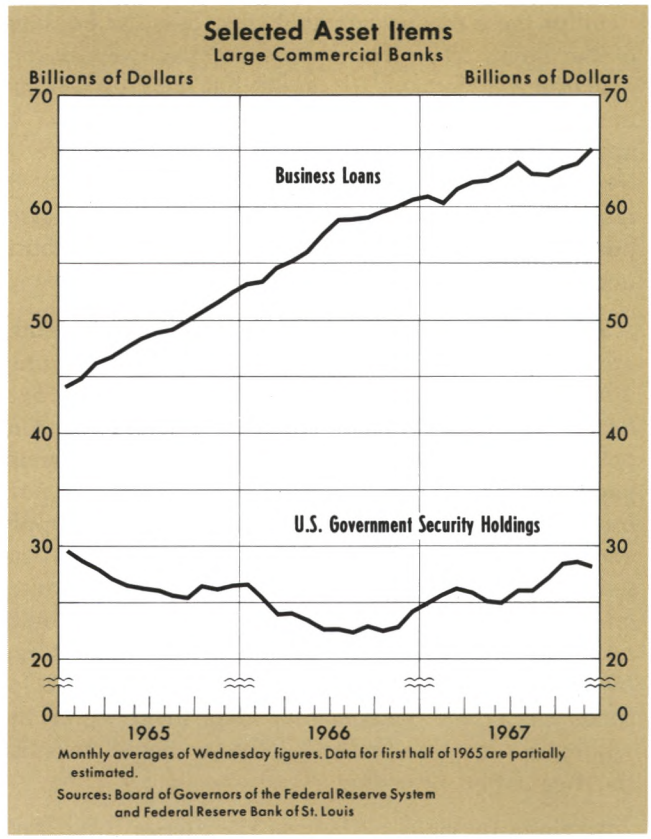
(millions of dollars)

| | December 31, 1965 | June 30, 1966 | Annual Rates of Change |
|---|---|---|---|
| Commercial and Industrial Loans | 70,887 | 76,725 | 17.1 |
| Total U.S. Government Securities | 59,120 | 53,111 | —19.3 |
| (Bills and Certificates) | (13,134) | (9,174) | (—51.2) |
| Municipals | 38,419 | 40,368 | 10.4 |

This restructuring of the banks' asset portfolios reduced their liquidity. Government securities as a per cent of banks' deposit liabilities decreased noticeably and steadily from early 1965 through the first seven months of 1966. This trend prevailed not only for the so-called money market banks, but for all banks. Also, over the period 1965 through July of 1966, banks reduced their ratio of excess reserves to deposit liabilities. This ratio was on average about 20 per cent less in the period January through July of 1966 than in 1964.

***CD's as a Source of Funds*** – Large commercial banks, which specialized in business loans, relied heavily on the issuance of certificates of deposit as a source of funds in the first seven months of 1966. Individual commercial banks competed aggressively for funds by raising the rates paid on certificates of deposit to the Regulation Q maximum of 5½ per cent. From the first week in January to the end of June 1966 large commercial banks increased their large denomination CD's outstanding by $2 billion.

Large commercial banks, restricted under Regulation Q to a maximum rate of 4 per cent on passbook




savings, began in early 1966 to compete aggressively for household savings by issuing small denomination non-negotiable certificates of deposit. By issuing these small denomination CD's, banks were able to compete directly with assets offered savers by other financial institutions.[16] In a survey of member banks covering the period December 1965 to May 1966, the Federal Reserve found that commercial banks with total deposits of $500 million and over increased their consumer-type time deposits by $3 billion.[17] As the spread between interest rates paid on passbook savings and non-negotiable CD's widened, the increase in consumer-type CD's was partially offset by a decline of $1.8 billion in passbook-type savings deposits at these banks.[18]

[16]Some large commercial banks began issuing consumer-type CD's in the form of 5-year discount bonds. Some of these CD's could be purchased in $25 multiples at prices below $20 and could be cashed-in 90 days after purchase, on any 90-day anniversary thereafter, or between 90-day periods with written notice.

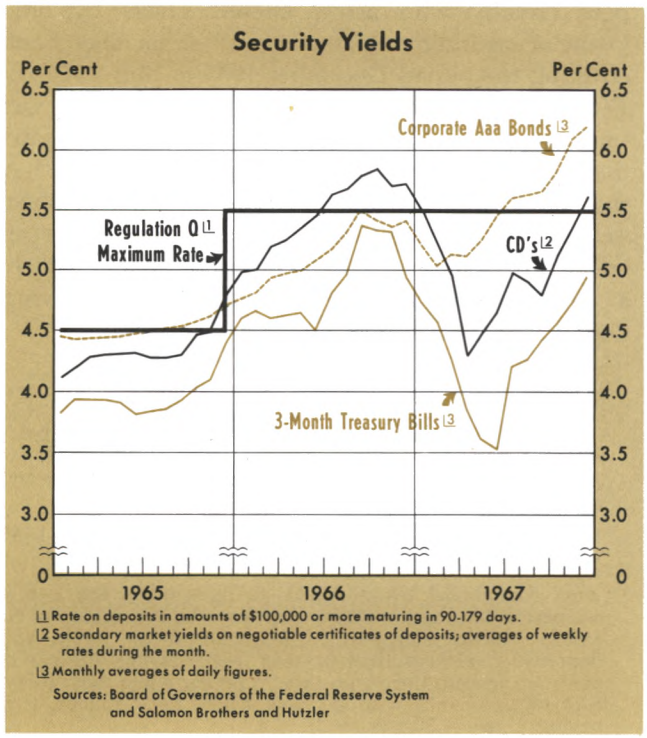
[17]"Changes in Time and Savings Deposits: December 1965-May 1966," *Federal Reserve Bulletin*, August 1966.

[18]Large commercial banks appear to have taken the lead in competing for consumer-type deposits. In May 1966, of the member banks surveyed, 61 per cent of the banks with deposits of $100 million or over were paying above 4.50 per cent on consumer-type time deposits, while only 14 per cent of the banks with deposits below $100 million were paying above 4.50 per cent.

All of these factors operated to reduce the liquidity of the banks. The banks were not passively accommodating the demand for credit, but were responding in a manner that economic theory would predict of any profit-maximizing economic unit. As the rate of return on business loans rose relative to the rate of return on other assets, banks restructured their asset portfolios to contain more of the higher-yielding business loans.

***The Effects of Regulation Q*** — Commercial banks are free to raise the yield they offer on CD's only up to ceiling rates set by the Federal Reserve System with Regulation Q. In contrast, yields on competitive assets such as Treasury bills and commercial paper are not restricted by any artificial ceiling rate, but are determined by free market forces of supply and demand. Therefore, when short-term market interest rates rise above the Regulation Q ceiling rates on time deposits, commercial banks find their ability to attract and hold such deposits determined not by their willingness to pay the market price for funds in a free market, but dependent upon the willingness of the Federal Reserve Board to raise the Regulation Q ceiling rates.

In three previous periods in the Sixties, July 1963, November 1964, and December 1965, when the secondary market interest rate on outstanding certificates of deposit issued by commercial banks moved above the Regulation Q limit on newly issued CD's, the Federal Reserve System raised the Regulation Q ceiling. This policy action allowed commercial banks, by offering yields on time deposits competitive with other available market assets, to compete effectively with other borrowers.




[1] Rate on deposits in amounts of $100,000 or more maturing in 90-179 days.
[2] Secondary market yields on negotiable certificates of deposits; averages of weekly rates during the month.
[3] Monthly averages of daily figures.
Sources: Board of Governors of the Federal Reserve System and Salomon Brothers and Hutzler

However, when the market rate on outstanding CD's moved above the Regulation Q ceiling in the summer of 1966, the Federal Reserve System refused to raise Regulation Q ceilings. One factor influencing this decision was the pressure from the House Banking and Currency Committee to restrain commercial banks' competition with savings and loans and mutual savings banks for savings. In July 1966, in order to further restrict commercial banks in their attempt to attract consumer time deposits, the Federal Reserve lowered the maximum interest rate payable on multiple maturity time deposits from 5½ to 5 per cent on 90-day or more multiple maturities and from 5½ to 4 per cent on multiple maturities of less than 90 days.

In the first week of July, the secondary market rate on outstanding negotiable CD's rose above the maximum rate of 5½ per cent on new issues. After early July, with CD's selling at a discount in the market, large commercial banks found it increasingly difficult to attract and hold these funds. New York banks were able to increase their outstanding CD's by only $46 million in July.

With the market yield on CD's rising above the ceiling rate on new issue CD's, and the Board of Governors refusing to raise Regulation Q ceilings and increasing reserve requirements on certain classes of time deposits, banks now realized they could no longer rely on time deposits to acquire funds to expand their flow of credit to the business sector. Further, the banks now expected a reversal of the flow of time deposits.

In August over $3.7 billion of outstanding negotiable certificates of deposit matured at large commercial banks, and $6.7 billion in negotiable CD's were scheduled to mature in the September-October period. By middle and late August there were expectations of a large loan demand converging on the commercial banking system just as the expected heavy runoff of certificates of deposit occurred. Large offerings of Treasury tax-anticipation bills were expected in late August, and the expected sale of Federal National Mortgage Association participation certificates and other Federal agency financings were slated to add to an already heavy schedule of new corporate and municipal offerings. There were grow-

ing fears in the capital and money markets that the major suppliers of funds would be unwilling to continue to supply funds at currently existing interest rates.

Hopes for a tax increase to halt inflationary pressures had faded in August. The feeling spread in the financial markets that the Federal Government did not or would not recognize the pressures its operations were placing on these markets. The conviction spread that the major burden of economic restraint would fall on monetary policy.[19]

## *Banks' Reactions in August*

Banks had never before experienced a large outflow of time deposits. The expectations of a runoff of CD's and the uncertainty about the magnitude of the outflow and its effects on their operations led individual banks to desire to increase their liquidity, by acquiring a larger portion of the existing stock of reserves to meet the expected increase in required reserves as time deposits decreased and demand deposits increased. To continue to expand business loans while simultaneously building up their reserves, the individual banks attempted to restructure their portfolios.

Over a period of time, if an individual bank wants to increase the liquidity of its portfolio, the three main ways it may accomplish this are:

(1) Member banks may attempt to borrow from the Federal Reserve banks via the discount window;
(2) Commercial banks may borrow short-term funds in the Federal funds market; or
(3) A commercial bank may sell part of its investment assets and/or reduce its volume of loans.

Methods (1) and (2) are essentially short-term in nature. They are designed to permit commercial banks time to restructure their portfolios via method (3).

***Member Bank Borrowing*** – Federal funds and borrowings at Federal Reserve banks, to a large extent, may be viewed by individual member banks as alternative sources of short-term funds. The amount of member bank borrowing at the Federal Reserve discount window rose steadily from an average of $402 million in January to $722 million in May 1966. In June the rate on Federal funds passed 5 per cent; in July most trading was at rates above 5.25 per cent; and in August the rate moved above 5.5 per cent with some trading occurring at the 6 per cent level. However, after May, despite the sharply rising rates on Federal funds, and despite increasing demands by the banks for short-term funds (to permit them to adjust their portfolios to take advantage of the rising yields on business loans), member banks did not noticeably increase their borrowings at the Federal Reserve banks.

The question then arises why, in the summer of 1966, with the spread between the 4.5 per cent discount rate and the market rate on Federal funds widening, there was no marked increase in the amount of member bank borrowings at the Federal Reserve banks.

This question can be answered largely by taking into consideration the Federal Reserve system's policy of discouraging continuous borrowing by any one member bank at the discount window, which tends to become progressively more restrictive as the aggregate level of member bank borrowing rises and remains at a higher level for an extended period. Although the Federal Reserve banks did not explicitly refuse credit to any member banks in 1966, there are strong indications that, as the level of member bank borrowing approached the $750-800 million range, rather than raising the cost of such borrowing to ration potential borrowers out of the market, the result of some Federal Reserve banks' tighter administration of the discount window was, in effect, to "close the window" to further increases in the level of member bank borrowing.[20]

Beginning in about June, the Federal Reserve banks may have used tighter administration of the discount window to force member banks to reduce their borrowings, or member banks may have felt that the Reserve banks would show great reluctance to extend additional accommodation. Also, some member banks may have decided to husband their "goodwill" at the discount window to meet expected future emergency cash demands.

***Banks Liquidate Municipals*** – Since the banks had reduced their holdings of Government securities to

[19]On August 25, 1966, the Wall Street Journal reported that J. Dewey Daane, a member of the Board of Governors, had stated that if monetary policy was going to have to carry all the burden of fighting inflation, a further rise in interest rates was inevitable. He asserted that he believed such further increases in interest rates were coming.

[20]Borrowing at the Federal Reserve Banks is a privilege which may be extended by a Reserve Bank to member banks in its district. It is not a right of member banks to demand accommodation. To a significant degree, each district Reserve Bank sets its own policies on lending to member banks.

near a minimum level, and believing that access to the discount window was limited, the banks in August attempted to adjust their reserve positions to increase their cash holdings by selling municipal securities. To do so, they had to induce other economic units to restructure their asset portfolios.

In the terminology of the financial community, the market for municipal bonds could be described as much "thinner" than the market for Government securities. Within the bond markets a small number of specialists in the buying and replacement of securities, called dealers, perform an important function. These dealers broaden and add depth to the bond market by standing ready to buy and sell debt obligations of the Federal government, state and local governments, and corporations, and facilitate shifting these assets to other individuals or institutions. Hence, their operations tend to increase the liquidity of these assets. Dealers rely heavily on borrowed funds to finance their positions (holdings) in these securities; they are heavily dependent on commercial banks for their financing requirements, especially their residual financing.

Dealers are especially sensitive to changes in monetary conditions because of the special characteristics of their business. During periods when interest rates are falling, dealers are able to anticipate that if they buy securities, they can distribute these securities at a higher price as interest rates fall. Inspired by the profit motive, dealers actively add to their holdings and increase their participation in the securities market when rates are falling.

In periods of rising interest rates, dealers may find that they are unable to distribute their security holdings at prices above what they paid. Also, they find that the cost of borrowing funds to carry their positions rises. When dealers expect market interest rates to rise, they attempt to reduce their positions and engage less actively or withdraw from participation in the securities market. For those dealers who remain in the market, the residual financing function of the commercial banks becomes extremely important.

Commercial bank loans to dealers are viewed by the individual banks as a source of liquidity. Such loans are callable at the discretion of the lending bank. Also, for the banks the cost of reducing dealer loans is less than reduced lending to business customers. During the summer of 1966 as the yields on business loans increased, commercial banks, especially New York banks, sharply increased their lending rate to dealers. The lending rate of New York banks to dealers in Government securities rose from a range of 5¼ to 5¾ per cent for renewals and new loans in the first week of June to ranges of 6 to 6½ per cent at the end of July. The lending rate to dealers then rose to 6⅛ to 6⅝ per cent in mid-August.

Dealers responded to the sharply rising level of credit market interest rates and the increased cost of borrowing funds to carry their positions by (1) reducing their borrowing from banks, and (2) sharply reducing their participation in the bond market. From a high of $4.5 billion on July 6, loans by large banks to dealers and brokers for purchasing or carrying securities fell to $3.8 billion by the first of August, then fell by an additional $0.4 billion during the next three weeks. Dealers' positions in Government securities decreased from an average daily level of $3.6 billion over the first eight months of 1965 to an average daily position of $2.1 billion over the first eight months of 1966. In the July to August period of 1966, dealers' holdings of Governments was only half as large as in the same period of 1965. Dealers also attempted to shorten the maturity of their holdings. Government securities due within one year as a per cent of total dealer positions in Governments rose to 92.7 per cent in the July-August period of 1966, compared to 82.5 per cent in the same period of 1965.

After the middle of August, with banks attempting to reduce their holdings of municipal securities, with other principal purchasers of municipals themselves faced with large expected cash demands, and with dealers in the securities attempting to reduce their own positions, price quotations for these securities became almost nominal. Only a few dealers were willing to buy municipal bonds in the secondary market. Commercial banks found they could shift their holdings of municipals to other economic units only at sharply lower prices. Thus, banks found they could buy the liquidity they desired only at a rapidly rising cost.

***Business Loans*** — Commercial banks maintained a high level of business loans in the early summer of 1966. After totalling $56.4 billion at the start of June, business loans by large commercial banks rose $2.3 billion by the first week in July.

Over the last part of July and in early August, credit market interest rates rose sharply, reinforcing the expectations by banks of significant run-offs in time deposits. There was no reduction in the business sector's demand for credit. Expecting high interest rates in the future and worried about the future

"availability of credit," corporations, relative to past periods, placed record demands for credit. The banks reacted to the continued demand for business loans, the impact of Regulation Q, and the tighter monetary policy by attempting to reduce their holdings of municipals.[21] A classic liquidity crisis in the municipal bond market resulted.

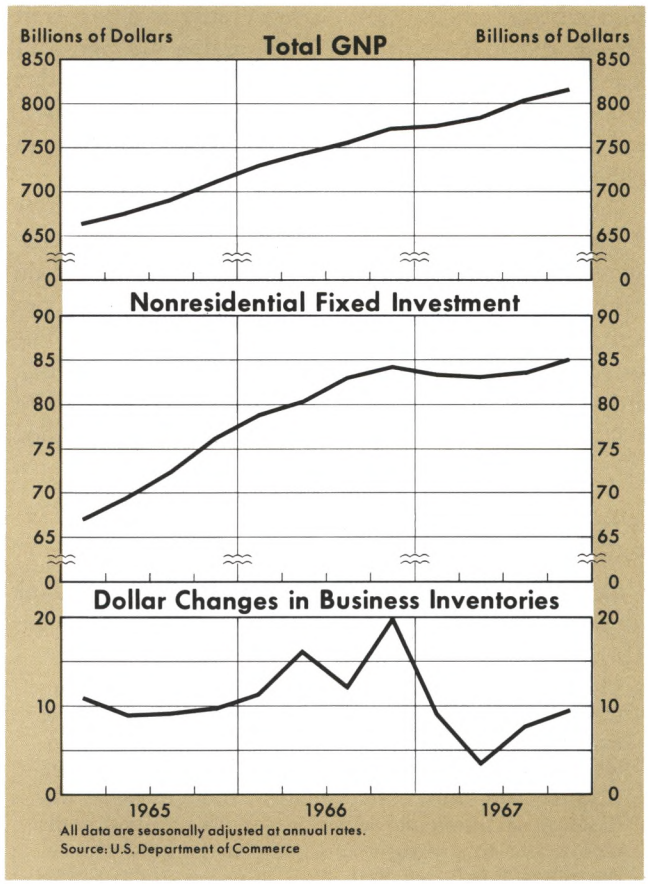
Compared to July no large increase in base money occurred in August. The drastic reversal of the impact of open market operations on the growth of base money and the full impact of higher reserve requirements on time deposits had a decided contractionary effect on the bank credit process. The statements of Federal Reserve officials indicated to the banks that the intent of policy was to maintain monetary restraint.

With all other avenues of adjustment exhausted, the banks reduced their lending to the business sector. Between the reporting dates of August 3 and August 17, large commercial banks reduced their business loans by $65 million. In the last half of August, banks decreased their flow of credit to the business sector at a much more rapid pace. In this period large commercial banks' holdings of business loans fell by $668 million. As the commercial banks reduced their lending to the business sector, cries from the business sector, not only about the cost of funds but the actual availability of funds, were added to the cries of disorder and fears of a possible panic emanating from the financial markets.

> Increasingly, even [business] customers having formal loan agreements or confirmed lines of credit with their commercial banks became uncertain as to whether these commitments would, or could, be honored.[22]

## After August

During the last quarter of 1966 Gross National Product and prices continued to expand at rapid rates. GNP expanded at an 8 per cent rate and the consumer price index rose at a 3.2 per cent rate. In




the same period the money supply showed no net change. In September bank credit temporarily rose sharply, but in October it decreased sharply and remained at this lower level through November. Over the last part of 1966 there was a sharp decline in the demands placed in the credit market by the business sector, with the total quantity of funds demanded returning to a level comparable to the same period of 1965. Reflecting the much-reduced increase in the supply of new securities, rates on long-term Government bonds, corporate bonds, and municipals stabilized near the high levels reached in August. Yet, money market interest rates continued to rise through the late fall of 1966. The continued increase in short-term yields, especially on Treasury bills, reflected investor expectations of increased Treasury financing.[23]

In the first two quarters of 1967 the effects of nine months of an unchanged money stock showed up in a marked slowing in the rate of increase of aggregate

[21]This does not in any way imply an argument for using Regulation Q as a restrictive policy instrument. If yields banks can offer to attract time deposits are artificially held below other credit market interest rates, and consequently disintermediation occurs, this does not necessarily mean that the *total* flow of credit is reduced. For example, during the second quarter of 1969, Regulation Q ceilings held yields on time deposits below other market rates. During this period time deposits at all commercial banks decreased by $2.4 billion, but during the same period the volume of commercial paper rose by $2.8 billion.

[22]Roy R. Reierson, "Is a Credit Crunch in Prospect," Senior Vice President and Chief Economist, Bankers Trust Company of New York, January 20, 1969.

[23]Investors expected that the cut in agency financing called for in the President's September 8 program would mean that the Treasury would have to sell more Treasury bills to meet expected cash demands. On September 20 the Treasury forecast that its overall cash demands for the rest of 1966 would total about $8 billion, and that most of this amount would be raised through the sale of Treasury bills.

demand and prices. GNP rose at only a 2 per cent rate in the first quarter of 1967 and a 4.9 per cent rate in the second quarter. The consumer price index rose at a 0.7 per cent rate in the first quarter of 1967, and at a 2.8 per cent rate in the second quarter of 1967.

The sharp decline in the growth rate of aggregate demand reflected primarily an adjustment by the business sector. Spending by the business sector on structures and durable goods decreased at a 2.8 per cent rate during the first two quarters of 1967. The accumulation of inventories decreased very sharply, dropping from an annual rate of $19.9 billion (IV/1966) to $9.0 billion (I/1967) and to $3.4 billion (II/1967).

## *Additional Restraint and Then a Policy Move Toward Ease*

On September 1, 1966, each Federal Reserve Bank president issued a letter to member banks in his district. The stated purpose of the letter was:

> The System believes that the national economic interest would be better served by a slower rate of expansion of bank loans to business within the context of moderate overall money and credit growth. Further substantial adjustments through bank liquidation of municipal securities or other investments would add to pressures on financial markets. Hence, the System believes that a greater share of member bank adjustments should take the form of moderation in the rate of expansion of loans, and particularly business loans.
>
> Accordingly, this objective will be kept in mind by the Federal Reserve Banks in their extensions of credit to member banks through the discount window.

The main purpose of the letter apparently was to bring pressures on the commercial banks to cut back on business loans while affording them access to the discount window to cushion the portfolio adjustments. Regardless of what the desired intent of the September 1 letter was, it seems to have been interpreted in many quarters as a threat by the central bank, rather than an indication that the Federal Reserve planned to make the discount rate available to the banks to ease their process of portfolio adjustments.[24] However, the increase in business loans by large commercial banks had already stopped in early August and then had showed a sharp decline in the last part of August. Also, the greatest danger of a liquidity crisis in the municipal bond market had already occurred in the two weeks prior to the September 1 letter.

[24]In the September 2, 1966 *Wall Street Journal*, the article reporting the September 1 letter was headed, "Reserve Board Tells Banks to Curb Loans, Threatens Less Lending to Ones That Don't."

In mid-September of 1966 the Federal Reserve again increased reserve requirements against time deposits. These requirements against member bank "other" time deposits in excess of $5 million were raised from 5 to 6 per cent. The effect of this restrictive policy action was to reduce further the amount of money a given stock of base money would support. The money multiplier (the item reflecting how large a stock of money a given stock of base money could support) declined throughout the remainder of 1966.

In the late fall of 1966 the intent of the Federal Reserve System was to move toward an "easier" policy:

> Federal Reserve open market operations during the final six weeks of 1966 were directed at attaining somewhat easier conditions in the money market and providing the base for a resumption of bank credit growth. The easing that had already been permitted in the immediately preceding weeks under the proviso clause had contributed to a more relaxed atmosphere throughout financial markets but bank credit had remained weak and interest rates had risen for a time in the first half of November.
>
> Against this background, the Federal Open Market Committee voted at its November 22 meeting to take a modest but overt step toward ease . . . A move toward somewhat greater ease was voted at the Committee's December 13 meeting.[25]

During the last four months of 1966 open market operations, on balance, again began to exert a strong expansionary effect on the supply of base money. From August through December, Federal Reserve holdings of Government securities increased at an 11 per cent annual rate. These open market operations were not offsets to other factors affecting the base, but resulted in a 5.8 per cent rate of increase in the adjusted source base. The expanding supply of base money offset most of the effect of the decreasing multiplier, and the money stock remained little changed to the end of the year.

The expansionary effect of open market actions continued through the first half of 1967. Over this period System holdings of securities rose at a 10 per cent annual rate and the adjusted base grew at a 5.6 per cent rate. In December 1966 bank credit began to expand at a rapid rate and continued at an 11.4 per cent rate through 1967. Beginning in February 1967 the supply of money, responding to the rapid rise in base money, began to expand at a rapid rate,

[25]See *Annual Report, 1966*, Board of Governors, p. 259.

showing a 6.4 per cent increase in the following twelve months. Reflecting the slowing in the real sector and the renewed expansionary influence of Federal Reserve policy actions on the monetary base, credit market interest rates declined noticeably during most of the first half of 1967.

Near the end of the second quarter of 1967, reflecting the renewed acceleration of the money supply and bank credit, aggregate demand and prices began to increase again at accelerated rates. In the third quarter of 1967, GNP rose at a 9 per cent rate, and the price deflator rose at a 4.2 per cent rate. In the fourth quarter, GNP rose at an 8 per cent rate, and the rate of increase of the price deflator rose to 4.5 per cent. Reflecting the feedback effects from the real sector to the credit markets of the renewed rapid rise in demand and prices, interest rates, which had declined over the first part of 1967, began to increase sharply by July of 1967. The marked rise in interest rates was evident in short-term rates such as Treasury bills and also in long-term rates on Aaa corporate and municipal bonds.

## Summary and Conclusions

The impact of Federal Reserve actions, through open market operations and reserve requirement policy, became much more restrictive in July through August 1966, the period of the so-called "Credit Crunch." These actions took place within an economic environment much different from recent prior periods. This article has discussed and analyzed the effect of this changed economic environment on the money supply and bank credit processes. It was pointed out that in 1966, relative to previous periods in the current expansion:

(1) The credit markets were faced with exceptionally large credit demands from the business sector and the Federal agencies;

(2) The business sector increased its use of commercial banks as a major source of credit;

(3) To take advantage of the profitable opportunities offered by rising rates on business loans, banks reduced their liquidity positions by decreasing their holdings of Government securities and excess reserves; and

(4) For the first time, commercial banks faced a situation where Regulation Q ceiling rates severely restricted their ability to bid for time deposits.

Money and bank credit during early 1966 continued to expand at the very rapid rates prevailing in the last half of 1965. This expansion reflected increases in their respective multipliers which more than offset a reduction in the rate at which the monetary base was supplied by the Federal Reserve. After April, money remained about unchanged to the end of the year, as a result of a decrease in the money multiplier, which more than offset a resumption in April of growth in the monetary base at its late 1965 rate. Bank credit, however, expanded through July at an 8 per cent rate, then slowed markedly to late 1966.

The Federal Reserve should not have been surprised that money and bank credit continued to expand through the first quarter of 1966, even though there was a desire to exert a restraining influence on total demand. The rapid expansion of base money in the last half of 1965, and the sharply rising yields on business loans reflecting strong demands by the business sector for bank credit, caused money and bank credit to rise rapidly in early 1966. An increase in the stock of base money must be absorbed into the asset portfolios of the banks and the public, and such an adjustment is not an instantaneous process. In early 1966, as this adjustment process proceeded (reflected in a rise in the money and bank credit multipliers), market interest rates and prices increased, and the stocks of money and bank credit expanded.

In the first seven months of 1966 the individual commercial banks behaved in a manner that economic theory would predict for any rationally behaving profit-maximizing economic unit. As the yields on business loans increased, the banks used every avenue available to expand their holdings of these high-yielding assets. With the opportunity cost of liquid assets rising, banks responded by reducing their holdings of lower yielding liquid assets – Government securities, excess reserves, and dealer loans.

The continued increase in bank credit after the money stock ceased to expand can be largely explained by the success of banks in acquiring time deposits. An increase in the ratio of time deposits to demand deposits increases the bank credit multiplier but decreases the money multiplier. With rising yields available on business loans, banks bid aggressively for time deposit funds to meet business demands for credit. Operating on past experience, banks did not expect that the Federal Reserve would permit Regulation Q ceiling rates to prevent them from bidding competitively for time deposits.

In July policy actions by the Federal Reserve began to exercise a much more restrictive effect on the commercial banks. The refusal of the Federal Reserve to raise Q ceilings as credit market interest rates rose restricted the ability of banks to compete for time deposits. In late July the increase in reserve requirements on time deposits exercised a further restrictive effect on the bank credit process. The Federal Reserve, by its open market actions, offset most of the contractionary effect of these two policy actions. In July the stock of base money rose by $600 million.

Given the large increase in base money in July, the Federal Reserve should also not have been surprised at the large rise in bank credit in that month. Rather, given the upward trend in the bank credit multiplier over the previous months, the central bank should have been warned by the fact that the increase in bank credit was not much greater and by the fact that the money stock showed no change.

In August the marked reversal of the impact of open market operations on the growth of base money added a further restraining influence. The banks were forced to make a portfolio adjustment. This portfolio adjustment took the form of an attempt by banks to reduce their holdings of municipals. The result of this attempted portfolio adjustment was manifested in the credit crunch in August.

In a period of time in which the commercial banks are forced by monetary policy to restructure their asset portfolios, one would expect there to be "above average pressure" in the financial markets. That banks are forced to reduce their rate of production of bank money and reduce the credit they extend to the rest of the economy are the key elements of a tighter or more restrictive monetary policy. This is a necessary preliminary to the desired policy goals of reduced aggregate demand and hence a reduced rate of increase of prices.

In 1966 the intent of monetary policy was to slow the growth rate of aggregate demand and hence reduce the inflationary pressures building up in the U.S. economy. This goal was achieved in the first part of 1967, as increases in aggregate demand and prices slowed very markedly. This beneficial result was preceded by a severe but short-lived liquidity crisis in the money and capital markets in August 1966.

A historical analysis of the 1966 period suggests that by following a less drastic contractionary policy in August (permitting less of a decline in the stock of base money), and by following a more contractionary policy with respect to the growth rate of base money over the remaining months of 1966, the Federal Reserve could have achieved the desirable ultimate results of policy mentioned above. Also, more gradually restrictive policies would quite likely have prevented the severe wrenching of the money and capital markets that occurred in August. Such a policy, of course, would not have removed the necessity for banks to make adjustments in their portfolios. It would have permitted this adjustment to be spread over a longer period of time, thereby reducing the threat of near-panic selling, and allowing a smoother adjustment to a policy of monetary restraint.

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