FEDERAL RESERVE BANK OF ST. LOUIS

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REVIEW

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Stabilization Policy and Inflation

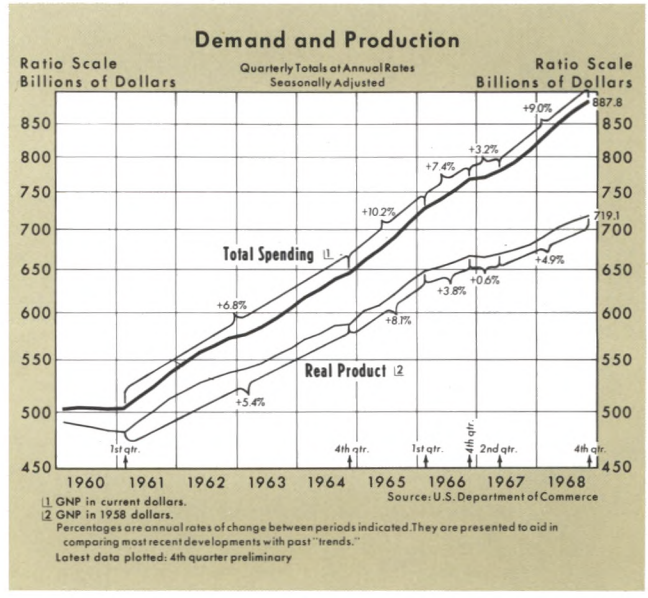
THE PROJECTED COURSE of economic activity for this year is discussed in the 1969 Economic Report of the President, which was presented to Congress on January 16. The appended report of the outgoing Council of Economic Advisers projected total spending in the fourth quarter of 1969 to be 6 per cent above fourth quarter 1968. Though their estimate is labeled a forecast, it may be considered, more appropriately, a target or plan in the spirit of the Employment Act of 1946. To achieve this 6 per cent target growth in total demand, the outgoing Administration proposed a budget consisting of a 5.5 per cent increase in Federal spending in the year ending fourth quarter 1969, and continuation of the 10 per cent tax surcharge to mid-1970.[1] Enactment of these proposals, in conjunction with the Council's projections of economic activity, would yield a small surplus in the Federal budget for calendar 1969. No specific recommendations were offered for the course of monetary actions, other than that such actions should be "appropriate."

Projections of total spending are supplemented by estimates of growth in real product and of the advance in the price level. The Council's report demonstrates clearly the necessity for slowing the growth of total spending as a means of reducing inflationary pressures. According to the Council, reduction in the growth of total spending from 9.5 per cent in the year ending fourth quarter 1968 to 6 per cent in the same period in 1969 would probably be manifested in about 3 per cent growth in real product and about 3 per cent increase in prices. Real product advanced 5.5 per cent from fourth quarter 1967 to fourth quarter 1968, while prices rose 3.9 per cent.

Recent Economic Developments: Background for Forthcoming Policy

The rate of growth of total spending slowed only slightly in the fourth quarter, continuing far in excess of growth in the economy's productive potential. As a result, upward pressure on prices persisted and prices rose at a 4 per cent annual rate in the fourth quarter, the same as in the previous year. By comparison, prices increased at a 2.5 per cent average rate from 1964 to 1967 and 1.3 per cent annually from 1961 to 1964.

Both monetary and fiscal actions provided substantial stimulus to total spending in the year ending last June. The pace of economic activity, through December, continued to reflect these expansionary

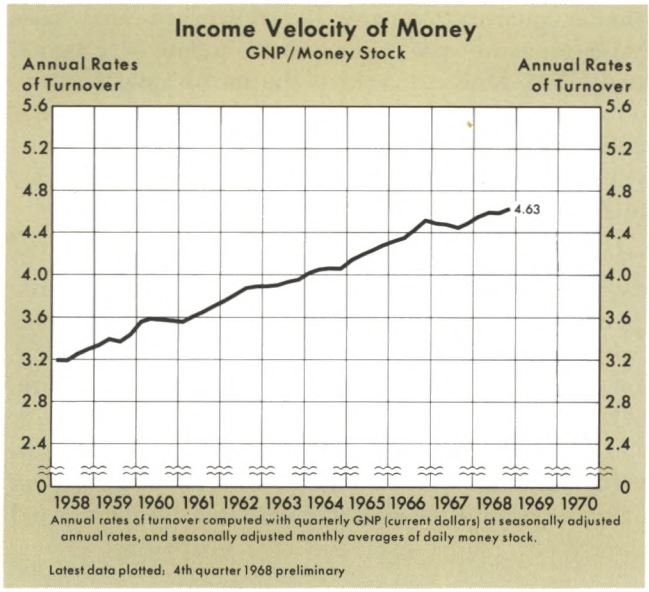


policy developments. After mid-year, the Federal budget deficit declined as tax receipts increased and the growth of Federal spending slowed. However, the rate of monetary expansion continued well above the growth rate of productive potential and velocity of money continued to rise.

Fiscal Actions

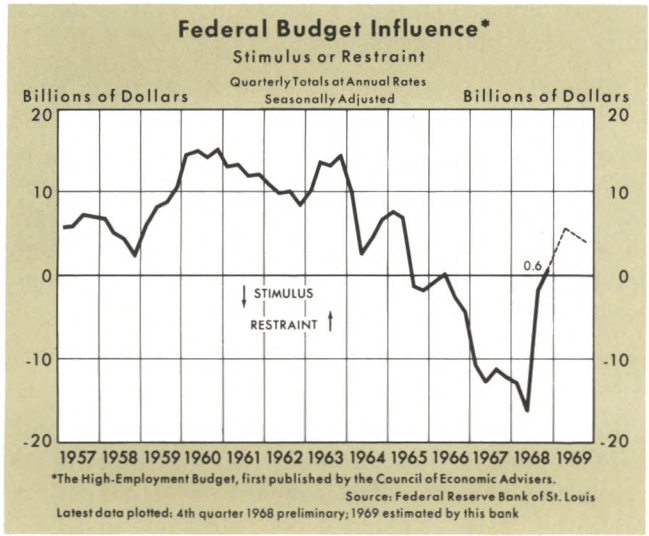
Federal budget actions have been less stimulative since mid-year; revenues have increased very rapidly since July, while expenditure growth has slowed. The moderation of expenditure growth reflects the restraints included in the Revenue and Expenditure Control Act of 1968. Growth of revenues reflects the combined effects of the tax surcharge provision of the Act and large advances in nominal incomes.

[1] All references to the government budget projections for 1969 are on a seasonally adjusted national income accounts basis.



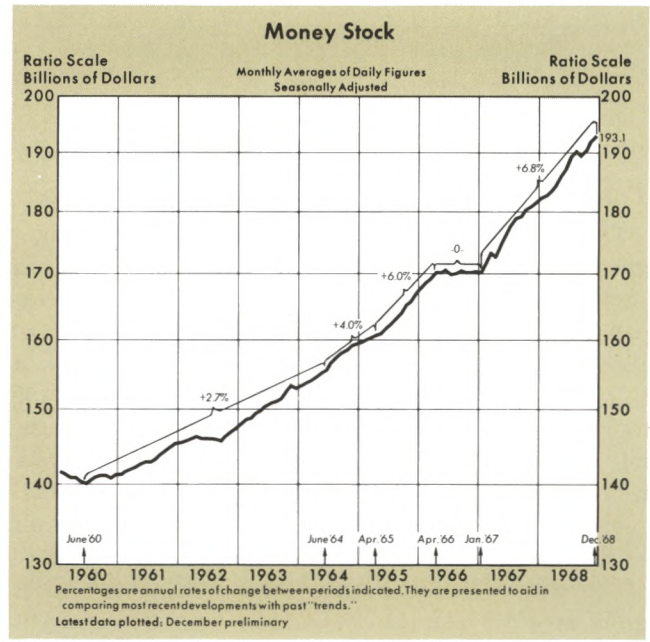
The high-employment budget, a measure of fiscal influence, shifted from a $14.5 billion annual rate of deficit in the first half of calendar 1968 to a slight deficit in the second half. While all measures of fiscal actions indicate that the expansionary influence of the Federal budget has been reduced substantially, total spending in the economy has continued to expand at a rapid rate.

Fiscal restraint is expected to intensify in the first half of calendar 1969, and moderate slightly in the second half. The high-employment budget is scheduled to move to a $5.6 billion annual rate of surplus in the first half, and a $4.0 billion rate of surplus in the second half. The government's budget proposes expenditure increases of 5.5 per cent in the year ending fourth quarter 1969, and continuation of the 10 per cent surcharge for all of 1969. The effect on total demand of the movement from a budget deficit to a surplus is contingent on the rate of monetary expansion.



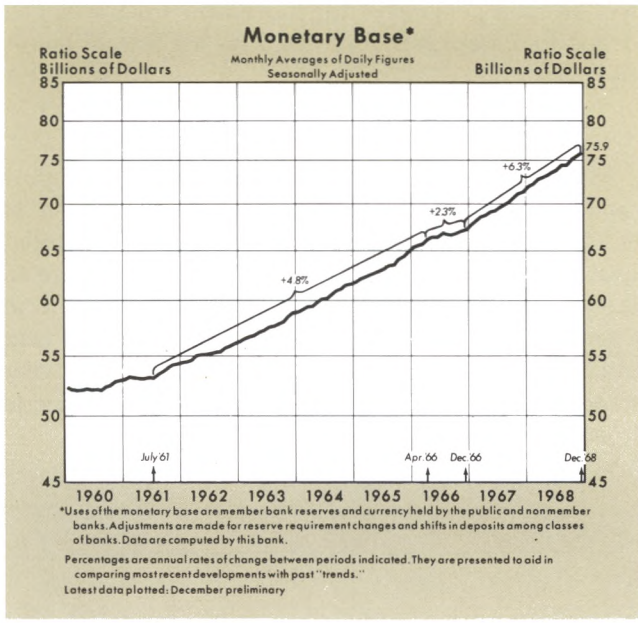
Monetary Actions

Monetary aggregates have continued to grow rapidly since June. The money stock has grown at a 5.2 per cent annual rate in the past six months, less rapidly than the 8 per cent rate of increase in the previous six months. However, in the most recent three months, money has increased at an 8.6 per cent rate. In comparison money grew at a 4.1 per cent trend rate from 1964 to 1967 and a 2.6 per cent rate from 1960 to 1964.



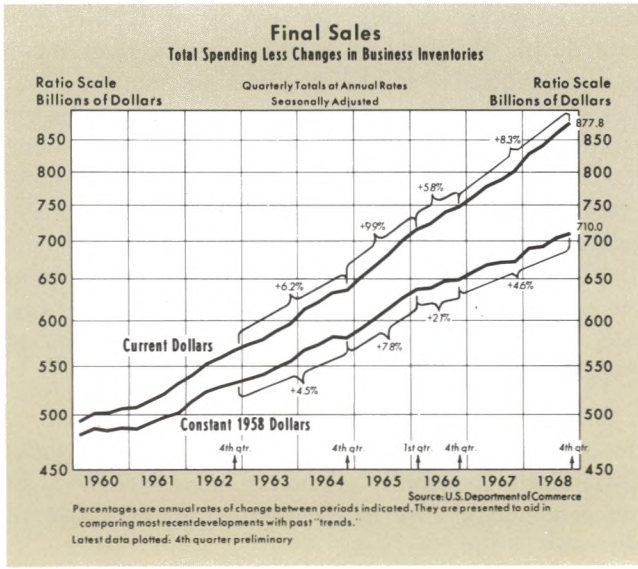
The monetary base, which largely determines the trend growth of money, has risen at an 8.1 per cent rate during the last six months, greater than the 5 per cent increase in the previous six months. Over the past year, the monetary base has increased more steadily than either the money stock or bank credit. Fluctuations in the money stock and bank credit during short periods are caused by many factors, including changes in the growth rate of time deposits as market interest rates change relative to the ceiling rates that banks can pay on time deposits, and, in the case of money, by abnormal shifts in Treasury deposits.

Bank credit has expanded at a 14 per cent rate in the past six months and 11 per cent in the past year. Total loans at commercial banks have risen at a 15 per cent annual rate in the past six months and 12 per cent in the past year.



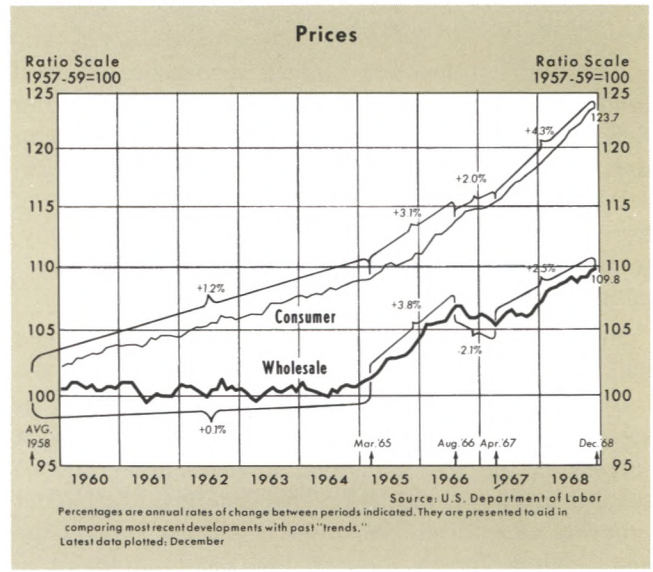
Total Spending, Final Sales and Production

Despite the movement of the Federal budget toward surplus, total public and private spending has continued to advance rapidly as rapid monetary expansion has continued unabated in the last half of 1968 and in early 1969. Total spending increased at a 7.9 per cent annual rate from the third to the fourth quarter, slightly slower than earlier in the year, but about the same as the 8.1 per cent average rate from mid-1965 to late 1968. The composition of total spending changed from the third to the fourth quarter as the advance in final sales moderated and the rate of inventory accumulation increased. Final sales grew at a 6.8 per cent rate from the third quarter, compared with an 8 per cent average rate since 1964.



Similar quarter-to-quarter slowdowns in final sales have frequently taken place in the inflationary period since 1964, however, so that the fourth quarter slowdown in growth of final sales is not necessarily indicative of a change in trend. For example, final sales slowed from first to second quarter 1968, only to resume a rapid advance in the third quarter.

Real product rose at a 3.9 per cent annual rate in the fourth quarter, slower than in the previous three quarters but at about the same rate as in the previous two years. A slowdown in real product growth may not indicate a moderation of inflationary pressure, but may reflect the restraints of labor force growth and of limited advances in productivity. In an economy operating at essentially full employment, an increase in total demand is manifested by more rapid



increases in prices than otherwise. Total or final demand, not real product, reflects the overall influence of monetary and fiscal actions.

Industrial production has risen 5 per cent from late 1967, about the same growth rate as from 1965 to 1967, but less than the 7 per cent rate from 1961 to 1965. Recent growth in industrial output has been less than in the 1961 to 1965 period, probably because of high levels of resource utilization. At these high levels, productivity gains tend to decline as less efficient labor and equipment are utilized.

Prices and Employment

Prices began to accelerate in late 1965 in response to the pressures of excessive demand relative to productive capacity. The annual rate of increase of prices has been at about 4 per cent since mid-1967.

up from a 3 per cent rate from late 1965 to mid-1967, and from a 1.5 per cent average rate in the 1961 to 1965 period.

Wholesale prices of industrial commodities rose at a 2.7 per cent rate from late 1967 to late 1968 and at a 1.7 per cent rate from 1964 to 1967, after being essentially unchanged from 1961 to 1964. Consumer prices increased 4.7 per cent from late 1967 to late 1968, at a 2.9 per cent average rate from 1965 to 1967, and at a 1.3 per cent rate from 1961 to 1965.

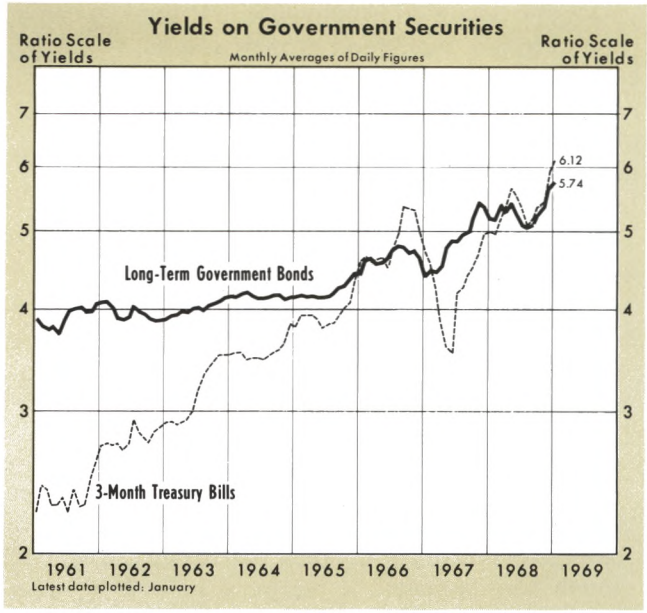
The acceleration of price increases and total demand growth have been associated with a rising rate of employment of the labor force. In January 1965, when unemployment was 4.8 per cent of the labor force, the Council of Economic Advisers stated that employment of 96 per cent of the labor force should be an interim target for stabilization actions. That target level was achieved in early 1966, while inflationary pressures intensified. Since then, employment has exceeded that level in all but two months, reaching an extremely high 96.7 per cent of the labor force in November and December of 1968. The acceleration of the rate of price increase which began at the end of 1965 has continued almost without interruption.

Interest Rates

Intensification of inflationary pressures has also affected prices for the use of loan funds. As increasing prices for the use of borrowed funds and for goods and services come to be anticipated, the public increases current purchases and borrowing in an effort to avoid higher prices and interest rates in the future. In this manner, anticipated inflation gives rise to additional demand pressures, and prices and interest rates rise further. Because of the expectation of higher prices, borrowers are willing to pay higher interest rates than otherwise. Holders of assets direct their holdings away from the loanable funds markets and into equities and real assets, unless they can obtain a return from loans sufficient to compensate them for the anticipated inflation.

Market interest rates, in response to both supply and demand forces, have risen on balance since last September. This increase was especially rapid in late November and early December. Yields on long term securities have followed the trends of prices of goods and services. Long-term Treasury bond yields averaged 4 per cent in the 1960 to 1965 period, 4.8 per cent from 1966 to 1967 and 5.3 per cent in 1968.

The Federal Reserve discount rate and the rate charged to prime borrowers by commercial banks



were raised as lagged responses or adjustments to market rate developments. On December 3 the prime rate was raised from 6¼ per cent, which it had been since September, to 6½ per cent. The Federal Reserve discount rate was increased from 5¼ per cent to 5½ per cent on December 18 in response to the increased market rates. On December 19, the prime rate was raised again to 6¾ per cent, and on January 7 to 7 per cent. This is the highest level of the prime rate since it was first defined in 1929. With prices currently rising at a 4 per cent rate, the 7 per cent prime rate may be no higher, in real terms, than the 4½ per cent prime rate prevailing in the early Sixties when prices were rising at about a 1½ per cent rate.

Regulation Q of the Federal Reserve System and similar regulations by the Federal Home Loan Bank Board limit interest rates paid on deposits and savings and loan shares. However, there is no reason to suppose that these restrictions keep the general level of market interest rates lower than it otherwise would be. Since the restrictions may limit the total supply of loan funds, the average level of interest rates paid by borrowers of loan funds is, in response to supply and demand forces, probably higher than it would be in the absence of the controls.

Stabilization Policy and the Economic Outlook for 1969

There is widespread agreement that inflation is the nation's chief economic problem in 1969. It is also agreed that inflationary pressures can be reduced by slowing the growth of total spending. Such a slowing requires a policy of monetary and fiscal restraint.

Despite universal acceptance of the need to reduce the rate of growth of total spending, there is a question of how such a reduction will affect real product and prices. The outgoing Council has judged that a 6 per cent growth in total demand from fourth quarter 1968 to fourth quarter 1969 will be accompanied by about 3 per cent growth in real product and about 3 per cent advance in prices. Such a judgment requires further examination.

Demand, Production and Prices
Annual Rates of Change

Period	Total Demand	Real Product	Period	Prices
II/54 to I/57	7.3	4.5	IV/55 to I/58	3.7
I/57 to II/58	.3	—2.5	I/58 to IV/59	1.6
II/58 to I/60	8.2	6.4	IV/59 to IV/60	1.9
I/60 to I/61	.1	—1.5	IV/60 to IV/61	1.1
IV/64 to I/66	10.2	8.1	IV/65 to IV/66	3.3
I/66 to II/67	5.7	2.5	IV/66 to II/67	2.5
II/67 to IV/68	9.0	4.9	II/67 to IV/68	3.9

Stabilization Actions and Total Demand

The outgoing Council has suggested a 6 per cent growth in total demand as an optimum target for stabilization actions in 1969. This goal for GNP growth was presented in conjunction with a budget that projects a continuation of the less expansionary fiscal stance implemented in mid-1968. Whether such a goal will be achieved depends on the ultimate fiscal program that is adopted by Congress and the new Administration, and the forthcoming rate of monetary expansion. Rapid monetary expansion apparently has continued up to the present, and, due to the lagged effect of monetary actions, rapid growth of total spending might be expected well into 1969.

The rate of monetary expansion in recent years seems to have been influenced to a considerable degree by changes in the amount of outstanding Federal debt. Since late 1966, large Federal deficits have prompted rapid increases in bank reserves to facilitate absorption of new issues of Government securities, without much immediate increase in interest rates. With the Federal budget now near balance and scheduled to move into surplus, monetary authorities may be better able to combine the program of fiscal restraint with restriction of the rate of growth of monetary aggregates, such as Federal Reserve credit, total bank reserves, the monetary base and the money supply.

Real Product and Prices

An evaluation of the Council's 1969 projections for real product growth and prices can be facilitated by examining past periods when the growth of total spending decelerated. As the table indicates, on three occasions since 1954 there was a marked and sustained decline in the rate of increase of total spending: first quarter 1957 to second quarter 1958, first quarter 1960 to first quarter 1961, and first quarter 1966 to second quarter 1967. On each of these occasions, a slowdown in total spending growth was accompanied by a simultaneous deceleration of real product. The effect on prices, however, has tended to lag the deceleration of total spending by three or four quarters.

Growth in total spending slowed in the period beginning second quarter of 1957 from a 7.3 per cent rate to a 0.3 per cent rate. Real product decelerated at the same time while price increases did not slow until about a year later. When total spending decelerated beginning second quarter 1960 from an 8.2 per cent rate to a 0.1 per cent rate, real product decelerated simultaneously. Price increases did not decelerate until three quarters later. Total spending slowed beginning second quarter 1966 from a 10.2 per cent rate to a 5.7 per cent rate, and real product growth declined simultaneously. Prices first accelerated, then decelerated three quarters later.

This experience, though limited, suggests that a deceleration of growth in total spending in 1969 probably would be accompanied by a simultaneous deceleration of real product. However, a slowdown in the rate of price increase might be expected to be delayed by three quarters or a year.

Summary

Inflation is a problem that will take time to overcome. On the basis of past experience, it is doubtful that the Council's proposed economic program will be successful in reducing the rate of price increase to 3 per cent for the year ending fourth quarter 1969. Monetary expansion continues rapid, implying continued fast growth in total spending unless the rate of monetary expansion is moderated. With inflationary expectations apparently entrenched in the economy, it is more likely that significant price effects of a reduction in spending growth, once it occurs, would not appear until as much as a year later.

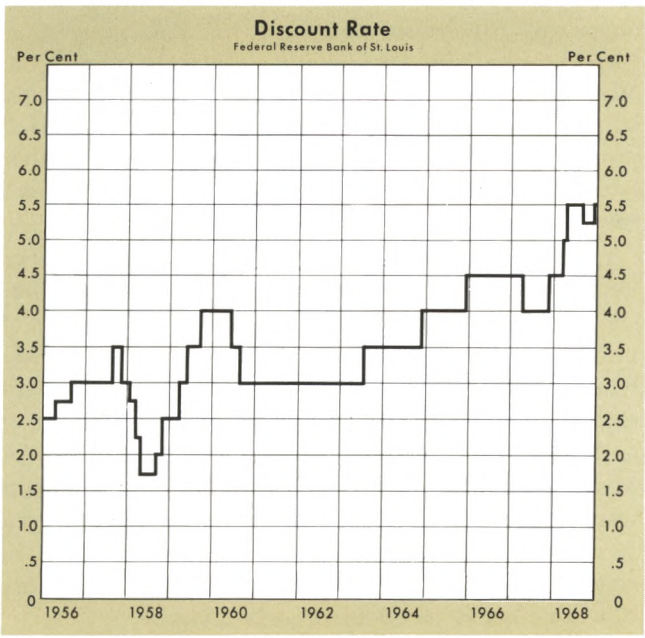
Operations of the Federal Reserve Bank of St. Louis—1968

THE FEDERAL RESERVE BANK OF ST. LOUIS is part of the Federal Reserve System, which includes the Board of Governors in Washington, D.C., the 12 Federal Reserve Banks, and their 24 branches. The Eighth Federal Reserve District includes all of Arkansas and portions of Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. In addition to the head office, branch offices are located in Little Rock, Louisville, and Memphis.

The operations of the Federal Reserve Bank of St. Louis and its branches fall principally within three functional areas: participation in the formulation and administration of monetary policy; supervision of certain commercial banks; and provision of a variety of services for the public, the United States Government, and commercial banks. These areas are closely interrelated, and specific activities of the Bank may serve more than one function. For example, member bank borrowing from the Federal Reserve is one of the privileges of membership, and extension of such credit involves some aspects of supervision, while establishment of the discount rate is a part of monetary policy formulation.

Lending and the Discount Rate

Member banks and, under certain circumstances, others may receive credit assistance from Federal Reserve Banks through advances and discounts. Advances are the usual form of credit to member banks, and the only form of credit to others. Nevertheless, a custom has developed of referring to Reserve Bank lending as discounting, and the interest charge applicable to such lending as the discount rate. The discount rate is established by directors of each of the twelve Reserve Banks, subject to review and determination by the Board of Governors. The rate was adjusted four times during 1968. It was increased from 4½ to 5 per cent in March and to 5½ per cent in April. The discount rate was then reduced to 5¼ per cent in August, but restored to 5½ per cent in December.[1]



Borrowing by member banks from the Federal Reserve Bank of St. Louis during 1968 rose sharply from 1967 levels but remained substantially below the level of 1966. Average credit outstanding to Eighth District member banks was $17 million, compared with $6 million in 1967 and $32 million in 1966.

A Federal Reserve System Committee has made a number of proposals for the redesign of the discount

[1]Under present law, when a member bank borrows from its Reserve Bank on collateral other than U.S. Government obligations or limited types of paper that 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.

mechanism.[2] The chief objective of the proposals is to stimulate use of the discount window for the purpose of facilitating short-term adjustments in bank reserve positions. According to the Committee report, a more liberal and convenient mechanism should enable individual member banks to adjust to changes in fund availability in a more orderly fashion and, in so doing, lessen some of the causes of instability in financial markets without hampering overall monetary management.

Two major and interrelated changes included are: (1) more objective definitions of terms and conditions for discounting; and (2) inclusion of several complementary arrangements for borrowing, each designed to provide credit for a specific need. As a result of these changes the Federal Reserve System anticipates a generally higher level of borrowing by member banks. However, a higher level of borrowing does not necessarily imply a corresponding increase in total reserves, since increased borrowing can be offset by smaller System holdings of securities.

The first of these changes would be accomplished by introducing specific quantity and frequency limitations on certain types of borrowing by member banks, and by increasing reliance on the discount window through consistently maintaining the discount rate at levels reasonably close to rates on alternative instruments of reserve adjustment. These proposals are designed to permit a clearer and more unequivocal communication of discounting standards and limitations to member banks, and to help insure uniformity of window operation among districts and among banks.

The proposed redesign contains varied arrangements by which the Federal Reserve would provide short-term adjustment credit, seasonal credit, and emergency credit. Short-term adjustment credit is further divided into a "basic borrowing privilege" and other adjustment credit. The former provides credit on an automatic basis within specified limits on amount and duration to all member banks meeting specified conditions; the latter is available, under administrative control, to meet needs larger in amount or longer in duration than can be accommodated under the basic borrowing privilege. Seasonal credit would be provided to accommodate recurring demands as determined by observed seasonal patterns, for such amounts and duration as the applying member bank demonstrates a need. Credit would continue to be provided to member banks in general or isolated emergency situations and – in its role as lender of last resort to other sectors of the economy – the Federal Reserve would stand ready, under extreme conditions, to provide credit assistance to financial institutions other than member banks.

[2]See "Report of a System Committee," *Reappraisal of the Federal Reserve Discount Mechanism,* Board of Governors of the Federal Reserve System, July 1968.

Research

Research activities at the Federal Reserve Bank of St. Louis are directed toward national and regional business and financial problems. Analyses are conducted of both current and longer run basic stabilization issues. Also, economic developments in the Eighth Federal Reserve District are measured and interpreted. Such analyses are used to assist the President of the Bank in discharging his responsibilities as a participant in the deliberations of the Federal Open Market Committee, and in formulating his recommendations to the Bank's Board of Directors. In addition, the research staff engages in activities to provide economic information to the public. This is accomplished through publication of this *Review* and other recurring releases which are available to the public without charge.

Supervision and Examination

The Federal Reserve System is one of the agencies responsible for supervising commercial banks, with the objective of fostering and maintaining a sound banking system.

A major supervisory responsibility is evaluation of the assets, operations, policies and effectiveness of management of the banks subject to review. Examinations provide the basic information which enables each supervisory authority to help prevent or correct situations that might adversely affect the economy or the general public interest. Supervision by the Federal Reserve Bank of St. Louis is exercised principally through examination of state member banks. All state member banks in the district were examined in 1968.

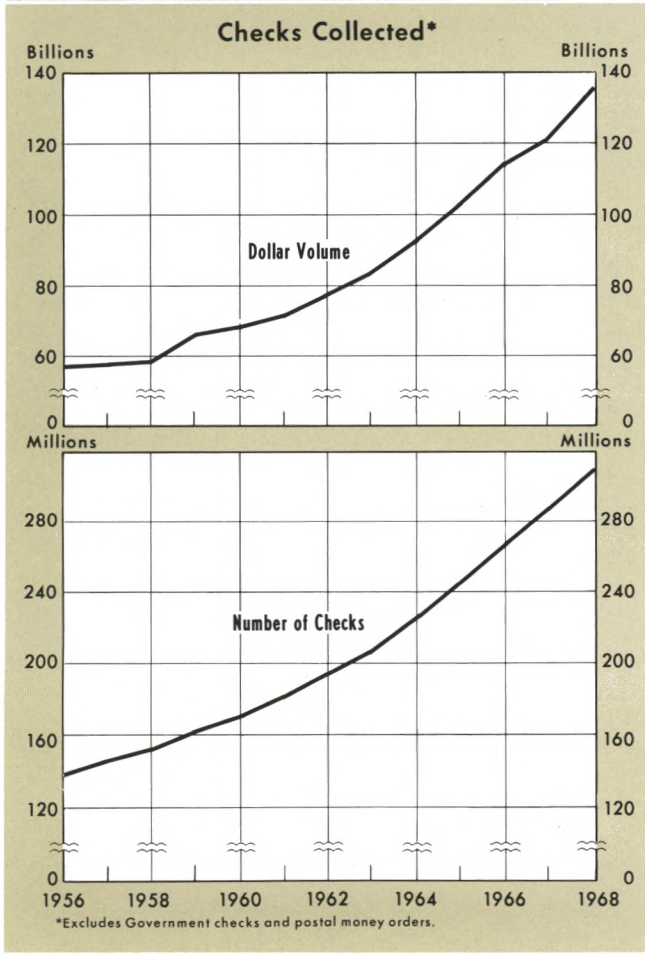
Other supervisory functions of the Federal Reserve System include admission of state banks to membership in the System, approval of the establishment of branches, approval for merger or absorption of other banks by state member banks, and granting permission to establish registered bank holding companies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

Table 1

VOLUME OF OPERATIONS[1]

	Dollar Amount (Millions)		Per Cent Change
	1968	1967	1967-68
Checks collected[2]	135,737.9	120,860.0	12.3
Noncash collection items	556.2	524.1	6.1
Coin counted	58.2	48.0	21.3
Currency counted	1,577.5	1,514.7	4.1
Transfers of funds	169,173.1	147,057.5	15.0
U. S. Savings Bonds handled[3]	600.2	626.8	—4.2
Other Government securities handled	20,250.3	16,232.8	24.7
U. S. Government coupons paid	157.2	166.9	—5.8
	Number (Thousands)		Per Cent Change
	1968	1967	1967-68
Checks collected[2]	311,416	286,069	8.9
Noncash collection items	882	868	1.6
Coin counted	539,162	445,359	21.1
Currency counted	219,297	217,358	0.9
Transfers of funds	268	247	8.5
U. S. Savings Bonds handled[3]	10,608	9,864	7.5
Other Government securities handled[3]	690	603	14.4
U. S. Government coupons paid	724	759	—4.6

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



Service Operations

Among its service operations, the four offices of this bank maintain facilities for the collection and clearing of checks and other items, furnish currency for circulation, handle the legal reserve accounts of member banks, and act as a fiscal agent for the Government. Most of these service operations at the bank's offices increased in 1968, reflecting the growth in economic activity in the Central Mississippi Valley.[3]

Collection Items

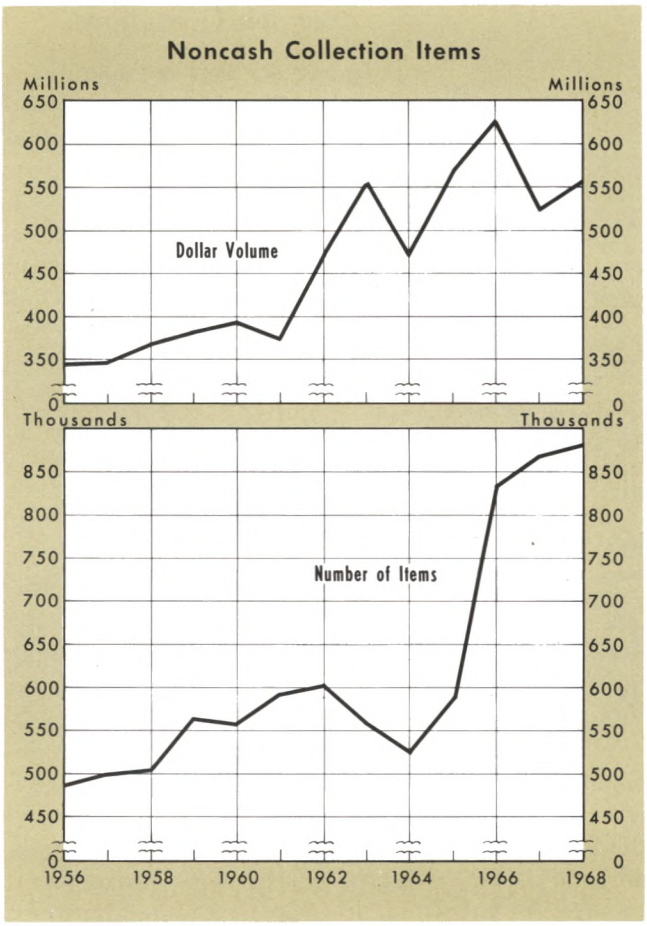
Federal Reserve Banks participate in collecting checks and provide a mechanism through which commercial banks settle for the checks collected. These activities facilitate the use of demand deposits by individuals, businesses, and governments in making payments. The four offices of this bank receive checks from district member banks, other Federal Reserve offices, and Government agencies for collection. In order to increase the speed of collections, the Reserve Bank in some cases receives checks directly from member banks of other Federal Reserve Districts. Checks received are either drawn on banks in the Eighth District that remit at par,[4] par-remitting banks in other districts, or the United States Treasury.

The number of checks collected through the four offices of the bank rose from 286 million in 1967 to 311 million in 1968, an increase of 8.9 per cent. Reflecting both the greater number of checks and their larger average size, dollar volume rose to $136 billion, 12 per cent above a year earlier.

In addition to maintaining facilities for check collection, Federal Reserve Banks handle numerous

[3]For an analysis of economic trends in the region, see the January 1969 issue of this *Review*.

[4]All checks collected and cleared through the Federal Reserve Banks must be paid in full by the banks on which they are drawn, without deduction of a fee or charge, that is, they must be payable at par. National banks and state member banks must remit at par as a condition of membership. In addition, most state non-member banks agree to remit at par.

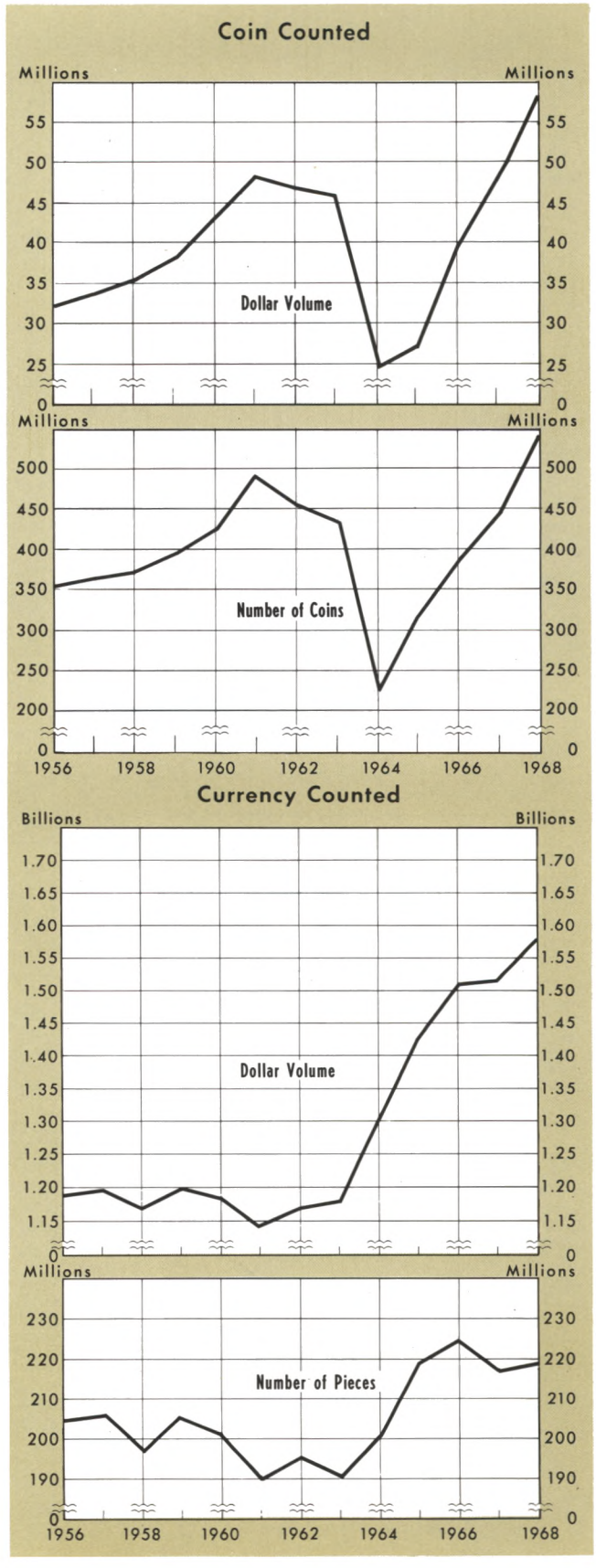


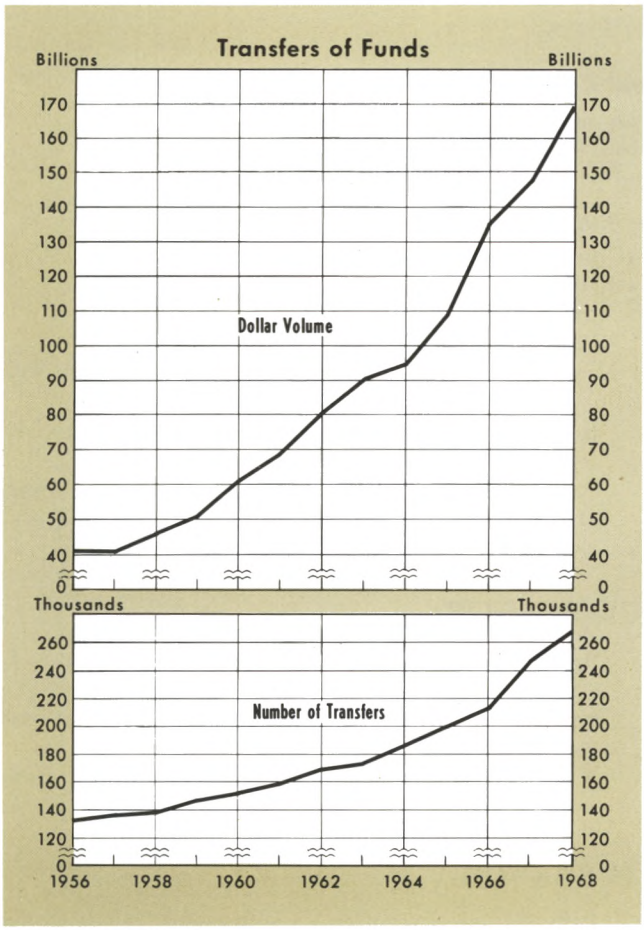
other, noncash items for collection, such as drafts, promissory notes, bonds and bond coupons. The number of noncash collection items rose 1.6 per cent from 1967 to 1968 while their dollar value rose 6.1 per cent.

Money Operations

Just as individuals and businesses obtain coin and currency from commercial banks by withdrawing deposits, member banks obtain coin and currency by withdrawals from their accounts at the Reserve Banks. Nonmember banks may obtain coin and currency from member banks or directly from Reserve Banks, with charges made to a designated member bank's reserve account. When commercial banks receive an excess of coin and currency from their customers, it may be deposited in the Federal Reserve Bank, where it is counted and sorted and the usable money is redistributed.

Coin handling rose sharply in 1968, continuing the rapid increases of the previous three years. The number of pieces counted totaled 539 million, up from 445 million in 1967 and 227 million in 1964 (a year of severe coin shortage). The dollar value of coins handled also has risen sharply, totaling $58 mil-





lion in 1968, compared with $48 million in 1967 and $25 million in 1964.

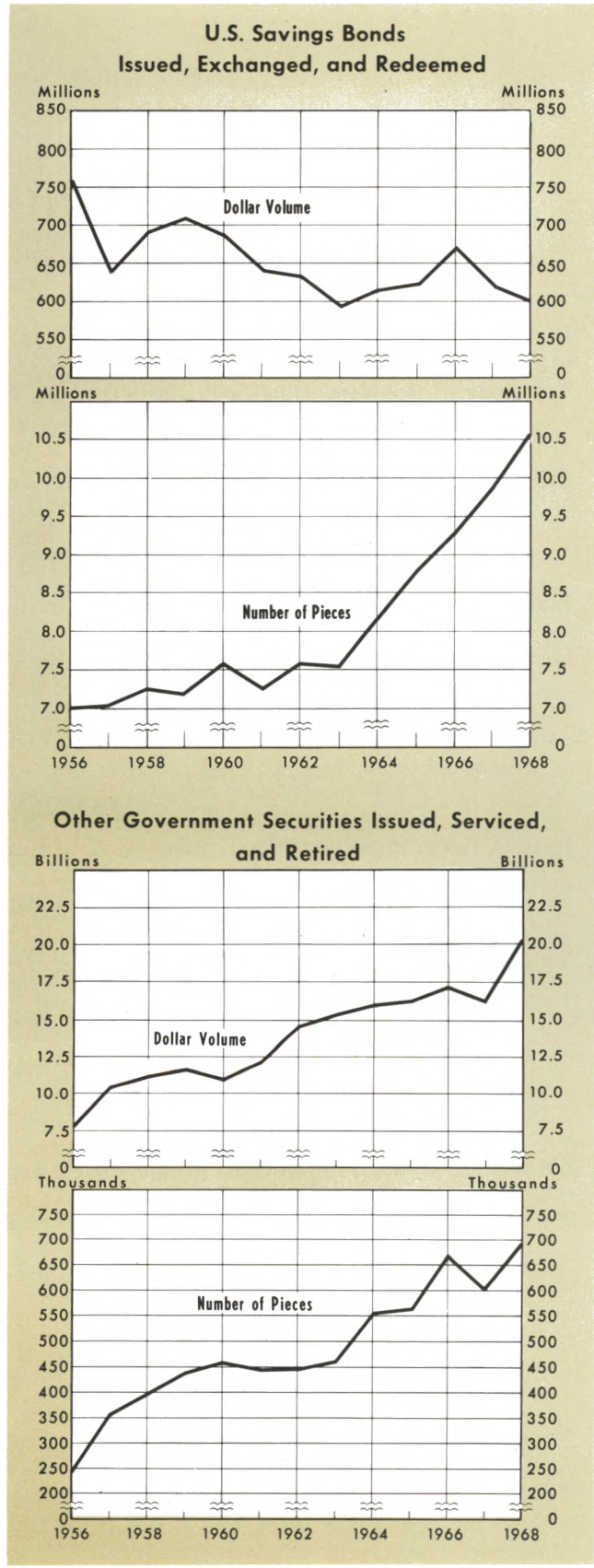
A total of 219 million pieces of currency were handled in 1968, 1 per cent above the previous year. The dollar value of currency handled totaled approximately $1.6 billion, an increase of 4.1 per cent from a year earlier.

Transfers of Funds

Wire transfers of funds are largely movements of member bank balances between 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 participated in 268 thousand transfers in 1968, 8.5 per cent above the previous year. Dollar value, totaling $169 billion in 1968, was up 15 per cent.

Fiscal Agency Operations

Each Federal Reserve Bank acts as depository and fiscal agent of the United States Government. In this capacity the Reserve Banks carry the principal check-



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Chairman of the Board and Federal Reserve Agent

FREDERIC M. PEIRCE, Chairman and Chief Executive Officer
General American Life Insurance Company
St. Louis, Missouri

Deputy Chairman of the Board

SMITH D. BROADBENT, JR.
Broadbent Hybrid Seed Co.
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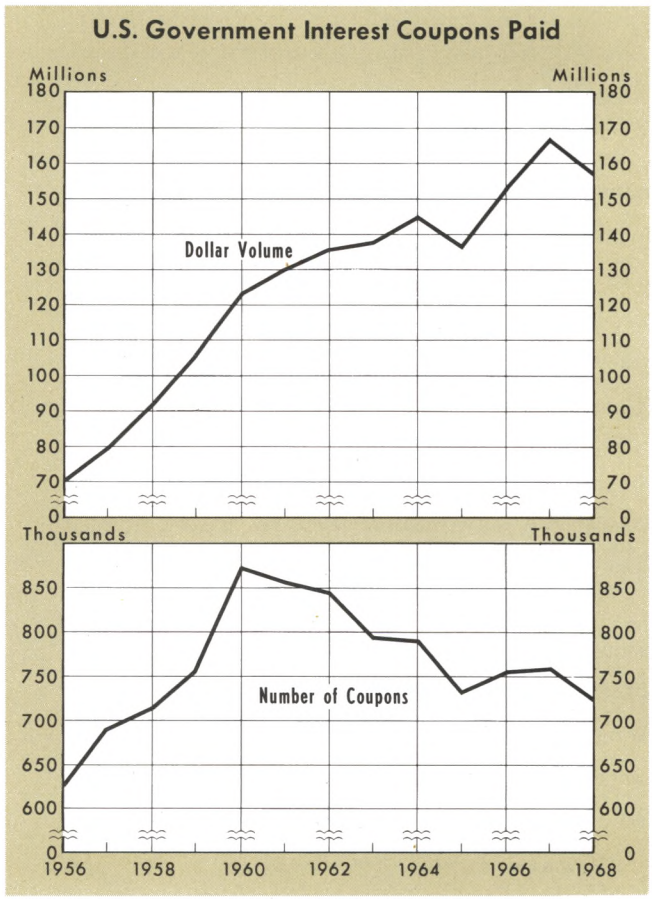


ing accounts of the Treasury, issue and redeem Government securities, administer the Treasury tax and loan accounts of commercial banks, and perform other Government financial duties.

The four offices of this bank issued, exchanged or redeemed 10.6 million United States Savings Bonds valued at $600 million in 1968. The number of savings bonds handled rose 7.5 per cent from 1967 to 1968, although the dollar value fell 4.2 per cent. Other Government securities issued, serviced, or retired totaled 690 thousand, which was 14 per cent above a year earlier, while dollar value rose 25 per cent to $20 billion.

Statements

Total assets of the Federal Reserve Bank of St. Louis were $2.9 billion on December 31, 1968, an increase of 3.4 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 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 $84 million in 1968, up 31 per cent from a year earlier. This sharp rise in earnings was due to larger holdings of loans and securities, as well as much higher interest rates on these assets, while expenses increased only moderately. After dividends to member banks and increases in surplus to equal paid-in capital, net earnings are set aside for the U.S. Treasury as interest on Federal Reserve notes. Such payments totaled $81 million in 1968, up 30 per cent from a year earlier.

Table II

COMPARATIVE STATEMENT OF CONDITION
(Thousands of Dollars)

ASSETS	December 31, 1968	December 31, 1967
Gold certificate reserves	352,955	437,041
Federal Reserve notes of other banks	33,010	34,379
Other cash	24,589	33,588
Discounts and advances	770	1,100
U. S. Government securities	1,868,829	1,768,480
Uncollected items	573,768	500,594
Other assets	95,438	76,250
Total Assets	2,949,359	2,851,432
LIABILITIES AND CAPITAL ACCOUNTS		
Federal Reserve notes (net)	1,676,649	1,569,186
Deposits:		
Member banks — reserve accounts	783,570	726,684
U. S. Treasurer — general account	599	70,721
Other	16,086	39,312
Deferred availability cash items	414,762	394,394
Other liabilities and accrued dividends	13,693	10,435
Total capital accounts	44,000	40,700
Total Liabilities and Capital Accounts	2,949,359	2,851,432

Table III

COMPARATIVE PROFIT AND LOSS STATEMENT
(Thousands of Dollars)

	1968	1967
Total earnings	97,649	77,024
Net expenses	13,962	12,868
Current net earnings	83,687	64,156
Net addition (+) or deductions (—)	+291	+56
Net earnings before payments to U. S. Treasury	83,978	64,212
Distribution of Net Earnings:		
Dividends	1,273	1,208
Interest on Federal Reserve notes	81,055	62,402
Transferred to surplus	1,650	602
Total	83,978	64,212

International Monetary Reform and the "Crawling Peg"

The following is a guest article prepared by George W. McKenzie, Assistant Professor of Economics at Washington University in St. Louis. Professor McKenzie received his Ph.D. from the University of California at Berkeley in 1967. The article is presented with the anticipation that his framework and viewpoint will bring forth useful comment and discussion on the international monetary system. These views do not necessarily represent those of the Federal Reserve Bank of St. Louis or of the Federal Reserve System.

IN ORDER for the world economy to function smoothly, it is necessary that the international monetary system meet three basic tests:[1]

1. It should provide an environment in which each participating country can pursue its own domestic goals, such as full-employment, reasonable price stability, economic growth, and social justice.
2. It should be conducive to stability and growth in international trade and capital investments.
3. It should operate without the imposition of direct controls on international transactions, since these controls reduce the benefits of international specialization.

Over the past decade, there has been continuous and growing concern by many economists and Government officials that the framework of the International Monetary Fund (IMF), as developed at Bretton Woods in 1944, is unable to meet these three goals and, hence, should be modified. To most casual observers, the events of the past two years seem to support this concern. An air of uncertainty and skepticism surrounds the Bretton Woods System, which has experienced the British devaluation, the increase in the free market price of gold, the imposition of restrictions on domestic activity in France and the United Kingdom, and a proliferation of controls on international transactions.

This article proposes that the basic philosophy underlying the International Monetary Fund is *workable,* but that to be satisfactorily implemented, certain reforms in its operation are needed. In particular, a "crawling peg" exchange rate system should be substituted for the current "adjustable peg" mechanism.

The national representatives who drafted the IMF's Articles of Agreement generally believed that reasonably stable exchange rates were necessary for the growth of international transactions. While they hoped that rates could remain pegged for extended periods of time, they also recognized that some countries might want to adjust their exchange rates if they were experiencing serious international payments imbalances. Hence, the "adjustable peg" concept was created.

In practice, the "peg" has been adjusted only infrequently by industrial countries and often only as a last resort.[2] Thus an important policy instrument for dealing with international payments difficulties has not been utilized. In contrast, under a "crawling peg" system, exchange rates would vary but only on the basis of a predetermined formula agreed upon by the members of the IMF. Such an international monetary arrangement would have the following advantages:

1. Exchange rate flexibility would increase the effectiveness of monetary policy in achieving domestic goals.

[1]These three goals roughly correspond to the objectives of economic policy discussed by the Deputies of the Group of Ten in the Annex to the 1964 Ministerial Statement. These documents are reprinted in the *Federal Reserve Bulletin,* August 1964, pp. 975-999.

[2]For a discussion of the reasons for this, see R. S. Sayers, "Co-operation Between Central Banks," *The Three Banks Review,* September 1963.

2. By spreading exchange rate adjustments over long periods, the "crawling peg" system would avoid the periodic exchange crises and uncertainty of the present system.
3. The incentive for countries to impose controls on international transactions would be reduced. Indeed, a prerequisite for the successful operation of the "crawling peg" is a reduction in such controls.

Thus the "crawling peg" meets the three basic tests of a satisfactory international monetary system. Before examining the "crawling peg" in detail, the present system and the sources of its weakness are discussed.[3]

The Bretton Woods System

Because exchange rates are pegged under the Bretton Woods System, a gap may develop between the *demand* for foreign exchange by a country's citizens to purchase goods, services, and financial items abroad and the *supply* of foreign exchange generated by sales of such items to foreigners. If the country's officials consider the imbalance to be *temporary*, they may fill the gap by allowing a net change in their country's international reserves, consisting of (a) gold, (b) foreign exchange, and (c) its position vis-a-vis the IMF.[4] In addition, countries may arrange to obtain loans from one or more countries.

International reserves exist in order to enable countries to withstand such temporary payments deficits. However, since the deficit country has a limited stock of reserves, its ability to rely on them to bridge a continuing gap between its international payments and receipts is also limited. Supplemental loans from trading partners may be sought but are usually contingent upon some form of positive balance-of-payments adjustment. In addition, the surplus countries, while initially welcoming reserve accumulation as an indicator of their strength in the world economy, eventually may want to limit their build-up and hence will put pressure on the deficit country to take remedial action.[5] Thus countries experiencing prolonged deficits under the present system eventually must undertake severe measures of adjustment. These usually take the form of either policies of exchange rate adjustments, aimed at switching spending from foreign to domestic goods, or policies aimed at reducing aggregate expenditure and hence spending abroad. Although in extreme circumstances a deficit country is permitted, under the IMF Articles of Agreement, to impose controls on international transactions in order to correct a deficit, this course generally encounters opposition.

The "Adjustable Peg"

Because changes in exchange rate par values are discretionary, and their timing and magnitude are extremely difficult for officials to determine, exchange rates tend to be altered only as a last resort under the "adjustable peg" system. As an alternative, industrial countries have developed a complex network of credit facilities and supplements to existing reserve assets that enable them to postpone exchange rate changes in the hope that either the situation will correct itself, or that suitable domestic policies can be implemented.

Therefore, when they do occur, exchange rate adjustments are usually relatively large in magnitude, and concentrate within a short period a large burden on the import and export sectors of the initiating country and its trading partners. On the other hand, failure to undertake such adjustments may be equally costly. If a country's payments deficit is due to costs and prices rising faster at home than abroad, domestic export- and import-competing industries will find business dwindling.

The prospect of large periodic exchange rate adjustments can lead to a considerable loss of confi-

[3]For a detailed discussion of the pros and cons of fixed and flexible exchange rates, there are a number of interesting sources: Fritz Machlup and Burton Malkiel, eds., *International Monetary Arrangement: The Problem of Choice*, (Princeton: Princeton University Press, 1964), especially Chapter 4; M.O. Clement, et. al., *Theoretical Issues in International Economics*, (Houghton-Mifflin, 1966), Chapter 6; and the Federal Reserve Board, "A System of Fluctuating Exchange Rates: Pro and Con," *State of the Economy and Policies for Full Employment*, Hearings, Joint Economic Committee, U.S. Congress, Eighty-seventh Congress, Second Session.

[4]Under the provisions of the IMF, a member country is obliged to deposit with the IMF a quota consisting of 25 per cent gold and the rest its own national currency. A country's reserve position at the IMF consists basically of its gold subscription minus its net drawings plus the IMF's net sale of its currency, in addition to any amounts of its own currency that it has repurchased. This position represents the amount that essentially can be drawn automatically.

[5]Basically, countries hold international reserves for the same reasons that stores and manufacturers hold inventories. Each merchant wants to have enough stock on hand to meet his customers' demands as quickly as possible. On the other hand, he does not want to maintain such a large inventory that a significant portion of his investment is tied up. Similarly, a country will want to have enough reserves on hand in order to meet any balance-of-payments deficits. However, it does not want to build up reserves indefinitely, since this involves the transfer of real resources to foreigners in return for less productive assets.

dence in the currencies of the countries involved. Suppose that country X has experienced prolonged balance-of-payments deficits and the expectation is that its officials will fail to prevent new deficits. Many people, speculating that the only way for X to solve its problems is through devaluation, will convert assets denominated in X's currency into gold or assets denominated in some other currency which is expected to maintain its value. In addition, speculators will sell X's currency in the forward exchange market in the hope of being able to buy it back later at a lower price.[6]

These pressures make the price of X's currency in the forward market expensive relative to the spot price, or current price, and thus make hedging quite costly. An X importer who must deliver a certain amount of foreign exchange in the future may discover that the premium he has to pay to buy foreign exchange in the forward market is prohibitive. However, if X does devalue he then finds that his bill is higher in terms of his own currency.

This example indicates that considerable uncertainty can be generated under the present "adjustable peg" system. The difficulty lies not in the fact that exchange rate adjustments are possible, but that they are postponed so long that even the dullest speculator knows that some change must be made. When an exchange rate adjustment is anticipated, speculators are in a position to make large profits with relatively little risk. In fact, speculative capital movements, in anticipation of an exchange rate adjustment, may actually force a change upon a country which had no fundamental economic reason for the adjustment.

An alternative to altering exchange rates is a policy which entails a slower rate of relative price adjustment: countries with deficits could allow wages to increase at a slower rate than productivity increases.[7] As a result, costs would decline and this would enable the country to improve its international price competitiveness. Conversely, a country experiencing a surplus in its balance of payments might allow its wages to increase at a rate higher than productivity increases, thereby reducing its competitiveness. Such policies, however, would be difficult to administer and would probably meet political resistance. Not only would it be difficult to control wages, but there are also problems in measuring productivity changes. In addition, the period of adjustment could be extremely long, and a country with insufficient reserves might be forced to seek an alternate and more costly remedy.

The Fixed Exchange Rate and Domestic Economic Policy

Not only does the present fixed exchange rate system prevent smooth balance-of-payments adjustments: it also severely frustrates the application of domestic stabilization policies.

To understand this weakness, consider the hypothetical situation in which a country, such as Italy, is experiencing inflation but has no balance-of-payments deficit or surplus. In an attempt to control rising prices, the Italian Central Bank decides to sell government securities in the open market. This reduces the level of demand deposits and hence the funds available to commercial banks.[8] Interest rates and security yields rise. The yield differentials that emerge between Italian and foreign securities induce arbitrage, that is, investors sell their foreign assets and purchase Italian securities. In addition, Italians borrow funds in countries where interest costs are lower. This capital inflow creates a surplus in Italy's balance of payments. As economic activity slows, imports decline and hence the surplus grows.

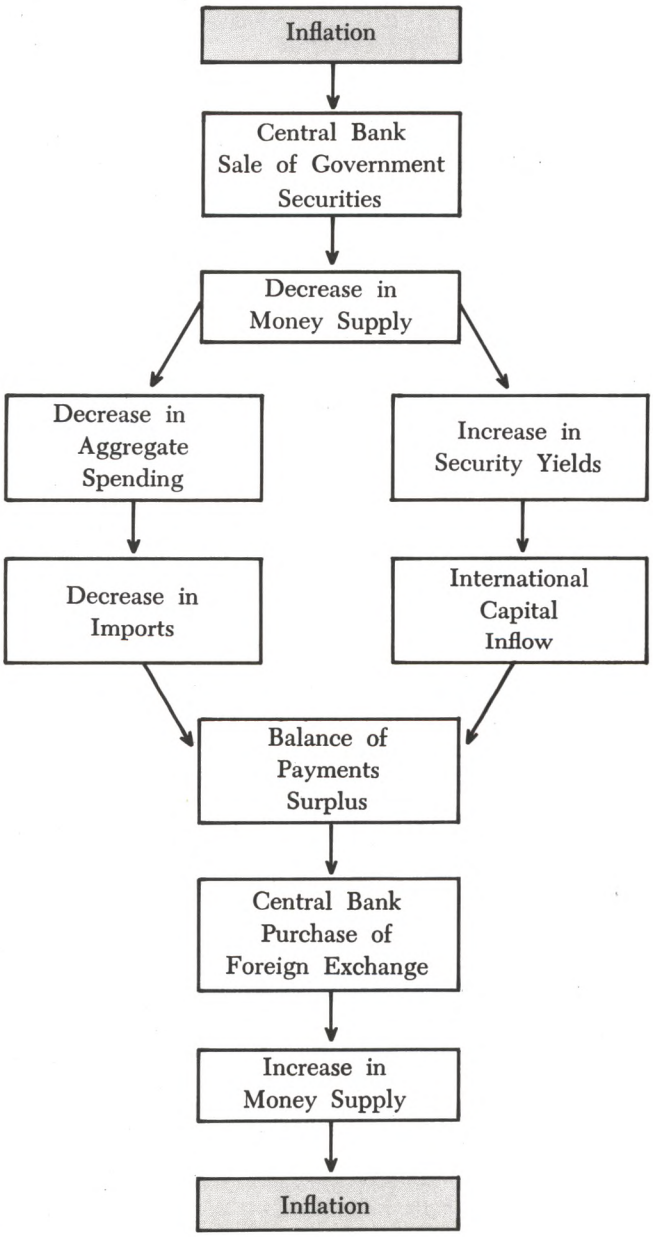
In order to maintain the exchange rate at its pegged level, the Italian Central Bank then enters the exchange markets to purchase the "excess" supply of foreign exchange. The impact of this operation is identical to one where the central bank purchases government securities in the open market, that is, there

[6]The forward exchange market deals in contracts calling for the *future* purchase or sale of foreign exchange. A variety of transactions take place in this market. For example, a successful speculator at the time of the British devaluation was able to sell pounds in the forward market at around $2.80 per pound. After the devaluation he could buy them back for $2.40. International traders use the forward facilities to hedge. An exporter who knows he will be receiving foreign funds several months hence will sell these funds in the forward market at a rate established today. In this manner, the trader is able to insulate himself from potential exchange rate fluctuations. The forward market is also used by those engaging in covered interest rate arbitrage.

[7]See the papers by Fritz Machlup and Robert Triffin in *Maintaining and Restoring Balance in International Payments,* William Fellner, et. al., (Princeton: Princeton University Press, 1966), pp. 45-47, 102-104. This book consists of a series of papers dealing with policy guidelines and was undertaken at the suggestion of the Group of Ten Industrial countries.

[8]The analysis of this section is based upon R. A. Mundell, "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science,* November 1963; and Ronald McKinnon and Wallace Oates, "The Implications of International Economic Integration for Monetary, Fiscal and Exchange Rate Policy," *Princeton Studies in International Finance,* November 16, 1966.

is an increase in the money supply. This will tend to offset the effect of the original restrictive monetary policy. Economic activity will be stimulated to return to its original level and hence imports will increase. As interest rates and security yields return to their original levels the capital inflow will be reduced, returning the balance of payments to its previous state. Thus the goal of slowing the rate of inflation through monetary policy will be thwarted by the goal of maintaining the pegged exchange rate, as the following diagram shows.[9]



[9]This and subsequent analyses are essentially short-run in nature.

With this view in mind, foreign officials have sought to increase the effectiveness of monetary policy by placing controls on the foreign operations of their country's banking institutions.[10] Such controls, designed to prevent capital inflows during periods of restrictive monetary policy, include:

1. Limits or ceilings on the expansion of credit by banks. This reduces the incentive to borrow in general.
2. Higher reserve requirements against bank liabilities to foreigners than against liabilities to its own citizens. This reduces banks' incentive to borrow abroad.
3. Quantitative limits on net foreign liabilities.
4. Requirements that a bank's spot foreign assets and liabilities should be equal.
5. Prohibiting interest payments on deposits owned by foreigners.

In addition, some countries encourage lending abroad during restrictive periods. This can be accomplished by providing guarantees against exchange rate changes or by offering better foreign exchange rates than could be obtained in exchange markets.

Such controls, however, are merely short-run remedies. By reducing the capital inflow, such controls do indeed increase the immediate effectiveness of the restrictive monetary policy. However, as economic activity declines, so does spending on foreign goods and services. This leads once again to a payments surplus and the offsetting, expansionary effect on the money supply. The balance-of-payments effects on the money supply have merely been postponed until the impact of changes in the real sector are felt. In addition such controls reduce the benefits of free capital flows by leading to an inefficient allocation of financial resources.

Although the effects of monetary policy are weakened under a fixed exchange rate system, fiscal policy remains effective. Let us suppose that in order to reduce inflation, Italy increases taxes, thereby reducing government financing operations. As a consequence of this decline in government financing operations, security prices rise and yields fall. This leads

[10]For a detailed discussion of these controls, see Rodney H. Mills, "The Regulation of Short-Term Capital Movements: Western European Techniques in the 1960's," *Staff Economic Studies*, Board of Governors of the Federal Reserve System, May 22, 1968. Also see comments by Otmar Emminger, "Practical Aspects of the Problem of Balance-of-Payments Adjustment," *The Journal of Political Economy*, Supplement, August 1967, p. 39.

to a capital outflow and hence a deterioration in the balance of payments. However, as domestic economic activity slows because of the reduction in disposable income, imports will decline and this will tend to offset the deterioration in the capital account. Thus balance-of-payments equilibrium will be restored, the net effect on the money supply will be zero, and hence the slowdown in economic activity will be preserved. This sequence of events can be seen from the accompanying diagram.

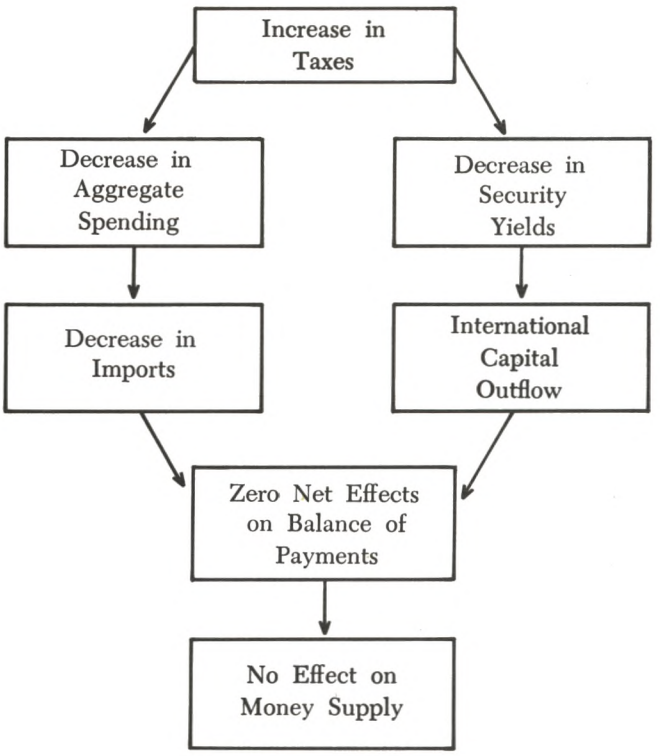
The drawback of fiscal policy is its implementation. As with monetary policy, there is a time lag between the actual change in economic conditions and recognition of the need for policy response. Fiscal policy measures, however, are subject to an additional lag between recognition and actual legislation of measures. Frequently this lag arises from political considerations. For example, no one likes an increase in taxes.

In reality, the responses of the real and financial sectors to changes in interest rates and aggregate spending will take time. In addition, there are tariff and quota restrictions on international trade and various impediments to the free flow of capital, which may prevent the process from working itself out.[11]

In addition, there may be a conflict of policy aims in the short run. In situations when there is (a) unemployment and a balance-of-payments surplus or (b) inflation and a deficit, policies which change the level of aggregate spending will be consistent with the achievement of both internal and external balance. However, when there is (a) unemployment and a payments deficit, or (b) inflation and a surplus, it becomes difficult for officials to achieve both domestic and international goals. Policies which reduce spending and eliminate a balance-of-payments deficit will only increase unemployment. Similarly, attempts to reduce a payments surplus by stimulating spending when there is inflation lead to more, not less, inflation. Resolving this conflict is not easy since it involves weighing the value of domestic, social, and political goals against the costs of international payments imbalances.[12]

[11]Impediments to capital flows may take various forms: 1) limited access to information; 2) higher commission rates for placing foreign issues; 3) difficulties arising from legal procedures; 4) obstacles due to national taxation procedures; 5) exchange risk; as well as 6) governmental controls. See OECD, *Capital Markets Study: General Report*, Paris, 1967.

[12]For an approach which emphasizes a "mix" of monetary and fiscal policy to simultaneously achieve domestic and international goals, see Robert A. Mundell. "The Appropriate Use of Monetary & Fiscal Policy For Internal and External Stability," *IMF Staff Papers*, March 1962.



Domestic and International Stabilization and the "Crawling Peg"

Many economists have argued that the best method to avoid the dilemma posed by the present international monetary system is to allow greater flexibility in exchange rates.[13] This could be achieved by either or both of the following modifications:

1. Introduce flexibility in the parity exchange rate so that it might "crawl" over time.
2. Widen the band in which exchange rates fluctuate around the parity level. (At present, the band is one percent on either side of the parity.)

The "Crawling Peg"

The basic idea behind a "crawling peg" system is that there exists an exchange rate which equilibrates the international supply and demand for a particular currency. However, the possibility that political or economic uncertainties might generate undesirable fluctuations in the supply and demand over short

[13]For example, see the list of twenty-seven economists who signed a statement advocating greater, though limited, exchange rate flexibility in "On Limited Exchange Rate Flexibility," Fellner, et al., *op. cit.*, p. 111.

periods suggests that the movement of the exchange rate should be restrained. To accomplish this, countries would continue to hold the foreign exchange market rate within a predetermined range during any business day by sale and purchase of international reserves.[14] However, the parity rate would be allowed to change from day to day by small amounts.

The actual formula for changing the parity exchange rate or peg would have to be determined by the members of the IMF. However, there are at least two possibilities. James Meade has suggested that the peg be allowed to "crawl" not more than one-sixth of one percent in any one month, with the timing of such changes subject to the discretion of government officials.[15] Such a plan would thus not impinge upon the sovereignty of individual countries. Nevertheless, international co-operation would still have to be maintained in order to avoid the possibility of countries undertaking mutually conflicting actions, such as begger-my-neighbor policies.

An alternative is for the IMF to adopt a plan such that the peg's "crawl" is automatic. For instance, today's parity rate might be a moving average of exchange rates over a certain previous period of time. (The rate would be allowed to move freely within a band around the "crawling peg.") If the trend in a country's exchange rate was up, then its parity rate would crawl up as well. Such a system eliminates the possibility of human error that would exist under the discretionary "crawling peg." On the other hand, it assumes that the operation of the foreign exchange market will bring desirable results. The ultimate choice between these two alternatives would depend on the results of carefully weighing the political and economic feasibility of each.

A Wider Band

In the previous discussion we assumed that there existed around the parity level a band in which exchange rates were free to vary without official intervention. The width of the band might remain at two per cent, as it is today, or it might be broadened perhaps to ten per cent. Under the automatic version of the "crawling peg," this band would play an important role, since past exchange rate movements within it would determine today's parity. Should the exchange rate threaten to move outside the limits prescribed by the band, officials would be obliged to intervene in the foreign exchange markets.

Any proposal designed *solely* to widen the band of variation around an inflexible parity is unsatisfactory since it provides no guarantee that the long-run equilibrium exchange rate will fall within the band.[16] It should be emphasized that the "crawling peg" proposal is designed to allow exchange rates to seek their equilibrium levels while limiting undesirable short-run fluctuations.

Freely Flexible Exchange Rates

An extreme plan for greater exchange rate flexibility would eliminate the concepts of "peg" or "band" and allow rates to fluctuate freely. This proposal is countered by those who argue that potentially wide fluctuations will lead to increased risk and hence restrict the growth of international trade and investment activities. Milton Friedman points out, however, that intelligent speculators will tend to move the exchange rate toward its equilibrium value.[17]

Consider a situation in which interest rates are roughly equivalent in the United States and the United Kingdom and the price of pound sterling is expected to fall. Speculators will then sell pounds in the forward exchange market in the hope of later buying pounds at a lower price. As this forward selling develops, the forward price of pounds falls.

Arbitragers seeking to take advantage of the spread between the spot and forward rates will then sell spot pounds, thus driving down the spot exchange rate. Simultaneously, they will buy pounds in the forward market, thus moderating the fall in the forward rate caused by the speculative pressures.

The operations of arbitragers and speculators may help to move the exchange rate toward its ultimate

[14]Because exchange rates will vary over time, the value of a country's reserves will also change. For example, one country will find that the value of a unit of foreign exchange from a particular country will decline if the latter's exchange rate depreciates. The reason a country holds reserves under the "crawling peg" system is to withstand sharp exchange rate fluctuations without having to sacrifice domestic goals. To guarantee that countries will always have sufficient reserves to meet both their domestic and international obligations, supplementary reserve facilities would continue to be needed within the framework of the IMF.

[15]James E. Meade, "The International Monetary Mechanism," *The Three Banks Review*, September 1964. In a subsequent article, "Exchange Rate Flexibility," *The Three Banks Review*, June 1966, Meade credits the original idea of the "crawling peg" to Mr. J. Black of Merton College, Oxford.

[16]The "band" proposal has been elaborated by George N. Halm, *The "Band" Proposal: The Limits of Permissible Exchange Rate Variations*, International Finance Section, (Princeton: Princeton University Press, 1965).

[17]Milton Friedman, "The Case for Flexible Exchange Rates," *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), pp. 157-203.

equilibrium. However, there is no guarantee that they will always possess sufficient foresight to avoid adversely affecting the stability of international transactions by under- or over-shooting the long term equilibrium exchange rate. In fact, this question can only be answered empirically. As is pointed out in a later section of this paper, Canada, with a flexible rate between 1950 and 1962, experienced a growing level of international trade and investment activity. In addition, there is evidence that speculation did not cause any destabilizing exchange rate fluctuations.

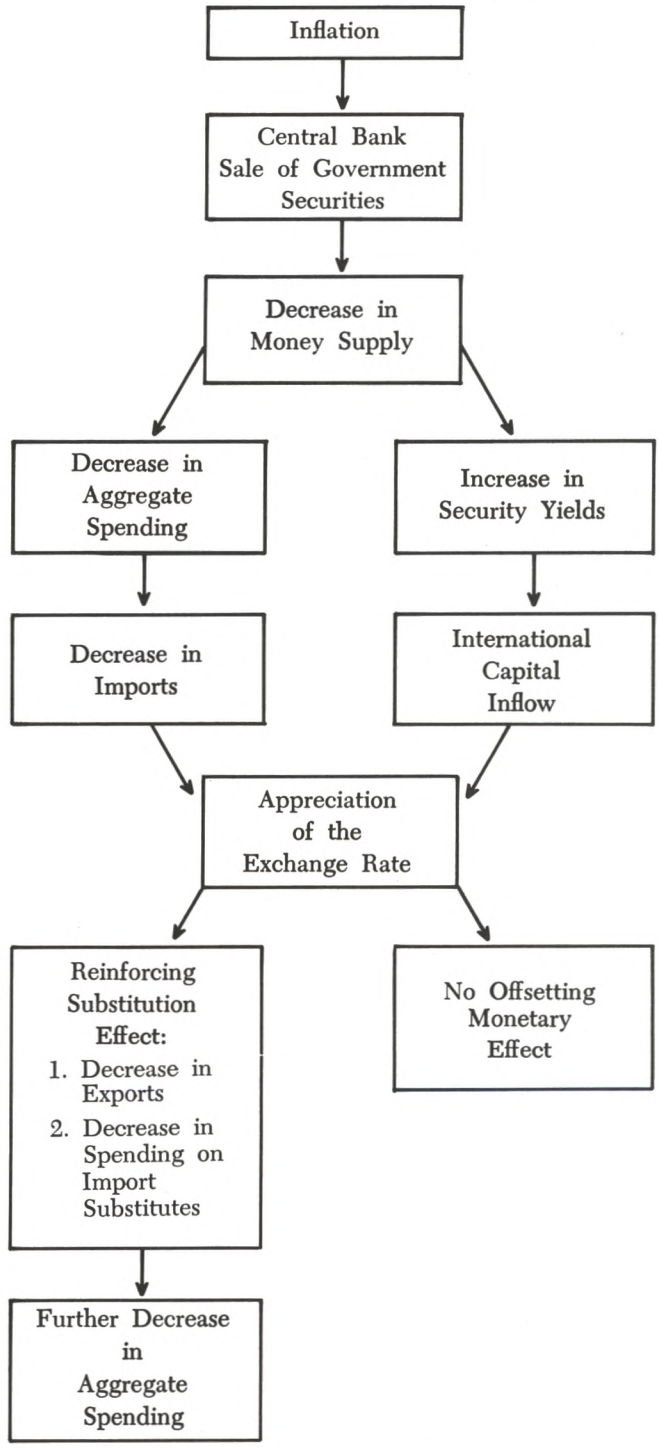
It would seem desirable to guard against the unknown risks of flexible exchange rates by adopting the "crawling peg" constraint on the spot rate. Under this system, the difference between spot and forward exchange rates would be kept within reasonable bounds by arbitrage. This spread is an important consideration for international traders and investors who may desire to hedge their transactions. If the cost of hedging is high, there will be good reason for the growth of international transactions to be slowed.

Again, suppose that the price of pound sterling is expected to fall and that interest rates are roughly equal in the United States and United Kingdom. Individuals would realize that the spot rate cannot fall by more than a predetermined amount under the "crawling peg" system. Any divergence of the forward rate by more than this would induce arbitrage, that is, there is an incentive to buy pounds forward with the knowledge that they can be re-sold at a price higher than the current forward rate. The forward rate would thus be kept within reasonable bounds by the increased demand generated by such operations.

Implications for Monetary Policy

One of the implications of the "crawling peg" is that it would *increase* the effectiveness of domestic monetary policy in the short run.

Let us again consider a situation where Italy is experiencing inflation and its central bank seeks to restrain economic activity by selling Government securities on the open market. As interest rates rise, investors will find Italian assets more attractive. There will be an increase in demand for lire, and the exchange rate will tend to appreciate. As a result, as the lira appreciates over time, Italy's exports will decrease and Italians will substitute imports for domestically produced goods. This tends to reinforce, rather than to weaken, the effects of the original decrease in the money supply. Because there is no balance-of-payments deficit or surplus, there is no offsetting monetary effect. Consider the following diagram:



It should be emphasized that the continued effectiveness of monetary policy in achieving domestic aims hinges upon the degree of exchange rate variability that the members of the IMF deem to be acceptable. If the peg is allowed to "crawl" at a slow

rate, monetary policy will be almost as ineffective as under a fixed exchange rate system. If, however, the range of potential variability is reasonably wide, then monetary policy can be expected to have an influence on domestic economic activity within a relatively short period. This will have the added benefit of reducing the capital controls required to increase the effectiveness of monetary policy under the present system.

The Canadian Experience with Flexible Exchange Rates

Much remains to be learned from the Canadian experiment with flexible exchange rates between 1950 and 1962. However, an examination of several issues surrounding this experience should give us an idea of some of the problems and possibilities of a "crawling peg" exchange rate system.

First, the Canadian experience tends to bear out the theoretical discussion above. Studies carried out by Rudolf Rhomberg of the IMF indicate that monetary policy is considerably more effective under a system of flexible exchange rates than under a system where rates are pegged.[18] In addition, Rhomberg's results indicate that an increase of $500 million in Canada's money supply would cause a depreciation in the exchange rate of approximately 1.2 cents during the first quarter of its impact and an ultimate depreciation of 2.4 cents. This is also consistent with our previous discussion.

In spite of the potential strength of monetary policy under a flexible exchange rate system, the Canadian business cycle was not eliminated over this period and, in fact, followed the United States business cycle very closely. Robert Mundell has argued that this was mainly the result of improper policies followed by Canadian monetary authorities,[19] rather than a weakness of the system. His argument runs as follows: During periods when economic activity subsided in the United States, demand for credit also decreased, and this led in turn to a decline in interest rates. At the same time, however, Canadian monetary authorities continued to decrease the money supply for at least six months following increases in their level of unemployment. As a consequence, interest rate differentials between the United States and Canada widened, bringing about a capital inflow and an appreciation in the Canadian exchange rate. The latter tended to reinforce the effects of the United States business cycle. The inappropriateness of policies was most profound in the period 1958-1960 when, in the presence of high unemployment, a restrictive monetary policy was pursued at the same time a deficit existed in the Government budget. The combination of the two brought about a wide difference between United States and Canadian interest rates with the attendant exchange rate appreciation.

Concern is voiced in academic, government, and business circles that flexible exchange rates would fluctuate so as to discourage international transactions. The Canadian experience does not support this conclusion. International trade between 1950 and 1962 doubled and direct investment by foreigners nearly tripled. In addition, the statistical results of Rhomberg[20] and, more recently, Sven Arndt[21] indicate that short-term capital movements tended to moderate movements in the exchange rate. For example, Rhomberg's work indicates that if the Canadian three-month Treasury bill was one per cent higher than the similar United States rate, approximately the same amount of short-term capital would flow into Canada as if there were a depreciation of one cent in the exchange rate.

Calculations by Yeager[22] show that in only six of the 128 months under the flexible rate system did the rate fluctuate within a range greater than two Canadian cents. In more than two-thirds of the months the range was less than one cent. Longer-run fluctuations tended to coincide closely with changes in monetary policy. During periods when monetary policy was restrictive, the exchange rate tended to appreciate, and conversely. No doubt, if changes in these policies had been better timed and more gradual, these longer fluctuations would have been moderated even further.

Conclusions

If the industrialized nations of the world are going to place heavy reliance on monetary actions to achieve domestic goals, then under a pegged exchange rate system these actions may be considerably weak-

[18]Rudolf Rhomberg, "A Model of the Canadian Economy Under Fixed and Fluctuating Exchange Rates," *Journal of Political Economy,* February 1964.

[19]Robert Mundell, "Problems of Monetary and Exchange Rate Management in Canada," *The National Banking Review,* September 1964.

[20]Rhomberg, p. 12.

[21]Sven Arndt, "International Short-Term Capital Movements: A Distributed Lag Model of Speculation in Foreign Exchange," *Econometrica,* January 1968.

[22]Leland Yeager, *International Monetary Relations,* Harper and Row, 1966, pp. 425-426.

ened unless controls on capital movements are imposed. This involves costs: not only are such restrictions incompatible with the goal of international currency convertibility, but by raising "barriers" to entry into international capital markets, these restrictions bring about an inefficient allocation of resources throughout the world. In addition, the present pegged exchange rate system is not conducive to international adjustment, but instead fosters periodic uncertainty in the form of exchange rate crises.

On the other hand, a system of crawling exchange rates renders monetary policy effective without capital controls. In fact, to assure that this is the case, it is necessary to reduce impediments to the free international flow of capital. Equally important is that this system enables long run balance-of-payments adjustments through greater exchange rate flexibility. The increased flexibility does not mean instability, however, for the exchange rate will be free to vary, or "crawl", only within bounds predetermined by the IMF.

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