

# FEDERAL RESERVE BANK OF ST. LOUIS

FEBRUARY 1970



## REVIEW



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# Real Economic Expansion Pauses

**E**

A few months ago the major question about economic policy was when were the effects of the progressively more restrictive monetary policy going to appear. Now that the effects of policy are definitely evident in trends of total spending and real output, the major questions are how far will the downturn go, and how long will it last.

Production has weakened considerably since mid-1969. Real output of goods and services, which rose at a 4 per cent annual rate from 1957 to 1969, increased at only a 2 per cent rate from the second to the third quarter last year and showed no increase in the fourth

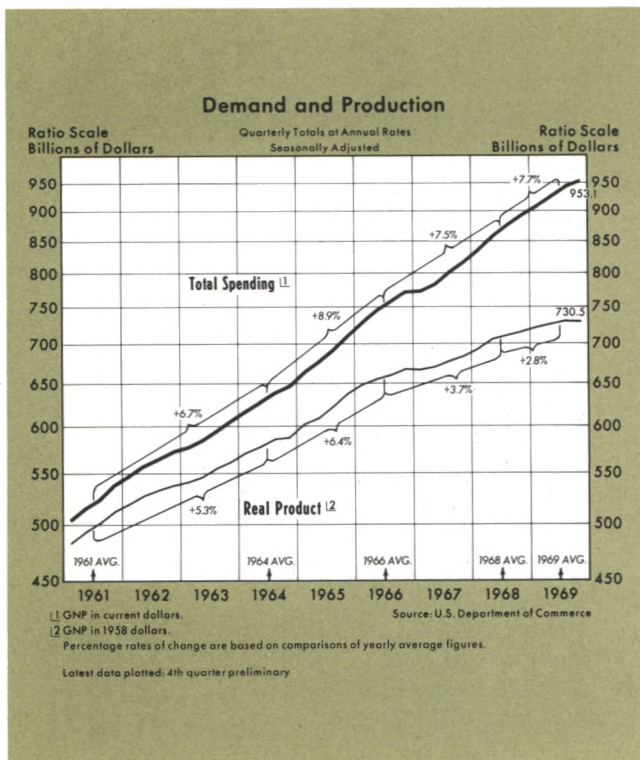
quarter. Industrial production declined at a 5 per cent rate from July to December. Payroll employment rose at only a 1 per cent rate from June to December, compared with a 3.7 per cent rise in the previous year.

Production has responded to a slower growth in demand. Growth of final sales of goods and services (total sales less those for inventory purposes) declined from an 8.3 per cent annual rate in the first half of 1969 to a 6.3 per cent rate in the third quarter and to a 5.8 per cent rate in the fourth quarter. Retail sales in the last part of 1969 were rising at about a 1 per cent annual rate, compared with a 4 per cent rate in late 1968 and early 1969. Sales growth has probably slowed further in January and early February.

The slower sales growth reflects more restrictive public policies. In mid-1968, taxes were raised and growth of Government spending was markedly curtailed. In early 1969 growth of the money supply slowed from the 7.3 per cent annual rate of the previous two years to a 4 per cent rate, and then slowed further to less than a 1 per cent rate from June to December.

The more restrictive fiscal and monetary actions were taken with a view to slowing the excessive spending and inflation and, indirectly and ultimately, to reducing the inordinately high interest rates. The general price level, which was nearly stable in the early Sixties, rose 1.7 per cent during 1965, 3.2 per cent from the fourth quarter of 1965 to the second quarter of 1967, 4 per cent in 1968, and 5.1 per cent in 1969.

According to our studies, inflationary pressures may continue strong as a result of the excesses of the 1965-68 period. During 1970, prices are likely to rise at relatively rapid rates. At the same time, as a result of the delayed effects of the restrictive actions and the consequent effect on total spending in 1969, total real output is not likely to rise in 1970 and may even decline slightly. The rate of unemployment will probably show a considerable increase in the last half of the year.





To put recent developments into perspective this article reviews briefly the changing character of the eight and one-half year economic expansion from 1961 to mid-1969, and then discusses the evidences of slow-down that are appearing in the economy.

### **Economic Expansion 1961-1968: Changing Characteristics**

In many respects, the early years of the economic expansion were quite different from the more recent years. In the 1961 to 1964 period, most of the spending on goods and services was reflected in a rise of real output, while prices remained relatively stable.

During this period of surging real output and generally stable prices, corporate profits before taxes rose at a 10 per cent average annual rate, personal income rose at an average rate of 6 per cent, and wages of production workers in manufacturing industries increased at an average rate of 3.7 per cent. Since prices remained fairly stable, most of these gains in profits, income, and wages represented real gains for the recipients.

In the two-year period from 1964 to 1966, real output and employment expanded more rapidly than during the previous three years. However, one very noticeable feature of the 1964-66 period was the more rapid rise of prices, compared with the 1961-64 period. In the 1964-66 period the general price index rose at a 2.3 per cent annual rate, considerably above the 1.3 per cent rate of increase over the previous three years. The faster increases in prices offset some of the nominal gains of the recipients of increased profits, personal income and wages.

In the following two years, 1966-68, except for a 5-6 month period in early 1967, GNP continued to expand at a rapid rate. However, the economy was now placed under increasing strain to meet the continued rapid rise in the demand for real output.

### ***Accelerating Prices***

The most striking feature of the 1966-68 period was the accelerating price level, with the general level of prices rising at a 3.6 per cent annual rate, almost three times faster than during the 1961-64 period. In the later period approximately 50 per cent of the rise in total spending reflected rising prices.

Recipients of rising levels of wages and other personal income were affected by accelerating prices.

For example, though the money wages of production workers rose at a 4.4 per cent average annual rate from 1966 to 1968, considerably faster than the 3.7 per cent rate from 1961-64, their real wages rose at only a 0.9 per cent annual rate from 1966 to 1968. This rate of real increase in wages was less than half as rapid as that during the 1964-66 period.

### ***Rapid Rises in Interest Rates***

Another noticeable distinction between the first part of the 1961-69 period and the last half was the behavior of market interest rates. The 1961-64 period was characterized by stable or slowly declining long-term interest rates and slowly rising short-term rates. The last half of the period was characterized by progressively more rapid increases in both long- and short-term interest rates. These rapid rises in the level of market interest rates reflected mainly the acceleration of prices, which resulted from an overly expansionary monetary policy. The "historically high levels of interest rates" reflect not a "tight monetary policy," but the eventual results of the very expansionary monetary policy pursued by the Federal Reserve until early 1969.

As the economy moved into 1969 the switch in the predominant characteristics of the economic expansion became even more evident. Over the first half of 1969, although GNP spending continued to expand at a 7.4 per cent rate, real output grew at only a 2.3 per cent rate. Approximately 70 per cent of the expansion in GNP was price inflation.

The accelerating prices and rapidly rising interest rates of the 1965-69 period followed from: (1) the economy having reached and gone beyond an efficient level of resource use; (2) accelerated growth of public expenditures resulting in government deficits and, most importantly, (3) an excessive rate of monetary expansion.

### **1969: Progressively Greater Monetary Restraint**

In the first half of 1969, in contrast with the previous two years, policy actions by the Federal Reserve became less expansive. After mid-1969, policy actions exerted a very restrictive effect on the monetary aggregates. From January 1967 to January 1969 the money stock increased at a 7.3 per cent rate. During the first half of 1969 the growth rate of money was cut to a 4 per cent annual rate. From June to December there was almost no increase in money balances held by the public.



**Money Stock and Monetary Base**

Ratio Scale  
Billions of Dollars  
250

Monthly Averages of Daily Figures  
Seasonally Adjusted

Ratio Scale  
Billions of Dollars  
250

**Money Stock**

**Monetary Base \***

1962 1963 1964 1965 1966 1967 1968 1969 1970

Sept '62 May '65 Apr '66 Jan '67 Jan '69 June '69 Dec '69

3.8% 6.6% -0.3% 7.3% 4.0% 0.7%

5.0% 2.7% 6.4% 3.4% 2.7%

201.2 78.8

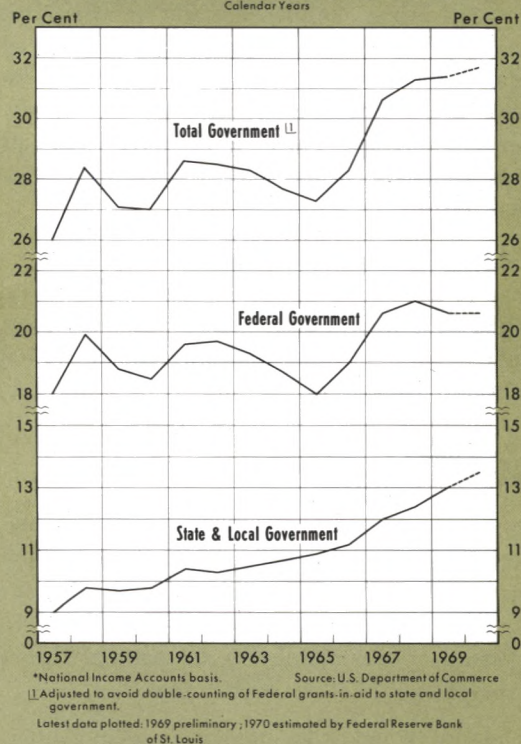
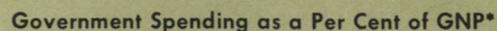
\*Uses of the monetary base are member bank reserves and currency held by the public and nonmember banks. Adjustments are made for reserve requirement changes and shifts in deposits among classes of banks. Data are compiled by this bank.

Percentages are annual rates of change between periods indicated. They are presented to aid in comparing most recent developments with past "trends."

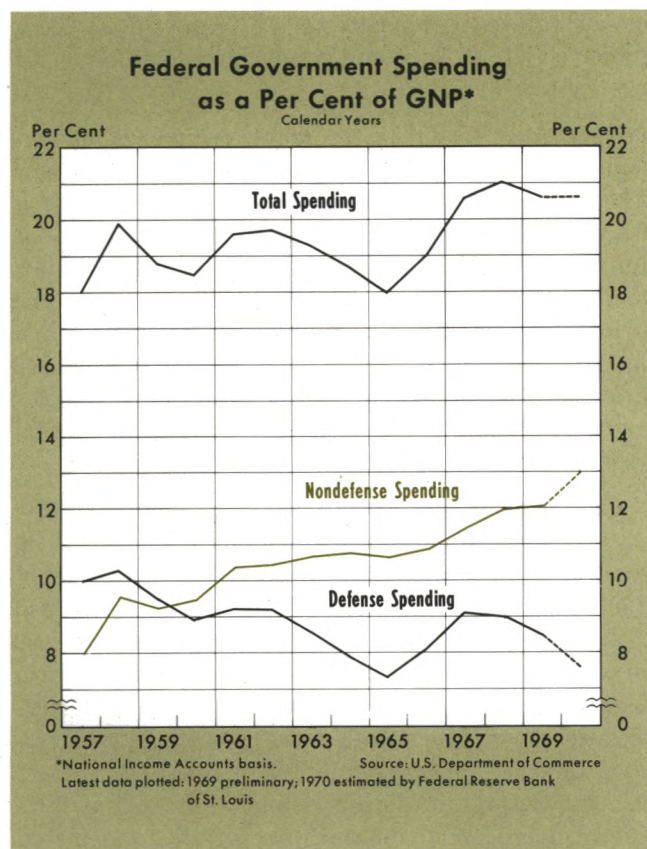
Latest data plotted: January preliminary

The money stock rose sharply in the last half of December. However, this rapid increase in money only reflected temporary technical factors. From the peak in late December, money has declined to an average at the end of January that is the same as the average level from June through November 1969.

The expansionary monetary actions during the 1967-68 period stemmed from accommodation of large Federal budget deficits and, after fiscal policy became restrictive in mid-1968, a desire to cushion an expected moderation in total spending growth in late 1968. The Federal budget has shown a slight surplus since 1968, and Government borrowing needs have been greatly below those of the 1966-68 period. Consequently, the monetary authorities have been spared







the responsibility of financing large Government borrowing and have been free to pursue a restrictive policy.

As currently estimated by the Bureau of the Budget, the Government plans to maintain a small budget surplus through mid-1971. Expenditures are projected to increase 1.5 per cent rate from fiscal 1970 to fiscal 1971. The budget surplus is not expected to increase, as revenue growth is expected to be slowed by moderate advances of income and profits this year; in addition, the surcharge expires in June. The recent Congressional changes in tax structure will also serve to reduce the growth of revenue. If current budget plans are realized, and they are still subject to Congressional approval, the stance of fiscal policy would allow the monetary authorities considerable discretion in formulating monetary policy.

### Interest Rates

From 1965 to 1969 the sharp rise of interest rates resulted mainly from the increasing demand for loan funds, which, in turn derived increasingly

from rising anticipations of inflation. In 1969 the short-run impact effects of the reduced rate of expansion of the monetary base reinforced the upward pressures of price expectations on market interest rates. Consequently, market interest rates rose very rapidly in 1969. A sharp short-run impetus to market interest rates was to be expected to follow from a much reduced rate of expansion of base money. However, as the effects of the reduced growth rate of money continue to result in reduced demand for real output and consequently a reduction in the demand for credit and less upward pressure on commodity prices, there should be easing in credit market interest rates.

### Total Spending and Components

If economic expansion is evaluated solely by the rate of increase of GNP spending, the restrictive effect of policy actions has become apparent only in recent months. The expansion of GNP slowed to a 6.2

Table I

#### GROSS NATIONAL PRODUCT PRODUCTION AND PRICES — 1969 (Billions of dollars)

Quarter	Nominal GNP	Real Product
I	\$ 16.2	\$ 4.6
II	16.1	3.6
III	18.0	3.9
IV <sup>1</sup>	10.3	-0.1

(Annual rates of change from the preceding quarter)			
Quarter	Nominal GNP	Real Product	Prices
I	7.5%	2.6%	4.9%
II	7.3	2.0	5.2
III	8.0	2.2	5.4
IV <sup>1</sup>	4.4	-0.1	4.7

<sup>1</sup>Preliminary

per cent rate in the second half of 1969, somewhat slower than over the first half of the year. From the second quarter of 1969 to the third quarter of 1969, GNP rose at an 8 per cent annual rate, then slowed to a 4.4 per cent rate from the third to fourth quarter.

Table II

#### CHANGES IN COMPONENTS OF TOTAL SPENDING, 1969<sup>1</sup> (Annual rates of change in parentheses)

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter <sup>2</sup>
Consumption	11.3 ( 8.5)	10.8 (7.9)	7.0 (5.0)	9.4 (6.6)
Fixed Investment	5.2 (18.0)	1.9 (6.0)	2.0 (6.3)	2.0 (6.2)
Changes in Business Inventories	-3.9	0.3	3.8	-2.9
Government Spending	3.3 ( 6.5)	2.9 (5.6)	4.1 (7.9)	1.9 (3.5)
Net Exports	0.3	0.1	1.1	-0.1
Total Spending <sup>3</sup>	16.2 ( 7.5)	16.1 (7.3)	18.0 (8.0)	10.3 (4.4)

<sup>1</sup>In billions of dollars

<sup>2</sup>Preliminary

<sup>3</sup>Components may not sum to totals because of rounding.



Using criteria other than the broad yardstick of total spending, there is considerable evidence that the "economic expansion" came to a halt in late 1969. Since mid-1969 the index of industrial production has declined, while real output and payroll employment have both grown at barely a one per cent rate. Although the dollar value of final sales rose at a 6 per cent rate in the last half of 1969, the real volume of final sales showed almost no increase, compared to a 4.2 per cent annual rate of growth in real volume during 1966-68.

Personal income rose at about a 5 per cent annual rate in late 1969, down from a 9 per cent rate in the preceding year. Taking the rapid rise in prices into account, increases in personal income during the last four months of 1969 represented no gain in real command over goods and services. The slowing in personal income growth has been reflected in a decline in the growth of consumption expenditures, which rose at a 5.8 per cent rate over the last half of 1969 compared to an 8.2 per cent rate over the first half of the year.

Gross private domestic investment increased at a 7.4 per cent annual rate during the last half of 1969, compared to a 5.3 per cent rate over the first six months of 1969. This is the only one of the three major components of GNP that showed a sharp acceleration during the last half of 1969. However, this sharp increase in investment during the second half reflected a large increase in the third quarter. From the third quarter to the fourth quarter, investment spending declined at a 2.5 per cent annual rate.

One area of investment spending that has attracted considerable concern is business expenditure on new plant and equipment. New capital equipment spending by business in 1969 is estimated to have increased 11 per cent, compared to about a 4 per cent increase in 1968. The most recent survey by the Department of Commerce and Securities Exchange Commission indicates that the business sector plans to increase its spending on new plant and equipment by an additional 9.7 per cent in 1970.

When the rise in prices of machinery and equipment are taken into account, using the wholesale price index for machinery and equipment, the 11 per cent increase in 1969 represents about a 7.8 per cent rise in real terms. This increase in real terms, although quite large, is well below the average rate of increase in real terms of 14 per cent over the two years from 1964 to 1966. Assuming no acceleration in prices of

machinery and equipment for 1970, the 9.7 per cent projected rise in spending would represent only a 6.4 per cent real increase.

The projected rise in spending on new plant and equipment is not evenly spread over all industries. The projected rise in manufacturing industries is only 6.4 per cent, or about 3.2 per cent after an adjustment for a continued rise in prices. Of the twenty-one major industry categories in the Department of Commerce — SEC Survey, respondents in nine of the twenty-one industry categories project no change or a decrease in capital spending. For example, the motor vehicles and parts industry projects no increase in capital spending, and therefore a decline in real terms.

Corporate profits are already beginning to show noticeable signs of the deceleration of the growth in total spending. After rising through the first half of 1969, profits declined after midyear. As the slowing in real personal income continues, as the rate of increase of payroll employment continues to slow, and if a sharp increase in government demand for goods and services does not arise to offset the slowing in real private demand, business will likely revise downward its expectations of future demand for real output. Consequently, a significant part of the anticipated spending by the business sector on new plant and equipment may not materialize as 1970 progresses.

### *A Real Interest Rate Guideline*

Although market interest rates on long-term capital borrowing rose very rapidly in 1969, they apparently had little effect in dampening the business sectors' demand for credit. If, instead of focusing attention on market interest rates, real interest rates are considered, then this anomaly of rising market interest rates and rising demands for long-term credit largely disappears. The real costs of long-term borrowing declined slightly over the first three quarters of 1969. Only in the last part of 1969 did the real cost of borrowing show a significant upward movement.

### *Ceilings and Channels of Credit Flows*

As credit market interest rates rose to high levels in 1969, the policies of the Federal Reserve, Federal Home Loan Bank Board, and Federal Deposit Insurance Corporation, which impose ceiling rates on the interest rates commercial banks, mutual savings banks, and savings and loan institutions can pay to attract deposits, favored borrowing by large corporations. Large business borrowers with direct access to the money and capital markets, by issuing bonds and commercial



paper, were able to competitively bid funds away from savings institutions. In 1969 the outstanding volume of commercial paper averaged \$27.3 billion, up from \$19.4 billion in 1968, and double the average outstanding volume in 1966. In 1967 and 1968 the household sector reduced its holdings of municipal and corporate securities. However, in the first half of 1969, the household sector increased its holdings of these securities by approximately \$9.7 billion.

As funds flowed through channels other than the savings institutions, the ability of these institutions to extend credit to specific sectors of the economy, especially housing, was reduced. Although such a process of fund diversion probably did not affect total credit considerably, it had a significant effect on the locus and form of real investment.

In mid-January, the Federal Reserve Board, the Federal Deposit Insurance Corporation, and the Federal Home Loan Bank Board raised the maximum rates intermediaries are permitted to pay for funds. Under the amended Regulation Q effective January 21, member banks are permitted to pay 4.5 per cent on passbook savings deposits, up from the 4 per cent ceiling in effect since November 1964. Small certificates maturing in one year are permitted to yield 5.50 per cent, and small certificates maturing in two years are permitted to yield 5.75 per cent (See the table on page 29 for all Regulation Q ceilings). Previously, since September 1966, the ceiling on all single maturity deposits less than \$100,000 had been 5 per cent.

However, these new ceiling rates are still below the market yields available to many savers on competitive financial assets. For example, in mid-January the yield on commercial paper and Treasury bills, which are directly competitive with large CD's, were 8.75 per cent and 7.80 per cent respectively. Seasoned corporate bonds, which are partial competitors for savings deposits, were yielding about 7.90 per cent, compared to the new ceiling rates that savings institutions could offer of 5 to 5.75 per cent.

## Prices

If one looks at prices, evidence of the effect of restriction imposed by policy since midyear is not clearly evident. In the second half of 1969 the general price index rose at the same 5.1 per cent annual rate as during the first half of the year. In the fourth quarter of 1969 the general price index showed a slower 4.7 per cent rate of increase. However, monthly data on consumer and wholesale prices cast some doubt on

the degree of reduction of price increases in the last quarter of 1969. From September to December consumer prices rose at a 6.3 per cent annual rate, slightly faster than over the first nine months of 1969. The rate of increase of wholesale prices also rose in the last three months of 1969, increasing from an annual rate of 4.6 per cent over the first nine months to a rate of 5.4 per cent from September to December. The rate of increase of wholesale prices of industrial commodities accelerated to a 5 per cent rate, compared to a 3.6 per cent rate from December 1968 to September 1969.

## Conclusions

If, instead of a myopic concentration on the rapid increase in prices, analysis of current economic conditions is broadened to take into account lags between policy actions and their effects on policy goals such as the growth of real output, production, employment and real income, then a downward turn in economic activity has begun. Now that the restrictive effects of policy actions are definitely evident in the real sector of the economy, attention should be focused on the questions of how far and how fast will the downturn go, and when should the Federal Reserve move to a moderately easier policy?

Prices have shown very little sign of slowing their rapid rates of increase, and market interest rates remain at very high levels. However, economic theory and empirical evidence indicate that after a prolonged period of inflation, a downward adjustment of prices and interest rates follows only slowly after real output, real income, and employment adjust downward. Given the difference between the lags of adjustment of prices and interest rates to a restrictive monetary policy and real output and employment, a policy of "waiting to see the whites of the eyes" of the inflation enemy manifested in prices and interest rates, can have considerable unnecessary adverse consequences for real output, income, and employment.

One step that monetary policy should avoid is a sharp reversal to a very expansionary policy such as occurred during the 1967 pause in economic activity. However, if a restrictive policy is pushed too far too fast, by creating a large rise in unemployment, such a policy may lay the groundwork for just such a sharp reversal. If after mid-1970 policymakers face a 5.5 or 6.0 per cent unemployment rate, then it may be very difficult to avoid a sharp reversal of policy. In such a case, the chance of throwing all the hard-won effects of monetary restraint to the winds becomes very great.



# Operations of the Federal Reserve Bank of St. Louis—1969

**T**HE FEDERAL RESERVE BANK OF ST. LOUIS is one of twelve banks which, along with the Board of Governors in Washington, D. C., make up the Federal Reserve System. The St. Louis Bank's geographic responsibility, the Eighth Federal Reserve District, includes Arkansas and portions of Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. Branches in Little Rock, Louisville, and Memphis aid the St. Louis bank in its operations.

The operations of each Federal Reserve Bank can be divided into three major classes. First, it provides a variety of services for commercial banks (mainly member banks), the Federal Government, and the public. Second, it supervises certain banks in the Eighth District. Third, it aids in the formulation of national monetary policy. This report of the past year's operations discusses these three areas and related functions.

## Service Operations

Each Federal Reserve Bank provides five major service operations: lending money to member banks; furnishing currency and coin for circulation; maintaining facilities for the collection and clearing of checks; maintaining the legal reserve accounts of

member banks; and acting as a fiscal agent of the U. S. Treasury. The volume of most service operations at this bank's four offices increased in 1969, reflecting growth in economic activity in the Central Mississippi Valley. The increased volume of operations is reflected by an increase in employment in this bank's four offices from 1,193 on January 1, 1969 to 1,289 on January 1, 1970, an increase of 8 per cent.

## Lending

Federal Reserve Banks are "bankers' banks." For example, under certain circumstances, commercial banks borrow from the Reserve Banks in much the same way that individuals and corporations borrow from their banks. This is done through advances and discounting. Although advances are the usual means by which credit is extended, a custom has developed of calling these loans discounts and the interest charged the discount rate. Lending through this mechanism is initiated by the borrowing bank, but the frequency and amount of borrowing by any one member bank is limited by the Federal Reserve Banks.

Daily borrowing from the St. Louis Federal Reserve Bank averaged \$42 million in 1969, compared with \$17 million in 1968, \$6 million in 1967, and \$32 million in 1966. In 1969, 22 per cent of the member

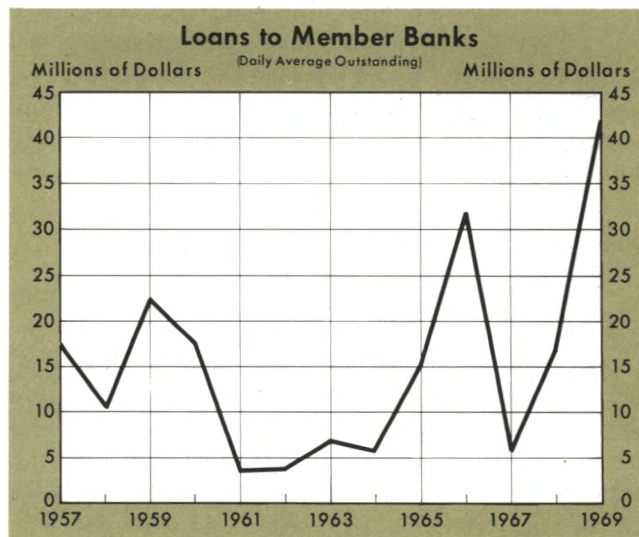
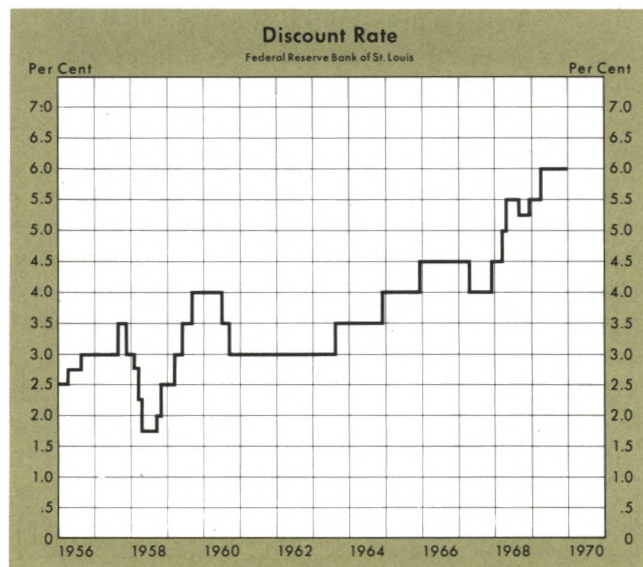




Table 1

VOLUME OF OPERATIONS<sup>1</sup>

	Dollar Amount (Millions)		Per Cent Change 1968-69
	1969	1968	
Checks Collected <sup>2</sup>	140,348.6	135,737.9	3.4%
Noncash collection items	450.7	556.2	-19.0
Coin counted	70.5	58.2	21.1
Currency counted	1,715.9	1,577.5	8.8
Transfers of funds	244,648.5	169,173.1	44.6
U. S. Savings Bonds handled <sup>3</sup>	595.4	600.2	-0.8
Other Government securities handled <sup>3</sup>	21,839.0	20,250.3	7.8
U. S. Government coupons paid	172.3	157.2	9.6
	Number (Thousands)		Per Cent Change 1968-69
	1969	1968	
Checks collected <sup>2</sup>	344,068	311,416	10.5%
Noncash collection items	914	882	3.6
Coin counted	636,317	539,162	18.0
Currency counted	236,842	219,297	8.0
Transfers of funds	300	268	11.9
U. S. Savings Bonds* handled <sup>3</sup>	11,219	10,608	5.8
Other Government securities handled <sup>3</sup>	953	690	38.1
U. S. Government coupons paid	736	724	1.7

<sup>1</sup>Total for the St. Louis office and the Little Rock, Louisville, and Memphis branches.<sup>2</sup>Excludes Government checks and money orders.<sup>3</sup>Issued, exchanged, and redeemed.

banks in the district borrowed from the Federal Reserve, compared with 13 per cent in 1968. While market interest rates rose rapidly in 1969, the discount rate was raised only once — on April 4, from 5½ to 6 per cent.<sup>1</sup> Incentive to borrow from the Federal Reserve was increased with the enlarged spread between the market rate and the discount rate.

### Coin and Currency Operations

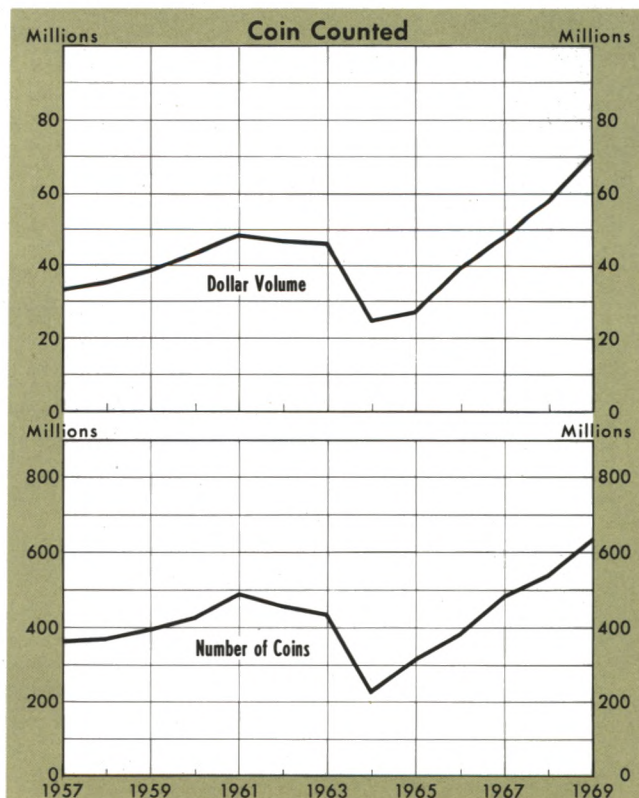
Just as businesses and individuals obtain coin and currency from commercial banks, commercial banks obtain them at Federal Reserve Banks. Member banks withdraw directly from the Federal Reserve Bank, while nonmember banks withdraw from member banks or with permission from the accounts of member banks at the Federal Reserve Bank. When banks receive an excess of coin and currency from their customers, it is deposited with the Federal Reserve Bank. There it is sorted and counted, the usable money is held for redistribution, and the non-usable money is destroyed.

<sup>1</sup>Under present law, when a member bank borrows from its Reserve Bank on collateral that does not meet certain "eligibility" requirements, it must pay interest at a rate one-half of 1 per cent higher than the Reserve Bank's normal discount rate. The Board of Governors has recommended legislation that would permit a member bank, in appropriate circumstances, to borrow on any collateral satisfactory to its Reserve Bank, without the necessity of paying a "penalty" rate of one-half of 1 per cent.

In 1969, coin handling continued the sharp rise of the past several years, demonstrating further recovery from the severe coin shortage which occurred in the mid-1960's. The demand for coins nationally has been fed in part by the inflation of recent years, and there has probably been some positive influence from the increasing use of coin-operated vending machines. The number of pieces counted at the Bank rose from 227 million in 1964 to 636 million in 1969, an average annual increase of 23 per cent. Meanwhile, the dollar value increased from \$25 million to \$71 million.

A total of 237 million pieces of currency was handled in 1969, 8 per cent above the previous year.

The dollar value of currency handled amounted to \$1.7 billion, an increase of 9 per cent from a year earlier. The increase in currency probably reflects the increase in personal income and the related rise in transactions, along with the increase in the price level.





As of February 1, 1970

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versity, State College, Mississippi

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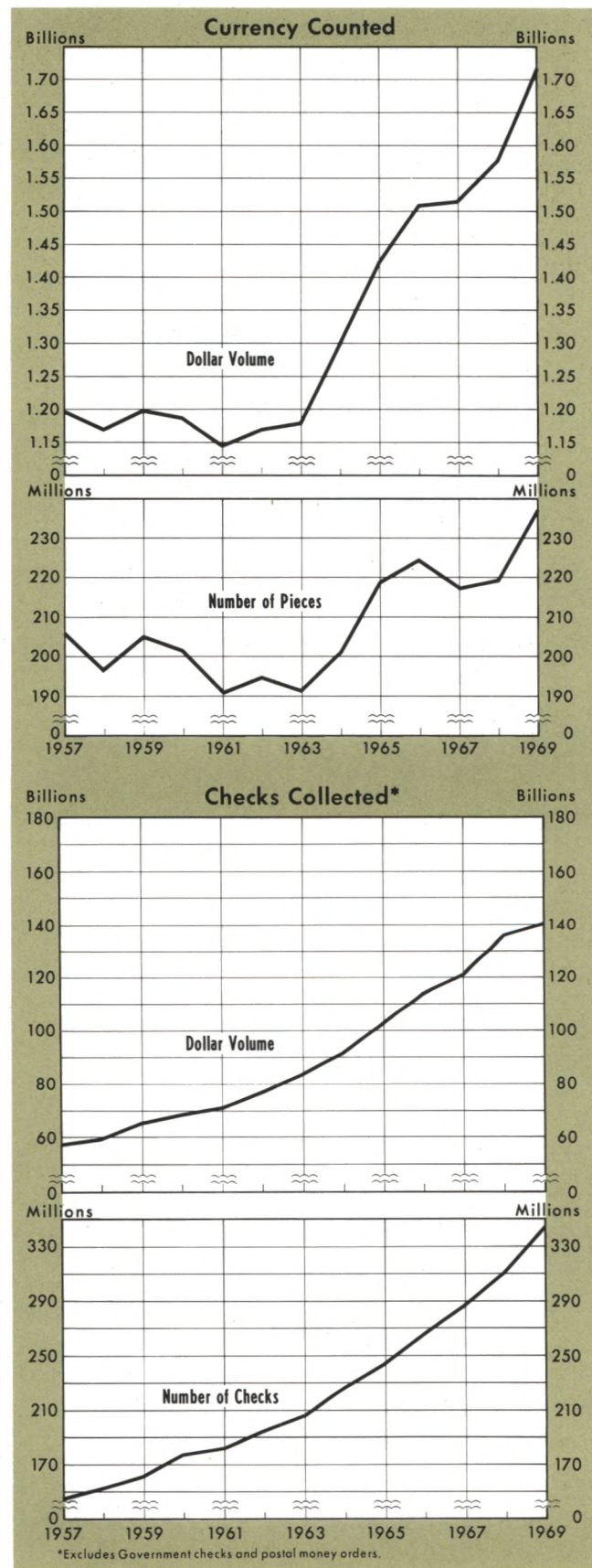
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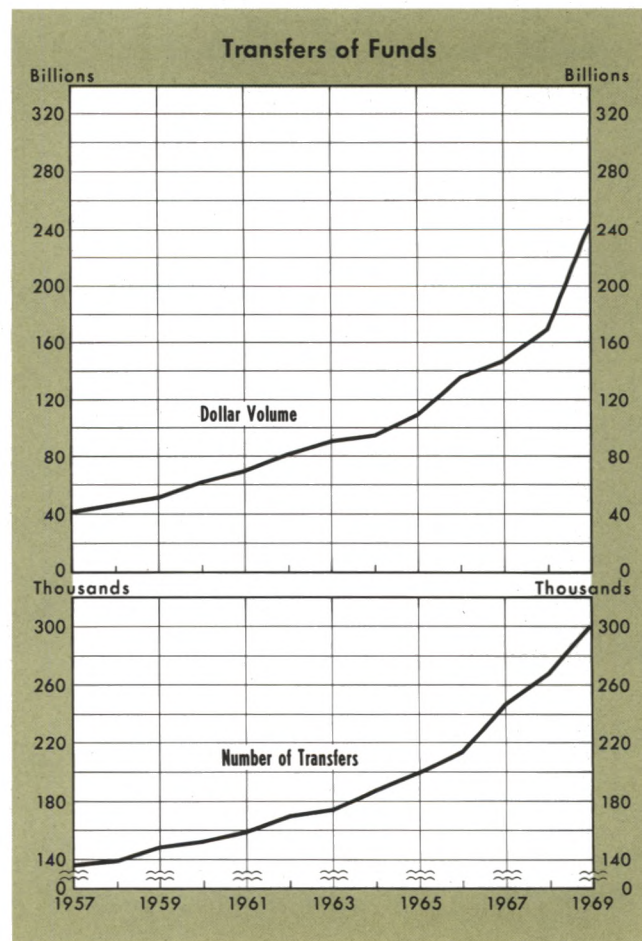
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## Check Clearing

Federal Reserve Banks participate in collecting checks and provide a mechanism through which commercial banks settle for checks collected. The four offices of this bank receive checks from district member banks, other Federal Reserve Banks, and Government agencies for collection. A Federal Reserve Bank also sometimes receives checks directly from member banks in other Districts to increase the speed of collections. Checks received are drawn either on banks in the Eighth District which remit at par, par remitting banks in other districts, or the United States Treasury. The dollar volume of checks collected rose from \$136 million in 1968 to \$140 million in 1969, an increase of 3.4 per cent. The number of checks collected rose from 311 million in 1968 to 344 million in 1969, an increase of 10.5 per cent. The number of checks collected in all of the banks in the Federal Reserve System increased 10 per cent from 1968 to 1969. The fact that the number of checks collected has increased more rapidly than the dollar amount probably indicates that more people are using checks for purchasing. Two possible reasons for the





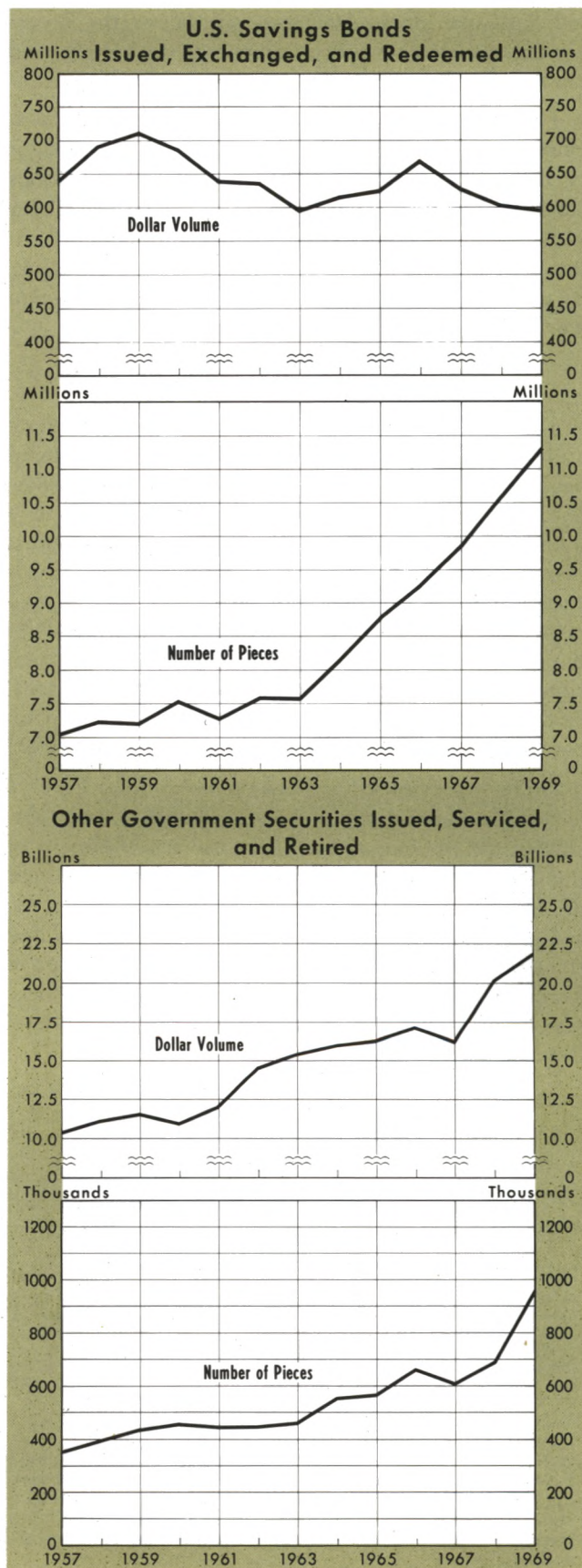
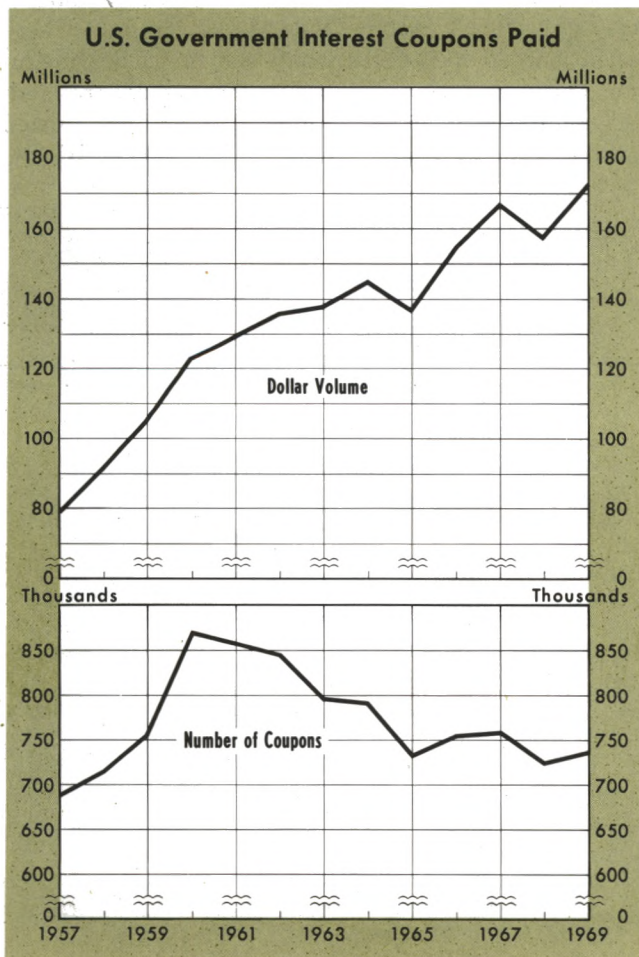
increased popularity of paying by check are that many banks have eliminated or lowered service charges on demand deposits.

### *Transfers of Funds*

Wire transfers of funds are largely movements of member bank balances among Federal Reserve Banks. Such transfers result primarily from transactions in the Federal Funds market, check collection settlements, and transfers in connection with U. S. Treasury obligations. The number and dollar value of such transfers have risen sharply in recent years. This Bank was party to 300 thousand transfers in 1969, 12 per cent above the 268 thousand transfers in 1968. Dollar value was \$245 billion, up 45 per cent over 1968.

### *Fiscal Agency Operations*

Each Federal Reserve Bank acts as a depository and fiscal agent of the United States Treasury. In this capacity the Federal Reserve Banks carry the principal checking accounts of the Treasury, issue and





redeem Government securities, administer the Treasury tax and loan accounts with commercial banks, and perform various other Government financial duties.

The four offices of this bank in 1969 issued, exchanged, and redeemed 11 million U. S. Savings Bonds valued at \$595 million. The number of bonds handled rose 6 per cent from 1968, while the dollar value declined 1 per cent. Other government securities issued, serviced, and retired totaled 953 thousand, 38 per cent above a year earlier, while dollar value was up 8 per cent to \$22 billion.

### Supervision and Examination

The Federal Reserve System, along with state authorities, exercise supervision over state-chartered banks which are members of the Federal Reserve System, with the objective of fostering and maintaining a sound banking system. Supervision includes annual examinations which provide the information for evaluation of the assets, operations, policies, and management of the banks subject to review. This enables the supervisory authorities to help prevent or correct situations that might adversely affect the soundness of the banks, and the public interest. All state member banks in the district were examined in 1969.<sup>2</sup>

Other supervisory functions of the Federal Reserve System include admission of state banks to membership in the System, approval for the establishment of domestic and foreign branches, approval for merger or absorption of other banks by state member banks, and permission to establish registered bank holding companies and for such companies to acquire stock in banks. Much of the investigation involved in these supervisory functions is conducted by the Federal Reserve Banks.

Table II

#### Number of Banks by Type

	United States 12/31/69	Eighth District 12/31/69	United States 12/31/68	Eighth District 12/31/68
National	4,669	348	4,716	350
State Member	1,203	117	1,267	124
State Insured Nonmember	7,596	891	7,504	1,019
State Noninsured	198	16	197	16

<sup>2</sup>Four agencies have the authority to supervise private commercial banks. The Comptroller of the Currency's major supervisory responsibility is National Banks; the Federal Reserve, for the most part, examines state member banks; the Federal Deposit Insurance Corporation mainly supervises state insured nonmember banks; and the state supervisory authorities examines all state banks (including both insured and noninsured).

### Research

The research staff of the bank performs two major roles. One is to analyze national and regional financial situations with a view to formulation of monetary policy recommendations. These recommendations are used by the President of the Bank in the deliberations of the Federal Open Market Committee.

The second function of the research staff is to provide economic information to the public, principally through the monthly *Review* and other recurring releases. The research staff also provides data and analyses which facilitate other operations of the System; for instance, research into the structure of banking markets aids in determining the advisability of mergers and holding company applications.

### Statements

Total assets of the Federal Reserve Bank of St. Louis were \$3.2 billion on December 13, 1969, an increase of 9 per cent from a year earlier. Most of the rise in assets was due to increased holdings of U. S. Government securities, which resulted from the operations of the System Open Market Account. These open market operations, which are the major instrument of monetary policy, are authorized by the Federal Open Market Committee and are undertaken at the Federal Reserve Bank of New York by the

Table III

#### COMPARATIVE STATEMENT OF CONDITION (Thousands of Dollars)

	December 31, 1969	December 31, 1968
<b>ASSETS</b>		
Gold certificate reserves . . . . .	345,289	352,955
Federal Reserve notes of other banks . . . . .	29,347	33,010
Other cash . . . . .	9,828	24,589
Discounts and advances . . . . .	15,200	770
U. S. Government securities . . . . .	2,105,524	1,868,829
Uncollected items . . . . .	621,658	573,768
Other assets . . . . .	93,965	95,438
Total Assets . . . . .	<u>3,220,811</u>	<u>2,949,359</u>
<b>LIABILITIES AND CAPITAL ACCOUNTS</b>		
Federal Reserve notes (net) . . . . .	1,796,579	1,676,649
Deposits:		
Member banks — reserve accounts . . . . .	824,090	783,570
U. S. Treasurer — general account . . . . .	67,998	599
Other . . . . .	15,866	16,086
Deferred availability cash items . . . . .	449,575	414,762
Other liabilities and accrued dividends . . . . .	21,021	13,693
Total capital accounts . . . . .	<u>45,682</u>	<u>44,000</u>
Total Liabilities and Capital Accounts . . . . .	<u>3,220,811</u>	<u>2,949,359</u>



Table IV  
COMPARATIVE PROFIT AND LOSS STATEMENT  
(Thousands of Dollars)

	1969	1968	Per Cent Change 1968-69
Total earnings . . . . .	117,877	97,649	20.7
Net expenses . . . . .	15,515	13,962	11.1
Current net earnings . . . . .	102,362	83,687	22.3
Net addition (+) or deductions (—) . . . . .	— 2	+ 291	—
Net earnings before payments to U. S. Treasury . . . . .	102,360	83,978	21.9
Distribution of Net Earnings:			
Dividends . . . . .	1,351	1,273	6.1
Interest on Federal Reserve notes* . . . . .	100,168	81,055	23.6
Transferred to surplus . . . . .	841	1,650	—49.0
Total . . . . .	102,360	83,978	21.9

\* Income transferred to Treasury

Committee's agent. Although the securities remain at the New York Bank, each Reserve Bank participates in the holdings and earnings of the System Account.

Net earnings before payments to the United States Treasury increased to \$102 million in 1969, up 22 per cent from a year earlier. This sharp rise in earnings was due to larger holdings of loans and securities, as well as higher interest rates on these assets, while expenses increased only moderately. After dividends to member banks and increases in surplus, the remaining portion of net earnings are transferred to the U. S. Treasury as interest on Federal Reserve notes. Such transfers totaled \$100 million in 1969, up 24 per cent from a year earlier.



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# Monetary and Fiscal Influences on Economic Activity: The Foreign Experience

by MICHAEL W. KERAN

*The November 1968 and November 1969 issues of this REVIEW included articles which developed and explained in some detail a procedure for testing the relative importance of monetary and fiscal influences on economic activity in the United States. The conclusions reached in those articles were that (except for the years covering World War II) monetary influences had a stronger, more predictable, and faster impact on economic activity than fiscal influences.*

*This article presents additional empirical evidence on the monetary-fiscal issue on the basis of data from eight foreign countries. The analysis of this foreign experience tends to confirm the results obtained for the United States. Because the test procedure is identical with that used and described in some detail in the previous articles, this article is devoted mainly to presenting and describing the empirical evidence.*

ONE OF THE major current debates among economists and policymakers in the United States and abroad deals with the relative importance of monetary and fiscal influences on economic activity. This debate reflects a growing awareness of the importance of monetary policy in any stabilization program. In part, this awareness stems from the intellectual resurgence of the quantity theory of money as an explanation of short-run movements in economic activity. In the main, however, it is probably due to the surprising number of recent historical experiences in which monetary actions have seemed to be effective and fiscal actions have seemed to be ineffective.

The two episodes best known to the American public are the tight money-easy fiscal policy combination of 1966 which preceded the mini-recession in early 1967, and the easy money-tight fiscal policy combination of the last half of 1968 which was followed by continued economic boom in 1969. Similar experiences have occurred in other countries. In early 1968, for example, the United Kingdom had an easy money-tight fiscal policy combination and experienced a continued economic boom in the second half of 1968 and through early 1969.

This *Review* has recently published two articles analyzing the relative impact of monetary and fiscal influences on economic activity in the United States.<sup>1</sup>

<sup>1</sup>Leonall C. Andersen and Jerry L. Jordan, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization" in the November 1968 issue of this *Review*, pp. 11-24; and Michael W. Keran, "Monetary and Fiscal Influences on Economic Activity—The Historical Evidence," in the November 1969 issue of this *Review*, pp. 5-24.

The conclusions reached in both articles were that monetary influences have had a larger, more predictable, and faster effect on economic activity than fiscal influences. If the relationship observed in the United States reflects an important and stable underlying phenomenon, then one would expect that similar relationships would exist in other countries with roughly similar economic institutions. The intent of this article is to investigate comparable monetary and fiscal influences on economic activity for a selected group of foreign countries.

According to many authorities, the most desirable quality of any empirically-estimated equation is its accuracy in forecasting the future. According to Christ,<sup>2</sup> "the 'future' should be interpreted to include anything unknown to the forecaster when he did his work." Thus, a significant test of the equation developed with respect to the United States would be to subject it to tests using data from other countries. With this in mind, this article should be viewed as an attempt not only to increase our understanding of monetary and fiscal relations in particular foreign countries, but also to provide an independent test of the "forecasting ability" of equations developed for the United States.

<sup>2</sup>Carl F. Christ, *Econometric Models and Methods*, (John Wiley and Sons, Inc., 1966). "Thus, a person might forecast some aspect of nineteenth century behavior by means of theory and data derived solely from the twentieth century," page 5. "Is there any truth in the maxim that prediction provides the acid test? The answer is yes. (If) . . . we confront the model with an entirely new set of data, which we were not familiar with when the model was chosen," page 547.



This article will deal with these issues in the following order: first, a brief consideration of the test procedures; second, consideration of the data problems in making empirical tests of foreign countries; third, presentation of the statistical results; fourth, testing various propositions; and finally, some general observations on the role of monetary influences on economic activity.

### The Test Procedure

The basic form of the equation used to test the relative impact of monetary and fiscal influences on economic activity is the same as that used in the previous articles in this *Review*. The general form of the test equation is:

$$\Delta Y = a_0 + a_1 \Delta M + a_2 \Delta F,$$

where:  $\Delta Y$  is a measure of changes in economic activity;  $\Delta M$  is a measure of changes in monetary influences;  $\Delta F$  is a measure of changes in fiscal influences;  $a_1$  and  $a_2$  are symbols which represent the magnitude of the impact of monetary and fiscal influences, respectively, on economic activity; and  $a_0$  represents the average impact of all other influences on economic activity during the same period.

The earlier articles presented a detailed discussion of the relative advantages and disadvantages of this "single equation" approach as opposed to alternative approaches to measuring monetary and fiscal influences.<sup>3</sup> That discussion will not be repeated here.

The procedure employed in this article is to test two variables which are usually considered to be under the control of the monetary and fiscal policy-makers to see which variable has the dominant impact on economic activity. These variables are not necessarily those which are consciously controlled by policy makers. Rather, the variables tested are those which

both the Modern Quantity theory and the Keynesian Income-Expenditure theory would imply are the best measures of the impact of monetary and fiscal actions. Because this approach omits direct consideration of the *channels* through which the monetary or fiscal effects operate, it cannot be used to answer questions about the underlying structure of the economy.

### Foreign Data Problems

When American researchers attempt to collect data on some facet of the American economy, they are doubly blessed. First, the United States publishes more statistics in greater detail and generally of greater accuracy than other countries. Second, expert knowledge of the sources and reliability of the data are readily available.

In general, neither the quantity nor quality of foreign data are as good as that for the United States. Furthermore, the American research worker is unlikely to be as familiar with the sources of foreign data as with domestic data.

Apparently, only four countries besides the United States have quarterly GNP data: Canada, Germany, Japan, and the United Kingdom. For reasons discussed in the Appendix, GNP results for the United Kingdom are not used in the main body of this article. For the United Kingdom and the other countries in our survey group, for which quarterly GNP data were not available, namely, Belgium, France, Italy, and the Netherlands, economic activity was measured on the basis of a proxy variable. The proxy variable for economic activity is equal to the scaled product of the seasonally adjusted industrial production index and the consumer price index<sup>4</sup> times GNP in the base years of those indexes. As is shown in the Appendix, the proxy variable gives substantially the same implications for monetary and fiscal actions as the GNP measure in those countries in which both measures are available.

Using GNP data where available, and the proxy where GNP data was not available, provides quarterly measures of economic activity for eight of the major foreign industrial countries which have reasonably decentralized economic systems, and therefore come closest to paralleling the American economic system. For purposes of comparison, updated results from earlier studies on the United States are also presented.

<sup>4</sup>The consumer price index is not seasonally adjusted. The exact formula is presented in the Appendix.

<sup>3</sup>One point should be emphasized. The "single equation" approach used here does not provide any direct evidence about whether the Keynesian Income-Expenditure theory or the Modern Quantity theory is the most appropriate explanation of national income. The reason for this is because the "single equation" test used in this article does not discriminate between the behavioral assumptions of the two theories. See Keran, pp. 6-8 for further discussion of this and related issues. It is theoretically possible to have a strong and prompt monetary influence on economic activity in a Keynesian model. Such a model was estimated empirically by J. Ernest Tanner in "Lags in the Effects of Monetary Policy," *American Economic Review*, December 1969.

A single equation test of behavioral assumptions of the Quantity Theory and Income-Expenditure Theory, was made by Milton Friedman and David Meiselman in "Relative Stability of Income Velocity and Investment Multiplier in the United States, 1868-1960," *Stabilization Policies*, Prentice Hall, 1963. The September 1965 issue of the *American Economic Review* is devoted to a searching discussion of the Friedman-Meiselman results.



The measure of monetary influence used for each country was the money stock as defined by the International Monetary Fund (IMF) in its *International Financial Statistics*. This was the only monetary variable which was available quarterly on a consistent basis for all countries.<sup>5</sup> However, it would be desirable in future research to try other monetary variables, such as the monetary base or total reserves of the banking system.

The most serious data problems were encountered in developing an appropriate fiscal variable. Possible measures of the fiscal influence are total Government spending (including transfer payments as well as purchases of goods and services), high-employment tax receipts, the differences between government spending and high-employment tax receipts,<sup>6</sup> and changes in the national debt. Data on high-employment tax receipts and on the national debt were not available for any of the countries. Of necessity, therefore, the only measure of fiscal influences used in this paper is total Government spending culled from Treasury statistics on cash outlays including transfers to Government corporations. The Government component of the National Income Accounts could not be used for two reasons: 1) it included only purchases of goods and services; and 2) it included expenditures at all levels of government. Even on this basis, fiscal measures were available for only three countries. By coincidence, they were the same countries which had GNP data: Canada, Germany, and Japan.<sup>7</sup>

This limited measure of fiscal influence may not be as serious a liability as it appears. Experience with United States data indicates that Government spending is the best measure of fiscal influences.<sup>8</sup> However, it does mean that further research on fiscal influences could possibly change the results presented in this article. For Belgium, France, Italy, the Netherlands, and the United Kingdom, no consistent quarterly fiscal variable was available. For these countries only monetary influences on economic activity were measured.

<sup>5</sup>It could be argued that different definitions of the money stock would be appropriate for different countries because of different institutions. This is a reasonable proposition. However, a consistent IMF definition of money was used for two reasons: (1) the author is not familiar enough with the institutions in each country to reformulate the money stock definition; (2) the author did not want to be accused of choosing the data source on the basis of that which best supported his hypothesis.

<sup>6</sup>Actual Government spending need not be adjusted for the high-employment concept because the differences would be conceptually small. On the other hand, the difference between actual and high employment tax receipts can be conceptually large. See Keith Carlson, "Estimates of the High-Employment Budget," this *Review*, June 1966.

<sup>7</sup>Fiscal data were available for the United Kingdom from 1962 but are not included here for reasons given in Appendix II.

<sup>8</sup>Andersen and Jordan, pages 17 and 18.

The results reported in this article are based on the data and sources described. However, it is conceivable that some sources of data may have been overlooked which could have improved, or perhaps modified, the results presented.<sup>9</sup>

### Statistical Results

The summary results of the regression analysis in both first and central difference form, using the Almon distributed lag technique,<sup>10</sup> are presented in Tables I and II. In the case of first differences, the quarter-to-quarter change from period  $(t-1)$  to period  $(t)$  is labeled as the change at period  $(t)$ . In central difference form, the average change from  $(t-1)$  to  $(t+1)$  is labeled as the change at period  $(t)$ . Although the first difference form is the usual method of presenting "change" data, the central difference form more closely approximates the economic concept of "change" at a point in time.<sup>11</sup>

Table I includes those countries in which economic activity is measured by GNP and in which the fiscal influence is measured by total central Government spending. Table II includes those countries in which economic activity is measured by the proxy variable and in which a fiscal variable was not available. In the Appendix, the validity of the proxy variable is discussed and it is shown that it gives substantially the same result as when GNP is used to measure economic activity. For those who are unfamiliar with interpreting statistical results as presented in Tables I and II, a description of the Canadian first difference

<sup>9</sup>The sources of all data used in this article are listed at the end of the Appendix.

<sup>10</sup>In each test the form of the equation was estimated with money alone, fiscal alone, and a combination of the two. Alternative time lags between  $(t-1)$  and  $(t-6)$  were tried. The form of the equation selected and the time lags to represent each time period were chosen on the basis of minimum standard error of estimate adjusted for degrees of freedom.

The Almon lag technique, by constraining the distribution of coefficients to fit a polynomial curve of  $(n)$  degree, is designed to avoid the bias in estimating distributed-lag coefficients which may arise from multicollinearity in the lag values of the independent variables. The theoretical justification for this procedure is that the Almon constrained estimate is superior to the unconstrained estimate because it will create a distribution of coefficients which more closely approximates the distribution derived from a sample of infinite size. In order to minimize the severity of the Almon constraint, the maximum degree of the polynomial was used in each case. The maximum degree is equal to the number of lags plus one of the independent variables up to five lags. Following the convention established by Shirley Almon, "The Distributed Lag Between Capital Appropriations and Expenditures," *Econometrica*, (January 1965), if there are  $(n)$  lags,  $(t+1)$  and  $(t-n-1)$  are both constrained to zero. The regressions were also run without constraining the beginning and ending values to zero, and the results are virtually identical.

<sup>11</sup>For a further description and justification of central differences, see John Kareken and Robert Solow, "Lags in Monetary Policy," page 18, in *Stabilization Policies*, Prentice Hall, 1963.



results in Table I is provided.<sup>12</sup> Others may proceed to the section titled "Presentation of Results."

**How to Read the Statistical Results** — The time period (II/1953-IV/1968) for Canada indicates the period during which the dependent variable ( $\Delta$ GNP) is explained by the monetary and fiscal variables. The lag (t-6) indicates that it takes the contemporary and six lagged quarters for the monetary and fiscal influences to have their full effect on the economy.

At the top of Table I is an equation similar to that described on page 17. Changes in Gross National Product ( $\Delta$ GNP) is the variable to be explained. Changes in the money stock ( $\Delta$ M) and changes in Government expenditures ( $\Delta$ E) are the variables which are postulated to explain  $\Delta$ GNP.<sup>13</sup>  $a_1$  is the symbol for the measured influence of  $\Delta$ M on  $\Delta$ GNP, holding  $\Delta$ E unchanged, and  $a_2$  is the symbol for the measured influence of  $\Delta$ E on  $\Delta$ GNP holding  $\Delta$ M unchanged,  $a_0$  represents the estimated trend value of all other influences on  $\Delta$ GNP.

The columns of numbers in Table I under  $a_1$  and  $a_2$  represent the statistically estimated value of the average relation between the monetary or fiscal influence and  $\Delta$ GNP for various countries. In the case of Canada, 4.27 is the estimated monetary coefficient, which implies that on the average, for every \$1 increase in the money stock, there will be a \$4.27 increase in GNP over the current and six following quarters. The number below, enclosed by a parentheses (5.75), is the "t" statistic, which is a measure of the statistical confidence one may have that the estimated coefficient has the same sign as the "true" coefficient relating  $\Delta$ M to  $\Delta$ GNP. The larger the "t" statistic, the greater our confidence in the value of the estimated coefficient. In general, an estimated coefficient with a "t" statistic larger than 1.96 is significantly

<sup>12</sup>It should be kept in mind that this description is highly simplified. Those who are interested in a more complete and rigorous explanation of statistical hypothesis-testing should consult any elementary textbook in statistics.

<sup>13</sup> $\Delta$ E rather than  $\Delta$ F is used here as a symbol of the fiscal influence because the specific measure used in this case is changes in Government expenditures.  $\Delta$ F was a surrogate for any measure of fiscal influence.

Table I  
MONETARY AND FISCAL INFLUENCES ON  $\Delta$ GNP  
 $\Delta$ GNP =  $a_0 + a_1\Delta$ M +  $a_2\Delta$ E

Country	Time Period	Lags*	Constant Term $a_0$	Monetary Influences $a_1$ (sum)	Fiscal Influences $a_2$ (sum)	R <sup>2</sup> D-W
(First Differences - Billions of National Currency)						
Canada	II/1953 - IV/1968	t-6	.33 (3.27)	4.27 (5.75)	-1.45 (1.38)	.43 2.20
Germany	III/1961 - III/1968	t-3	-3.26 (.76)	8.88 (2.85)	.68 (.41)	.39 2.27
Japan	I/1956 - III/1968	t-2	.03 (.25)	2.78 (5.26)	.81 (1.75)	.56 1.94
United States	I/1954 - III/1969	t-4	3.19 (4.22)	5.50 (8.30)	.01 (.02)	.67 1.82
(Central Differences - Billions of National Currency)						
Canada	II/1953 - IV/1968	t-6	.32 (4.91)	4.82 (9.32)	-2.13 (2.80)	.67 1.48
Germany	III/1961 - III/1968	t-3	-4.20 (1.31)	10.44 (4.84)	.33 (.23)	.54 1.70
Japan	I/1956 - III/1968	t-2	-.04 (.37)	2.68 (4.77)	1.46 (2.96)	.66 .74
United States	I/1954 - III/1969	t-4	3.14 (5.64)	5.35 (10.79)	.11 (.47)	.79 1.17

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses. R<sup>2</sup> is the percent of variation in the dependent variable which is explained by variations in the independent variables. D-W is the Durbin-Watson statistic.

\*Lags are selected on the basis of minimum standard error, adjusted for degrees of freedom.

different from zero, and a "t" statistic smaller than 1.96 is not significantly different from zero at the 95 per cent confidence level. The convention in economics is to make the 95 per cent confidence interval the boundary between acceptance or rejection of the coefficient as significantly different from zero. Thus, in the case of Canada, the statistical results indicate that the monetary influence is positive and highly significant.

The estimated coefficient for the fiscal influences for Canada is -1.45. The implication is that for every \$1 increase in Government expenditures, there will be a \$1.45 decrease in GNP after six quarters. This negative relation is contrary to the generally assumed relation between Government spending and GNP. However, the "t" statistic of (1.38) indicates the estimated fiscal coefficient is not statistically different from zero, and consequently this result is not persuasive evidence that Government expenditures are perverse in their effect on economic activity. The R<sup>2</sup> is the coefficient of determination adjusted for degrees of freedom.<sup>14</sup> It is .43 for Canada. This means that

<sup>14</sup>The degrees of freedom of an equation are equal to the number of observations of the dependent variable minus the number of independent variables, including the constant term. In the Canadian case, there were 63 observations of  $\Delta$ GNP from II/1953 to IV/1968 and there were 7 independent money variables (one contemporary and six lagged), and 7 independent fiscal variables plus one constant term, so that the degrees of freedom equalled 48.



43 per cent of the variation in  $\Delta$ GNP can be explained by variation in the monetary and fiscal variables,  $\Delta$ M and  $\Delta$ E.

Considering that the statistical estimates were made on the basis of quarterly first differences, which magnifies the random elements in the data, an  $R^2 = .43$  is considered to be reasonably high. D-W (the Durbin-Watson statistic) is a measure of randomness in the error term of the estimated equation. An acceptable range for the D-W statistic in these equations would be roughly between 1.25 and 2.75.<sup>15</sup>

**Presentation of Results** — Table I shows the summary regression results for Canada, Germany, Japan and the United States, using changes in quarterly GNP as a measure of economic activity. In each case the results are presented in both first difference and central difference form. Central difference data are, in effect, a two-term moving average of first difference data. Thus, central differences have consistently higher  $R^2$  than first differences because some of the random movements which are so prominent in first difference data have been averaged out. This also has the effect of reducing the randomness of the error term and thus reducing the value of the Durbin-Watson statistic.<sup>16</sup>

The regression results in Table I give substantially consistent implications with respect to monetary influences. In every country the coefficient for the monetary variable is positive and statistically significant in both first and central difference form. On the other hand, the fiscal variable does not exert an influence which exhibits any systematic pattern for the various countries. For Canada the

fiscal variable is insignificant in first differences and negative and significant in central differences. For Germany and the United States, it is statistically insignificant in both first and central difference form. For Japan, the fiscal variable is statistically insignificant in first differences and positive and statistically significant in central differences. These results contrast sharply with those for the monetary variable where, for each country, and for both first and central differences, the monetary coefficient is positive and statistically significant.

The other countries in this study do not have quarterly GNP estimates which can be used as a measure of economic activity. For those countries economic activity is measured by the proxy variable defined above and justified in the Appendix.

In Belgium, France, Italy, the Netherlands, and the United Kingdom (before 1962), acceptable measures of fiscal influence are not available. For these countries, it was only possible to measure monetary influences on economic activity. This is done in Table II with quarterly observations from 1953 to 1968, using both first and central difference form.

Table II

### MONETARY INFLUENCES ON A PROXY MEASURE OF ECONOMIC ACTIVITY ( $\Delta$ Y)

$$\Delta Y = a_0 + a_1 \Delta M$$

Country	Time Period	Lags*	Constant Term $a_0$	Monetary Influences $a_1$ (Sum)	Dummy Variable	$R^2$ D-W
(First Differences - Billions of National Currency)						
Belgium	II/1953 - IV/1968	t-3	3.00 (1.02)	2.57 (3.08)	23.60 (3.19)	.28 2.36
France	II/1953 - IV/1968	t-2	3.17 (1.31)	2.09 (2.55)	98.81 (15.58)	.82 1.44
Italy	II/1953 - IV/1968	t-3	.19 (1.96)	1.87 (5.61)	—	.42 2.37
Netherlands	II/1953 - IV/1968	t-5	.01 (.04)	6.02 (5.31)	—	.33 1.64
United Kingdom	II/1953 - IV/1968	t-6	.21 (3.12)	1.41 (2.63)	—	.35 1.99
(Central Differences - Billions of National Currency)						
Belgium	II/1953 - IV/1968	t-3	1.05 (.55)	3.17 (5.83)	17.77 (3.76)	.46 1.36
France	II/1953 - IV/1968	t-2	— .02 (.01)	3.25 (3.40)	34.16 (4.39)	.36 1.65
Italy	II/1953 - IV/1968	t-6	.19 (3.14)	1.75 (7.92)	—	.66 1.75
Netherlands	II/1953 - IV/1968	t-5	— .07 (.32)	6.62 (6.69)	—	.42 .81
United Kingdom	II/1953 - IV/1968	t-6	.20 (4.31)	1.46 (3.86)	—	.48 .91

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses.  $R^2$  is the per cent of variations in the dependent variable which is explained by variations in the independent variable. D-W is the Durbin-Watson statistic.

\*Selected on the basis of minimum standard error of the estimate adjusted for degrees of freedom.

<sup>15</sup>This is based on the assumption of 40 observations and 5 independent variables. One could reject auto correlation in the error term (lack of randomness) if the Durbin-Watson statistic is in the range 1.79-2.21. The inconclusive range goes as low as 1.25 and as high as 2.75. The inconclusive range would be narrowed with more observations and widened with more independent variables.

<sup>16</sup>There seems to be a systematic trade-off between first and central differences, with the latter having higher  $R^2$ 's (which is desirable) and lower D-W statistics (which is sometimes undesirable).



In the case of Belgium and France, dummy variables were added to account for major nation-wide strikes.<sup>17</sup> In Belgium, there was a nation-wide strike in December 1960 and January 1961 which closed down most major industries. To account for this non-monetary influence on economic activity, a dummy variable was included which assumed the value of  $-1$  in IV/1960 - I/1961 and a value of  $+1$  in II/1961. For all other periods the dummy variable had a value of zero. In France, there was a nation-wide strike in May 1968 which shut down virtually all industry. As monetary influences would not be expected to explain this phenomenon, a dummy variable was included which assumed the value of  $-1$  in the second quarter of 1968 and  $+1$  in the third quarter of 1968. The dummy variable assumed a value of zero for all other quarters. For France the statistical significance of the dummy variable was substantial in first differences and much less so in central differences, because the impact of the strike was partially averaged out in central difference data. Consequently, the high  $R^2$  for French first difference results (.82) should be partially discounted.

Although the monetary influence is statistically significant for every country in this study, there is a substantial degree of variation in the estimated value of the monetary influence between countries. For example, in first-difference form the monetary variable for Germany is 8.88, and for the United Kingdom it is 1.41. This range of values is largely due to variations in institutional factors in each country, such as the level of per capita income, the traditional payment period for workers, and the number and availability of money substitutes.

Table III

	Monetary Influence ( $a_1$ )	Velocity (GNP/M)
Germany	8.88	6.60
United States	5.50	4.56
Canada	4.27	5.14
Japan	2.78	3.60
Netherlands	6.02	4.22
Belgium	2.57	2.85
France	2.09	2.96
Italy	1.87	2.23
United Kingdom	1.41	2.70

These institutional factors can substantially influence the amount of money stock required to induce a given change in economic activity. One rough measure of the institutional differences between countries is the observed ratio of the money stock to income

(the income velocity of money). As can be seen in Table III, the estimated value of the monetary influence for each country ( $a_1$ ), is closely associated with the income velocity of money.

The monetary influence values are derived from first-difference results in Tables I and II. The values for velocity (GNP/M) are calculated on the basis of annual GNP and money stock data for 1968. These results indicate that the monetary influence values are substantially influenced by the institutional factors which determine velocity in each country. However, as these institutional factors seem to change only slowly over time, the monetary influence values are relatively stable within each country.

The results presented in Table II, where monetary influences alone are measured, are consistent with the results in Table I in which both monetary and fiscal influences are measured. The monetary influence is positive and statistically significant in all countries considered in both first and central difference forms of the equation. The  $R^2$ 's are sufficiently high to infer that monetary influences explain a significant amount of the change in economic activity in these countries. Every substantial movement in money is followed by a roughly proportional movement in economic activity.

The results presented in Tables I and II indicate that in nine of the major industrial countries of the world, monetary influences play an important role in determining the short-run movements in economic activity.

### Testing Propositions

Three propositions with respect to monetary and fiscal influences were tested in earlier articles on the basis of United States results. These propositions considered whether monetary or fiscal actions were (1) stronger, (2) more predictable, and (3) faster-acting. The conclusion reached with respect to the United States was that monetary actions dominated fiscal actions in each proposition.

These same propositions will be tested for foreign countries in which both monetary and fiscal measures are available; that is, Canada, Germany, and Japan. In addition, updated results for the United States will be presented as a basis for comparison.

**Which is stronger?** — To measure the relative strength of monetary and fiscal influences during the test period we need to know which has had the largest impact on economic activity. If the monetary

<sup>17</sup>There were undoubtedly random events in other countries which could have been accounted for with dummy variables.



Table IV

BETA COEFFICIENTS<sup>1</sup>

Country	Monetary Influences (Sum)	Fiscal Influences (Sum)
	First Differences	
Canada	1.08*	— .61
Germany	.70*	.30
Japan	.66*	.32
United States	.94*	.00
Country	Central Differences	
Canada	1.21*	— .58*
Germany	.88*	.09
Japan	.54*	.36*
United States	.96*	.04

<sup>1</sup> Beta coefficients are equal to the estimated coefficient times the ratio of the standard deviation of the independent variable over the dependent variable.

\* Statistically significant at the 95 per cent or higher level of confidence.

and fiscal measures had the same dimension and the same average degree of variation, the test could be made by directly comparing the size of the estimated coefficients of the monetary and fiscal variables. As these conditions are not satisfied, the estimated coefficients cannot be used directly for this test. However, when the estimated coefficients are "normalized" by being converted into beta coefficients, they can be compared.<sup>18</sup> The "sum" beta coefficients for Canada, Germany, Japan, and the United States are presented in Table IV for both first and central difference form.

The results indicate a considerable degree of consistency between countries. In every country for both first and central differences, the beta coefficients for the monetary variable are substantially larger than that for the fiscal variable. In every case the sign of the monetary variable is positive (a change in money leads to a change in GNP in the same direction), and the values are statistically significant. The sign of the beta coefficient for the fiscal variable varies between countries and is statistically significant only for Canada and Japan in central difference form. However, the values of the fiscal coefficients in these two countries are opposite in sign, indicating a lack of cross-country consistency. Clearly, for the time periods and countries considered, monetary influences have had a stronger impact on economic activity than have fiscal influences.

**Which is more predictable?** — The best-known measure of the predictability of the monetary and fiscal influences on economic activity is the "t" statistic.

<sup>18</sup> Beta coefficients are equal to the estimated coefficient times the standard deviation of independent variable over the standard deviation of the dependent variable. See Arthur S. Goldberger, *Economic Theory*, (John Wiley and Sons, 1964), pp. 197-98.

As indicated above, the "t" statistic is a statistical indicator of the confidence one may have that the "true" relationship between the independent and the dependent variables has the same sign as that of the statistically estimated relationship between those variables. The larger the "t" statistic, the more confidence one may have that the monetary and fiscal variables are predictably related to economic activity. The sum "t" statistics of the monetary and fiscal coefficients included in Table I are reported separately in Table V for both first and central differences. Again, the results are remarkably consistent between countries. In every case the "t" statistic for the monetary coefficient is larger than the "t" statistic for the fiscal coefficient. As a crude indicator of the relative precision of coefficient estimates, the absolute value of the average "t" statistic of the monetary variable is 4½ times larger than that of the fiscal variable. Thus, for the four countries considered, the monetary variable is substantially more predictable in its effect on GNP than the fiscal variable.

Table V

## "t" STATISTICS

Country	Monetary Influences (Sum)	Fiscal Influences (Sum)
	First Differences	
Canada	5.75	— 1.38
Germany	2.85	.41
Japan	5.26	1.75
United States	8.30	.02
Country	Central Differences	
Canada	9.32	— 2.80
Germany	4.84	.23
Japan	4.77	2.96
United States	10.79	.47

Note: A "t" value is a statistical indicator of the confidence one may have that the "true relationship" between the independent and dependent variable has the same sign as the statistically estimated coefficient of that relationship.

**Which works faster?** — The relative speed of monetary or fiscal influences can be measured by observing which variable has the shorter time lag in influencing economic activity. For comparability, the quarterly patterns of the estimated beta coefficients are used. The beta coefficient results were derived from the same set of statistical results summarized in Table I. Only the first difference results are plotted in Chart I. Almost identical patterns of beta coefficients are obtained with the central-difference form. Again, the quarterly pattern of the monetary influence on economic activity is remarkably stable for different countries. In contrast, the quarterly pattern of fiscal influence on economic activity varies substantially be-



between countries. For each country, the effects of the monetary influence substantially outweigh the effects of the fiscal influence in the contemporary quarter, except for the case of Japan. In Japan, where the fiscal influence has had the largest overall positive association of any of the countries considered, the monetary influence outweighed the fiscal influence in the first and second lagged quarters. The general impression from observing the quarterly pattern of the beta coefficients is that monetary influences tend to have a faster impact on GNP than fiscal influences for these four countries.

The results of testing these three propositions about monetary and fiscal influences on economic activity for Canada, Germany, and Japan are consistent with the results obtained from earlier studies on the United States.

### Additional Observations in the Money-Economic Activity Relation

Two points should be kept in mind in interpreting these results:

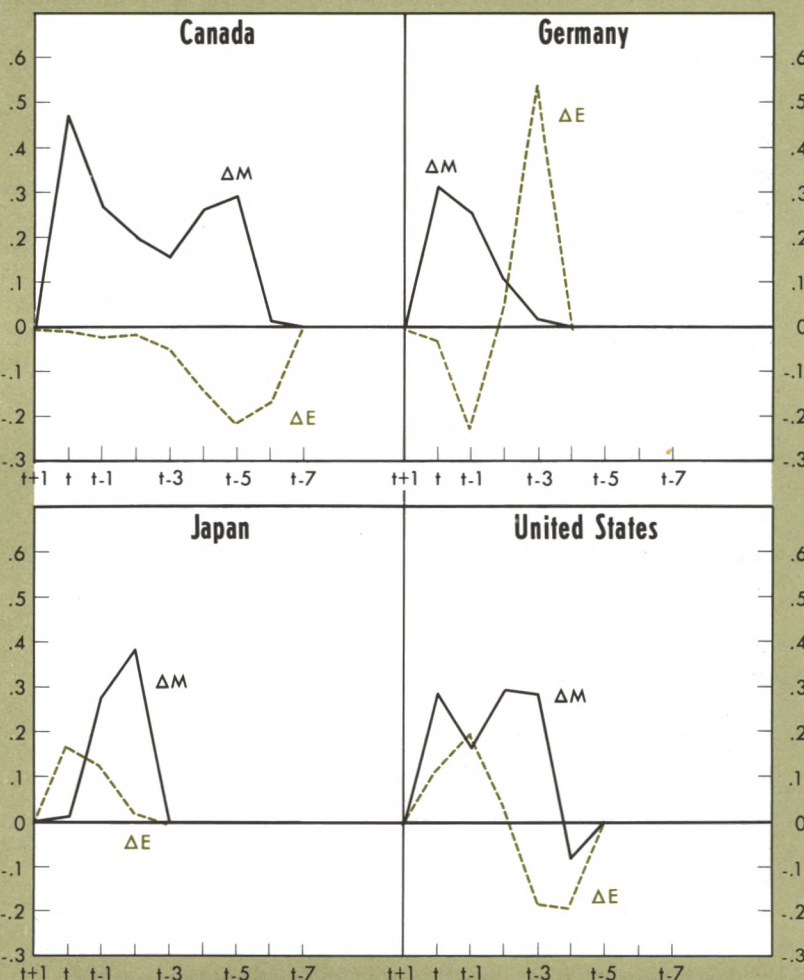
1) Monetary influences have a large and systematic influence on economic activity. Because policymakers can control the money stock, monetary policy should play a central role in any successful stabilization policy.

2) The high degree of statistical association between monetary influences and economic activity should not be taken to imply that there are no other systematic influences operating on economic activity. Economic activity can be influenced by a wide range of factors which are independent of monetary influences. A demonstration of this fact is that the degree of variation in economic activity, explained by monetary influences is less than perfect.

Both of these points can be highlighted with examples from three countries.

**Germany** – Chart II illustrates that from 1954 to 1964, German monetary influences were relatively

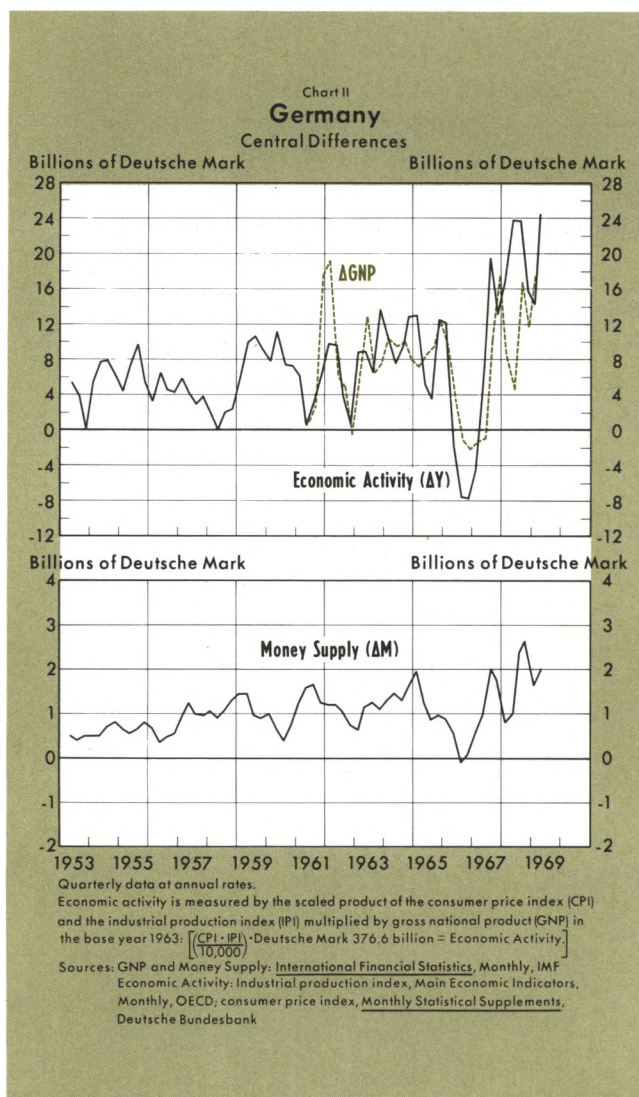
Chart I  
**Beta Coefficients  
of Monetary and Fiscal Influences**  
First Differences



Note: Beta coefficients are for changes in the money supply ( $\Delta M$ ) and Government expenditures ( $\Delta E$ ). These beta coefficients are calculated as the products of the regression coefficients for the respective variables and the ratio of the standard deviation of the independent variables to the standard deviation of the dependent variables ( $\Delta GNP$ ). Lags were selected on the basis of the minimum standard error of the estimate adjusted for degrees of freedom.

stable as measured by the quarter-to-quarter changes in the money stock. With the exception of a moderate deceleration in 1959 and 1960, no cyclical pattern can be observed in the money stock. Economic activity during the 1954-64 period also exhibited a relatively stable growth rate. However, there were several moderate fluctuations with cyclical troughs in 1958, 1960, and 1962. Yet only the trough in 1960 was associated with restrictive monetary influences. Although none of these cyclical movements in economic activity





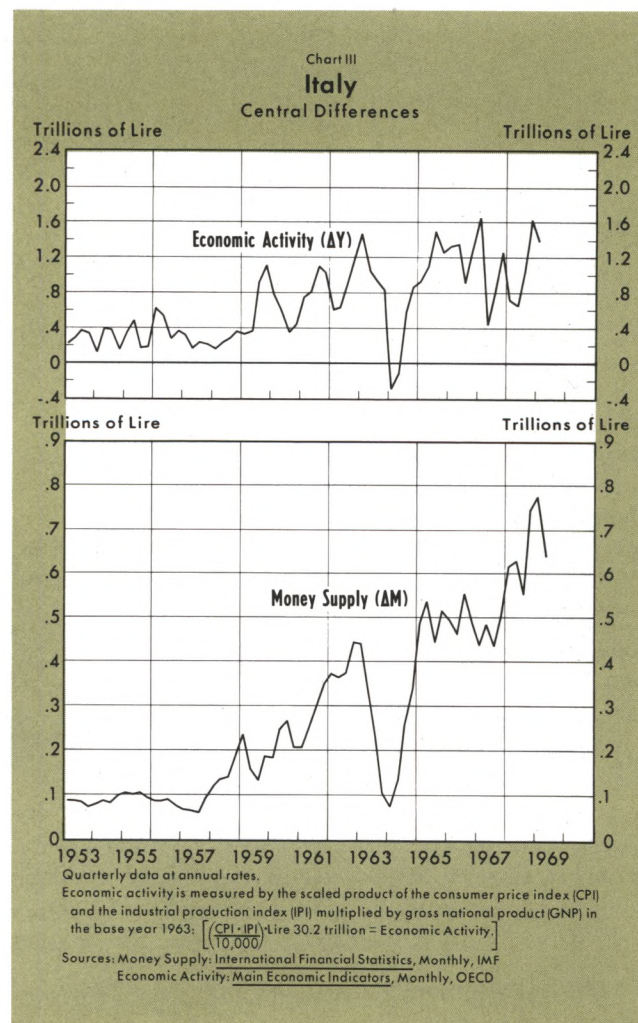
were sufficiently strong to have been generally considered a recession, they illustrate that cyclical movements in economic activity do occur independently of monetary influences.<sup>19</sup>

German developments in the 1965 to 1969 period, moreover, provide an example of the strength of monetary influences when they are allowed to operate. In late 1965 and in 1966 the German monetary authorities followed a systematically restrictive policy, as indicated by the steady deceleration of the money stock. This monetary action was, in part, a response

<sup>19</sup>This raises an important point in statistical estimation procedures. A regression analysis on German data from 1954 to 1964 would not have shown a statistically significant association between monetary variables and economic activity. The method of computing statistical association is that variations in one variable are observed to occur systematically with variations in another variable. If there is little or no variation in monetary variable, then the statistical regression procedures will not measure any significant relation with economic activity.

to fears of domestic inflation, although in the main it was due to concern over deterioration of the German international trade position.<sup>20</sup> This restrictive monetary policy was followed by a substantial deceleration in economic activity in late 1966 and 1967. As the international trade position improved, monetary policy was eased, and the money stock accelerated in 1967 and 1968. Economic activity responded promptly, resuming the rapid growth rates of earlier years. The 1966-67 business cycle trough was widely recognized in Germany as a period of recession, and its cause can be clearly traced to the actions of the monetary authorities.

German postwar experience illustrates two things: first, stable monetary influences do not exclude the possibility of cyclical instability in the economy; and second, fluctuating monetary influences seemingly induce fluctuations in economic activity.



<sup>20</sup>See Michael Keran "Monetary Policy, Balance of Payments, and Business Cycles: The Foreign Experience," *this Review*, November 1967.



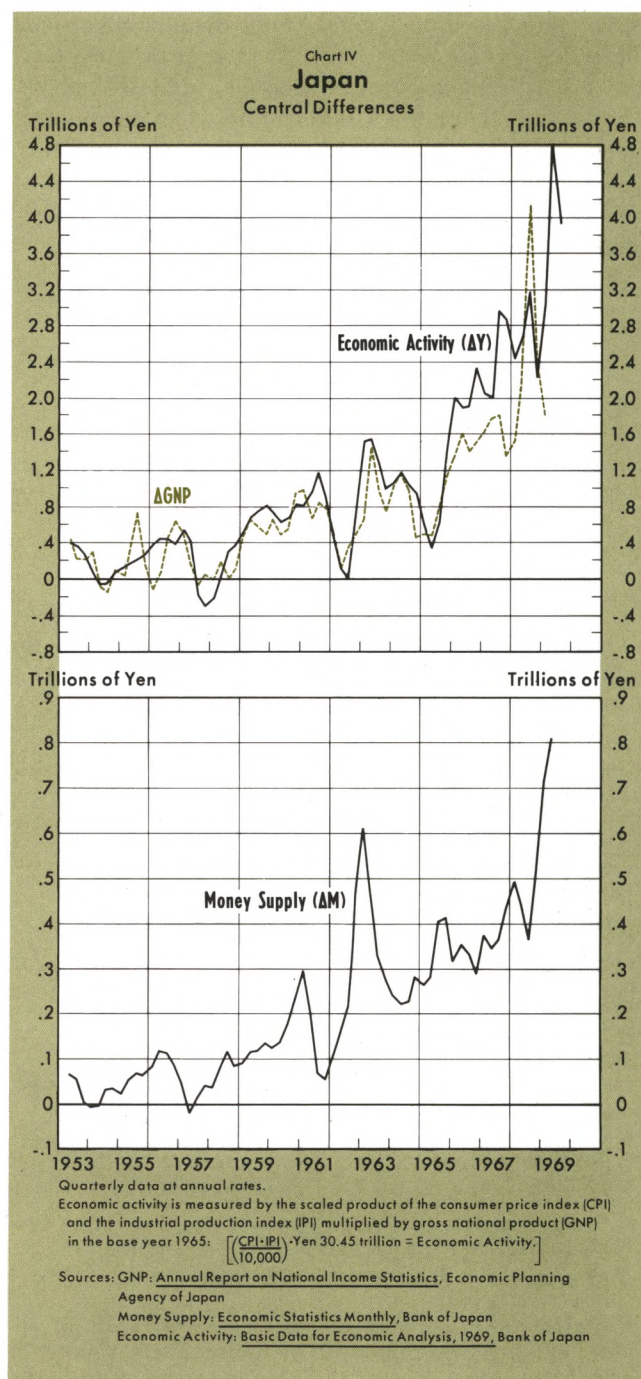
**Italy**—Chart III illustrates that the Italian experience in the post-war period is similar to that of Germany. From 1953 to 1957, monetary influences in Italy were stable and economic activity grew at a relatively stable rate, with some irregular quarter-to-quarter movements. From 1958 to 1962 the money stock accelerated and, correspondingly, economic activity accelerated. Because of a deterioration in their international trade position in 1962 and 1963, the Italian monetary authorities followed a tight money policy in 1963 and early 1964. Their actions caused a sharp deceleration in economic activity in late 1963 and into 1964. When the money stock was permitted to accelerate in the second half of 1964, economic activity expanded in line with its previous growth rate. Italy has had stable growth in both money and economic activity since 1965, despite its widely publicized political turmoil.

**Japan**—The Japanese experience contrasts with that of Germany and Italy in its more frequent reversals of monetary actions, as shown in the lower tier of Chart IV. This monetary behavior has apparently caused all postwar business cycles in Japan to be dominated by monetary considerations. Japan has had four cyclical troughs: in 1954, 1957, 1962, and 1965. Each of these troughs was preceded by a deceleration in the money stock and each recovery with an acceleration in the money stock. All systematic movements in economic activity in Japan have been related to monetary considerations. From 1965 to 1968, Japan followed a stable monetary policy and, as a result, economic activity has also grown at a relatively stable rate until very recently.

The Japanese experience reinforces the points made above. Although stable monetary influences do not guarantee stable growth in economic activity, unstable monetary influences seem to assure fluctuations in the growth of economic activity.

### Conclusion

The purpose of this article has been to review the postwar economic experience of a variety of industrial countries to see whether monetary and fiscal influence bear any systematic relationship to movements in economic activity. The results presented indicate that in spite of admitted differences in economic institutions and differences in the objectives of policymakers between countries, a substantial degree of consistency is observed. For each of the eight foreign countries considered, the monetary influence was important. The estimated coefficient relating the monetary variable to economic activity was positive and statistically significant. Of the countries in which fiscal measures



were available, only in Japan was the positive relation postulated by economic theory found to hold.

It is important to keep in mind that these results, especially with respect to fiscal influences, are even more tentative than is generally the case in statistical estimations of economic relations, because of the severe data limitations discussed above.

With this caveat the implication of this study is that our confidence in the results of earlier studies



which were based on United States data, is enhanced. The single equation approach to measuring monetary and fiscal influences on economic activity, which was developed for the United States, has passed the "forecasting test" mentioned at the beginning of this article. That is, the recent economic experience of a number of industrial countries can be better understood by the use of this equation.

Previous research which concluded that monetary influences are important in determining the short-run movements in economic activity is confirmed by the results obtained for other countries.

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*The Appendix to this article develops the case for using a proxy measure of economic activity for those countries in which quarterly GNP data are not available. The Appendix also considers the special case of the United Kingdom.*

## APPENDIX

### ***Comparing Nominal GNP and a Proxy Measure of Economic Activity***

Nominal GNP is a measure of the market value of all goods and services produced in an economy during a particular time period. It is the most broad-based measure of economic activity available. But since quarterly GNP data are not available for many important countries, a proxy for economic activity was constructed and used in some cases. This alternative measure is equal to the scaled product of the consumer price index (CPI) and industrial production index (IPI) times GNP. The formula for computing the proxy for economic activity (Y) is:

$$Y = \left( \frac{\text{CPI} \cdot \text{IPI}}{10,000} \right) \cdot \text{GNP},$$

where the value of GNP is that in the base year of the price and production indexes.

The proxy measure of economic activity has a much narrower base than GNP. The price component of the proxy was measured only by the consumer price index (CPI). However, the CPI tends to move quite closely with movements in the implicit GNP price deflator for those countries in which we have both data series. The real component of the alternative measure is based on the seasonally adjusted industrial production index, which means that all service industries, levels of government, and agriculture are not included.

Despite these limitations, this measure of economic activity is a useful first approximation for the purposes of business cycles analysis. Its usefulness is indicated in Table VI, where economic activity is measured by our proxy variable and by nominal GNP for those countries in which both series are available. As can be seen, the indicators of monetary and fiscal influences give consistently the same results with these different measures



Table VI

**MONETARY AND FISCAL INFLUENCES ON  
ECONOMIC ACTIVITY, MEASURED BY A PROXY  
( $\Delta Y$ ) AND BY NOMINAL GNP ( $\Delta GNP$ )**

(First Differences — Billions of National Currency)					
Variable Dependent	Lags*	Constant Term	Monetary Influence	Fiscal Influence	R <sup>2</sup> D-W
		a <sub>0</sub>	a <sub>1</sub> (Sum)	a <sub>2</sub> (Sum)	
<b>CANADA</b>					
(II/1953 - IV/1968)					
$\Delta Y$	t-5	0.29 (2.88)	5.25 (7.95)	-1.61 (1.75)	.58 1.73
$\Delta GNP$	t-6	0.33 (3.27)	4.27 (5.75)	-1.45 (1.38)	.43 2.20
<b>GERMANY</b>					
(II/1961 - III/1968)					
$\Delta Y$	t-4	3.86 (0.60)	10.64 (2.23)	-6.74 (2.14)	.31 2.08
$\Delta GNP$	t-3	-3.26 (0.76)	8.88 (2.85)	0.68 (0.41)	.39 2.27
<b>JAPAN</b>					
(I/1956 - III/1968)					
$\Delta Y$	t-2	-0.10 (0.78)	3.71 (6.06)	1.46 (2.74)	.66 0.76
$\Delta GNP$	t-2	0.03 (0.25)	2.78 (5.26)	0.81 (1.75)	.56 1.94
<b>UNITED STATES</b>					
(II/1954 - III/1969)					
$\Delta Y$	t-5	2.34 (1.24)	8.27 (4.27)	-0.64 (0.80)	.50 1.68
$\Delta GNP$	t-4	3.19 (4.22)	5.50 (8.30)	0.01 (0.02)	.67 1.82

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses. R<sup>2</sup> is the percent of variation in the independent variable which is explained by variations in the independent variable. D-W is the Durbin-Watson statistic.

\*Lags are selected on the basis of minimum standard error, adjusted for degrees of freedom.

of economic activity. The coefficient for the monetary variable is positive and statistically significant for each country using both measures of economic activity. The coefficient for the fiscal variable tends to vary in sign and significance from country to country.

Another indication of the reasonableness of the proxy variable ( $\Delta Y$ ) is that the quarterly pattern of the beta coefficients for each country with respect to ( $\Delta M$ ) and ( $\Delta E$ ) is almost identical to that presented in Chart I for ( $\Delta GNP$ ). The values of the monetary and fiscal variables with respect to  $\Delta Y$  and  $\Delta GNP$ , can be compared directly because the proxy variable has been scaled by the value of GNP.

The results presented in Table VI indicate that in some cases the monetary and fiscal variables do a better job of explaining the proxy variable ( $\Delta Y$ ) than they do of

explaining changes in GNP ( $\Delta GNP$ ). For both Canada and Japan the R<sup>2</sup> for the proxy variable ( $\Delta Y$ ) is larger than that for  $\Delta GNP$ . In the United States and Germany the R<sup>2</sup> is higher for  $\Delta GNP$  than it is for the proxy variable ( $\Delta Y$ ). These results imply that the proxy variable is a useful measure of economic activity, permitting meaningful estimates of monetary and fiscal influences.

### *The Special Case of the United Kingdom*

The results for the United Kingdom are consistent with the results for the other countries, when economic activity is measured by the proxy variable (see Table II in the main body of this article). However, when economic activity is measured by GNP or, as the English prefer, GDP<sup>1</sup>, the results are not statistically significant. This can be seen in the first difference results presented in Table VII.

Table VII presents the estimated relationships between monetary and fiscal influences and three different measures of economic activity. When economic activity is measured by the proxy variable ( $\Delta Y$ ), the monetary influence is statistically significant and the fiscal influence is not. Together the monetary and fiscal variables explain 21 per cent of the variation in ( $\Delta Y$ ). When economic

<sup>1</sup>GDP stands for Gross Domestic Product. The major difference between this and GNP is the way in which the international sector is handled. In GDP, net receipts from interest, profits, and dividends earned abroad are excluded, while in GNP they are included.

Table VII

### UNITED KINGDOM

**Monetary and Fiscal Influences on Economic Activity  
Measured As A Proxy ( $\Delta Y$ ), Nominal GNP  
( $\Delta GNP$ ), and Nominal GDP ( $\Delta GDP$ )**

(I/1962 - III/1968)					
Dependent	Lags*	Constant Term	Monetary Influence	Fiscal Influence	R <sup>2</sup> D-W
		a <sub>0</sub>	a <sub>1</sub> (Sum)	a <sub>2</sub> (Sum)	
(First Differences — Billions of Pound Sterling)					
$\Delta Y$	t-2	.12 (.73)	2.50 (3.06)	-.37 (1.00)	.21 1.98
$\Delta GNP$	t-2	.45 (2.20)	.80 (.81)	-.62 (1.43)	.05 3.18
$\Delta GDP$	t-3	.54 (2.43)	-.58 (.51)	-.01 (.01)	.02 3.18
(Central Differences — Billions of Pound Sterling)					
$\Delta Y$	t-2	.15 (1.13)	2.34 (3.58)	-.30 (.99)	.35 1.01
$\Delta GNP$	t-6	.36 (2.96)	1.94 (2.06)	-1.43 (2.34)	.30 2.36
$\Delta GDP$	t-5	.37 (2.61)	1.22 (1.16)	-.65 (1.10)	.10 2.31

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses. R<sup>2</sup> is the percent of variations in the dependent variable which is explained by variations in the independent variable. D-W is the Durbin-Watson statistic.

\*Lags are selected on the basis of minimum standard error, adjusted for degrees of freedom.



activity is measured by  $\Delta$ GNP or  $\Delta$ GDP, neither the monetary nor the fiscal influences are statistically significant, and the amount of variation in economic activity explained by these variables is only 5 per cent and 2 per cent, respectively, in first difference form.

Quite clearly, when economic activity is measured in first difference form, the proxy variable ( $\Delta Y$ ) gives an entirely different assessment of the influences of monetary and fiscal variables than does  $\Delta$ GNP or  $\Delta$ GDP. These differing results using alternative measures of economic activity are not observed for the other countries in this study. For every other country  $\Delta Y$  and  $\Delta$ GNP gave substantially the same results with respect to the monetary and fiscal variables.

An investigation of the time series of GNP and the proxy measure of economic activity provides at least a partial explanation for this discrepancy. Both series show the same basic cyclical pattern in first-difference form. However, the GNP series has a small number of quarterly observations which deviate substantially from the proxy measure series. This is especially true for the third and fourth quarters of 1963, the first and second quarters of 1967, and the second and third quarters of 1968. These deviations tend to be offsetting, that is, a sharp decline in one quarter is matched by a sharp increase in the next quarter. With only 27 observations in the sample period, even six atypical observations can distort the statistical significance of the estimated coefficients.

These atypical observations could be due to the fact that both the GNP and GDP data have greater measurement error than the data which underlies the proxy measure of economic activity. Both the industrial production and consumer price indexes are monthly series which are averaged to compute quarterly proxy measures. The measurement error possibility is consistent with the very large Durbin-Watson statistic (3.18) for first-difference results of both GNP and GDP, which implies a high degree of negative auto-correlation in the error term. When central differences are taken of the GNP and GDP data, the consequences of random-measurement error in the series are reduced. The offsetting movements in the quarterly values  $\Delta$ GNP and  $\Delta$ GDP are considerably lessened.

Measuring monetary and fiscal influences against central differences (see bottom half of Table VII), one observes that both the monetary and fiscal variables are statistically significant with respect to GNP, and the explained variation of  $\Delta$ GNP rises to 30 per cent. The value of the Durbin-Watson statistic is also in a less unacceptable range than in the first difference results. Computing central differences for  $\Delta$ GDP does not improve the results significantly from the first difference results.<sup>2</sup>

These results suggest that perhaps a proxy variable may be superior to GNP or GDP as a measure of economic activity, if there is less measurement error in the proxy variable than in the other measures of economic activity.

The relatively short period from I/1962 to III/1968 was used for the regressions in Table VII because total

government spending data were not available in earlier years. A longer time span encompassing a wider range of economic events (1953-68) was used in the main body of the article to analyze monetary influences in the United Kingdom.

## Data Sources

For each country the seasonally adjusted series for the industrial production index, Gross National Product, money stock, and Government expenditures were used. The consumer price index is not seasonally adjusted.

**Belgium** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Money Stock: *International Financial Statistics*, IMF.

**Canada** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Gross National Product: *Canadian Statistical Review*, Dominion Bureau of Statistics; Money Stock: *International Financial Statistics*, IMF; Government Expenditures: *Canadian Statistical Review*, Dominion Bureau of Statistics.

**France** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Money Stock: *International Financial Statistics*, IMF.

**Germany** – Industrial production index, 1963=100; *Main Economic Indicators*, OECD; consumer price index, 1962=100; *Monthly Statistical Supplements*, Deutsche Bundesbank; Gross National Product and Money Stock: *International Financial Statistics*, IMF; Government Expenditures: *Monthly Report of the Deutsche Bundesbank*.

**Italy** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Money Stock: *International Financial Statistics*, IMF.

**Japan** – Industrial production index and Consumer price index, 1965=100; *Basic Data for Economic Analysis*, 1969, Bank of Japan; Gross National Product: *Annual Report on National Income Statistics*, Economic Planning Agency of Japan; Money Stock: *Economic Statistics Monthly*, Bank of Japan; Government Expenditures: *Basic Data for Economic Analysis*, 1969, Bank of Japan.

**Netherlands** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Money Stock: *International Financial Statistics*, IMF.

**United Kingdom** – Industrial production index and consumer price index, 1963=100; *Main Economic Indicators*, OECD; Money Stock: *International Financial Statistics*, IMF; Government Expenditures: *United Kingdom Financial Statistics*.

**United States** – Industrial production index, 1957-59=100; Board of Governors of the Federal Reserve System; consumer price index, 1957-59=100; United States Department of Labor; Gross National Product: United States Department of Commerce; Money Stock: *International Financial Statistics*, IMF; Government Expenditures: Federal Reserve Bank of St. Louis.

<sup>2</sup>M. J. Artis and A. R. Nobay, "Two Aspects of the Monetary Debate," in *National Institute of Economic Review*, August 1969, report similar results with respect to  $\Delta$ GDP.



# The Administration of Regulation Q\*

by CHARLOTTE E. RUEBLING

AT A TIME when market interest rates have soared to levels never before reached in this country, rates on deposits at banks and other financial institutions have been held much lower. The rate commercial banks charge on prime business loans has been 8½ per cent since early last June. Mortgage and many other market interest rates are currently about as high. On the other hand, payment of interest is prohibited on demand deposits, and the maximum rates permitted on time and savings deposits vary between 4.50 and 7.50 per cent.<sup>1</sup> The highest rate applies only to deposits in denominations of \$100,000 or more maturing in a year or longer. Smaller time and savings deposits are permitted to yield 4.50 to 5.75 per cent (see table below).

Type of Deposit	Regulation Q Ceiling Rate	Spread between Government Security Yield and Comparable Ceiling Rate*
Savings deposits	4.50	(30 days) 2.64
Other time deposits		
Multiple maturity		
30-89 days	4.50	(3 - mo.) 3.57
90 days or more	5.00	(6 - mo.) 3.11
Single maturity		
Less than \$100,000		
30 days to 1 year	5.00	(6 - mo.) 3.11
1 year	5.50	(12 - mo.) 2.53
2 year	5.75	(2 yrs.) 2.40
\$100,000 or more		
30-59 days	6.25	(3 - mo.) 1.82
60-89 days	6.50	(3 - mo.) 1.57
90-179 days	6.75	(6 - mo.) 1.36
180 days to 1 year	7.00	(12 - mo.) 1.03
1 year or more	7.50	(12 - mo.) 0.53

\*On January 21, 1970, yields (bond-yield equivalents, see footnote 6) were 7.14 per cent on Treasury bills maturing in 30 days, 8.07 per cent on three-month bills, 8.11 per cent on six-month bills, 8.03 per cent on twelve-month bills, and 8.15 per cent on notes maturing in approximately two years (February 1972).

These ceilings were adopted January 21, 1970. During 1969 the ceilings were lower, with yields on small time deposits limited to 5 per cent or less, a rate which did not compensate savers for the 6 per cent decline in the purchasing power of their funds.

Interest rate ceilings on deposits at banks which are members of the Federal Reserve System are established under Federal Reserve Regulation Q. Ceilings at insured nonmember banks, which have been the same as for member banks, are set by a regulation of the Federal Deposit Insurance Corporation.<sup>2</sup> These Regulations stem from Banking Acts of 1933 and 1935, respectively.<sup>3</sup> Some states have at times imposed ceilings for state-chartered banks which are lower than those established by the Federal agencies. There were no explicit nationwide regulations on interest and dividend rates at mutual savings banks and savings and loan associations until 1966. Legislation in September of that year brought rates paid by Federally insured mutual savings banks under the control of the Federal Deposit Insurance Corporation, and rates paid at savings and loan associations which are members of the Federal Home Loan Bank Board under its control. That legislation also required the three regulatory agencies to consult with each other when considering changes in the ceiling rates.

This article examines changes in the maximum rates payable on commercial bank time and savings deposits. The maximum rate permitted on demand deposits has been zero since 1933.<sup>4</sup> Ceiling rates on time and savings deposits have been changed from time to time during the past 35 years, particularly during the 1960's. Two factors largely responsible for changes during the Sixties were the rising level of

\* The author acknowledges the work of Elaine Goldstein, who initiated this study of the history of Regulation Q.

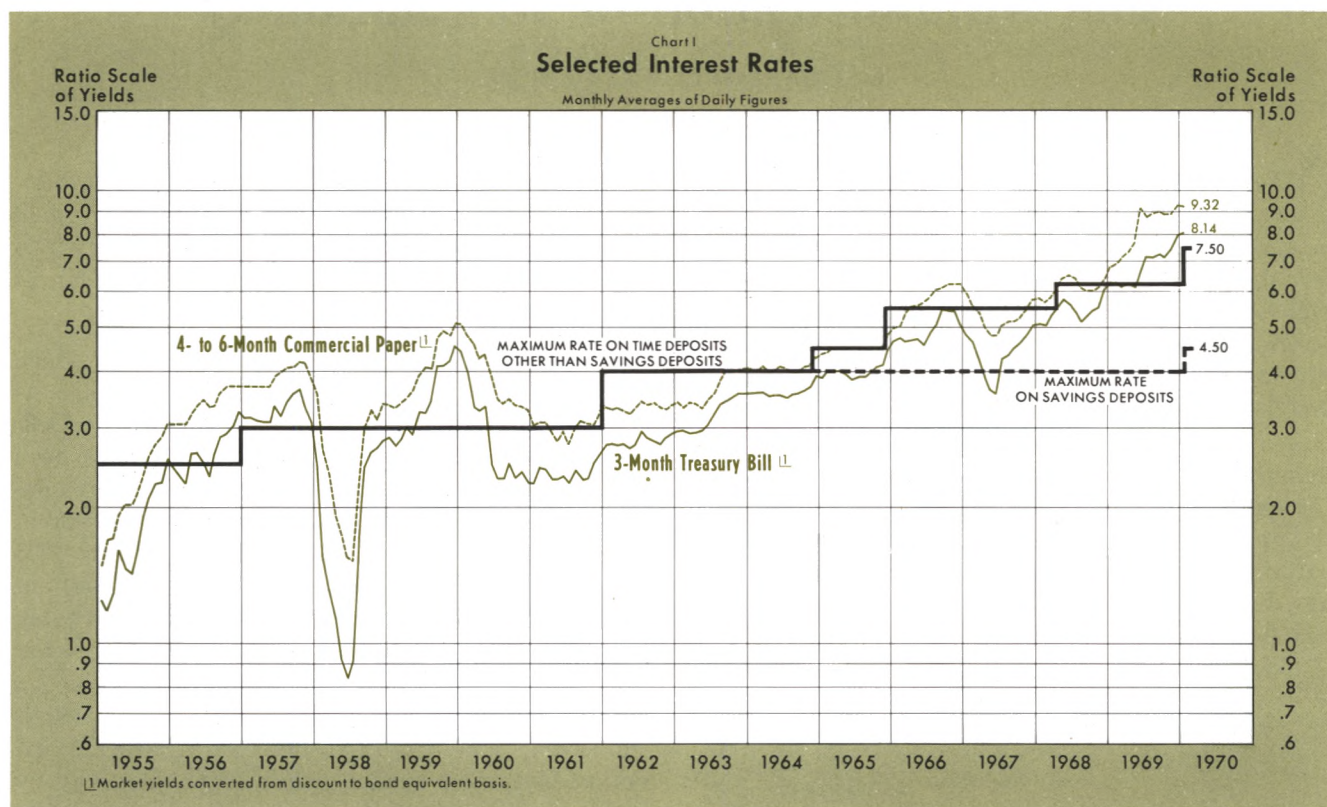
<sup>1</sup>Time deposits are defined in Regulation Q of the Federal Reserve to include "time certificates of deposit" and "time deposits, open account," both of which have maturities not less than 30 days or require 30 days written notice prior to withdrawal. Savings deposits are not subject to any maturity or withdrawal notice by the deposit contract, but the bank may at any time require 30 days notice prior to withdrawal. In this article, "time deposits" will be used to refer to deposits other than demand and savings; "time and savings deposits" will refer to the broad class of bank deposits which is distinct from demand deposits.

<sup>2</sup>Changes in maximum rates permitted at nonmember banks are given in the Annual Reports of the Federal Deposit Insurance Corporation. See for example, in *The Annual Report of the Federal Deposit Insurance Corporation* 1968, pp. 145-147.

<sup>3</sup>Historical background on interest rate restrictions, including developments prior to 1933, are summarized in "Interest Rate Controls—Perspective, Purpose and Problems" by Clifton B. Luttrell in the September 1968 issue of this *Review*, also available as Reprint No. 32. See also Albert H. Cox, Jr., *Regulation of Interest Rates on Bank Deposits*, Michigan Business Studies, Vol. XVII, No. 4 (Ann Arbor: University of Michigan, 1966), pp. 1-30.

<sup>4</sup>The implications of this interest rate ceiling for bank behavior have been analyzed by Donald R. Hodgman in *Commercial Bank Loan and Investment Policy* (Champaign: University of Illinois, 1963).





market interest rates and the growing importance of large certificates of deposit as a money market instrument. Use of negotiable certificates of deposit as a means of attracting large accumulations of money market funds began in February 1961, when the First National City Bank of New York announced it would offer large denomination negotiable CD's, and the Discount Corporation, a Government securities dealer, announced it would make a market for them.<sup>5</sup> The transferability of these CD's enhanced their desirability as a financial asset.

Changes in ceiling rates have usually been considered and made when ceilings were out of line with market interest rates. However, Chart I, showing market yields on a bond-yield equivalent basis and Regulation Q ceilings on two types of deposits, suggests that ceiling rates have sometimes remained out of touch with market conditions.<sup>6</sup> Changes in the structure of ceilings or in the relationship between market rates and the ceilings have, at times, been permitted in order to direct the flow of funds among

financial institutions, geographical areas, or sectors of the economy, or to accomplish stabilization objectives.

This article has three purposes:

- (1) to chronicle changes in ceiling rates;
- (2) to indicate reasons expressed by policymakers for making or dissenting from the changes; and
- (3) to evaluate the feasibility of achieving intended goals through deposit rate regulations.

The exhibit on pages 32 and 33 summarizes changes in the ceiling rates and the reasons behind them.

### *Emphasis on Prevention of Destructive Competition*

**November 1933** — As the Federal Reserve Board implemented its authority by adopting Regulation Q on November 1, 1933, the main theme was the prevention of destructive interest rate competition, which members of the Senate Committee on Banking and Currency, commercial bankers, and others believed to have been one cause of bank failures in earlier years. Possible destructive rate competition was often cited in later years as a reason for objecting to higher ceilings or as a justification for a particular structure of ceiling rates.

The Federal Reserve Board set a 3 per cent maximum rate on all time and savings deposits, effective

<sup>5</sup>Helen B. O'Bannon, "Certificates of Deposit," in *Money and Finance: Readings in Theory, Policy, and Institutions*, ed. by Deane Carson (New York: John Wiley & Sons, Inc. 1966), pp. 118-124.

<sup>6</sup>In this article interest rates on Treasury bills and commercial paper are quoted on a bond-yield equivalent (rather than discount) basis to make them comparable to rates on time and savings deposits.



November 1, 1933. On average for the year, the ceiling was above some short-term market rates, but below the rates apparently being paid on deposits at commercial banks, savings and loan associations, and mutual savings banks. Comparing total time and savings deposits at all commercial banks with interest expense of banks suggests that they were paying an "effective" average rate of 3.4 per cent in 1933. Similar measures for savings and loan associations and mutual savings banks indicate the same rate.<sup>7</sup> Market interest rates on high-grade short-term securities were far below 3 per cent. The three-month Treasury bill rate averaged .53 per cent in 1933, while rates on prime four- to six-month commercial paper averaged 1.77 per cent. The average rate banks charged on commercial loans in New York City fell from a peak of 4.79 per cent in March 1933 to 2.61 per cent in December.

**February 1935** — In early 1935 the Board lowered the ceiling rate to 2½ per cent, accepting a recommendation of the Federal Advisory Council (composed of commercial bankers):

... in view of the wide divergence in rates of interest now being paid on thrift and other time deposits in different sections of the country, and in view of the increasing difficulty of obtaining from suitable investments a yield sufficient to warrant payment of the maximum rate now fixed under provision of Regulation Q of the Federal Reserve Board, it is recommended that the Board give consideration to the advisability of lowering the present maximum rate.

In the opinion of the Council the present rate might well be lowered one-half of one per cent.<sup>8</sup>

**January 1936** — The Federal Reserve set different rates for time deposits with various maturities as of January 1, 1936, lowering the ceilings on short-term deposits. The maximum rate payable was changed to 1 per cent on time deposits maturing in less than 90 days, and to 2 per cent on those maturing in from 3 to 6 months. The Board stated "... that banks were not justified in paying as high rates of interest for time deposits having shorter maturities in view of their greater availability for withdrawals and therefore that

the rates fixed by the Board should be graduated according to maturities."<sup>9</sup> Discussions associated with the change pointed to the general downward trend of interest rates and the fact that many banks were finding it necessary to make further reductions in rates paid depositors because of decreased earnings. This comment suggests that banks were responding rationally to market forces and that any ceiling rate may have been superfluous. The lower ceilings, nevertheless, vindicated bank actions to their depositors.

Those favoring ceilings in order to limit "destructive competition" felt that free competition for deposits would force some banks to offer rates on short-term funds which were out of line with returns obtainable on assets "suitable" for banks to hold. In order to earn a return higher than it was paying on deposits, a bank might accept higher-risk and longer-term assets, thus impairing the liquidity and solvency of that bank and the banking system.

If the aggregate relation between interest expense and deposits adequately measures the rates banks pay, this argument seems to provide some justification for ceiling rates. In 1933 this measure shows banks paying rates higher than the rates on high-grade short-term securities. Banks were paying an average effective rate of 3.4 per cent, about twice the rate on prime four- to six-month commercial paper. The rates banks were paying do not appear significantly different from rates they were charging on short-term business loans. It could be argued that banks were offering strongly competitive rates to improve liquidity, which had fallen because of strong demands for currency and liquidity in the rest of the economy. This might be considered corrective behavior, while restraint on competition imposed by ceiling rates simply treated symptoms rather than the cause of the financial crisis.

Regulation Q ceilings do not appear to have encouraged or safeguarded bank liquidity. On the contrary, liquidity, in terms of the ratio of loans to deposits, has often dropped (the ratio rising) during periods when Regulation Q constrained competition for funds. For example, the ratio of loans to total deposits increased from 61.1 per cent in December 1968 to 67.8 per cent in December 1969, a period in which Regulation Q was the primary cause of a \$10.7 billion decline in time and savings deposits. Chart II, a comparison of the spread between the market yield on prime four- to six-month commercial

<sup>7</sup>This "effective" rate is calculated by dividing interest expense of all commercial banks by average balance of time and savings deposits for the year, and is a crude, but about the only, measure of rates banks were paying. The deficiencies of this measure are brought out by Albert H. Cox Jr., *op. cit.* p. 37. For one thing, it ignores maturity. For a listing of annual effective yields from 1930 through 1968, see United States Savings and Loan League, *Savings and Loan Fact Book*, 1969, p. 17.

<sup>8</sup>Federal Reserve Board, *Annual Report*, 1934, p. 203.

<sup>9</sup>Federal Reserve Board, *Annual Report*, 1935, p. 211.



## REGULATION Q CEILING RATES

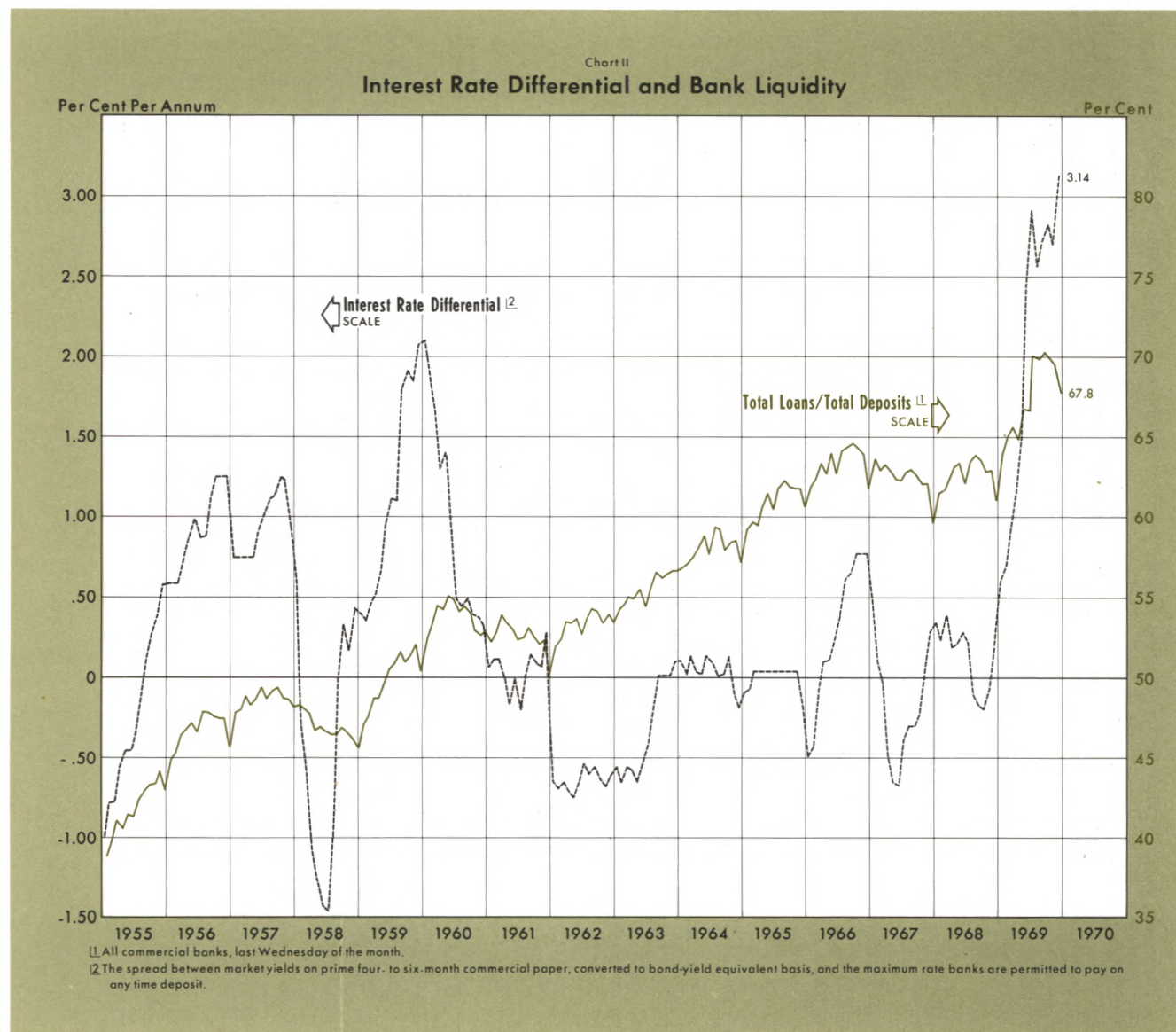
Date Effective	Ceiling Rates*	Reasons for Ceilings	Dissents
Nov. 1, 1933	All time and savings deposits 3.00%	To prevent interest rate competition which might lead to bank failures.	
Feb. 1, 1935	All time and savings deposits 2.50%	Market rates had been declining. No investments suitable for banks offered ceiling rate. The increasing spread in rates being paid in different areas of the country was considered undesirable.	
Jan. 1, 1936	Savings deposits 2.50% Other time deposits Less than 90 days 1.00 90 days - 6 months 2.00 6 months or longer 2.50	Market interest rates had been declining; rates offered by banks had been reduced. Time deposits with shorter maturities should earn a lower rate of return.	
Jan. 1, 1957	Savings deposits 3.00% Other time deposits Less than 90 days 1.00 90 days - 6 months 2.50 6 months or longer 3.00	Market interest rates had risen above ceilings. Banks should have greater flexibility in competing for funds.	Robertson: Raising ceilings would impair bank liquidity and solvency as they sought higher yielding assets in order to pay higher rates.
Jan. 1, 1962	Savings deposits Less than 12 months 3.50% 12 months or more 4.00 Other time deposits Less than 90 days 1.00 90 days - 6 months 2.50 6 months - 12 months 3.50 12 months or more 4.00	To enable banks to attract longer-term savings and permit investment in longer-term assets needed for economic expansion. To enhance freedom of competition and efficiency of allocation. To enable banks to compete for foreign deposits.	King: Rate competition would have adverse effects on many commercial banks without making a significant contribution to solution of the U.S. Balance of Payments deficit, and present savings were adequate for economic expansion.
July 17, 1963	Savings deposits Less than 12 months 3.50% 12 months or more 4.00 Other time deposits Less than 90 days 1.00 90 days or more 4.00	To avoid outflows of funds to foreign competition. To prevent a run-off of bank time deposits, which might unduly tighten bank credit, given the discount rate increase. To eliminate bookkeeping in efficiency cause by splintered ceiling rates.	
Nov. 24, 1964	Savings deposits 4.00% Other time deposits Less than 90 days 4.00 90 days or more 4.50	To insure a sufficient flow of funds through banks to finance domestic investment. To avoid outflows of funds to foreign competition. Savings deposits rate was not raised higher because it might then disturb the relationship with rates of other thrift institutions and complicate Treasury financing. A higher rate on short time deposits might compel unwise competition.	Robertson — To the 4 percent ceiling on other time deposits: This increase would aggravate volatility of deposits. Shepardson and Robertson — To a 4 percent ceiling on savings deposits: It was discriminatory to small savers in view of the 4.5 percent rate permitted on some other time deposits.



Dec. 6, 1965	Savings deposits Other time deposits	4.00% <b>5.50</b>	To enable banks to attract and retain time deposits and therefore make more effective use of funds already in the economy to finance loan expansion. Market interest rates had risen since November 1964 under demand pressure.	Robertson: It would conflict with credit restraint hoped from the discount rate increase. Larger banks would be able to attract funds from smaller banks which rely on demand and time deposits. It would force smaller banks into higher risk positions.
July 20, 1966	Savings deposits Other time deposits Multiple maturity 30 - 89 days 90 days or more Single maturity	4.00%   <b>4.00</b> <b>5.00</b> <b>5.50</b>	To help forestall excessive interest rate competition among financial institutions at a time when monetary policy was aimed at curbing the rate of expansion of bank credit.	
Sept. 26, 1966	Savings deposits Other time deposits Multiple maturity 30 - 89 days 90 days or more Single maturity Less than \$100,000 \$100,000 or more	4.00%   <b>4.00</b> <b>5.00</b>  <b>5.00</b> <b>5.50</b>	To limit further escalation of interest rates paid in competition for consumer savings. To keep growth of commercial bank credit to a moderate pace.	
Apr. 19, 1968	Savings deposits Other time deposits Multiple maturity 30 - 89 days 90 days or more Single maturity Less than \$100,000 \$100,000 or more 30 - 59 days 60 - 89 days 90 days - 6 months More than 6 months	4.00%   <b>4.00</b> <b>5.00</b>  <b>5.00</b>  <b>5.50</b> <b>5.75</b> <b>6.00</b> <b>6.25</b>	To supplement policy measures of monetary restraint. To give banks some leeway to compete for interest sensitive funds. To resist reduction in CD's while not promoting expansion of bank credit.	
Jan. 21, 1970	Savings deposits Other time deposits Multiple maturity 30 - 89 days 90 days or more Single maturity Less than \$100,000 30 days to 1 year 1 year 2 years \$100,000 or more 30 - 59 days 60 - 89 days 90 - 179 days 180 days to 1 year 1 year or more	<b>4.50%</b>   <b>4.50</b> <b>5.00</b>   <b>5.00</b> <b>5.50</b> <b>5.75</b>  <b>6.25</b> <b>6.50</b> <b>6.75</b> <b>7.00</b> <b>7.50</b>	To bring ceilings more in line with market rates. To raise rate on small savings. To encourage longer-term savings in reinforcement of anti-inflationary measures. To increase the pool of savings for investment in mortgages.	

\*The ceiling rates which were changed are shown in boldface type.





paper and the highest Regulation Q ceiling with bank liquidity ratios, suggests that ceilings, when effective, have had an adverse effect on bank liquidity by forcing a run-off of deposits at the very time when credit demands at banks have been strongest.

### ***Ceiling Rates Raised to Permit Freedom of Competition***

The ceiling rates remained unchanged for twenty-one years from 1936 to 1957. Market rates, too, were relatively stable until the late Forties. Beginning then, market rates increased somewhat but, in general, remained below the ceilings. Therefore, during this twenty-one year period, Regulation Q ceilings were virtually forgotten by both bankers and public policymakers.

During the late Fifties and early Sixties, market yields rose and interest rate ceilings were raised in actions reflecting the view that ceilings should be generally in line with market rates. In deliberations on the changes, prevention of undue restriction on competition was emphasized more than was prevention of destructive competition.

**January 1957** — In the mid-1950's short-term market interest rates rose above Regulation Q ceilings. The average rate on prime four- to six-month commercial paper was 3.41 per cent in 1956; three-month Treasury bills were trading at an average rate of 2.67 per cent; and savings and loan associations were paying, on average, an "effective" rate of 3 per cent. In contrast, commercial banks were paying an "effective" rate of 1.6 per cent on time and savings deposits,



while ceiling rates remained at the 1 to 2.5 per cent levels established in 1936.

Because banks were not offering competitive yields, time and savings deposits suffered a relative decline. From 1955 to 1956 time and savings deposits increased only 3.3 per cent, compared with a 7.2 per cent average annual rate in the previous four years. Deposits at savings and loan associations and at mutual savings banks rose 15.6 per cent and 6.4 per cent, respectively, during 1956, compared with rates slightly faster in the previous four years.

In view of this situation the rate ceilings on bank time and savings deposits were raised effective January 1, 1957, in order to give banks greater flexibility in competing for funds. The maximum rate payable on time deposits of less than 90 days remained 1 per cent, while rates permitted on other time and savings deposits were raised one-half of one percentage point. The specific reasoning behind the decision was that:

... there was insufficient reason to prevent banks, in the exercise of management discretion, from competing actively for time and savings balances by offering rates more nearly in line with other market rates. By increasing the rate limitations only on savings deposits and on time deposits with maturities longer than 90 days, the Board continued to recognize the special thrift character of savings accounts and to preserve a differential between longer-term time deposits and short-term time deposits representing essentially liquid balances.<sup>10</sup>

Governor Robertson voted against the change, going back to arguments presented at the hearings on the Banking Act of 1933. He held that it would increase bank operating costs, making it more difficult for banks to raise additional capital, that it would make banks seek higher yielding assets and impair the liquidity and solvency of the banking system, and that short-term funds "should be invested in open market paper, so that holders would have to bear the burden and risks of fluctuating rates and not shift that risk to the banking system."<sup>11</sup>

**January 1962** — In general the Governors took a more favorable attitude toward rate competition, and the ceilings were raised again on January 1, 1962. The change resulted in some further splintering in the classification of time and savings deposits, as the

Board distinguished maturities longer than one year from shorter maturities. Ceilings on savings deposits and on time deposits with maturities of six to twelve months were raised from 3 per cent to 3.5 per cent, and banks were permitted to offer a rate of 4 per cent on time and savings deposits held for twelve months or longer.

The Board of Governors felt that the resulting flexibility and freedom of competition would be useful for three reasons: (1) it would enhance economic growth; (2) it would contribute to improving the United States balance-of-payments position; and (3) it would have a healthy effect on the management of individual banks. The impact on growth was expected to come through encouraging the flow of bank funds to longer-term assets. "By permitting higher rates to be paid on deposits held for longer periods, the new limits would make it possible for banks to attract long-term savings, in contrast to volatile liquid funds, and thereby give banks greater assurance that they could invest a larger portion of their time deposits in longer-term assets."<sup>12</sup> This possible effect on the selection of bank assets was one reason Governor King dissented and Governor Mills questioned the action.

Another reason for raising the ceilings in 1962 was that it would permit competition for foreign deposits "that might otherwise move abroad in search of higher returns, thereby intensifying an outflow of capital or gold to other countries."<sup>13</sup> Balance-of-payments considerations also played a part in subsequent changes of the ceilings. In October 1962, legislation was passed which exempted deposits of foreign governments, and certain international institutions in which the United States was a participant, from the deposit rate ceilings for three years. Exempting legislation and exemption under Regulation Q were renewed in 1965 and 1968.

In discussing competition, most Governors emphasized the desirable rather than the possibly destructive effects. They felt that the higher ceilings would "enable each member bank to determine the rates of interest it would pay in light of the conditions prevailing in its area, the type of competition it must meet and its ability to pay."<sup>14</sup> Governor Robertson specifically expressed this thought—urging ceiling rates even higher than many banks might pay, in order to place responsibility for determining rates upon the individual bank. He noted that Regulation

<sup>10</sup>Federal Reserve Board *Annual Report*, 1956, pp. 52-53.

<sup>11</sup>*Ibid.*, pp. 54-55 contain a full statement by Governor Robertson, giving considerable detail on why there should be ceiling rates and why they should not be raised at certain times.

<sup>12</sup>Federal Reserve Board *Annual Report*, 1961, p. 103.

<sup>13</sup>*Ibid.*, p. 102.

<sup>14</sup>*Ibid.*, p. 102.



Q might impart the unintended and unwanted idea that ceilings indicated what the Federal Reserve thinks banks ought to be paying.<sup>15</sup> This view of competition seems to suggest that the ceilings were not essential in preventing undue concentration of funds and that, as a guide to banks, they may be undesirable.

### *Reservation: Impact of Higher Ceiling Rates on Other Savings Institutions and on Housing*

One reservation about freer competition for commercial banks was its possible impact on other savings institutions. Governor Mills voted for the increase in ceilings in 1962, but questioned going above a 3½ per cent maximum, which would retain the usual spread between rates on commercial bank deposits and rates on deposits at other savings institutions.<sup>16</sup> The aggregate "effective" rates paid by both banks and savings and loan associations had continued to rise in the late Fifties and early Sixties. In 1961 savings and loans were paying an average "effective" rate of 3.92 per

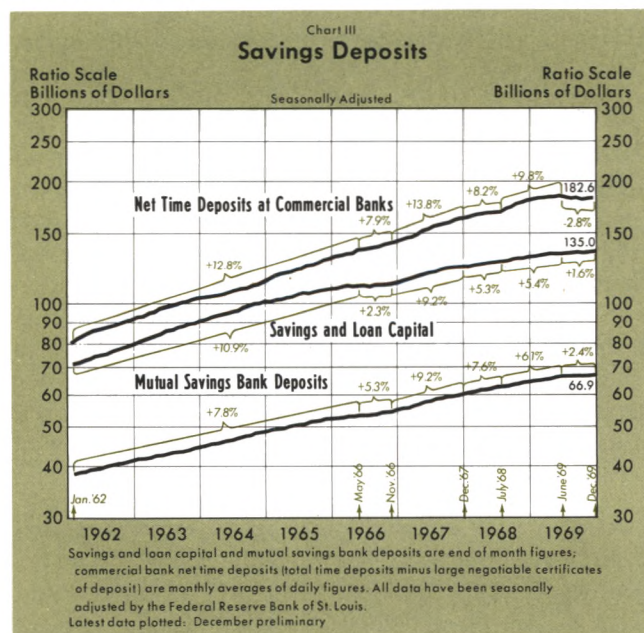
at least since 1962. It has been argued by many, including those associated with savings and loan associations and mutual savings banks, that, because these institutions enhance the availability of credit for housing, they should be given an advantage in the competition for consumer-type savings.

While it is important that there be an optimal flow of funds into the construction of housing, it should be considered whether regulation of bank interest rates accomplishes this goal, and whether this method involves costs which could be avoided.

The examples of 1966 and 1969, when interest rate ceilings effectively prevented both banks and other thrift institutions from competing for funds, seem to suggest that the ceilings alone cannot accomplish an optimal flow of funds into housing. From May to November 1966, growth of deposits at savings and loan associations was only a 2.3 per cent annual rate compared with an 11 per cent rate in the previous 4½ years. In the last half of 1969 the increase was at a 1.6 per cent rate, compared with 5.4 per cent in the previous year.

It has sometimes been argued that because savings and loan associations invest in longer-term assets than banks, they cannot adjust so easily as banks to changes in interest rates. Therefore, without differential ceiling rates, held stable even when market rates vary, savings and loan associations could not operate profitably. However, longer-term assets only imply that a savings and loan association requires a relatively large amount of reserves in order to pay a higher rate on deposits than the average rate earned on assets during a period of transition. As savings and loan associations adjust the rates charged on loans, they should be able to restore a workable relation between interest expense and interest earnings.<sup>17</sup>

Inability to attract and retain deposited funds is potentially as dangerous to savings and loan associations as is paying higher rates in the short-run than they are able to earn. During 1969, Government agencies tried to supplement savings and loan sources of funds by selling securities in the capital market at competitive rates and lending the proceeds to savings and loan associations. As a result savings and loan associations pay the higher competitive yield only on marginal funds, with fewer funds directed away from the housing market because of the rate ceilings than in 1966.



cent, compared with 2.71 per cent for commercial banks. In 1962, after the ceilings were raised, the rate at banks jumped nearly 50 basis points, compared with a 15 basis point increase at savings and loan associations.

Concern over nonbank thrift institutions has been behind resistance to raising Regulation Q ceilings

<sup>15</sup>*Ibid.*, p. 104.

<sup>16</sup>*Ibid.*, p. 103.

<sup>17</sup>See Norman N. Bowsher and Lionell Kalish, "Does Slower Monetary Expansion Discriminate Against Housing?" in the June 1968 issue of this *Review*, also available as Reprint No. 29.



It appears that the interest rate ceilings have not accomplished the goal of encouraging housing. In fact, they probably have made credit for housing more difficult to obtain. On the other hand, they have encouraged the Government to protect a specific set of institutions and to provide services which regulations hinder private markets from providing.

### *Changes in Ceiling Rates to Influence Growth of Bank Credit*

Beginning with the change of ceilings in 1963, the influence of Regulation Q on the growth of bank credit has gradually become the focus in discussions of changing ceilings. The flow of deposits into banks is one factor influencing the ability of banks to expand loans and investments. The relation of interest rate ceilings to market rates is, in turn, an important factor influencing the amount of time and savings deposits which banks are able to attract. Therefore, through its influence on bank credit, Regulation Q has come to be considered a major tool of monetary stabilization policy.

**July 1963** — The change which took place in July 1963 raised the ceiling rates on all time deposits held longer than 90 days to 4 per cent, eliminating some of the previous splintering in the rates. While the balance-of-payments was cited as the primary reason for the change, Governor Robertson, who dissented from the concurrent discount rate increase from 3 to 3½ per cent, added that the increase in ceilings was necessary to offset any restrictive impact of the discount rate increase on bank credit.<sup>18</sup>

**November 1964** — In November 1964 ceiling rates were raised again, after some further increases in market interest rates and in conjunction with a discount rate increase to 4 per cent. The action adjusted the maximum rate on time deposits held less than 90 days from 1 per cent to 4 per cent, while raising that on longer maturities to 4.5 per cent. The differential ceiling rates on savings deposits were also eliminated by permitting a rate of 4 per cent on any savings deposit held longer than 30 days.

The principal reasons for raising the ceilings were to insure a sufficient flow of funds through banks to finance domestic investment and to avoid an outflow of funds which might worsen the balance-of-payments deficit. Again, Governor Robertson thought that

some change in the maximum interest rates permitted under Regulation Q was warranted by the need to prevent a run-off of time deposits. He dissented from raising the ceiling to 4 per cent on time deposits with maturities less than 90 days, however, because he expected it to "encourage the replacement of maturing certificates of deposit with new certificates of shorter original maturities, thus aggravating bank deposit volatility and pressures upon bank liquidity positions."<sup>19</sup>

Both Governor Robertson and Governor Shepardson thought that a 4.5 per cent maximum on savings deposits would be appropriate in that it would treat small savers more equitably. The majority of the Board of Governors, however, felt a 4 per cent rate would preserve the prevailing relationship between rates paid on savings deposits by commercial banks and those paid by savings institutions such as mutual savings banks and savings and loan associations, whereas a higher ceiling might encourage unwise competition and possibly complicate Treasury financing problems.<sup>20</sup>

**December 1965** — In December 1965 an increase in ceiling rates was intended to permit some continued orderly expansion in bank credit while other policy instruments exercised restraint. The maximum rate payable on time deposits, regardless of maturity, was raised to 5.5 per cent, while the ceiling on savings deposits remained 4 per cent. The discount rate was again raised — this time to 4.5 per cent. Most of the discussion reported concerned the discount rate action and the majority view that monetary policy should move promptly against inflationary credit expansion, at a time when market rates had been rising under demand pressures, resource-use had been intensifying, and the pace of Government expenditures was accelerating.

The increase in Regulation Q ceiling rates was intended to help stabilize the growth of bank time deposits and thereby permit banks to make more effective use of funds than when they are uncertain about retaining deposits. The general idea that regulated rates should be in line with market rates is reflected in the statement: "In addition, a pattern of interest rates that was accepted by borrowers and lenders as fully reflecting market forces should, it was thought, add assurance of a smooth flow of funds to all sectors of the economy."<sup>21</sup>

<sup>19</sup>Federal Reserve Board, *Annual Report*, 1964, p. 48.

<sup>20</sup>*Ibid.*, p. 48.

<sup>21</sup>Federal Reserve Board, *Annual Report*, 1965, pp. 64-65.

<sup>18</sup>Federal Reserve Board, *Annual Report*, 1963, pp. 39-40.



Governor Robertson, however, dissented on the grounds that the increase in ceilings would conflict with the credit restraint hoped for from the discount rate increase. The alternative action he suggested was to dampen bank issuance of promissory notes by defining them as deposits, while maintaining the current discount rate and interest rate ceilings on deposits. He also felt that higher ceilings would shift deposits from smaller to larger banks or force smaller banks into higher-risk assets.<sup>22</sup>

**July 1966** — The ceiling rate structure of 4 per cent on savings deposits and 5.5 per cent on time deposits lasted little more than six months. In July 1966 the Board of Governors took two actions influencing ceiling rates. For one thing they lowered the ceiling rate on multiple maturity deposits. A multiple maturity deposit was distinguished from single maturity as one: (1) payable at the depositor's option on more than one date; or (2) payable after written notice; or (3) subject to automatic renewal at maturity. Maximum rates on multiple maturity deposits were lowered to 5 per cent if held more than 90 days and to 4 per cent if held only 30-89 days. This lowering of rates was intended to inhibit competition between banks and thrift institutions "at a time when monetary policy was aimed at curbing the expansion of bank credit."<sup>23</sup>

The other action was to recommend legislation to facilitate distinction between consumer-type deposits and money market CD's. The Board considered the previous action of defining multiple maturity deposits only a partial attempt at this. They recommended that Congress broaden the authority of the Federal Reserve by allowing them to distinguish deposits by amount in regulating rates, and that it extend similar authority to the Federal Home Loan Bank Board to determine maximum rates at savings and loan associations.

**September 1966** — Public Law 89-597, passed September 1966, permitted time deposits under \$100,000 to be treated differently from larger ones in regulating maximum rates and authorized national regulation of maximum rates paid by savings and loan associations and mutual savings banks. On the same day the law was signed, the maximum rate on any time deposit less than \$100,000 (excluding passbook savings deposits) was set at 5 per cent. Like the previous reduction, this one was intended to limit rate increases caused by competition for household savings,

and to keep the growth of bank credit at a moderate pace.<sup>24</sup>

During 1966 market interest rates continued their upward trend, culminating in the so-called "credit crunch." Yields on prime four- to six-month commercial paper reached 6.11 per cent and yields on three-month Treasury bills reached 5.08 per cent in August 1966. Rates paid at banks and savings and loan associations were not competitive with these other market instruments. As a result, the growth of time and savings deposits slowed substantially. In early 1967 market interest rates subsided somewhat, financial institutions could again attract funds, and growth of deposits quickly moved to the previous rapid trends.

**April 1968** — In the spring of 1968, market interest rates climbed into the range at which ceilings prevented banks from competing for funds as effectively as before. In April the ceiling rates on large denomination CD's were raised "in order to give banks some leeway to compete for interest-sensitive funds." Rates on single maturity CD's in denominations larger than \$100,000 were raised to 5.75 per cent if held 60 to 89 days, to 6 per cent if held 90 days to 6 months, and to 6.25 per cent if held longer than 6 months. Ceiling rates on other time deposits were not raised; the resulting structure was considered sufficient to resist the run-off of CD's, while not promoting expansion of bank credit.<sup>25</sup>

**1969** — While the relationship between ceiling rates and market interest rates changed significantly in 1969, no change was made in ceiling rates. For example, the spread between yields on four- to six-month commercial paper and the ceiling rate on three- to six-month CD's was over 3 percentage points at the end of 1969. Prior to the last time ceiling rates were raised, in 1968, the spread was about one-half of one percentage point. As a result of the change in relative yields, by December 1969 banks had lost over half of the \$24 billion in CD's held in December 1968. Other time and savings deposits, savings and loan capital, and mutual savings bank deposits also stopped increasing or increased at substantially slower rates than in 1968.

Bank credit increased only 2.5 per cent in 1969, after rising 11 per cent in 1968. This slowing was due partly to slower growth of the monetary base and partly due to the impact of Regulation Q.

**January 1970** — The disintermediation in 1969 led to an upward revision in the ceiling rates effective January 21. The maximum rate on bank savings de-

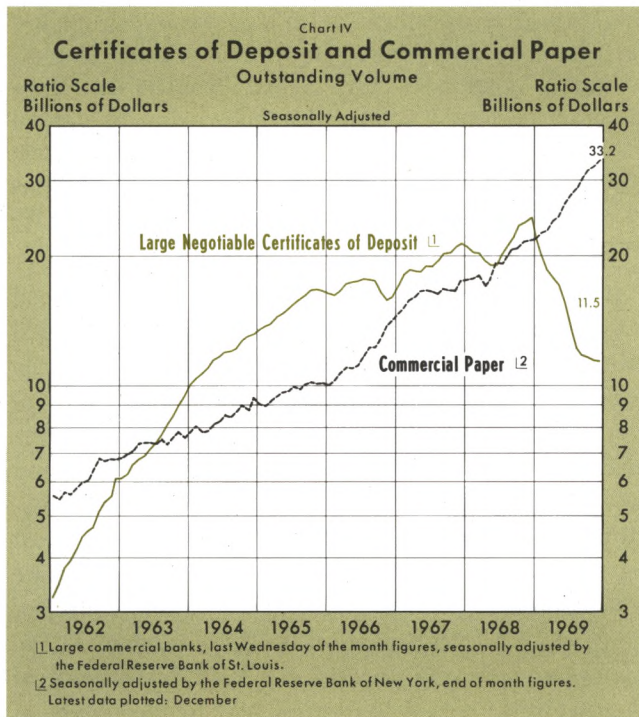
<sup>22</sup>*Ibid.*, p. 70.

<sup>23</sup>Federal Reserve Board, *Annual Report*, 1966, pp. 97-98.

<sup>24</sup>Federal Reserve Board, *Annual Report*, 1966, pp. 104-106.

<sup>25</sup>Federal Reserve Board, *Annual Report*, 1968, pp. 69-70.





posits became 4.5 per cent. Small certificates (less than \$100,000) are now permitted to yield 5.50 per cent if they mature in one year, and 5.75 per cent if they mature in two years. The ceiling on each maturity classification of large CD's was raised  $\frac{3}{4}$  of a percentage point, and a new classification, large CD's maturing in a year or more, is permitted to yield 7.50 per cent.

The changes were made to bring the structure of ceiling rates "... somewhat more in line with going yields on market securities," to permit a more equitable rate on small savings, and "... to encourage longer-term savings in reinforcement of anti-inflationary measures." Along with these reasons was the belief that higher rates on savings at institutions would increase the amount of funds available for mortgages. On the following day the Federal Home Loan Bank Board raised the maximum rates savings and loan associations are permitted to pay.

There was no explicit mention of bank credit in the press release which announced the change. However, it was pointed out that:

"The revisions in the Board's Regulation Q ceiling rates were held to moderate size, so as not to foster sudden and large movements of funds into the banking system that could cause distortions in traditional financial flows or lead to an upsurge in bank lending."

During the Sixties the idea that Regulation Q is a major instrument for controlling bank credit became

the predominant rationale behind the structure of the ceilings. Implicit in this view was the importance of bank credit as a target variable in monetary stabilization policy. It does appear reasonable that the growth of credit extended by banks is associated with the growth of spending in the economy, and that appropriate stabilization policy during a period of excessive spending would be restricting the growth of bank credit. It should be recognized, however, that there are alternative channels through which funds flow from savers to borrowers.

Savers, who are discouraged from putting their funds in banks or other thrift institutions because of low yields, have had alternative, higher earning assets available. Therefore, any slowing in the growth of bank deposits and hence bank credit, which is caused by restricting competition, is probably offset by a rise in the flow of funds through unregulated markets, leaving the growth of total credit unaffected. In 1969, for example, at the same time that the outstanding volume of large negotiable CD's declined \$13 billion, the outstanding volume of commercial paper increased by \$11.5 billion. A stronger demand by individuals for small denomination (\$1,000 and \$5,000) Treasury bills also developed, as savers sought higher returns than banks were permitted to pay.

The impact of Regulation Q has encouraged banks to find nondeposit sources of funds. During the past two years, they found supplemental sources of funds in the sale of commercial paper by bank subsidiaries and holding companies and in Euro-dollar transactions. The channelling of dollars through Europe to avoid interest rate restrictions increased the cost and distance of flows of funds and led to new regulations imposing reserve requirements on such borrowing. Regulations concerning the sale of commercial paper are pending, while commercial banks continue to seek ways to avoid the discriminatory impact of Regulation Q.

### Summary and Conclusions

The Banking Act of 1933 authorized the Federal Reserve Board to establish maximum rates which banks may pay for funds. In November of that year, the Federal Reserve Board adopted Regulation Q, which imposed a ceiling rate of 3 per cent on member bank time and savings deposits. The action was taken to help avoid unwise competition among banks and its detrimental effects on the soundness of banks. This reason has gradually received less attention.



While the ceilings have been raised on occasion in order to permit some competition for funds, changes in the spreads between the ceiling rates and market rates sometimes have been allowed to occur with the intention of increasing the flow of funds toward nonbank thrift institutions or influencing the growth of bank credit. The primary justification for the current structure of Regulation Q ceilings has been its presumed control on bank credit for purposes of economic stabilization. Given this goal, the adverse impact of Regulation Q ceilings on bank liquidity at certain times has probably been intended. However, Regulation Q cannot control total credit in the economy, since funds leaving bank time deposits are channelled through unregulated markets or return to banks through nondeposit sources of funds.

Though the growth of total credit probably is unaffected by Regulation Q, the allocation of credit is affected. At times when ceilings restrict the amount of funds available to financial intermediaries, borrowers in the unregulated markets are able to obtain funds more cheaply than if all markets were freely competitive, while borrowers who rely on banks or

other thrift institutions are forced to pay a higher price or may find funds simply unavailable. The situation is analogous for savers. Holders of large amounts of liquid funds with knowledge of capital markets can receive the highest return available, while those who must rely on regulated institutions to hold and accumulate savings receive a lower return than if banks were free to compete.

It appears that interest rate restrictions on financial intermediaries impose inequities on our economy, discriminating against housing, small savers, and the regulated financial institutions. They encourage inefficiencies as banks try to reroute funds, intermediaries try to compete through premiums, and Government agencies have to find both new regulations and ways to ease the burden on those most severely hurt. It further appears that interest rate restrictions are of little consequence in the control of total credit or total spending in the economy. At the same time, there is no evidence that the absence of Regulation Q would be detrimental to the equity of the economy, the solvency of the banking system, or the control of total spending.

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