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THE MAKING OF U.S. MONETARY POLICY

H. Robert Heller
Member, Board of Governors
of the Federal Reserve System

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I want to share with you my experience in making U.S. monetary policy. Being only one person participating in a process that involves literally hundreds of people, my perception of that process may well differ from that of other persons involved.

I will begin by describing the institutional structure of the Federal Reserve and the decision making process itself. I will then identify the ultimate goals that the Federal Reserve hopes to attain and the targets it sets in the pursuit of these objectives. In that context I will discuss the problems caused by the recent divergence of the monetary aggregates from earlier patterns of behavior. I will then focus on the operating procedures the Federal Reserve employs in implementing its policy decisions.

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1. Institutional Structure

The Federal Reserve System reflects the American tradition of centralized authority within a decentralized structure. It carefully balances federal and regional powers and integrates representatives of various constituencies into the decision-making process.

The basic institutional structure of the Federal Reserve System was established through the Federal Reserve Act of 1913. Of the subsequent modifications of the act, the Banking Act of 1935 is of particular importance. It established the Federal Open Market Committee as a key policy-making body.

The Federal Open Market Committee comprises the seven Governors and five of the 12 Reserve Bank Presidents. They serve on a rotating basis, except for the President of the Federal Reserve Bank of New York, who is always a member. The members of the Board of Governors of the Federal Reserve System are appointed by the President, with the advice and consent of the Senate, for 14-year terms. The president of each of the twelve Federal Reserve Banks is appointed by the directors of these banks and must be approved by the Board of Governors.

In making monetary policy, the Federal Reserve has three basic tools at its disposal: open market operations, the discount rate, and reserve requirements. The Federal Open Market Committee (FOMC) is vested with the authority to conduct open market purchases and sales of securities. The Board of Governors determines the discount rate upon the recommendation of the Boards of Directors of the Reserve Banks, and it sets reserve requirements within limits determined by Congress. This diffused decision making responsibility reflects the diverse nature of the System as a whole and allows the various entities that make up the Federal Reserve System to participate in the policy-making process in a finely balanced manner.

In my comments I will focus on open market operations. This is the most frequently used policy instrument and has evolved in several ways over the last few decades.

Prior to FOMC meetings, the committee members are briefed by their respective staffs. In addition, the committee members receive three staff reports that together provide a thorough analysis of the current economic situation and the outlook. These reports have come to be known by the color of their covers: the Beige-, Green-, and Bluebooks. The Beigebook is a

compilation of information on current business conditions in each Federal Reserve District obtained through informal surveys of Reserve Bank Directors, as well as business, labor, and community leaders. The other two reports are prepared by the staff of the Board of Governors. The Greenbook contains a sector-by-sector analysis of recent economic, financial, and international developments, along with a detailed staff forecast for economic activity, prices, and financial markets. Finally, the Bluebook sets out several monetary policy alternatives, summarizes their implications for economic and financial developments, and analyzes technical issues that may arise in the implementation of policy.

FOMC meetings typically begin with a review of the open market and foreign exchange operations since the last meeting. These briefings are conducted by the Managers for Domestic and Foreign Operations of the System Open Market Account. They are followed by a staff presentation of the forecast contained in the Greenbook. A discussion of economic conditions and the outlook by the Board and the Presidents is next. The contents of the Bluebook are then reviewed by the staff, and again a round-table discussion of the monetary policy options ensues. Finally, the System Open Market Directive is formulated and voted upon.

This process, which proceeds from the general to the specific, is a remarkable exercise in consensus-building. Together with the Chairman's ability to put forth a policy that enunciates and consolidates the views of the Committee, it contributes in an important fashion to the formulation of a unified policy.

2. Policy Goals and Intermediate Targets

The ultimate objective of Federal Reserve policy is to foster economic growth in a framework of price stability. Price stability is not only an important goal in its own right; it also contributes to economic growth by reducing the uncertainty the economic decision makers face. This, in turn, will have a positive effect on the efficient and effective use of human, man-made, and natural resources. Domestic price stability also will contribute in important ways to exchange rate stability and thereby be supportive of a balanced pattern of international resource allocation.

Congress mandates that the Federal Reserve set forth twice a year its expectations regarding prices, economic growth, and unemployment. At the same time, the Federal Reserve has to specify its monetary growth targets.

A large body of historic research supports the relationship between money on the one hand and prices and economic activity on the other. In particular, research has shown that over extended periods of time, money and prices have had a reasonably stable relationship. The relationship between changes in money and changes in economic activity, while present, has been more uncertain and of a transitory nature.

In such a framework, monetary policy-makers can use the money supply and changes therein as an intermediate target to attain the ultimate objectives. This, clearly, has been the intent of the congressional mandate to the Federal Reserve to specify annual targets for monetary growth.

However, in the 1980s the relationship between money, nominal income, and other macroeconomic variables became less stable and less predictable. Consequently, simple monetary targeting also became a less reliable means to attain the ultimate objectives.

The deterioration in the money-income relationship is evident in the behavior of velocity, the ratio of GNP to money. As Exhibit 1 shows, the historical relationship between spending and the narrowly defined money supply, M1, departed from its long-term trend and

became more volatile. As shown in the exhibit, velocity also became more volatile for the more broadly defined monetary aggregates M2 and M3.*

Changes in velocity have coincided with major financial innovations and changes in the regulatory environment. In particular, the introduction of money market mutual funds in the mid-1970s and, beginning in the late 1970s, and the deregulation of interest rates banks and other depositories could pay on deposits had a powerful influence on the character of many monetary assets, and substitutability among them.

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* More precisely, M1 consists of currency, travelers checks, demand deposits and other checkable deposits. M2 is M1 plus money market deposit accounts, savings accounts, general purpose and broker/dealer money market mutual funds, small (less than $100,000) time deposits, and overnight repurchase agreements, and, finally, overnight Eurodollars issued to U.S. residents by the foreign branches of U.S. banks. M3 is M2 plus large time deposits, institution-only money market mutual funds, term repurchase agreements and term Eurodollars issued to U.S. residents.

The deregulation of interest rates in the 1980s helped to increase the demand for deposit balances because it reduced the opportunity cost of holding them. This effect was particularly strong for household transaction balances, on which interest was allowed to be paid for the first time.

At the same time, the ability of banks to pay interest on liquid money balances has made opportunity costs more variable over the short run, in percentage terms. This is due to the fact that banks have been slow to adjust the rates paid on liquid retail accounts. For instance, if the interest rate on Treasury bills rises from 10 to 11 percent, the opportunity cost of an account that earns no interest increases by only one-tenth. In contrast, the opportunity cost of an account that earns interest at a constant rate of 6 percent increases by one-fourth. Moreover, some interest-earning checkable deposits are now held for saving motives and savings balances appear to be more likely to shift into alternative investments when opportunity costs change.

The rise in interest rates in the late 1970s and early 1980s also stimulated awareness of the opportunity cost of holding money and magnified the interest sensitivity of the monetary aggregates.

Because of the uncertainty surrounding the behavior of transaction balances, and because of their now very high interest elasticity, the FOMC has not set a target range for M1 since 1986.

It has also been suggested that the Committee target the monetary base, composed of currency and reserves, or M1-A, which is currency plus noninterest-earning demand deposits. These aggregates seem to have the advantage of a lower interest elasticity than M1 or M2, but questions remain concerning the closeness of the relationship of each to U.S. economic activity.

The Federal Reserve staff has also evaluated some experimental aggregates that incorporate innovative schemes for weighting monetary components. However, none of these alternative measures has given a consistently superior performance with respect to all desirable attributes of an intermediate target--including controllability, demand stability, and predictability of influence on income and prices.

For the present, therefore, targets are set only for the broad monetary aggregates M2 and M3. As noted previously, the velocities of these broader aggregates are not as interest sensitive as that of M1. Part of

the reason is that interest rates offered on these broader aggregates are adjusted more quickly as market conditions change, and these aggregates internalize some of the asset shifts that make M1 so variable. Nevertheless, the opportunity costs of the broader aggregates, and thus their velocities, do vary with market rates.

The relationship between the opportunity cost of M2 and its velocity of circulation is depicted in Exhibit 2. The opportunity cost is defined as the difference between the interest rate on three-month Treasury bills and the weighted average of interest rates paid on balances contained in M2. To allow for lags in the response of the demand for money to changing market conditions, a two-quarter moving average of opportunity costs is used. The exhibit shows a rather close relationship between money demand and opportunity costs.

Moreover, many of the more sizable deviations can be explained by specific occurrences. For example, the drop in M2 velocity in early 1983, despite concurrent increases in opportunity costs, resulted from shifts of non-M2 funds into newly introduced deposit accounts that had no interest rate ceilings. Likewise, the decline in velocity in late 1986 reflected in part a

bulge in money demand resulting from a heavy volume of asset sales that occurred before tax reform legislation took effect.

Because of the interest sensitivity of money demand, the range of interest rates that may be associated with acceptable economic performance is carefully considered in the process of arriving at money growth targets. Furthermore, in light of the less predictable relationship between monetary growth and short-run economic performance, the FOMC has allowed money to depart from its targeted path when such a departure has seemed consistent with progress toward its ultimate objectives.

In light of the increasing unpredictability of the link between money and economic performance, the ranges of annual growth rates for M2 and M3 were widened by the FOMC. For both aggregates, the range is 4 to 8 percent for 1988 compared with 5-1/2 to 8-1/2 percent last year.

To supplement frequent judgmental and econometric forecasts, other leading indicators of the course of the economy and of price pressures are carefully monitored, including lead-times in orders for production materials, commodity prices, and financial

variables such as relative interest rates and exchange rates. Monetary targeting nevertheless retains its usefulness, especially over the long-run, because the link between trend money growth and the inflation rate is indisputable over extended periods of time.

3. The Operating Procedures

These developments with regard to the money-spending relationship have important implications for the choice of procedures to implement monetary policy. In the early 1980s, when the relationship between money and the economy still seemed reasonably stable, Federal Reserve open market operations were tied directly to the behavior of the monetary aggregates.

In recognition of the looser connection that has come to prevail, the FOMC has used since late 1982 an operating procedure that eliminates the automatic responsiveness of reserve availability and interest rates to divergences of the monetary aggregates from targets. This procedure relies more heavily on judgments about the strength of spending tendencies and inflationary pressures. I want to review these procedures with you. But before doing so, it will be helpful if we all have in mind a basic model of the

market for reserves in the United States.

4. The Reserves Market

The demand for reserves is determined primarily by the banks' reserve requirements. Before February 1984, required reserves were fixed and known before any maintenance period, as they were based on actual money balances during a previous period. Since then, however, reserves required against transaction balances have been based on a virtually contemporaneous computation period. In principle, therefore, required reserves could now respond to concurrent changes in the funds rate, which is the interest rate at which banks borrow and lend reserves, to the extent that that rate affected the demand for money contemporaneously. In practice, the demand for money and required reserves is not very interest elastic over the short span of a reserve-maintenance period, but the elasticity increases with the passage of time as depositors adjust to changing opportunity costs.

Exhibit 3 depicts a simple, stylized model of the reserves market that captures this demand behavior. The demand for reserves is shown to have a downward sloping relation to the funds rate. This relation reflects the demand for reservable deposits on behalf

of the public, the reserve requirements, and the willingness of banks to hold reserve surpluses. The supply of reserves is the quantity of nonborrowed reserves plus borrowings from the discount window. The nonborrowed portion is determined primarily by open market operations, although uncontrolled market factors such as currency withdrawals, Treasury balances, and float play a role in the very short run. This is particularly important late in a reserve maintenance period, when their effect on reserves can no longer be offset.

The three major types of discount window credit provided to depository institutions are called adjustment, seasonal, and extended credit. Adjustment credit helps institutions meet temporary reserve needs, while seasonal loans mainly assist small institutions that have temporary liquidity needs because, for example, their loan portfolios are concentrated in agriculture or tourism. Extended credit is provided to institutions with longer-run operating difficulties. Extended credit is not interest sensitive, and it is normally treated as part of nonborrowed reserves for purposes of policy implementation.

While the Federal Reserve generally fixes its discount rate below market rates, it expects institutions to

borrow from the discount window only when other sources of funds are not available on reasonable terms. Because discount window credit is less expensive than borrowing in the open market, such credit is rationed by administrative guidelines. Banks that seek discount window credit frequently are discouraged from continuing the pattern of balance sheet management that gave rise to such needs. But banks are more willing to bear the implicit cost of using up their "privilege" of borrowing at the window when there is a large spread between market rates and the discount rate. For this reason, the demand for borrowed reserves rises with the spread, and thus the sum of borrowed plus nonborrowed reserves as shown in Exhibit 3 has an upward sloping relation to the funds rate. The slope of this function changes because as the funds rate falls below the discount rate, borrowing drops to a small, nearly constant, "frictional" amount, representing the needs of institutions temporarily unable to tap market sources. This schedule of borrowed plus non-borrowed reserves shifts with changes in open market operations, in the discount rate, and in banks' willingness or need to borrow.

Exhibit 4 traces the evolution since 1982 of both adjustment plus seasonal borrowing and the spread of the funds rate over the discount rate. Exhibit 5 shows

the relationship between borrowing and the spread in the form of a scatter diagram. While the correlation between borrowing and the spread is clearly a positive, the relationship is loose, indicating much random noise and some long-term shifts in the willingness of depository institutions to borrow from the discount window.

5. The Operating Directive

At each of its meetings, the FOMC decides upon a short-run policy path that is intended to be broadly consistent with the long-run monetary targets and desired economic performance. The Committee then issues a directive to its agent, the Federal Reserve Bank of New York, concerning the conduct of open market operations during the six to eight weeks before the next meeting.

The FOMC's operating directive identifies a controllable operating variable whose course will guide the day-to-day purchase and sale of securities by the Trading Desk of the Federal Reserve Bank of New York. The general course for this variable is specified in what I will call the "principal instruction" of the directive.

The directive also describes qualitatively how the short-run path for the control variable is to be altered if particular indicators of financial developments or economic performance diverge from expectations, and it identifies the scope within which the Desk may operate, in consultation with the Chairman, without convoking the full Committee.

6. Federal Funds Targeting

The FOMC began setting explicit intermediate monetary targets in 1970. For most of the following decade, it used the federal funds rate as its control instrument. The principal operating instruction of the policy directive specified a narrow band within which the funds rate was to be contained by open market interventions. For example, the directive issued following the FOMC meeting of September 1979 stated that open market "operations shall be directed at maintaining the weekly average federal funds rate within the range of 11-1/4 to 11-3/4 percent."

Under this procedure, the Desk automatically adjusted the provision of nonborrowed reserves whenever the federal funds rate tended to deviate from its target band. Thus, within a reserve period, changes in reserve market pressures always were fully offset,

whether they were caused by shifts in required reserves demand, excess reserves demand, a change in willingness to borrow, or changes in market factors.

When money growth was faster than desired, the Federal funds rate could be raised within its range and if the excessive growth persisted, the Committee raised the operating band so that higher rates would dampen money demand. When monetary growth was weak, the band was lowered.

As shown in the top panel of Exhibit 6, this meant that the supply curve of reserves was effectively horizontal at the specified Fed funds rate. Shifts in the demand for reserves, such as from D to D', were fully accommodated. Under this procedure, one might expect a rather stable Fed funds rate accompanied by marked reserve fluctuations.

The evidence shows that this is what happened. The middle panel of Exhibit 6 shows the deviations of changes in the weekly Fed funds rate from its mean for the last three years (1976-79) during which this operating procedure was in effect. The graph shows that the Fed funds rate fluctuated very little from its trend value throughout the period.

In contrast, as the bottom panel of Exhibit 6 shows, the growth of total reserves fluctuated considerably around its mean value. That is, Fed funds targeting resulted in rather stable interest rates, but relatively large fluctuations in reserves -- and money -- over the short run.

One of the problems of the Fed funds operating procedure was that the FOMC did not always alter the funds rate promptly enough or sufficiently to keep monetary growth within the target ranges and consistent with long term price stability.

7. Nonborrowed Reserves Targeting

In an environment of excessive inflation and rising inflationary expectations, the Federal Reserve announced in October 1979 that, to improve monetary control, it would begin using nonborrowed reserves rather than the funds rate as its short-run operating target. This change in operating procedures was reflected in the language of the policy directive. For example, the principal instruction of the directive following the July 1982 meeting stated that "the Committee seeks behavior of reserve aggregates consistent with growth of M1 and M2 from June to September at annual rates of about 5 percent and about

9 percent respectively." The funds rate was still mentioned, but the range allowed for it was quite wide -- typically 4 or 5 percentage points.

Under nonborrowed reserves targeting, the FOMC still had to make an initial implicit judgment about the level of interest rates likely to be consistent with desired monetary growth. The implied Federal funds rate then helped to determine an associated level of discount window borrowing. Money growth targets were disaggregated by component and by size and type of depository institution, then translated into a path for required reserves, after taking account of interbank deposits and other reservable deposits that are excluded from the measured money supply. An estimate of excess reserves was added to projected required reserves and the initial assumption for the associated level of borrowing was subtracted; the result was a target path for nonborrowed reserves. The Desk used open market operations in order to aim at this target on a week-to-week basis.

The reserves-based procedure improved monetary control because it incorporated an automatic stabilizer for the growth of narrow measures of money. The FOMC no longer had to take active measures to adjust the funds rate when monetary growth deviated from its desired path,

but merely had to keep nonborrowed reserves on target.

Excessive growth of transaction money would be reflected in larger than expected required reserves, and would be accommodated through an increase in total reserves only to the extent that banks increased their borrowing at the discount window. As they bid for reserves, banks would also force up the funds rate, and a general increase in rates would automatically help over time to reduce the quantity of money demanded back toward its target path.

If money began growing below its desired path, required reserves, discount window borrowing and the funds rate would all decline. Lower interest rates would eventually stimulate money demand and help return the aggregates toward their intended paths. The return to desired money growth paths would be faster if nonborrowed reserves were reduced when money growth was high or if they were increased when money growth was low, thereby amplifying the movement of the funds rate. In addition, the discount rate could be changed.

A stylized version of nonborrowed reserves targeting is shown in the top panel of Exhibit 7, in which the supply of total reserves is shown as an almost vertical line. Although the supply of nonborrowed reserves is held constant, total reserves respond to interest rates through discount credit. Shifts in the demand for reserves result in fluctuations of the Fed funds rate, while movements in the quantity of reserves are cushioned by variations in interest rates that moderate divergences of money from target.

The time series for the weekly deviations from the mean of changes in the Fed funds rate (middle panel) and of total reserves growth (bottom panel) show that the fluctuations in the Fed funds rate were markedly larger than they were under the Fed funds operating procedure discussed previously.

Reserve growth still shows substantial variation around the mean, but these reflected changes in underlying conditions, such as credit controls and the onset of recession. The amplitude of reserve fluctuations was less than it would have been under the Fed funds procedure.

As is to be expected, Fed funds targeting results in a relatively stable funds rate and large reserve changes,

while reserve targeting results in relatively larger fluctuations in the Fed funds rate and less pronounced swings in reserve growth.

However, an operating procedure based on nonborrowed reserves is not advisable at a time when the relationship of money to income is open to question. To achieve ultimate price and income objectives, shifts in the schedule of money demand have to be accommodated. For instance, an increase in the demand for transaction balances that is not related to excessive spending nevertheless causes required reserves to rise. To prevent undesired interest rate increases and a resulting restraint on spending in this situation, the short-run operating target for nonborrowed reserves will have to be increased to allow accommodation of the demand shift. In addition, unforeseen changes in interest rates, due to changes in economic conditions, can cause changes in velocity and desired money growth patterns.

Nonborrowed reserves targeting remained in effect from October 1979 until the fall of 1982. During this period, which included a severe recession, the inflation rate fell dramatically, while interest rates were highly volatile. At the same time, regulatory changes and financial innovations made the demand for

M1 very unstable, and the narrow aggregate was permitted to deviate from targeted paths.

8. The Borrowed Reserves Operating Procedure

Progressively over the summer and fall of 1982, the Federal Reserve decided to de-emphasize M1 relative to M2, because the demand for M1 was expected to show further instability. In addition, a more flexible strategy was to be followed regarding monetary targeting in general, although a long-run commitment to return to reasonable price stability by reducing monetary growth was reaffirmed.

With regard to the short-run operating procedures, the automatic control implicit in nonborrowed reserves targeting gave way to a more judgmental approach. This led to the implementation of the borrowed reserves procedure by early 1983, which is still in place today.

The language of the FOMC policy directive was modified slightly, reflecting the emphasis of the new procedure. For example, the principal instruction of the directive issued following the September 1987 meeting stated that "the Committee seeks to maintain the degree of pressure on reserve positions." By "pressure on reserve positions," the FOMC generally means the amount of

reserves supplied through adjustment plus seasonal borrowing.

The FOMC sets a borrowing objective that it views as consistent with progress toward its goals for the monetary aggregates and the economy. The demands for required and excess reserves are forecast as they were under the nonborrowed reserve procedure. The key difference, however, is that subsequent changes in the demand for reserves are usually fully accommodated by changes in nonborrowed reserves, thereby enabling the assumed level of borrowing to be realized.

This operating procedure is depicted in the top panel of Exhibit 8. The initial demand for reserves is shown as line D. The supply of nonborrowed reserves is Sn and the total supply of reserves is S. Borrowing is indicated by B. If the demand for reserves shifts to D', the open market desk will accommodate this increased demand, thereby shifting the supply of nonborrowed reserves to Sn'. The corresponding supply schedule for total reserves is S', which includes

borrowing of B. In effect, the long-run supply curve for reserves is as shown by the line LRS, and the Fed funds rate is not affected by the increased demand for reserves. *

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* Changes in the borrowing assumption are made at times for technical reasons -- that is, because of temporary or longer term disturbances in the relationship of borrowing to the spread between the funds rate and the discount rate. For example, problems with wire transfers could result in large short-term funding needs or a holiday may cause an end-of-period surge in borrowing to spill over into the next reserve maintenance period. The amount of such "special situation borrowing" is largely unrelated to the spread, and the Desk treats it as a part of nonborrowed reserves for the purpose of policy implementation. In addition, there have at times been changes in the willingness of depositories to borrow from the discount window, which result in shifts of the borrowed reserves schedule.

In practice, there will be some short-term variations in the Fed funds rate. This can occur in response to a variety of factors, including shifts in the willingness of depositories to use discount credit. Federal Reserve policy as the demand function shifts. This is confirmed by the actual data shown in the middle panel of Exhibit 8. It shows that the Fed funds rate is somewhat less stable under this procedure than under the direct Fed funds targeting approach (Exhibit 6), but somewhat more stable than under the nonborrowed reserve targeting approach (Exhibit 7).

While there is no marked difference between the fluctuations in reserves experienced under the three procedures, the bottom panel of Exhibit 8 shows that reserve fluctuations are slightly larger than under the nonborrowed reserve targeting approach.

The borrowed reserve procedure has been a useful tool in implementing monetary policy. But, in contrast to nonborrowed reserves targeting, there is no automatic mechanism for controlling monetary growth. If money deviates from its forecast path, a discretionary change in the borrowing assumption is required to bring about the changes in money market conditions that will bring the aggregates back to the path.

To be sure, monetary growth has varied considerably since the procedure was instituted in late 1982, with the annual growth rates of M1 and M2 ranging from 5 to 16 percent and from 4 to 12 percent respectively. Nevertheless, the inflation rate has remained quite steady, averaging less than 4 percent per year since 1982, as measured by the fixed-weight GNP price index. During this period, the country has also enjoyed its longest peacetime expansion.

9. Operating Adjustments Between Meetings

The borrowing assumption set by the FOMC can be modified before the next meeting of the Committee for policy purposes, as well as for technical reasons. To guide the Desk's conduct of open market operations between meetings, the policy directive identifies the key variables whose performance could occasion a discretionary change in the degree of reserve pressure indicated by the principal instruction of the directive. Such variables include not only the behavior of the monetary aggregates, but also the pace of economic activity, the inflation rate and inflation expectations, conditions in financial and credit markets, and the foreign exchange value of the dollar. FOMC members often have differing views regarding the relative importance of these factors; but Exhibit 9

gives some indication of the consensus view by showing the order in which conditioning variables have appeared in recent policy directives.

10. Recent Policy Issues

As Exhibit 9 indicates, monetary growth and the strength of the business expansion were mentioned first among the variables conditioning the degree of reserve pressure sought by the FOMC during 1985 and 1986. Because of concern about the persisting overvaluation of the U.S. dollar relative to the currencies of its major trading partners, conditions in foreign exchange markets assumed higher priority beginning in the late summer of 1985. In September of that year, the G-5 countries announced a new program of concerted currency interventions to promote a downward adjustment of the dollar. The dollar declined, sharply at times, throughout 1986.

In February 1987, the monetary authorities of the countries with the most important currencies announced that they would cooperate closely to help stabilize exchange rates around the levels then prevailing. Shortly thereafter, the dollar again came under sharp downward pressure, accompanied by higher inflation expectations, and fears of a withdrawal of foreign

private investment and of a free fall in the currency's value. As a result, long-term interest rates, which had fallen for nearly three years began to rise. As Exhibit 9 reveals, developments in foreign exchange markets were given the highest priority in conditioning reserve pressures at the FOMC meeting of March 1987. In the following weeks, as concerns intensified about the inflationary consequences of further declines in the dollar, currency interventions were combined with a tightening of pressure on reserve positions and rising short-term interest rates in the U.S. At the same time, monetary policy abroad was eased.

In the summer of 1987, concern about the possibility of accelerating inflation and of rising inflation expectations re-emerged. The economy then was growing at a rate sufficient to produce quite high and rising rates of resource utilization. In September, the Committee again decided to seek some firming of pressures on reserve positions and the discount rate was increased.

When stock prices collapsed in mid-October, the resulting disturbances required a policy stance that ensured the liquidity and stability of the financial system. The FOMC not only eased the pressure on reserve positions, but also temporarily modified operating

procedures in order to help calm financial markets. The modified approach gave more weight than usual to money market conditions, thereby minimizing the risk that the Committee's intentions would be misinterpreted. This shift in emphasis was also considered necessary because the normal relationship between discount window borrowing and the Federal funds rate was apparently disrupted. In that period, fluctuations of the funds rate were held within a narrower band.

The FOMC recognized that open market operations might have to be especially alert and adaptable to changes in market conditions or in the economy. Further ease might be required to avoid the risk of a sharp decline in business activity. On the other hand, there were also risks that interest rate reductions would intensify downward pressure on the dollar and thereby might trigger another crisis in domestic and international financial markets. Therefore, citing the "sensitive conditions in financial markets" and "uncertainties in the economic outlook," the policy directives issued at the November and December FOMC meetings called for "a special degree of flexibility" in open market operations.

These changes in operating procedures and priorities were temporary in nature, and, as greater calm has been

restored to financial markets and the relationship between reserve positions and money market conditions has returned closer to normal, the FOMC gradually has reverted to its former emphasis on reserve objectives.

II. Concluding Observations

Looking to the future, significant challenges lie ahead for monetary policy makers. Achieving sustainable economic growth with price stability will remain the central objective. However, it will not be easy to attain this goal because the monetary aggregates have deteriorated as intermediate targets, and because the risk of inflation increases as resource utilization approaches its limits. In addition, structural adjustments will be needed to bring the government's budget and the current account of the balance of payments into better balance. While renewed strength in the export sector will aid the country's external position, domestic absorption will have to be moderated to forestall the development of excess demands on resources. The stability and health of the financial sector remain key concerns, given the recent turbulence of stock markets, the persisting problems of third world debt, and regional weaknesses in bank and thrift loan portfolios.

As always, successful monetary policy will require a careful weighing of all the relevant short- and long-term alternatives.

Exhibit 1
Velocity of Money and Treasury Bill Rate
(Quarterly)

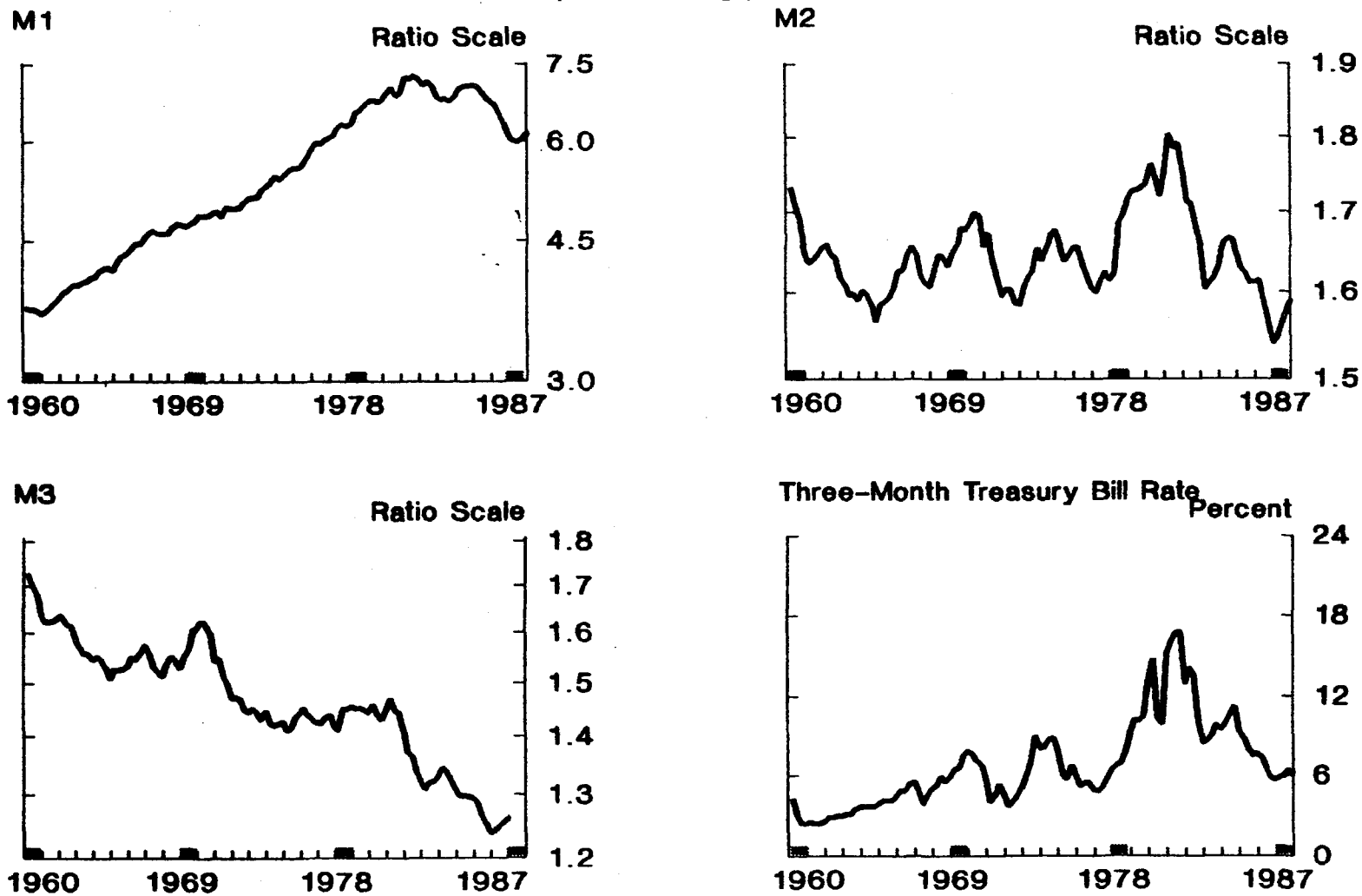
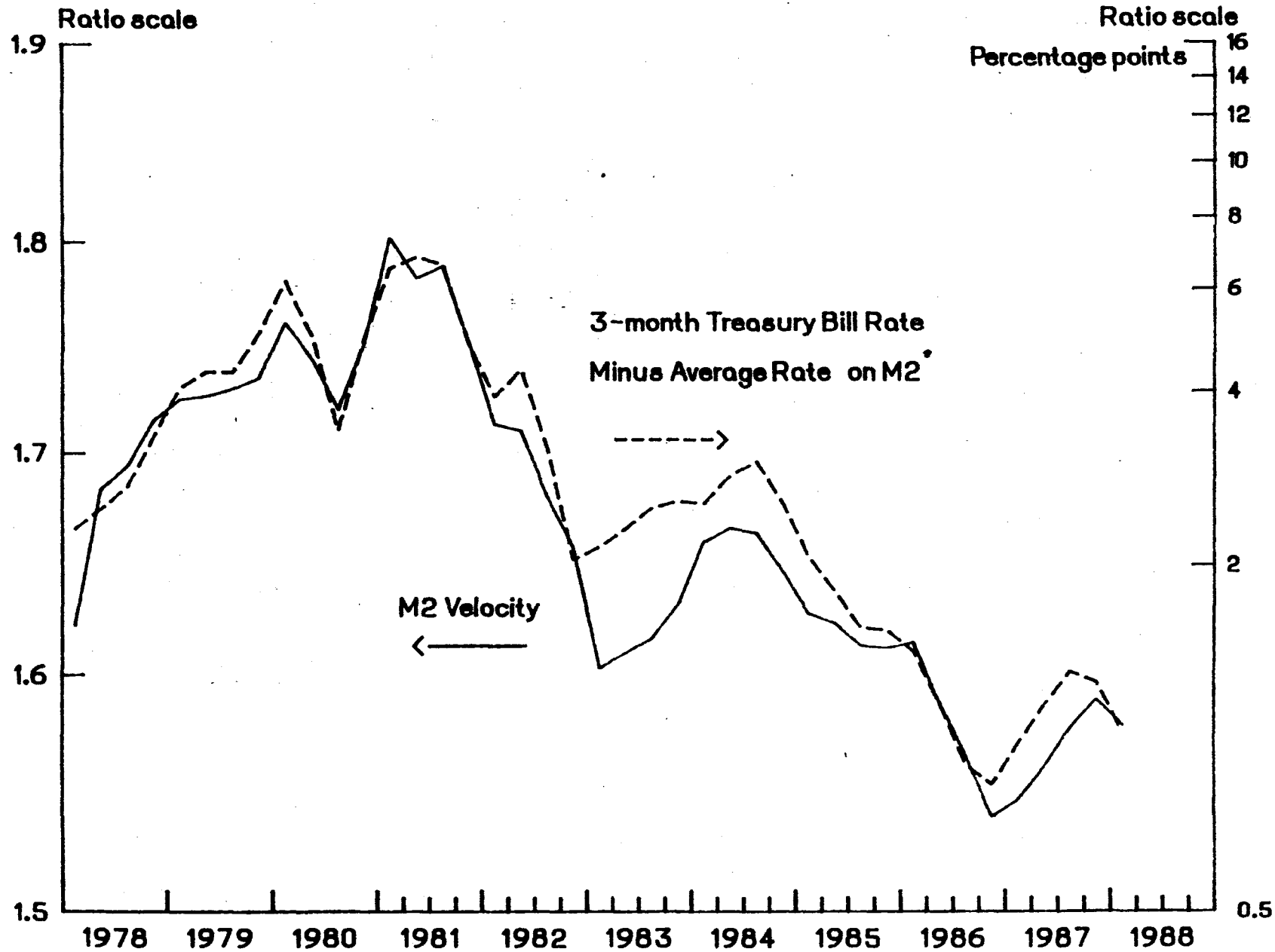


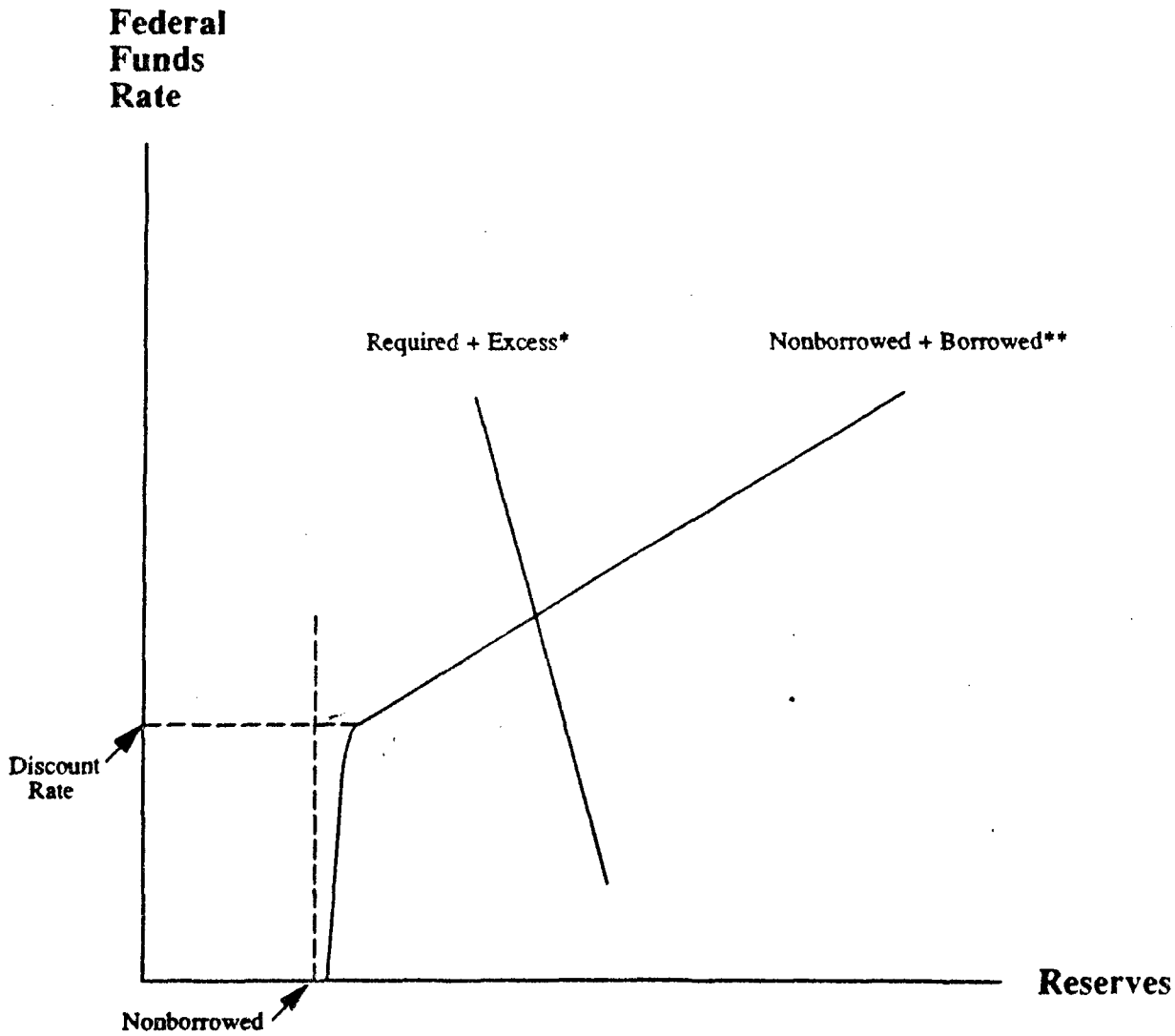
Exhibit 2

M2 Velocity and Average M2 Opportunity Cost



*Two-quarter moving average.

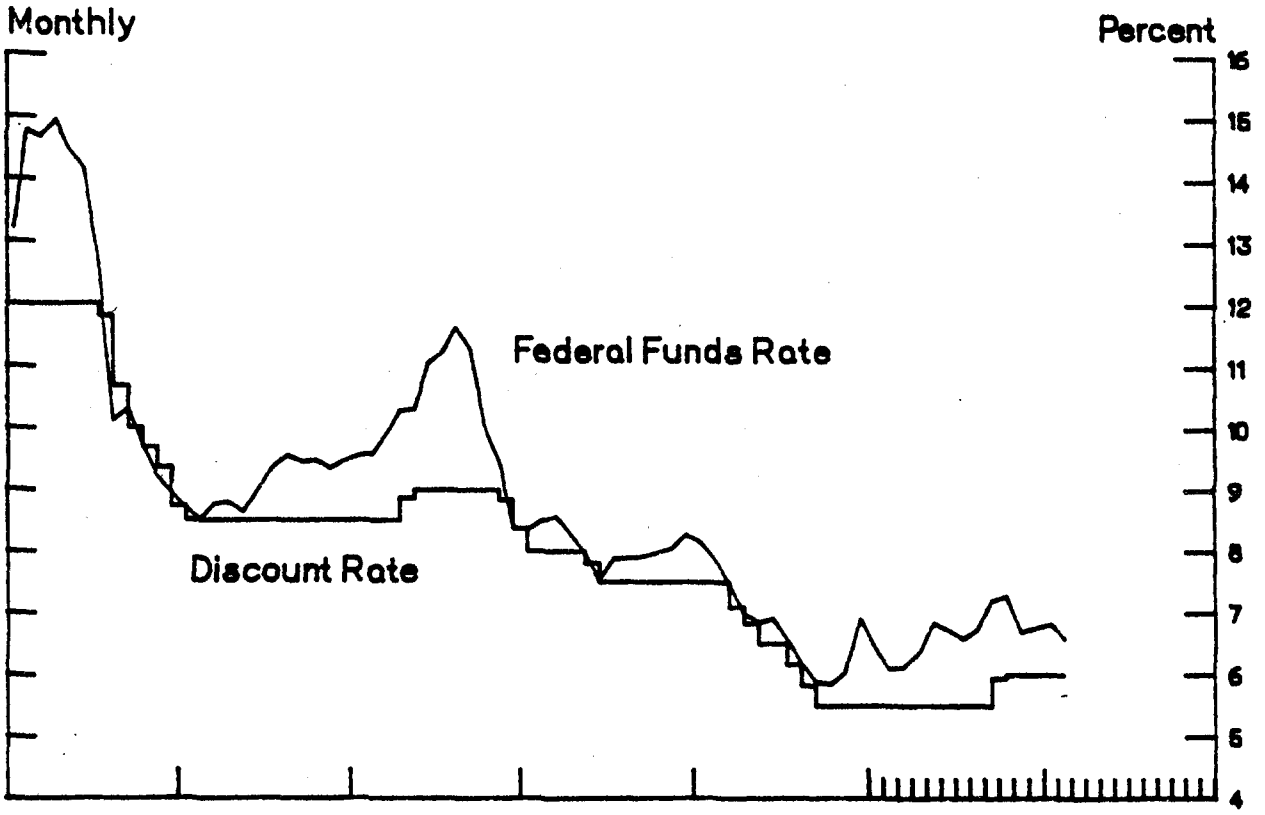
Exhibit 3
Reserves Market

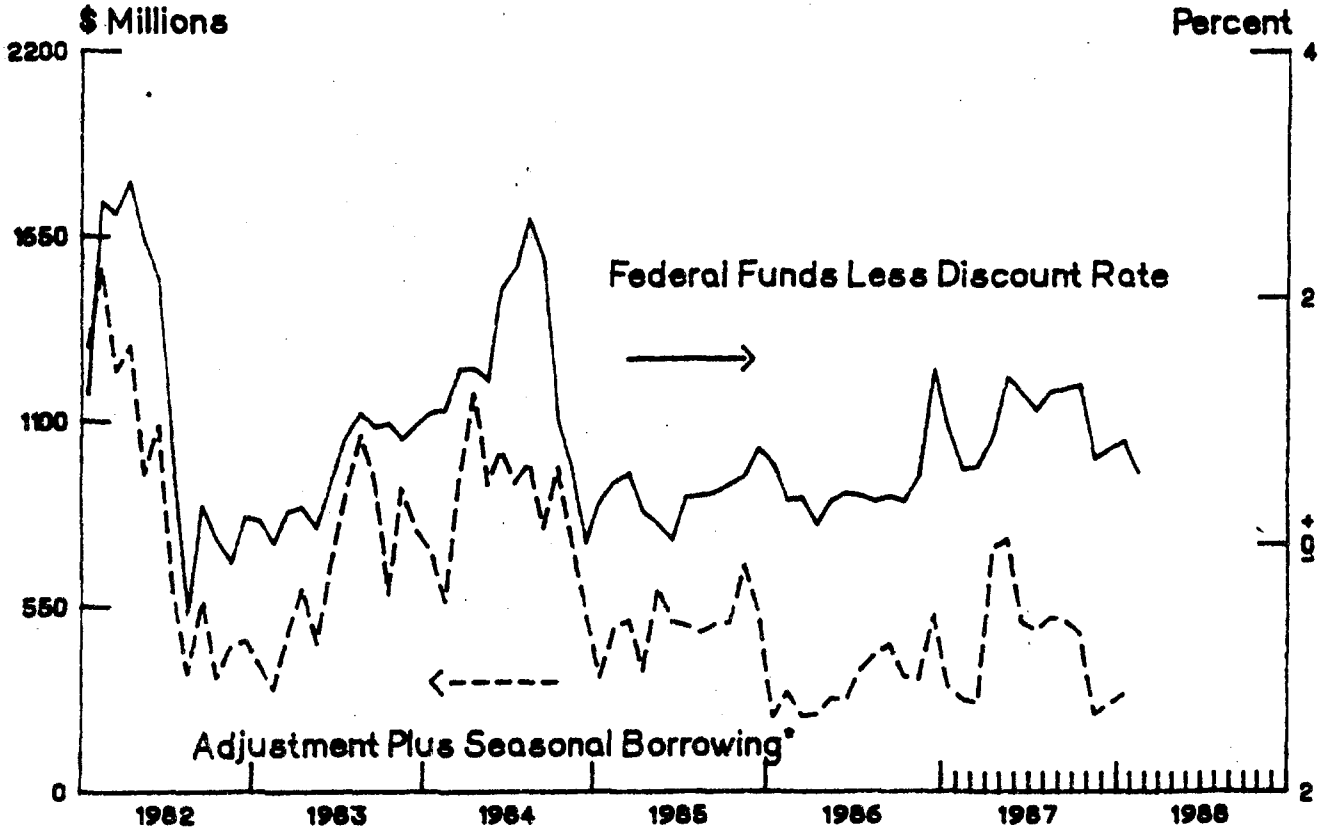


*This schedule shifts with changes in the demand for reservable deposits or in the willingness of banks to hold reserve surpluses.

**This schedule shifts with changes in open market operations, in the discount rate, or in banks' willingness or need to borrow.

Exhibit 4





*Excludes special situation borrowing.

Exhibit 5

Relationship of Discount Window Borrowing to the Spread between the Federal Funds and Discount Rates

(Monthly, 10/82 - 1/88)

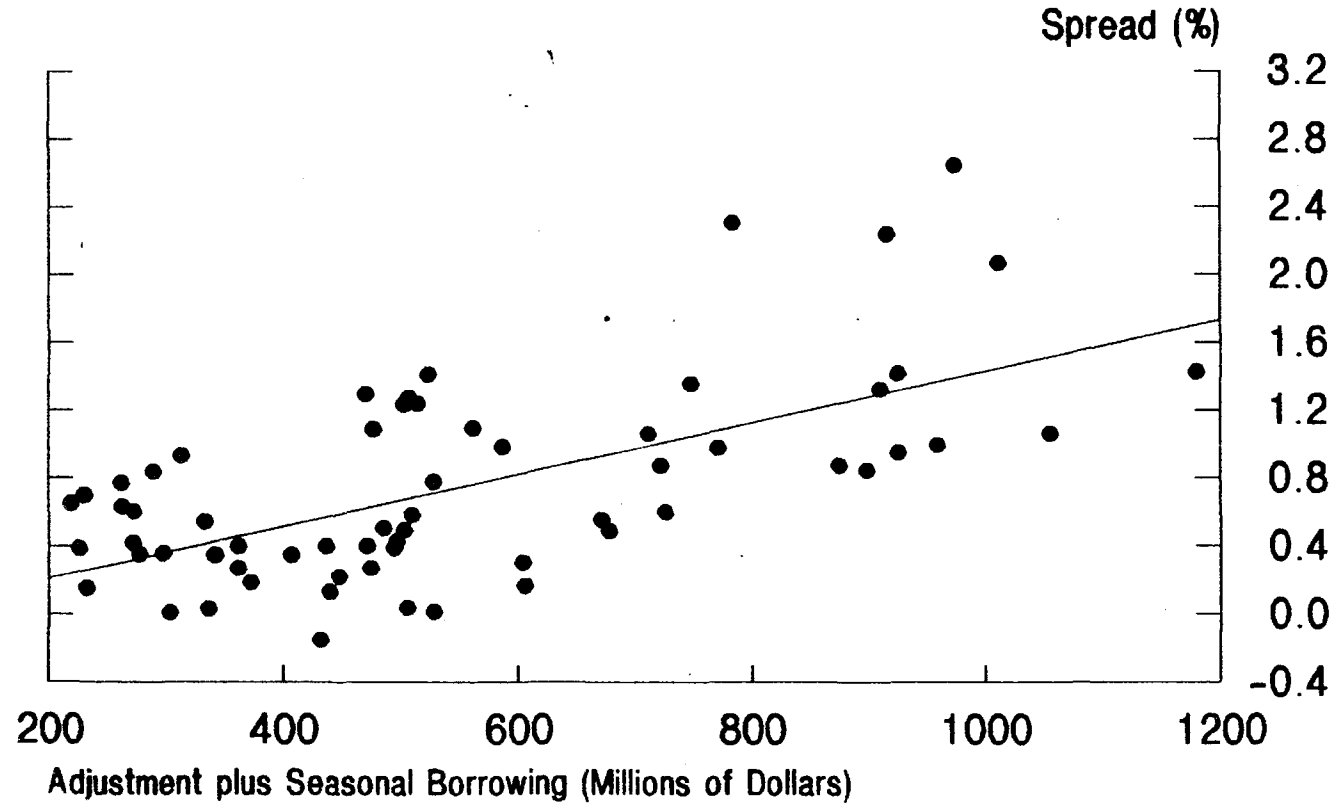
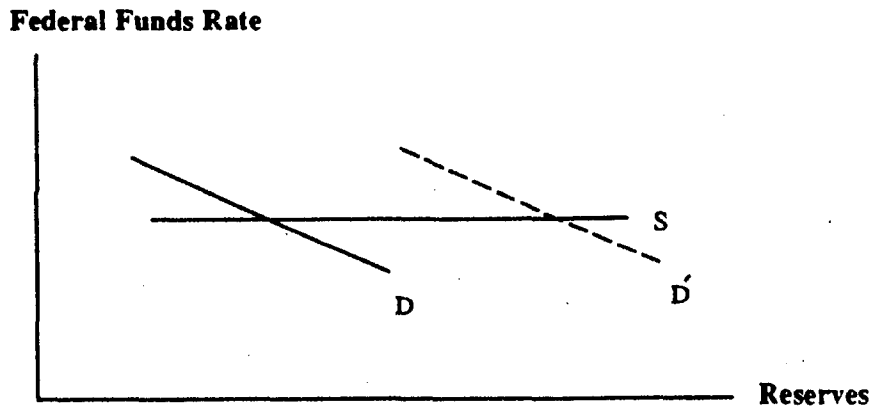
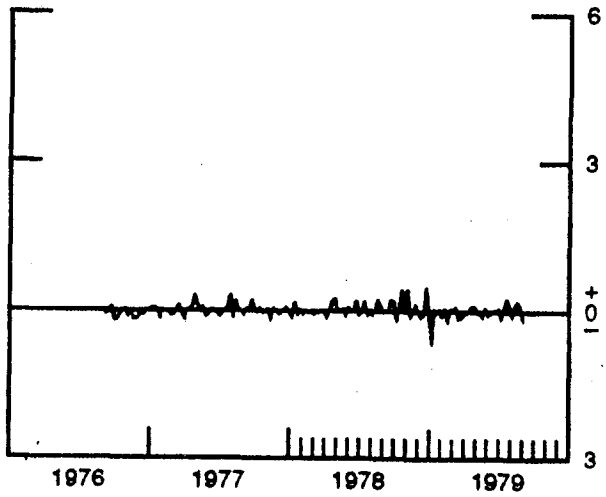


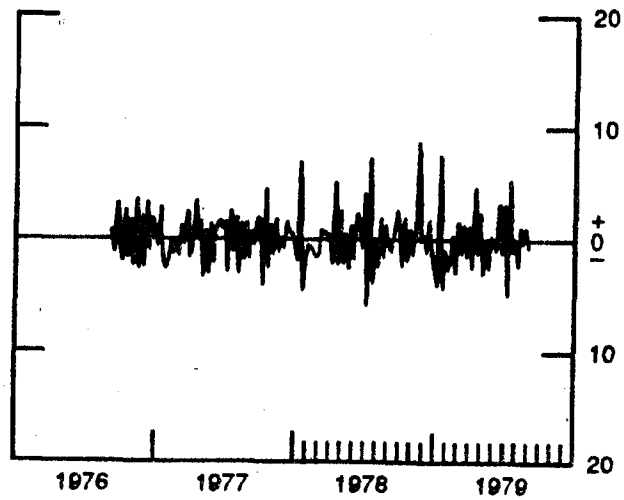
Exhibit 6
Federal Funds Targeting



Variability of Federal Funds Rate*



Variability of Total Reserve Growth**

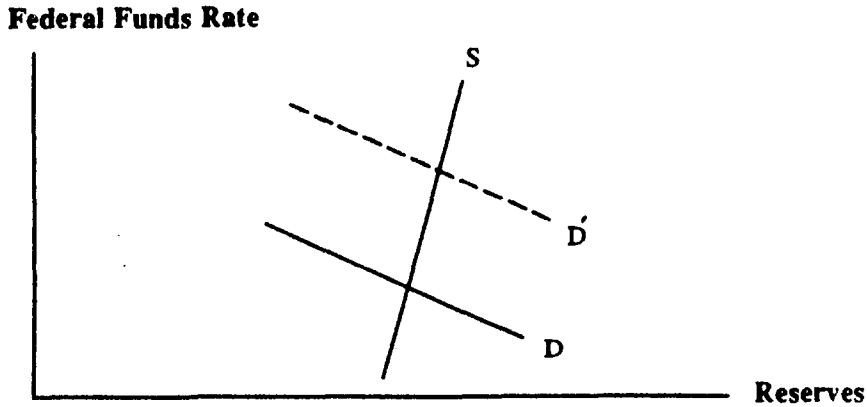


Key: S = Supply of total reserves
D = Demand for required plus excess reserves

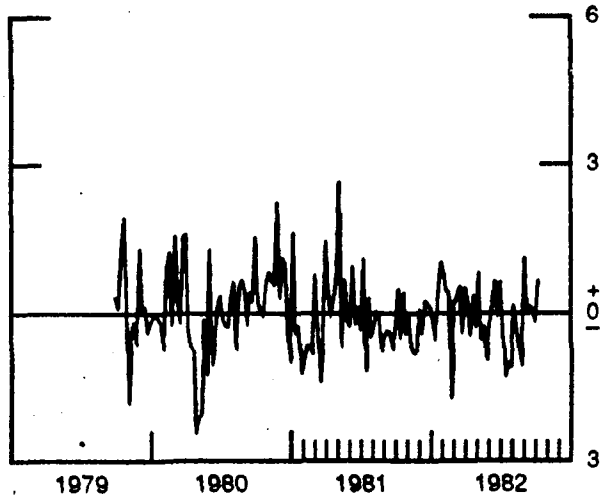
*Changes in the average weekly federal funds rate (in %) are plotted as deviations from the mean change over the period.

**The weekly growth rates of total reserves (in %) are plotted as deviations from the average weekly growth rate

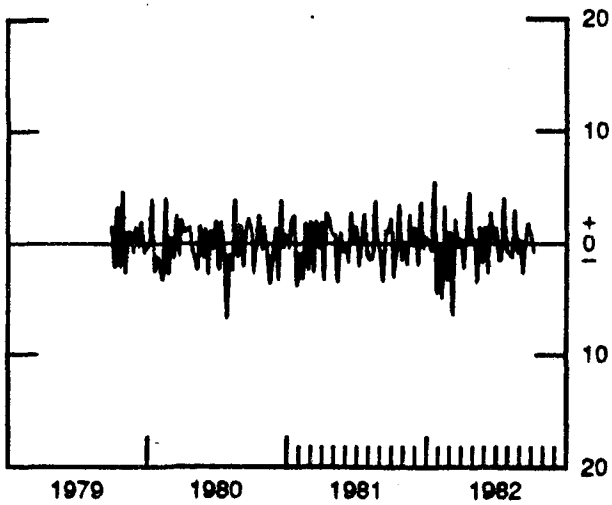
Exhibit 7
Nonborrowed Reserve Targeting



Variability of Federal Funds Rate*



Variability of Total Reserve Growth**

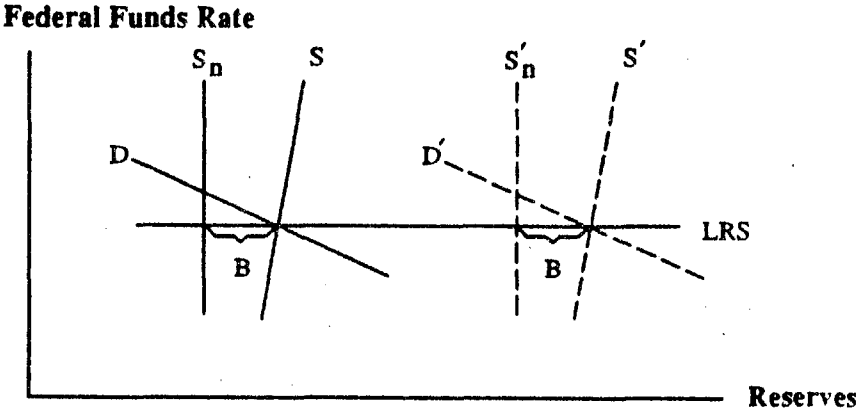


Key: S = Supply of total reserves
D = Demand for required plus excess reserves

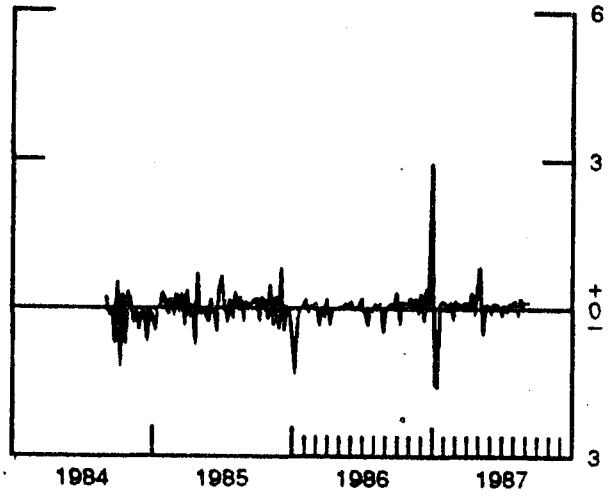
*Changes in the average weekly federal funds rate (in %) are plotted as deviations from the mean change over the period.

**The weekly growth rates of total reserves (in %) are plotted as deviations from the average weekly growth rate over the period.

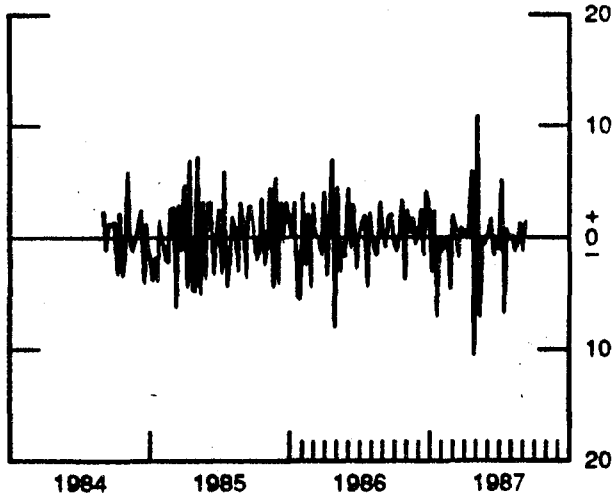
Exhibit 8
Borrowed Reserve Procedure



Variability of Federal Funds Rate*



Variability of Total Reserve Growth**



Key: S_n = Supply of nonborrowed reserves; LRS = Long-run supply
S = Supply of total reserves; B = Borrowed reserves
D = Demand for required plus excess reserves

*Changes in the average weekly federal funds rate (in %) are plotted as deviations from the mean change over the period.

EXHIBIT 9

Order in which Policy Variables Conditioning Reserve Pressure Appeared in the FOMC Directive

MEETINGS	FIRST	SECOND	THIRD	FOURTH	FIFTH
3/85 to 7/85	MONETARY AGGREGATE	STRENGTH OF EXPANSION	INFLATION	CREDIT MARKET CONDITIONS	EXCHANGE RATES
8/85 to 4/86	MONETARY AGGREGATE	STRENGTH OF EXPANSION	EXCHANGE RATES	INFLATION	CREDIT MARKET CONDITIONS
5/86	MONETARY AGGREGATE	STRENGTH OF EXPANSION	FINANCIAL MARKET CONDITIONS	EXCHANGE RATES	--
7/86 to 2/87	MONETARY AGGREGATE	STRENGTH OF EXPANSION	EXCHANGE RATES	INFLATION	CREDIT MARKET CONDITIONS
3/87	EXCHANGE RATES	MONETARY AGGREGATE	STRENGTH OF EXPANSION	INFLATION	CREDIT MARKET CONDITIONS
5/87	INFLATION	EXCHANGE RATES	MONETARY AGGREGATE	STRENGTH OF EXPANSION	--
7/87	INFLATION	MONETARY AGGREGATE	STRENGTH OF EXPANSION	--	--
8/87 to 9/87	INFLATION	STRENGTH OF EXPANSION	EXCHANGE RATES	MONETARY AGGREGATE	--
11/87	FINANCIAL MARKET CONDITIONS	STRENGTH OF EXPANSION	INFLATION	EXCHANGE RATES	MONETARY AGGREGATE
12/87	FINANCIAL MARKET CONDITIONS	STRENGTH OF EXPANSION	INFLATION	EXCHANGE RATES	MONETARY AGGREGATE