

THE STRATEGY OF MONETARY POLICY

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I. Introduction

While much has been written over the years concerning monetary policy, there is apparently a discontinuity in the flow of information between policy-makers, on the one hand, and academic researchers and participants in financial markets, on the other. Much of this lack of communication centers specifically on the formulation and implementation of monetary policy. As a result, much of the research into the policy process is based on incorrect assumptions concerning how policy is managed. Sherman Maisel, a former member of the Federal Reserve Board of Governors, argues that the Fed itself is a source of this communications gap: "The Fed has always resisted being too specific about [its] methods and its goals, clothing its operations in a kind of mystique that left it more freedom to maneuver" [18, p. 26].

In the opinion of many policy observers, this communications failure has real costs, both in terms of public understanding and the effectiveness of policy. While the Fed is reluctant to specify its procedures too explicitly in order to protect its freedom of action, "its attempt to protect itself from both outside critics and internal disappointment . . . weakens its ability to improve its performance" [18, p. 311].

Recently a number of papers have been directed toward unraveling the mystique that surrounds monetary policy.¹ The purpose of this article is to synthesize and extend the recent literature on this subject and thereby provide an interpretation of the monetary policy process and a model of current open market strategy. Hopefully, this article will contribute to a

better understanding of current policy procedures and will help to identify problem areas toward which further research should be directed.²

This article consists of seven sections. Section II presents the background to the current strategy. The following three sections describe long-run aspects of current policy formulation, the linkages between the long- and short-run policy process, and short-term open market strategy, respectively. An analysis of the effect of the constraint on interest rate volatility on short-run policy actions is presented in Section VI, followed by some final remarks in Section VII.

II. The Evolution of the Current Strategy

An important paper by Jack Guttentag, published in 1966, described the Federal Reserve's policy procedures of the 1950's and early 1960's as the money market strategy [10]. Under the money market strategy, the Federal Reserve's proximate focus was on the "condition of the money market"—generally understood to include the value of a constellation of interest rates, free reserves, and the inventory positions and financing costs of securities dealers. With such national economic goals as full employment and price stability remote in time and causal connection from conditions in the money market, the use of money market conditions as a proximate target tended to focus policy too narrowly. As a result, Guttentag argued:

The main weakness of the [money market] strategy is its incompleteness, i.e., the fact that the Federal Open Market Committee (FOMC) does not set specific quantitative target values for which it would hold itself accountable for the money supply, long-term interest rates, or any other 'strategic variable' that could serve as a connecting link between open market operations and system objectives; rather it tends to rationalize the behavior of these variables after the fact [10, p. 1].

To correct the deficiencies in the money market strategy, Guttentag suggested that the Fed adopt a complete strategy—consisting of quantifiable targets specified over given control periods, with the sequence of targets linked empirically to the ultimate price and output goals of the economy. Targets are

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¹ See, for example, the important articles by Axilrod and Beck [11], Brimmer [13], Kane [12], Maisel [17], Pierce [22, 23], Pierce and Thomson [25], Poole [26], and Tschinkel [29].

² This discussion is not meant to imply that all monetary research has been useless or that no one understands the essence of current policy procedures. With regard to the latter, it is clear that many financial market analysts have considerable expertise in assessing the implications of day-to-day Federal Reserve actions.

defined as strategic variables that policymakers can affect by manipulating policy instruments.³ Included in the set of targets are both intermediate targets such as interest rates, bank reserves, and monetary aggregates, and longer-term final targets (or goal variables) such as output, employment, and prices. Instruments are the magnitudes under direct policy control and include open market operations, the discount rate, reserve requirements, and interest rate ceilings.

A control period is the time interval over which the attainment of targets is planned. A complete policy strategy involves a number of control periods, each giving primary emphasis to different target variables. For example, over a weekly control period, an operating target such as the Federal funds rate or nonborrowed reserves might receive emphasis; over a monthly or quarterly control period, an intermediate target such as the growth rate of M_1 might receive emphasis. In control periods as long as six months or a year, long-term target variables such as output and employment would be the major policy goals.

A strategy is complete if its intermediate target is a strategic variable, linked empirically to the economy's long-term output, price, and employment goals. This implies that the policymaker is cognizant of the linkages among the various elements of the strategy. In a more formal sense, a model of the monetary policy transmission mechanism such as: instrument → intermediate target → long-term target must be developed.⁴

Guttentag was careful to distinguish between policy strategy, which involves the selection of the target variables to be explicitly considered by policymakers, and policy formulation, which involves the setting of specific values, or *dial settings*, for the target variables. In selecting these values, the policymaker examines a set of policy determinants such as relevant financial and economic data and forecasts. Clearly the development of an overall policy strategy is logically prior to policy formulation, since the particular policy determinants that the policymaker considers are dependent upon the strategy being pursued and the transmission mechanism it embraces [7, pp. 6-11].

The thrust of the Guttentag critique was reinforced by a number of events that increased public

³ Discussions of monetary policy have long been plagued by semantic difficulties with such words as targets, indicators, guides, objectives, etc., with the same words having different meanings to different writers. Such problems have played a major role in several major controversies in monetary economics [20].

⁴ The arrows indicate the direction of causation. See [7] for a clear discussion of the transmission mechanism in monetarist and non-monetarist models.

awareness of monetary policy. In the late 1960's the economic stimulus provided by the Vietnam war and the delay of the 1968 tax surcharge and the intellectual stimulus of the monetarist counter-revolution served to focus increasing public attention on monetary policy. During the same period, the development of large-scale econometric models reflected the substantial impact of monetary policy on economic activity and tended to emphasize quantification of policy targets. In view of these developments, it is perhaps not surprising that the Federal Reserve moved toward the development of a more complete strategy. In 1966 the FOMC added a "proviso clause" to its Directive, giving explicit weight to movements in bank credit in determining policy actions. In 1970 the FOMC first began to include explicit references to monetary aggregates in its instructions to the Trading Desk. An important step in this ongoing process was probably the appointment of Arthur Burns as Chairman of the Federal Reserve Board in early 1970. In this regard Maisel states: "From the first day in office [Burns] put the weight of his office behind greater quantification" [18, p. 70].

The result of this evolutionary process can be stated simply—monetary aggregates (e.g., M_1 , M_2 , M_3 , and bank credit) now receive more weight in policy deliberations and actions. The Directive—the FOMC's instructions to the Manager of the Trading Desk—now includes *specific* values for various strategic target variables, such as the Federal funds rate, bank reserves, and the monetary aggregates.⁵ It is useful for expository purposes to divide the discussion of current policy procedures and strategy into its long- and short-term aspects. A description of these components and their interrelationship begins in the next section.

III. A View of Long-Run Strategy

The policy process begins at the Federal Reserve Board with the development of staff forecasts for GNP, prices, unemployment, and other long-run targets four quarters into the future.⁶ These basic forecasts are undertaken three or four times each

⁵ The more specific the instructions contained in the Directive, the less discretion or latitude the Manager has in executing policy actions. One of Guttentag's criticisms of the Fed's operating procedures in the 1950's and 1960's was the ambiguity in the Directive. He stated: "It is natural and a type of poetic justice that the words used by the Committee in giving instructions to the Manager are thrown back to the Committee. If the Committee instructs him to follow an 'even keel tipped on the side of ease', for example, he can report back that he 'maintained an even keel . . .' and the Committee is not in a position to complain that it does not understand what these words mean" [10, p. 181].

⁶ This discussion draws heavily from the work of former members of the Board staff: Pierce [23], Pierce and Thomson [25]; and the work of former Governors Brimmer [2, 3] and Maisel [17, 18].

year and are updated each month. The projections are referred to as consensus forecasts, since judgmental and econometric inputs are combined into a single forecast.

The econometric forecast is made using the Board's version of the SSRC-MIT-PENN (SMP) econometric model.⁷ Initially, model simulations are conducted using expected values of exogenous variables not under Federal Reserve control, such as Federal Government outlays, and a trajectory for an intermediate target variable under potential Federal Reserve control, such as the growth rate of the money stock. The same money stock trajectory, for example a 5 percent annual growth rate, is also assumed by the judgmental forecasters. The judgmental forecast, prepared by staff economists in various sections of the Federal Reserve Board, is often more accurate in the near term than the model forecast [23, p. 12]. Differences in the econometric and judgmental forecasts are reconciled, and the consensus forecast is prepared.

One should not infer that the econometric projections are "pure" in the sense of a mechanical application of an existing model; as is true in most econometric work, a considerable degree of judgment is involved. This notion has been summarized by Hymans:

No [model] operator—at least, one with much success as a forecaster—lets the computer center run his model. Rather, the operator considers the model to be nothing better than the best statement of the internal logic of the economy which he happens to have available. While he rarely tampers with the model's interactive logic, he recognizes that there are relevant factors which he thinks he knows, and which he is sure the model does not know, about current realities in the economy. In some way, he attempts to communicate this information to the model. . . . And what is most important, much of the relevant information which has to be communicated to the model is simply not contained in the values of the exogenous variables [11, p. 537].

For the sake of completeness, it should also be noted that the judgmental forecast is not independent of the econometric projections. The various forecasters interact continually and therefore a judgment about the path of economic activity (especially over a long time horizon) is no doubt influenced by the model simulations.

Following the development of the consensus forecast, the Board staff usually produces a number of alternative long-run scenarios of economic activity for evaluation by the FOMC. First the consensus forecast is reproduced quarter-by-quarter, variable-

⁷ See 15), 17), and 19) for discussions of the policy transmission mechanism of the SMP model.

by-variable with the econometric model by adjusting the constant terms in selected equations. Alternative trajectories of monetary growth are then fed into the model to produce a consistent set of monetary, GNP, price, and unemployment estimates.⁸ The FOMC then evaluates these alternative scenarios and selects an explicit monetary growth path for the forthcoming six- or twelve-month period.

It is important to note that the implicit dial settings for the final targets embedded in the staff forecast may not, for a variety of reasons, be accepted by members of the FOMC. For instance, an individual member of the FOMC may not believe the staff forecast and may therefore foresee a different real sector outcome. Each Reserve Bank President has his own staff's view of the economic and financial outlook to consider, and it is possible that his staff has a forecast quite different from that of the Board staff. More generally, there is no reason to assume that each member of the FOMC will embrace the estimates developed by the Board staff with regard to the impact of monetary policy on economic activity.⁹

Alternatively, an FOMC member may have a longer planning horizon for policy than the four- to six-quarter projection horizon and, therefore, might not believe that such a short-term projection should be a major determinant of current policy actions. In the current setting, for example, a policymaker may desire to drive unemployment down to 4 percent by mid-1976 but might feel that existing economic constraints, as well as structural relationships, make the risk of intensifying inflationary pressures under such a policy high. Hence, the return to full employment should be, in this member's view, more gradual and occur over a two- to three-year period.

Another possibility is that an FOMC member may have little faith in any of the assorted projections and instead may be strongly influenced by current economic and financial conditions. This view implies a shorter planning horizon than four to six quarters. Pierce has summarized some reasons why this last possibility may prevail from time to time:

It is very difficult to convince a policymaker to move an instrument in what he views to be the wrong direction. That is to say, if income is ex-

⁸ As Pierce has discussed I231, a less extensive forecasting effort is made each month just prior to a FOMC meeting. This effort involves the updating of earlier forecasts through an extensive examination of incoming data and how they agree with, or have tended to modify, the projections presented in previous months. See also I21.

⁹ In recent testimony by Chairman Burns before the Senate Banking Committee (July 24, 1975), members of the Senate Committee requested the release of the staff economic forecast conditional on a particular growth rate in the money stock. Chairman Burns did not appear to favor this suggestion, and his response emphasized some of the same points discussed in this and following paragraphs.

panding very rapidly and the models are predicting that it is going to fall in the future unless he eases up, it is very difficult to get him to ease up because that sort of policy recommendation is contrary to what is going on currently. I must say that until our models do a lot better, his wariness may be justified. Again, the problem is one of how to handle risk: what if the model were wrong? What if the economy were expanding very rapidly, the policymaker eases up, but economic expansion becomes more rapid? The cost of the error to the policymaker would be very large [23, p. 18].¹⁰

A Model of the Long-Run Strategy The longer-term policy process described above conforms to a general class of constrained optimum problems. That is, policymakers may be viewed as maximizing a utility or preference function subject to the constraints imposed by the economic structure or by other considerations. Equation (1) states that the utility of the policymaker is a function of the deviation of the final targets from their desired levels, with greater utility being associated with smaller deviations.¹¹ Let U represent the policymaker's utility. Then:

$$\text{maximize } U = f_1(Y^A - Y^*) \quad (1)$$

$$\text{subject to } Y^A = f_2(M_L, X_L) \quad (2)$$

$$\text{and } \sigma_R^2 \leq \alpha \quad (2a)$$

where Y is a vector of final target variables such as GNP and prices. The superscript A denotes the actual value of the variable, and the asterisk denotes a desired value. The symbol σ_R^2 represents the variance of some interest rate R , α is a constant, M is the money stock, X represents other determinants of the final targets, and the subscript L is a distributed lag operator. The side constraints represented by equations (2) and (2a) reflect the limitations imposed on policymakers by the structure of the economy and by the volatility of interest rates.

The expected values of the final targets will generally depend upon the structure of the economy, the particular dial settings for the intermediate target variable selected by the central bank, dial settings for fiscal policy selected by Congress and the President, and the values of other determinants such as the level of consumer and business confidence, price expectations, the degree of capacity utilization, and international developments. The forecast of final

¹⁰ The issue here is quite complex. The policymaker must act in the face of uncertainty over structural parameters and with the knowledge that there is a lag between actions and effects. In addition, there is the distinct possibility that incoming data may be revised substantially and thereby alter the appropriate policy response. Against this background, it is often difficult for policymakers to be convinced to move an instrument now to affect a final target one year in the future. Perhaps some of the recent applications of control theory to stabilization policy will prove helpful in educating both policy advisers and policymakers.

¹¹ To be more precise, (f_1) is an inverse function; that is, the policymaker is minimizing disutility (or "losses") by minimizing the deviations of the actual target values from desired levels.

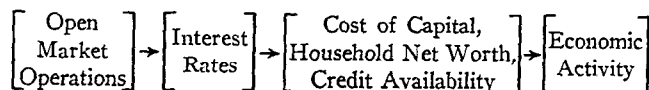
targets by the staff assumes specific dial settings for the intermediate target variables, e.g., the money stock, and also involves assumptions concerning all of the above determinants of economic activity not under the direct control of the Federal Reserve.¹² This process is summarized by equation (2), which condenses the SMP model and the consensus forecast for the final targets into a simple expression.¹³ It is presumed that the policymaker believes that changes in the money stock lead in a systematic fashion, albeit with a lag, to changes in prices, output, and employment.¹⁴

Equation (2a) is included as a constraint to account for the Fed's ongoing desire to avoid disorderly conditions in financial markets that, in turn, might frustrate the achievement of the final targets. A discussion of the constraint on interest rate volatility is the subject of Section VI.

Before closing the discussion of the long-term strategy, it is important to emphasize that many members of the FOMC might object to the causal sequence that seems to underlie equation (2): open market operations \rightarrow money stock \rightarrow economic activity. More specifically, some might prefer:

$$Y^A = f_2(R_L, X_L)$$

where R is a short- or long-term interest rate, and the implied causal sequence is more like the transmission mechanism of the SMP model [7, pp. 7-9].



In part the issue involved here concerns the endogeneity or exogeneity of R and M and which variable ought to be the intermediate policy target [27]. For purposes of this article, this complex issue is side-stepped for two reasons. First if one ignores the error term in the demand for money function, it may be solved in terms of the interest rate or the money stock, and either may be treated exogenously for

¹² This being the case, the forecast may be wrong because the fiscal policy assumption is wrong, the Federal Reserve does not achieve the dial setting for the intermediate target, the structural parameters underlying the forecast are incorrect, or there is a stochastic shift in a behavioral relationship. One point relevant to this problem, which has received all too little attention in the literature, is the interdependence of stabilization policy actions. For example, if a restrictive monetary policy leads to a response by the Congress or the President to ease fiscal policy, the forecaster must anticipate this reaction.

¹³ As noted above, each member of the FOMC might, in effect, have a different specification for equation (2) because of an alternative view of structural relationships. In this regard, equation (2), despite its simplicity, should not be mistaken for so-called reduced form models purporting to link the money stock or the monetary base to economic activity.

¹⁴ Throughout this article error terms are generally ignored. Clearly, the staff should express the confidence intervals and standard errors around a particular forecast for the final targets.

forecasting purposes.¹⁵ That is, a large macroeconomic model may contain a correctly estimated money demand function:

$$M = a_0 + a_1y + a_2R$$

where a_0 , a_1 , and a_2 are estimated parameters, M is money demand, y is nominal income, and R is the interest rate. The forecast for the final targets is independent of whether the money demand equation is solved for M or for R :

$$R = \frac{M - a_0 - a_1y}{a_2}$$

Second, M is the assumed intermediate target variable in equation (2) because the FOMC has chosen to index its policy stance publicly in terms of M_1 and other monetary aggregates.¹⁶ The use of the word "index" is meant to imply that even though members of the FOMC may have different views of the policy transmission mechanism in general, and the causal role of changes in the money stock in particular, the FOMC has been able to reach an agreement to express its policy in terms of growth rates in the monetary aggregates.

IV. The Linkage Between the Long- and Short-Run Strategy

Having selected a long-run dial setting for money stock growth, perhaps 5 percent over the next twelve months, the FOMC must now guide its open market operations monthly so as to achieve the desired long-run monetary growth path. It is important to recognize that there are an infinite number of monthly and quarterly patterns of monetary growth for the money stock that could turn out to *average* 5 percent over a full year. As will be shown, the monthly pattern desired by the FOMC will generally depend upon interest rate considerations and the current position of the money stock vis-a-vis the long-run target.

The relationship between the short- and long-run dial settings for M_1 is illustrated in Figure 1. It is assumed that a 5 percent long-run growth path for M_1 was adopted in December, and by the January FOMC meeting M_1 is well below its targeted long-run path. Under these circumstances the staff would normally prepare three (or more) alternative short-run money stock paths for FOMC consideration, each designed to return M_1 to the long-term path

¹⁵ Such a procedure would not be legitimate for estimation purposes because of the bias that would be introduced by treating a variable exogenously if in fact it were endogenous. See [16] for a discussion of this latter point and how it is related to models of money stock determination.

¹⁶ See the "Record of Policy Actions" appearing each month in the *Federal Reserve Bulletin*.

but each requiring successively longer adjustment periods.¹⁷ With reference to Figure 1, a rapid return to the long-run path may require an 8 percent growth rate for M_1 in the January-February control period (A). Alternatively, slower growth rates of 7 and 6 percent in the January-February control period and in several successive periods would return M_1 to the long-run path in May (B) and July (C), respectively. The process underlying the selection of these alternative paths—i.e., the short-run formulation of policy and the actual short-run alternative selected by the FOMC—are discussed in the following sections.

V. A View of the Short-Run Strategy

The short-run strategy of the FOMC involves the selection of a short-run dial setting for the money stock and the development of an operating procedure for achieving the desired monetary growth path. The process begins with the staff presenting to the FOMC each month a set of alternative short-run (two-month) growth rates for the money stock. Associated with each alternative short-run path for the money stock will be a growth rate of bank reserves and a level of the Federal funds rate.

In formulating the short-run strategy, income movements are taken as given; that is, income for the coming two-month control period is interpolated from

¹⁷ Currently the control period for the FOMC's short-run strategy is two months—in December the control period is December-January, in January it is January-February, etc.

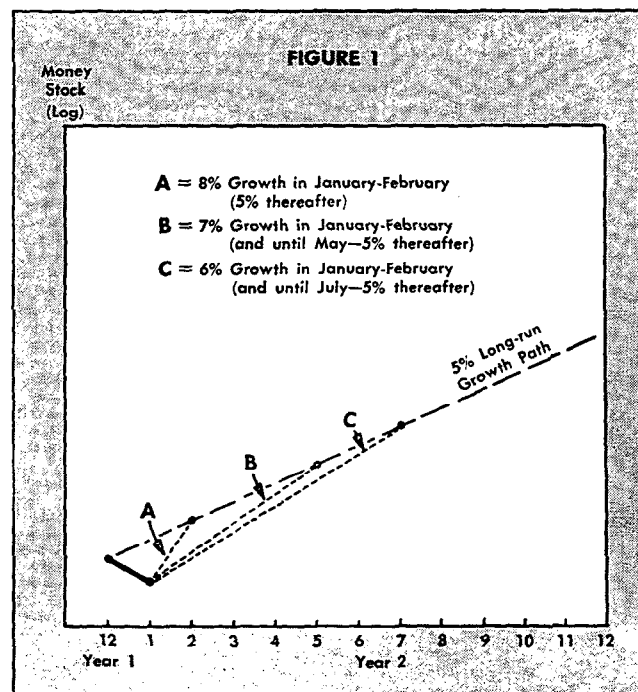


Table I
ALTERNATIVE SHORT-RUN DIAL SETTINGS
 (Percent)

Target	Alternative		
	(A)	(B)	(C)
Money stock growth	8	7	6
Federal funds rate	6	7	8
Reserve growth	8	7	6

Note: The growth in reserves and the money stock are expressed at seasonally adjusted annual rates, while the funds rate is expressed as a level.

the quarterly projection of economic activity described earlier. The important assumptions underlying this procedure are that the quarterly projection and the monthly interpolation are correct and that there is no significant simultaneity problem over a one- or two-month period. To illustrate, again consider the example used in Figure 1. Assume it is the end of January, that the consensus forecast specifies 5 percent monetary growth from December to July, and that the money stock actually declines in January. Normally, in the face of this one-month shortfall in the money stock, the staff would not revise its income projection for the coming months. This, in effect, assumes the policy lag is greater than one or two months and that subsequent policy actions will result in growth in the money stock that will overshoot the target by enough to offset the miss in the first month.

Given income and the current position of the money stock vis-a-vis the long-run target path as depicted in Figure 1, the staff might present at the January FOMC meeting a set of short-run alternatives, as in Table I.¹⁸

The first row contains alternative short-run growth rates that will return the money stock to its long-run path. Alternative (A) and the staff discussion accompanying it would indicate that to achieve an 8 percent growth rate in M_1 and to return to the long-run path by February, the growth in reserves over the January-February period would have to be 8 percent and the level of the Federal funds rate required is 6 percent.¹⁹

¹⁸ The alternatives, along with a discussion of the situation that might develop in financial markets under each option, appear in the "Bluebook," which is prepared monthly for the FOMC. See [2, p. 285]. The actual alternative selected by the FOMC is now published with a 45-day lag as part of the policy record. The alternatives contained in the Record of Policy Actions for the January 1974 FOMC meeting are the first available. In the discussion that follows we will, for simplicity, ignore M2, even though it appears with M1 under each alternative the FOMC considers.

¹⁹ It is worth noting that the FOMC has from time to time selected an alternative that has included, for example, the money stock under (A) and the funds rate under (B). In this case, the FOMC decided the staff had misspecified the relationship between the funds rate and monetary growth and has constructed a new alternative thought to be internally consistent. Thus, the FOMC is free to evaluate and to accept or reject the trade-offs among interest rates, reserves, and money stock growth implied by the staff estimates. See also n. 27.

The Federal funds rates, shown in row 2 of the table, are derived in two steps. First, assuming income given, a money demand function is solved for the short-term interest rate necessary to achieve the alternative short-run money path. The required Federal funds rate is then determined using a term structure equation relating it to the short-term interest rate. As was true in the forecast of economic activity, each alternative represents a staff consensus based on econometric models and judgmental considerations.²⁰

The third row of the table could in theory be derived by solving a money supply function for the rate of growth in reserves necessary to achieve each money stock alternative. That is, if one viewed the money supply as the product of a reserve aggregate, such as reserves available to support private deposits RPD,²¹ and a multiplier m , then the necessary growth in reserves could be obtained by estimating the multiplier, calculating the different February levels of the money supply M consistent with each money stock alternative, and dividing one by the other ($RPD = M/m$).²²

In practice, as discussed by Axilrod and Beck [1], the approach is demand oriented. After projecting the interest rates consistent with the short-run money stock growth rate for each alternative, these rates are used to estimate bank demand for required and excess reserves [1, p. 89]. An important characteristic of this approach is that it results in the supply of reserves and money being perfectly elastic at the targeted level of the interest rate R and the volume of reserves and money, therefore, being demand determined. This is illustrated in Figure 2, where the demand for reserves is expressed as a function of the interest rate.²³ Assume the position and slope of the demand schedule for reserves TR_D have been estimated by the staff and that TR_1 is the level of total reserves in February that is derived from deposit demand consistent with a 6 percent growth rate in the money stock. Under the demand approach discussed above, the required interest rate is R_1 , and

²⁰ Monthly financial models developed at the Federal Reserve Board and the Federal Reserve Bank of New York are major inputs in this process. For a discussion of these models, see the papers by Pierce and Thomson [24, 25] and Davis and Shadrack [8].

²¹ The reserve aggregate currently employed by the FOMC in its deliberations is called "reserves available to support private deposits" RPD. This magnitude is defined as total reserves minus required reserves against government and interbank deposits. It should be noted here that there is little objective evidence that RPD's have received much weight in the formulation or implementation of policy. Speaking of the 1973 period, Tschinkel said: "The Manager reflecting the desires of the FOMC found RPD of lesser importance in the determination of his response to the emerging patterns of monetary growth" [29, p. 105]. See also the recent evaluation of Kane [12, pp. 841-3] and the discussion that follows.

²² The particular reserve aggregate one chooses (e.g., total reserves, nonborrowed reserves, the monetary base, RPD, etc.) is not a critical issue here.

²³ While the following diagram relates the interest rate to reserves, one could just as easily substitute the money stock for reserves.

the System will supply reserves elastically at that rate. Thus the supply function TR_S is horizontal. This means that stochastic shifts in the reserve demand (or money demand) function, an error in the income projection, or any other disturbance on the demand side will, in the first instance, alter the position of TR_D to TR'_D and lead to changes in the quantity of reserves to TR_2 .²⁴

This can be contrasted with a supply approach to money stock control, which would lead to the interest rate being demand determined. Again with reference to Figure 2, the level of total reserves thought necessary to achieve the 6 percent growth in the money stock remains TR_1 . Accordingly, the System would supply the volume of reserves represented by the vertical TR_S function. Any disturbance on the demand side will alter the interest rate to R_2 and leave the quantity of reserves (and money) unaffected. In the absence of any disturbance (i.e., in a deterministic system) both approaches yield the same result (R_1 and TR_1).

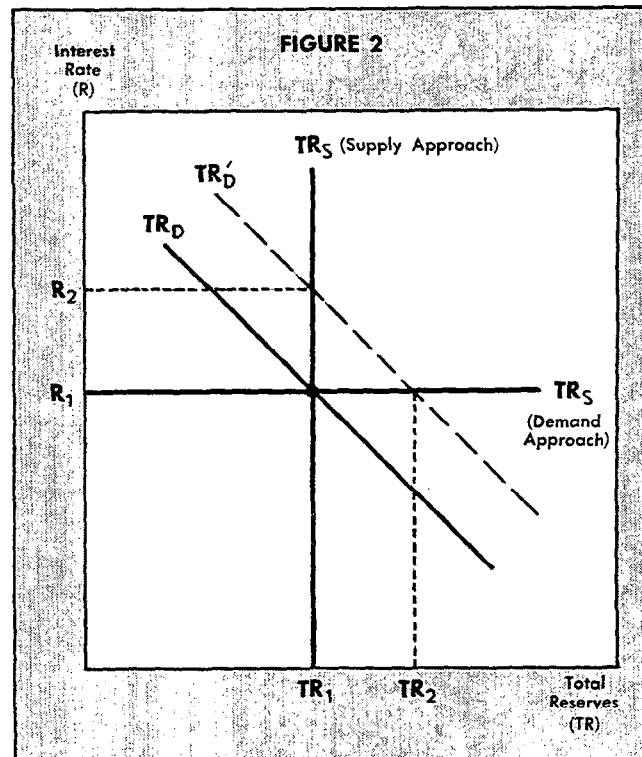
The point that must be emphasized is that one should not infer from the appearance of a reserve aggregate in Table I that the FOMC has adopted a supply approach to money stock control.²⁵ Evidence that the growth in reserves has had a low weight in the System's reaction function (i.e., in the formulation and implementation of policy) is easily obtained. Simply compare the specifications voted for reserves RPD, the money stock, and the funds rate in 1974 with the actual outcomes, shown in Table II.²⁶ This exercise in revealed preference shows that the Federal Reserve rarely missed the funds rate range but allowed reserves and the money stock to move away from the specified range in about one-half of the two-month control periods. Assuming the initial specifications were internally consistent, the conclusion must be that in the short run disturbances were allowed to affect quantity and not price. While this issue will be discussed in more detail in Section VI, the evidence in Table II suggests the System was not controlling reserves over the short run.²⁷

²⁴ While income is a shift parameter in this two-dimensional diagram, an increase in income would actually result in a movement along the demand function for demand deposits, time deposits, and reserves in three-dimensional space.

²⁵ Brunner and Meltzer, Friedman, and the St. Louis Federal Reserve Bank have long advocated such an approach.

²⁶ As detailed in Section VI, the short-run dial settings selected by the FOMC are actually expressed as ranges. The rationale for the ranges is explained on pp. 11-12.

²⁷ An interesting feature of this approach to policymaking is that a member of the FOMC might vote for Alternative (A) in Table I even though he viewed monetary policy as operating primarily through interest rates and thus really preferred the interest rate under Alternative (B). In other words, members of the FOMC may vote for individual elements in the table rather than columns. Support for this interpretation is provided by Maisel: "A possible side advantage of this strategy is that it can be followed even though it might be impossible to get agreement among the members of the FOMC either as to ultimate goals, or the form or level of an intermediate monetary variable, or as to how to define what strategy is being followed" [17, p. 154].



A Model of the Short-Run Strategy The following set of equations may be used to link the Federal funds rate to open market operations on the one hand and the money stock on the other:²⁸

$$M_D = f_3(y_L, R_L) \quad (3)$$

$$R = f_4(RFF_L) \quad (4)$$

$$RFF = f_5(TR_D, TR_S) \quad (5)$$

$$TR = NBR + MBB = ER + RR \quad (6a)$$

$$NBR = FR + RR \quad (6b)$$

where M_D is the demand for money, y is nominal income, R is a short-term interest rate such as the ninety-day commercial paper rate, RFF is the Federal funds rate, NBR is nonborrowed reserves, MBB is member bank borrowings, ER is excess reserves, FR is free reserves ($ER - MBB$), RR is required reserves, and TR_D is the demand for and TR_S the supply of total reserves. The first three relations are straightforward. Equation (3) is a standard money demand function; equation (4) is a term structure relation, where the short-term rate (e.g., the ninety-day commercial paper rate) is a function of a distributed lag on the funds rate (single-day maturity).²⁹ Equation (5) specifies the funds rate as a

²⁸ For simplicity we will continue to ignore time deposits and therefore M2.

²⁹ See [14] for evidence that a major portion of the variance in short-term rates can be explained by current and lagged movements in the Federal funds rate.

function of the demand for and supply of total reserves. In (6a) total reserves are divided into familiar components—required reserves and excess reserves—which, by definition, must equal reserves borrowed from the System and all other reserves (nonborrowed reserves). By rearranging terms, a convenient identity (6b) can be formed. This latter identity may be transformed into an equation with behavioral content by considering the right-hand side as reflecting the behavior of the public and the banks and the left-hand side as reflecting the behavior of the Fed. That is, the banks' demand for required reserves is derived from the public's demand for deposits. This, together with the banks' demand for free reserves, must equal the total of nonborrowed reserves supplied by the Federal Reserve open market operations.³⁰ Other factors, such as the gold stock, float, and Treasury deposits at the Federal Reserve, also affect the supply of nonborrowed reserves. However, holding these other factors constant or assuming that the System engages in so-called "defensive" open market operations to offset movements in these factors, NBR is controllable by policymakers. For present purposes, these other factors are held constant, and the change in nonborrowed reserves is assumed equal to the change in the System's holdings of securities. Therefore, the change in nonborrowed reserves directly reflects open

market operations (i.e., $\Delta NBR \equiv OMO$). In summary, the funds rate is determined by the supply of nonborrowed reserves relative to the demand for required reserves and free reserves.³¹

To close the model, the System's short-run reaction function relating OMO to RFF must be specified. Ignoring for the moment the constraint on interest rate volatility, the desired level of the funds rate RFF* can be determined by solving equations (1) to (4) recursively for a relationship between long-run target values of the money stock and RFF:

$$RFF^* = f_6(M^*) \quad (7)$$

In practice it is the short-run target value for the money stock, rather than the long-run target value, that would usually appear in equation (7). The reason, as discussed in Sections IV and VI, is that the change in the funds rate required to get the money stock back on the long-run path (assuming it is significantly off the path), is usually deemed too large and disruptive by the policymaker.

Once equations (1) to (4) have been solved for RFF*, equation (8) follows from equation (5) and the supporting identities:

$$\Delta NBR = OMO = f_7(RFF^* - RFF^A) \quad (8)$$

³¹ It should be emphasized that the set of equations presented is intended to be very general and should not be construed as a complete model of the financial sector and its interaction with Federal Reserve policy. This is a task beyond the scope of the present paper. As it stands the set of equations is under-identified, and no attempt is made to account for various aspects of simultaneity.

³⁰ See [6, Chapter 11 for a discussion of the key role of the free reserves equation in the financial sector of the SMP model.

Table II

SHORT-RUN DIAL SETTINGS FOR 1974*

Date of Meeting	2 Month Control Period	Money Stock Range (SAAR)	Actual Money Stock (SAAR)	RPD Range (SAAR)	Actual RPD (SAAR)	Federal Funds Rate Range (Percent)	Actual Federal Funds Rate (Percent)
Jan. 22, 1974	Jan.-Feb.	3.00 to 6.00	4.7	4.75 to 7.75	3.3	8.75 to 10.00	8.93 to 9.47
Feb. 20, 1974	Feb.-Mar.	6.50 to 9.50	11.8	3.50 to 6.50	5.8	8.25 to 9.50	8.81 to 9.33
Mar. 19, 1974	Mar.-Apr.	5.50 to 8.50	9.6	4.00 to 7.00	15.8	9.00 to 10.50	9.61 to 10.36
Apr. 16, 1974	Apr.-May	3.00 to 7.00	6.5	6.00 to 11.00	20.7	9.75 to 11.25 ¹	10.78 to 11.46
May 21, 1974	May-Jun.	3.00 to 7.00	6.3	13.00 to 20.00	20.0	11.00 to 11.75 ¹	11.45 to 11.85
Jun. 18, 1974	Jun.-Jul.	3.50 to 7.50	4.8	10.00 to 13.50	13.5	11.25 to 13.00 ¹	11.97 to 13.55
Jul. 18, 1974	Jul.-Aug.	2.00 to 6.00	2.1	8.75 to 11.75	9.0	11.50 to 13.00	12.02 to 12.60
Aug. 20, 1974	Aug.-Sep.	4.75 to 6.75	1.5	7.75 to 9.75	7.7	11.50 to 12.50	11.48 to 11.84
Sep. 10, 1974	Sep.-Oct.	3.00 to 6.00	2.6	6.00 to 8.50	3.5	10.25 to 12.00 ²	10.11 to 11.41
Oct. 15, 1974	Oct.-Nov.	4.75 to 7.25	5.3	5.50 to 8.00	-2.1	9.00 to 10.50	9.34 to 9.81
Nov. 19, 1974	Nov.-Dec.	6.50 to 9.50	4.5	2.50 to 5.50	3.2	8.50 to 10.00	8.72 to 9.46
Dec. 17, 1974	Dec.-Jan.	5.00 to 7.00	-3.4	9.00 to 11.00	3.9	7.13 to 9.00 ²	7.17 to 8.45

* Short-run dial settings for the money stock and RPD are expressed as seasonally adjusted annual rates of growth (SAAR) averaged over two-month target period. The range for the Federal funds rate and the actual outcome apply to statement week averages during inter-meeting period. Actuals for the money stock and RPD do not reflect benchmark revisions or revisions in the seasonal factors made following the period to which data relate.

¹ Upper limit of range raised between meetings to figure shown.

² Lower limit of range lowered between meetings to figure shown.

Simply put, the System will absorb (inject) reserves by selling (buying) securities when the funds rate is below (above) the desired level. This policy approach ensures that the supply of reserves is perfectly elastic at the desired funds rate and the quantity of reserves is demand determined. In the first instance, deviations in the demand for reserves from the FOMC specifications lead to an equivalent change in the stock of reserves but to no change in the funds rate.³²

There is in theory a mechanism that limits the pro-cyclical movement in reserves. The dynamics of the inter-meeting phase of the short-run policy process are embedded in a feedback control loop that can be summarized by:

$$\Delta RFF^* = f_s(M^* - M^A) \quad (9)$$

That is, movements in the funds rate depend upon deviations of the money stock from its desired value. To illustrate, assume incoming data on the money stock suggest that monetary growth over the short-run two-month target period will exceed the short-run dial setting selected at the last FOMC meeting. In response the Manager of the Trading Desk would be expected to increase the dial setting for the funds rate. In practice, however, the timing and magnitude of the Manager's initial response to apparent deviations of monetary growth from desired levels are often not so straightforward. If the tone of the securities markets is weak, for example, the FOMC might decide not to change the funds rate for the time being, even though the money stock is growing above the desired rate.³³

A more difficult problem contributing to cautious adjustments of the funds rate is the uncertainty concerning the money stock forecasts. This uncertainty results from the fact that forecasts of the money stock over the short run (e.g., one to three months ahead) have not been very accurate [29]. This being the case, the FOMC often may delay its response to an apparent deviation of actual from desired monetary growth until more data are available to confirm the error. The rationale is that the policy-maker prefers to avoid "whipsawing" the market—i.e., raising the Federal funds rate now if money growth appears to be exceeding desires and lowering

it later if the money stock projections prove incorrect and actual money growth is found to be close to that desired. This, of course, is another facet of the System's desire to minimize short-run interest rate volatility and is discussed in the next section.

VI. The Constraint on Interest Rate Volatility and Its Interaction with Policy Targets

Within the FOMC's current strategy, the target values for the Federal funds rate, reserves, and the money stock are actually expressed as ranges. Referring back to Table I, under alternative (A) for example, the entry for the money stock might be 7 to 9 percent and the entry for the Federal funds rate might be 5½ to 6½ percent. From the viewpoint of the staff, the ranges presented to the FOMC generally represent a standard error around a point estimate at the midpoint of the range. From the viewpoint of the FOMC, however, the ranges may have a somewhat different meaning. The range for the money stock is typically viewed as a range of tolerance. If the money stock is expanding at a rate within its range, then the desired level of the Federal funds rate will probably not be altered to any significant degree.³⁴ Thus, in terms of equation (9), M^* is a range and ΔRFF^* equals zero unless M^A is outside the range.

The following quotations suggest there are at least two interpretations attached to the reasoning behind any given range for the money stock adopted by the FOMC: (1) "The inherent short-run volatility of the monetary aggregates is one reason why the Committee expresses its short-run guides in terms of ranges of tolerance" [21, p. 334]. In this view the range implies a standard error around a point estimate. (2) "The Committee chose tolerance ranges for M_1 . . . that were at least as restrictive as the alternatives presented by the staff and reduced the lower ends of these ranges to indicate its willingness to accept substantially slower growth in the near term" [29, p. 108]. In this view the Committee skews its preferences, perhaps in response to previous deviations of actual from desired levels. Suppose the staff presents an alternative such as (C), which implies that an 8 percent Federal funds rate will translate into a 5-7 percent growth in the money stock, the point estimate being 6 percent growth. The FOMC, responding to past shortfalls in money stock growth, might then modify this alternative by

³² A point worth mentioning in this context is that a change in reserve requirements has virtually no impact on reserves or the money stock unless accompanied by a change in the funds rate target. If, for example, the System lowers the reserve requirement on demand deposits, other things equal, this will push down the funds rate. However, as depicted in equation (8), this will result in the System selling securities and, therefore, absorbing the free reserves.

³³ For a recent example of such an occurrence see the "Record of Policy Actions" of the FOMC in the *Federal Reserve Bulletin* (January 1975), p. 26.

³⁴ This discussion assumes that incoming data and forecasts of non-financial developments are consistent with the projections set out when the long-run trajectory for the money stock was first selected; as a result, the FOMC has not modified the long-run money stock target.

changing the range to 5-8 percent, indicating its willingness to err on the side of more, rather than less, monetary growth relative to projected levels. Operationally, this means that if the money stock actually should grow at an 8 percent rate, this will not result in a raising of the desired Federal funds rate.

The significance of the Federal funds range is that it specifically limits the degree of response by the Manager to a deviation of monetary growth from the desired range. As shown in Table II, this range in 1974 was typically 100-150 basis points. If the midpoint of the range selected is equal to the Federal funds rate prevailing just prior to the FOMC meeting, then the FOMC has typically been willing to tolerate a maximum change in the funds rate of 50-75 basis points in one direction over any given inter-meeting period.³⁵ Against this background, it is interesting to note that the money demand functions that underlie the specifications presented to the FOMC exhibit very low interest elasticities [4; 8; 24; 25]. The monthly model discussed by Pierce and Thomson [25, p. 351], for example, indicates that, other things equal, a 100 basis point change in the Federal funds rate will lead to only about a 0.3 percentage point change in the annual growth rate of the money stock over a one-month period and only about a one percentage point change over a six-month period. Assuming the interest elasticities embedded in the monthly models are reasonably accurate, the constraint on the monthly movement in the Federal funds rate, as explicitly revealed by the range in the Policy Record for the funds rate, suggests that *the FOMC is willing to tolerate relatively large short-run deviations of monetary growth from desired levels.*³⁶

Whether or not the constraint on month-to-month movements in interest rates has significant destabilizing effects on output and prices depends on the narrowness of the short-run constraint and whether or not it frustrates achievement of the long-run money stock target.³⁷

With regard to the narrowness of interest rate tolerance bands, Pierce conducted some experiments

³⁵ From time to time the FOMC has been willing to change the upper or lower end of the range on the funds rate and thus permit a larger inter-meeting movement in the funds rate. For a recent example, see the "Record of Policy Actions" of the FOMC in the *Federal Reserve Bulletin*, (February 1975), p. 88. In addition, if the funds rate prevailing at the time of the meeting is at the upper or lower end of the adopted range, it is possible that the full 100-150 basis point range could be used during the inter-meeting period.

³⁶ In other words, short-run monetary control is considered too "costly" because of the volatility of interest rates that seems to be required. For a critical review of this issue see [15]. For some evidence that short-run deviations of monetary growth from the desired trajectory might not be "costly" in terms of missing price and output targets, see [6, p. 24].

³⁷ It also depends, of course, on the willingness of the FOMC to modify the constraint over time. In this regard, the FOMC has clearly been willing to tolerate larger swings in interest rates over the first half of the 1970's than it did over most of the 1960's.

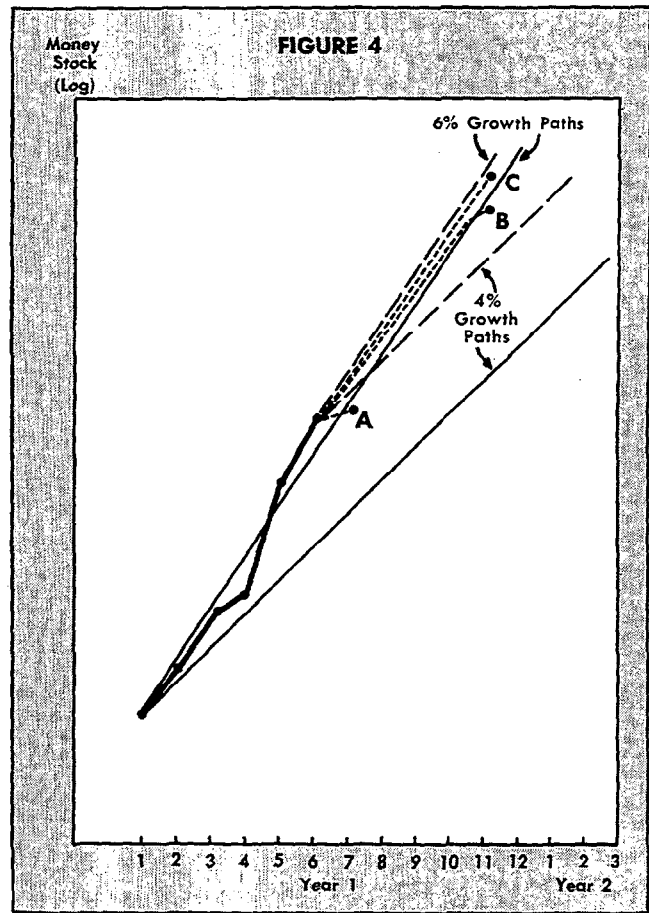
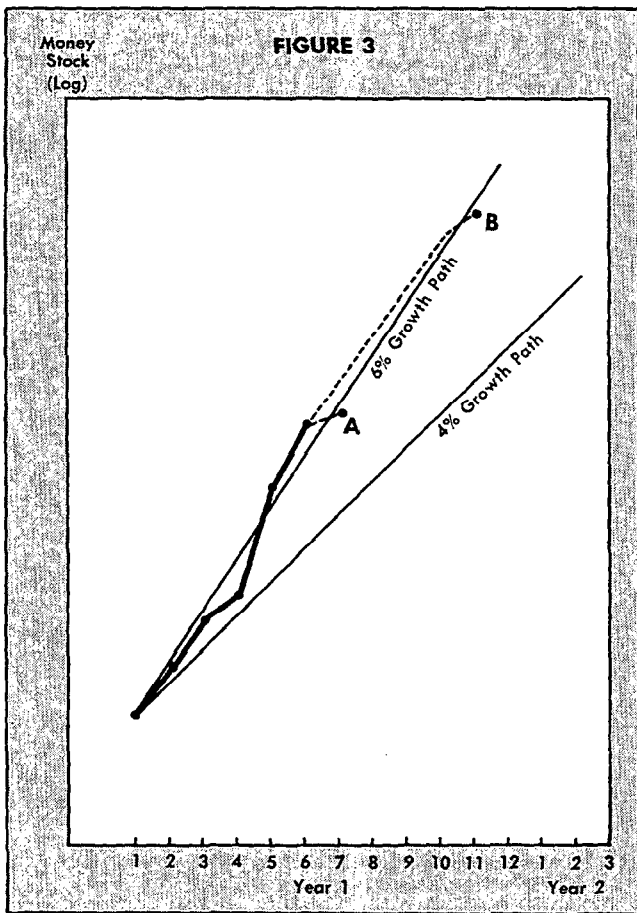
with the SMP model and concluded: "The results indicate that the placement of sufficiently narrow bounds on the change in the bill rate can have a large impact on the simulated value of GNP" [22, p. 101]. It is worth emphasizing that *if the band on interest rate movements is fairly narrow and inflexible, it is reasonable to question whether or not the money stock is being "controlled" at all.*

In theory, at least, the current FOMC approach to the formulation of policy is designed to guard against short-run deviations of money stock growth affecting the achievement of the long-run money stock target. This is illustrated in Figure 3. Assume the FOMC selected a 4-6 percent long-run growth path for the money stock in month 1 of year 1, growth in the money stock in months 5 and 6 of year 1 has been 8 percent, and the FOMC is meeting at the beginning of month 7. Further, assume the prevailing Federal funds rate is 5 percent. As discussed in Section IV, the short-run alternatives for the money stock presented to the FOMC by the staff will typically be tied to a specific time path for returning the growth of the money stock to the desired range. For example, alternative (A) would envision only 2 percent growth in the money stock over the next two months and thus an early return to the range. This might require a sharp rise in the Federal funds rate to perhaps 7 percent. Alternative (B), however, would envision a slower return to the upper end of the desired range; the money stock might be expected to grow at a 5 percent rate for five months and return to the range by month 11. This alternative would require a smaller current rise in the Federal funds rate to perhaps 6 percent, possibly followed by further rises in subsequent months.³⁸ An examination of month-to-month movements in the funds rate and in monetary growth over the past several years suggests that the FOMC has in practice more often preferred to pursue an alternative such as (B).³⁹

One significant area of concern with regard to this policy approach is the possible existence, from time to time, of a serially correlated error in the income projection. Suppose the staff is underestimating the strength in aggregate demand and the money stock is expanding more rapidly than desired. Since the

³⁸ It should be noted that one alternative may envision an immediate return to the desired range without any significant change in the funds rate. The explanation accompanying such an alternative may be that the monthly pattern of income growth suggests smaller increases in coming months and thus less strength in money demand. Another possible explanation is that the current spurt in monetary growth is a random occurrence not likely to persist.

³⁹ The revealed tendency to view short-run deviations of monetary growth (and their mirror image, the short-run smoothing of interest rates) as costless is controversial. Within the Hicks-Hansen IS-LM framework, the presumption is that there are stochastic shifts in the LM curve that are larger than the random shifts of the IS curve. See Poole [27] and the pathbreaking report of Weintraub [30, especially pp. 63-61].



growth of the money stock appears to be inconsistent with the income projection and the associated estimate of the demand for money, the initial tendency may be for the policymaker to discount the jump in monetary growth and wait for further data that would confirm greater strength in economic activity and money demand. The incorrect presumption is that the spurt in monetary growth is the result of a stochastic shift in money demand. The long-run implications of accommodating this growth are a more pro-cyclical policy than desired and, given the lags in the effect of policy, the need later on for a very sharp tightening in policy to offset past excesses.

An important problem for monetary control that can result from a series of short-run deviations of monetary growth is that the FOMC might give up on the long-run money stock target *de facto* by continually resetting the starting (or base) date of the control period over which the target value is to be attained. This might happen, for example, if the policymakers find it impossible to tolerate the large increases in interest rates necessary to offset past excesses in monetary growth. This is illustrated in Figure 4, which is similar to Figure 3 except that

the FOMC is presumed to adopt alternative (C) at its meeting early in month 7. The long-run target remains 4-6 percent but is calculated from month 6 rather than from month 1.⁴⁰ Unfortunately, this subtle ratcheting-up (or down) of the long-run monetary growth rate could exacerbate the cyclical swings in output and prices.⁴¹

VII. Some Final Remarks

This article has presented a view of the Federal Reserve's current approach to the formulation and implementation of monetary policy. It is hoped the general interpretation presented will be critically examined, the discussion of particular phases of the strategy carefully scrutinized, and the models that

⁴⁰ The FOMC recently made such a shift in the base of its current long-run money stock target. On May 1, 1975, Chairman Burns announced before the Senate Banking Committee that the FOMC planned money stock growth of 5 to 7½ percent over the period March 1975-March 1976. On July 24, 1975, the Chairman announced before the House Banking Committee that the targeted growth rate was the same, but the period over which it was to be obtained was the second quarter of 1975 to the second quarter of 1976. Since the money stock grew at nearly a 9 percent rate in the second quarter of 1975, this change in the base, in effect, accepts much of the intervening monetary expansion.

⁴¹ See Poole's recent paper [26, pp. 25-30] for some further possible pitfalls within the current strategy.

underlie the strategy empirically tested. This should result in a clearer understanding of current monetary policy procedures, more carefully developed advice for policymakers on how to improve their performance, and greater success in achieving the goals of monetary policy.

References

1. Axilrod, Stephen and Darwin Beck. "Role of Projections with Monetary Aggregates as Policy Targets," in *Controlling Monetary Aggregates II: The Implementation*. Federal Reserve Bank of Boston, 1973, pp. 81-102.
2. Brimmer, Andrew. "Tradition and Innovation in Monetary Management," in *Monetary Economics: Readings*. Ed. Alan Entine, Belmont, California: Wadsworth, 1968, pp. 273-89.
3. ———. "The Political Economy of Money: Evolution and Impact of Monetarism in the Federal Reserve System," *American Economic Review*, (May 1972), 344-52.
4. Ciccolo, John H. "Is Short-Run Monetary Control Feasible?" in *Monetary Aggregates and Monetary Policy*. Federal Reserve Bank of New York, 1974, pp. 82-91.
5. Cooper, J. Phillip. *Development of the Monetary Sector, Prediction and Policy Analysis in the FRB-MIT-PENN Model*. Lexington: D. C. Heath, 1974.
6. Corrigan, E. Gerald. "Income Stabilization and Short-Run Variability in Money," in *Monetary Aggregates and Monetary Policy*. Federal Reserve Bank of New York, 1974, pp. 92-103.
7. Crews, Joseph M. "Econometric Models: The Monetarist and Non-Monetarists Views Compared," *Monthly Review*, Federal Reserve Bank of Richmond, (February 1973), 3-12.
8. Davis, Richard and Frederick C. Schadrack. "Forecasting the Monetary Aggregates with Reduced-Form Equations," in *Monetary Aggregates and Monetary Policy*. Federal Reserve Bank of New York, 1974, pp. 60-71.
9. DeLeeuw, Frank and Edward Gramlich. "The Federal Reserve-MIT Econometric Model," *Federal Reserve Bulletin*, (January 1968), 11-40.
10. Guttentag, Jack. "The Strategy of Open Market Operations," *Quarterly Journal of Economics*, (February 1966), 1-30.
11. Hymans, Saul. "Comment" in *Econometric Models of Cyclical Behavior*. Ed. Bert Hickman, New York: National Bureau of Economic Research.
12. Kane, Edward. "All for the Best: The Federal Reserve Board's 60th Annual Report," *American Economic Review*, (December 1974), 835-50.
13. ———. "The Re-Politicization of the Fed," *Journal of Financial and Quantitative Analysis*, (November 1974), 743-52.
14. Lombra, Raymond and Leigh Ribble. "The Linkages Among Short-Term Interest Rates." Paper presented at the Eastern Economic Association Meetings. October 1974.
15. ——— and Frederick Struble. "Monetary Aggregate Targets and the Volatility of Interest Rates." Unpublished manuscript, August 1975.
16. ——— and Raymond G. Torto. "An Endogenous Central Bank and Its Implications for Supply and Demand Approaches to Money Stock Determination," *Quarterly Review of Economics & Business*, (Summer 1975), 71-9.
17. Maisel, Sherman. "Controlling Monetary Aggregates," in *Controlling Monetary Aggregates*. Federal Reserve Bank of Boston, 1968, pp. 152-74.
18. ———. *Managing the Dollar*. New York: W. W. Norton, 1973.
19. ———. "The Economic and Finance Literature and Decision Making," *Journal of Finance*, (May 1974), 313-22.
20. Mason, Will E. *Clarification of the Monetary Standard*. University Park: Penn State University Press, 1963.
21. "Numerical Specifications of Financial Variables and Their Role in Monetary Policy," *Federal Reserve Bulletin*, (May 1974), 333-7.
22. Pierce, James. "The Trade-off Between Short- and Long-term Policy Goals," in *Open Market Policies and Operating Procedures—Staff Studies*. Washington, D. C.: Board of Governors of the Federal Reserve System, 1971, pp. 97-105.
23. ———. "Quantitative Analysis for Decisions at the Federal Reserve," *Annals of Economic and Social Measurement*, (March 1974), 11-19.
24. ——— and Thomas Thomson. "Some Issues in Controlling the Stock of Money," in *Controlling Monetary Aggregates II: The Implementation*. Federal Reserve Bank of Boston, 1973, pp. 115-36.
25. ——— and Thomas Thomson. "Short-Term Financial Models at the Federal Reserve Board," *Journal of Finance*, (May 1974), 349-57.
26. Poole, William. "The Making of Monetary Policy: Description and Analysis," *New England Economic Review*, Federal Reserve Bank of Boston, (March-April 1974), 21-30.
27. ———. "Optimal Choice of Monetary Policy Instruments in a Simple Stochastic Macro Model," *Quarterly Journal of Economics*, (May 1970), 197-216.
28. Sims, Christopher. "Optimal Stable Policies for Unstable Instruments," *Annals of Economic and Social Measurement*, (January 1974), 257-65.
29. Tschinkel, Sheila. "Open Market Operations in 1973," *Monthly Review*, Federal Reserve Bank of New York, (May 1974), 103-16.
30. Weintraub, Robert. "Report on Federal Reserve Policy and Inflation and High Interest Rates," *Reserve Policy and Inflation and High Interest Rates*. U. S. Congress. House Committee on Banking and Currency, 93rd Congress (July-August 1974), pp. 31-76.

LOAN COMMITMENTS TO BUSINESS IN UNITED STATES BANKING HISTORY

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The practice of guaranteeing future credit availability to business enterprises, or what is today called the making of loan commitments, has existed since the beginning of banking in the United States. Although the specific forms of such practices have changed considerably in the past two hundred years, the basic concept has nonetheless been ubiquitous from post-Revolutionary times until the present. Banks originally extended loan commitments only to commercial and industrial businesses, but today they also routinely extend such guarantees to financial businesses and individuals. Commitments to non-financial businesses have retained their traditionally prominent position, however, and now represent approximately three-quarters of the dollar volume of total loan commitments.

It has only been since the mid-1960's that the topic of commercial bank loan commitment policies has become an explicit issue in banking circles. Increasing interest in these policies has recently been expressed by the various groups concerned with the banking industry, including bank regulators, students of monetary policy and, of course, bankers themselves. This increased interest is centered on commitment policies involving credit guarantees for non-financial businesses, and this article has the same focus. Two recent developments have caused the increased attention being given bank-business loan commitments. First, the demand for such commitments by business seems to have enlarged considerably. Second, banks have become more willing and able suppliers of loan commitments, and their liberalized approach has led to concern about the potential effects that vastly increased commitment positions might have on the liquidity, and thus the soundness, of individual institutions. These developments have also resulted in an increased awareness of the impact of loan commitments on the magnitude and direction of credit market flows. It is for these reasons that the topic of commercial bank loan commitment policies has emerged, after many years of quiescence, as one of the more important issues in contemporary banking.¹

¹ For an example of how the loan commitments issue is viewed by regulatory officials, see Arthur F. Burns, "Maintaining the Soundness of Our Banking System," an address before the 1974 American Bankers Association Convention, October 21, 1974, reprinted in the *Monthly Review*, Federal Reserve Bank of New York, Vol. 56, No. 11, November 1974, 263-7.

Even though recognition of the importance of bank loan commitment policies is currently widespread, the reasons for this change in status have not been fully explored: there has been no formal attempt to explain why businesses are now especially eager to obtain guarantees of future credit availability or why the banking system is so willing to satisfy these demands. The lack of such an analysis should not be considered unusual, however, for the entire evolutionary process leading up to the current situation remains somewhat unclear. The body of literature explicitly dealing with commercial bank loan commitment policies is relatively new, and its orientation has been practical, not analytical. This article attempts to fill the analytical gap by tracing the historical development of commercial bank loan commitment policies from the early days of banking through the present.

To study the development of bank loan commitment policies is, essentially, to study the development of the commercial loan, for the use of loan commitments is simply a refinement of the process by which credit is advanced from lender to borrower. This article shows that the evolutionary process has been motivated by changes in business credit requirements under different economic and financial circumstances and that the banking system's response has been guided by prevailing theories of proper banking conduct. Accordingly, loan commitments are examined within the framework of the various liquidity theories that have guided banking practices in the United States. The hypothesis is developed that today's financial environment encourages the demand for loan commitments by business because of recent experiences with credit stringency. Further, the liabilities management conception of banking doctrine allows banks to satisfy this demand without doing violence to their professional code of conduct. The first section of the article provides introductory descriptive background and definitions about current-day loan commitment practices, and the second section develops the historical review. The final section summarizes the major conclusions reached.

Current Types of Loan Commitment Arrangements

Agreements reached between borrower and lender with the purpose of establishing guarantees of future credit availability are referred to as loan commitment arrangements. The current trend in commercial lending is to structure loans and loan commitments to fit individual borrower needs, not to force all transactions into preconceived patterns. Although this makes it difficult to distinguish sharply among the various forms that loan commitments take, there are certain basic patterns to which these arrangements conform. These basic patterns are classified here according to the maturity of the intended advance, for maturity is a good indicator of the use to which funds are put. Short-term loans are made for seasonal and transaction needs, intermediate-term loans for working capital needs and interim financing, and long-term loans for investment in fixed assets. Borrower demands for loan commitments reflect these specific types of capital requirements.

One other important distinction is between commitment arrangements that are legally enforceable and those that are not. The majority of arrangements are made between banks and their customers on an informal basis, either verbally or in correspondence. In cases where an unequivocal guarantee is desired, however, legal documentation is prepared. Commitment arrangements legally binding to the bank are almost always accompanied by a fee that is typically computed on a daily basis against the unused portion of the commitment. These fees are justified on the grounds that legally binding commitment arrangements place the bank in a position from which it must be prepared to advance funds without recourse. For the same reason it is common practice for the fee to be retained even if the customer does not utilize his commitment.² As a practical matter, however, loan commitments backed by the moral obligation of a bank are honored with the same degree of seriousness as those backed by a legal obligation, because failure to meet commitments for reasons other than cause would destroy a bank's credibility in the financial community. Any commitment disclosed to the customer, therefore, has the status of a serious obligation to be honored by a bank if at all possible. The equal status given all types of disclosed commitments is reflected in a survey of eight large Midwestern banks, which found uniform satisfaction

² Eli S. Silberfeld, "Loan Commitment Fees—Some Legal Points," *The Journal of Commercial Bank Lending*, Vol. 56, No. 6, February 1974, 65.

of all commitments during the 1969-1970 period of tight money.³

Commitments for Short-Term Uses Bank loan commitments to business firms that have an intended short-term use for credit take the form of a line of credit. Lines of credit, which account for most of the volume of loan commitments, are classified into two types: the open line of credit and the firm line of credit. The open line of credit is very informal in nature, usually taking the form of a letter from the bank stating a general willingness to lend funds up to some maximum limit over a specific period of time, generally not more than one year in length. The commitment letter does not specify the terms of the arrangement, which the bank may change while the letter is outstanding. The customer may borrow under the open line of credit at his discretion, with interest being charged only on the actual amount of credit he uses. Continuous borrowing under open lines of credit is discouraged, and most banks require that their lines be "cleaned up" (the level of borrowing must return to zero) at some time during the year. This tradition reinforces the intention that credits granted under open lines are for short-term uses only. The fact that advances under open lines of credit are treated the same way as are direct short-term borrowings, always being accompanied by the customer's promissory note, further emphasizes this intention. In return for an open line of credit, the customer is required to pay an implicit fee in the form of compensating demand deposit balances.

A firm line of credit closely resembles an open line with the exception that a fee is paid based on the unused portion of the arrangement. It thus has legal status but in terms of service rendered offers the customer nothing more than an open line of credit.

Commitments for Intermediate-Term Uses The revolving credit is a device that has come into use in response to needs for short-term but continuous credit or for credit of uncertain duration. It guarantees the customer use of fluctuating amounts of bank credit over an extended period of time, usually two or three years, and has legal status. An explicit fee based on the unused portion of the commitment is always involved, and recently a number of banks have instituted an additional charge based on the

³ Douglas A. Hayes, *Bank Lending Policies: Domestic and International*, Michigan Business Series, Vol. XVIII, No. 4, The University of Michigan, 1971, p. 79.

entire amount of the commitment.⁴ The fee commonly charged on the unused portion is one-half of one percent per annum, while that levied on the entire commitment is one-quarter of one percent per annum. Compensating balances are also required.

Given the formal character of revolving credit arrangements, a rate charged on borrowing under commitment is specified. The rate usually has a fixed relation to the prevailing prime rate, and in this way the bank is assured of a return that is realistically related to existing credit market conditions. The customer's borrowing privilege depends upon his ability to meet certain financial conditions specified in a set of protective covenants contained in the contract, a feature designed to protect the bank from adverse changes in credit risk.

Commitments for Long-Term Uses Business credit needs related to the acquisition of fixed assets can sometimes be satisfied using bank term loans that have a maximum maturity of about ten years. Term loans represent a popular type of debt financing for moderately-sized companies that do not have access to public credit markets and for larger corporations that may find bank credit terms more flexible than either public debt issues or equity financing. When made directly, term loan commitment arrangements obligate the bank to extend up to a specified maximum amount of credit upon request, provided the customer meets certain financial requirements contained in the contract. Funds can be taken down as needed or the entire amount can be obtained at one time, but either way a long-term promissory note is made out. A fee is charged based on the unused portion of the commitment over its life. The volume of direct term loan commitments is not large relative to other types of loan commitments.

Often revolving credits are supplemented with a term loan option that allows the customer to convert the unused portion of his commitment into a term loan at the arrangement's expiration. The revolving credit with a term loan option is a very flexible arrangement that appeals to businesses engaged in projects that take several years to complete. The revolving credit feature of the contract provides "bridge" financing that can be activated as necessary, while the term loan feature provides an optional source of long-term financing, should conditions in the bond or equity markets prove unfavorable at the time a project is completed.

⁴ "Citibank Increases Loan-Pledge Fees Charged Big Firms," *Wall Street Journal*, September 24, 1974, p. 39, and Ben Weberman, "Holland Says Credit Line Commitment Prices Should be More Than Doubled," *American Banker*, November 12, 1974, p. 1.

Loan Commitment Policies and Theories of Bank Liquidity

The Commercial Loan Theory of Credit The first theory to govern banking practices in the United States was imported from Great Britain, for in this matter, as in so many others, early American thought was strongly influenced by prevailing opinion in the mother country. Thus the real-bills doctrine, a most persistent and popular British conception of proper banking conduct, came to play a key role in the early development of U. S. banking theory and practice.

The real-bills doctrine assumed form in 18th century British banking circles, where an oral tradition grew up regarding its various aspects. Adam Smith provided the first systematic exposition of the doctrine in his *Wealth of Nations* (1776), and thereafter many writers contributed to its refinement. During the 19th century, a turbulent formative period for U. S. banking practices and legislation, it was the focal point of debate and discussion in British banking. For the British banking school, the real-bills doctrine represented a central thesis, and its relevance to both banking and monetary management was stressed.⁵ Basically a theory of asset management that emphasized liquidity, the doctrine held that banks should restrict their earning assets to "real" bills of exchange (discounted paper financing the movement of goods) and short-term, self-liquidating advances for commercial purposes. In this way, it was argued, individual banking institutions could maintain the liquidity necessary to meet the requirements of deposit withdrawals on demand. Under a somewhat modified character this basic doctrine came to be known in the U. S. as the commercial loan theory of credit, and it remained the rubric of banking until the 1920's.

For about the first fifty years of U. S. banking history, the commercial loan theory of credit was easily compatible with practical standards of conduct, which were quite primitive. The development of commercial banking in this country had a very slow beginning, due largely to the limited demands and special preferences of the colonists for credit. In Colonial times, of course, the economy was largely agrarian, and a flourishing manufacturing industry with heavy capital demands simply did not exist. Given the relatively backward state of the economy, therefore, aggregate credit demand was not large. Existing requirements for financial assistance were

⁵ With respect to monetary management, it was argued that adherence to the real-bills doctrine would cause aggregate liabilities of the banking system (notes and demand deposits) to vary in quantity according to the state of real economic activity. In effect, then, the money supply would always be maintained at the most desirable level in a virtually self-regulated manner.

satisfactorily met by individuals (especially merchants), Colonial governments, and colonizing companies. English banks also counted as important sources of credit for Colonial enterprise. In short, important banking functions were performed without the aid of domestic banks, and this combination of circumstances acted to retard the development of a commercial banking industry. It was not until after the Revolutionary War that the first bank in this country, the Bank of North America, was established in 1782 in Philadelphia.

Merchants formed the Bank of North America, as they did most other early banks, in order to make credit more conveniently available for financing trade. The loans of these early banks were of a self-liquidating nature, and they conformed to the appropriate type of asset prescribed by the commercial loan theory of banking. Also, it is reasonable to assume that banks customarily entered into informal loan commitment arrangements with businesses requiring funds for actual short-term purposes. This happy situation did not prevail for long, however. In the second quarter of the 19th century, the U. S. entered a period of sustained and vigorous economic growth. This process required large amounts of capital, especially of a long-term nature, and these demands were partly directed toward the banking system. Consequently, banks were confronted with the problem of meeting credit demands directly at variance with their accepted code of conduct, which emphasized short-term lending.

Without doubt commercial banks did satisfy these demands for longer-term credit, including those associated with fixed investment programs. Yet it is also true that, in form at least, a facade of short-term lending was maintained. This occurred as the bill of exchange, so prominent from Colonial times, slowly disappeared and was replaced by the promissory note as the most common credit instrument, a transition largely completed by the end of the Civil War. Through use of the promissory note on a basis of continuous renewals, banks were able to conform to the letter of the law, as far as theory was concerned, and still meet the long-term credit demands of business. By informally guaranteeing renewal of short-term notes, banks in effect began granting loan commitments for long-term credits to their customers. So completely did the short-term promissory note fulfill the various credit demands of business through repeated extensions that it came to be regarded as accommodation paper, to be used for general credit needs and not exclusively for self-liquidating com-

mercial transactions.⁶ Starting in the 1870's, this practice became more overt as banks began to rely on financial statement analysis as a basis for making advances. The use of loan proceeds was left more and more to the discretion of business customers who, upon examination, were found to be financially sound. The earliest analysis of the uses of short-term, unsecured bank loans, made for the several years immediately preceding 1918, places at 20 percent the proportion used for investment in fixed capital.⁷ The same source estimates that between 40 and 50 percent of short-term, unsecured loans made at banks in large cities were commonly renewed at maturity.⁸ This, it seems, was the state of affairs that existed prior to 1920, the beginning of the next major period of evolutionary change in banking.

The commercial loan theory of credit became obsolete both because of its conceptual flaws and its impracticality. A critical underlying assumption of the theory held that short-term commercial loans were desirable because they would be repaid with income resulting from the commercial transaction financed by the loan. It was realized that this assumption would certainly not hold during a general financial crisis even if bank loan portfolios did conform to theoretical standards, for in most commercial transactions the purchaser of goods sold by the original borrower had to depend to a significant extent on bank credit. Without continued general credit availability, therefore, even short-term loans backing transactions involving real goods would turn illiquid. Rigid adherence to the orthodox doctrine was, furthermore, a practical impossibility if banks were to play a role in the nation's economic development. Moreover, the practice of continually renewing short-term notes for the purpose of supporting long-term capital projects proved unacceptable. The failure or inability of banks to tailor loan arrangements to the specific conditions encountered with longer-term uses in fact contributed to the demise of the practice. By the 1920's these factors became strong enough to work a change in basic banking doctrine.

The Shiftability Theory and the Doctrine of Anticipated Income The shiftability theory of liquidity replaced the commercial loan theory of

⁶ Harry E. Miller, *Banking Theories in the United States Before 1860*, Cambridge: Harvard University Press, 1927, p. 179.

⁷ H. G. Moulton, "Commercial Banking and Capital Formation, Part II," *The Journal of Political Economy*, Vol. XXVI, No. 6, June 1918, 648.

⁸ H. G. Moulton, "Commercial Banking and Capital Formation, Part III," *The Journal of Political Economy*, Vol. XXVI, No. 7, July 1918, 707.

credit about 1920, and it remained prominent until the late 1940's, when it was supplemented by the doctrine of anticipated income. Formally developed by Harold G. Moulton in 1918, the shiftability theory held that banks could most effectively protect themselves against massive deposit withdrawals by holding, as a form of liquidity reserve, credit instruments for which there existed a ready secondary market.⁹ Included in this liquidity reserve were commercial paper, prime bankers' acceptances and, most importantly as it turned out, Treasury bills. Under normal conditions all these instruments met the tests of marketability and, because of their short terms to maturity, capital certainty. The shiftability theory was enhanced during the 1930's and 1940's by the rapid growth in volume of short-term U. S. Government obligations.

Unlike the old commercial loan theory of credit, the shiftability theory provided a theoretical framework that could accommodate new and innovative approaches to business lending by commercial banks. This was so because liquidity meant the ability to exchange secondary reserve assets for cash, an approach that relaxed the constraints previously placed on loan arrangements. As bank holdings of U. S. Government securities grew, the thrust of the liquidity question was increasingly transferred from loan to investment portfolios. Bank lending techniques changed dramatically against this background, a process that was stimulated as a result of changes in business credit demands after the Great Depression.¹⁰ It is under the shiftability theory of liquidity that commercial bank loan commitment practices began to assume the form that prevails today.

Perhaps the biggest breakthrough in bank lending during this period was explicit recognition of the concept of term lending, a change that signified a clear break with the commercial loan theory of credit. Term lending was first introduced in the early 1930's and came as a response to conditions imposed by the Great Depression. The tradition of making and continuously renewing short-term loans for what amounted to long-term credit needs broke down in the period 1929-1933. One result was a purification of the concept of loan commitments. Henceforth, commitment arrangements would more realistically conform to the intended uses of credit, a much im-

⁹ *Ibid.*, p. 723.

¹⁰ The change in debt financing techniques over the period 1920-1940, especially with regard to bank lending, has been described as "... a technical revolution as far-reaching in its significance as technical advances in industrial production, transportation or agriculture." See Neil H. Jacoby and Raymond J. Saulnier, *Business Finance and Banking*, National Bureau of Economic Research, E. L. Hildreth and Company, 1947, p. 139.

proved situation that would contribute to their usefulness and respectability.¹¹

Even though many short-term loans were extended with the understanding that they would be used for purposes that would not realistically permit repayment of principal in the short run, some banks were forced into demanding repayment as a result of runs on their deposits. These demands for repayment occurred at a time of depressed business conditions and general financial difficulty and resulted in a number of business bankruptcies. The unfortunate lessons learned from this set of circumstances led to a more realistic consideration of the need for a true long-term bank credit instrument. Additionally, the post-Depression years found many industrial firms with outdated and deteriorated plant and equipment, renovation of which increased the demand for long-term credit. Acquisition of funds through debt and equity capital offerings was discouraged by the high yields on such issues relative to the prime rate on bank loans and by the restrictive provisions of the Securities Act of 1933 and the Securities Exchange Act of 1934.¹² In the business revival that began in 1932, therefore, banks represented a preferred source of long-term credit, and the need for a lending instrument to accommodate these demands was that much greater.

Acceptance of the term loan by bank regulatory authorities was not long in coming. Two events in particular gave the new practice an official air of respectability. The first was an amendment to the Federal Reserve Act through the Banking Act of 1935, by which banks were extended the privilege of borrowing from the Federal Reserve Banks against the security of *any* sound asset acceptable to the Reserve Bank at a penalty rate of one-half of one percent per annum higher than the highest discount rate in effect on eligible paper.¹³ Prior to this amendment, this privilege was available for use only in "exceptional and exigent circumstances" when a member bank's supply of assets eligible for rediscount was exhausted. This amendment extended the scope of the shiftability theory by allowing long-term assets,

¹¹ An argument that continuous borrowing for capital investment purposes remained prevalent at least through 1955 is made in "Continuous Borrowing Through 'Short-Term' Bank Loans," *Business Review*, Federal Reserve Bank of Cleveland, September 1956, 6-13. This thesis seems unlikely given the strong acceptance of term lending. While there is no doubt that continuous business indebtedness was and still is common, it can more easily be explained in terms of separate borrowings for distinct short-term credit uses. Commercial loan officers do encounter situations where short-term loan funds are channeled into longer-term uses, but these are generally unintended exceptions to the general norm.

¹² A good synopsis of these background conditions is provided in George S. Moore, "Term Loans and Interim Financing," in Benjamin H. Beckhart, (ed.), *Business Loans of American Commercial Banks*, New York: The Ronald Press Company, 1959, pp. 210-11.

¹³ Federal Reserve Act § 10(b). 12 U.S.C. § 347b, as amended by § 204 of the Banking Act of 1935 (49 Stat. 705).

including term loans, to be used as collateral for advances from the Federal Reserve Banks. The second event was the 1938 change in bank examination standards that abandoned the "slow" classification for bank assets based solely on maturity criteria.¹⁴ This examining change recognized the fact that banks had to substitute new forms of loans for their lost volume of short-term commercial loans and emphasized intrinsic soundness rather than liquidity through quick maturity.

The results of a bank term loan survey conducted in 1941 reveal that term lending grew rapidly in the 1930's and represented an important part of total loan volume.¹⁵ Eighty-one of 99 respondent banks, most of which were large institutions, held significant amounts of term credit at mid-year 1941; for 50 of these banks, term loans constituted 22 percent of total loans and discounts. Historical data provided by 56 of the banks revealed that their outstanding term loans increased three and one-half times from 1935 to 1940, reaching a level of \$967 million. It appears, however, that direct term loan commitments were not employed to a very significant degree in the 1930's and 1940's. Term loan commitment arrangements were available under the name of call credits, for which standby fees were charged.¹⁶

The revolving credit also appeared about the same time as the term loan and probably originated as part of the new long-term lending arrangement. Early discussions treat the revolving credit as a form of term lending because of its multi-year contractual nature, even when the term loan option is not part of the arrangement. Nevertheless it is significant that the revolving credit did appear, for it represents another advance in financial technique. Early usage of revolving credits was very limited, their number being estimated as only 5 percent of the number of term loans outstanding in 1941.¹⁷ There appears to have been some resistance on the part of banks to enter revolving credit arrangements, presumably due to the uncertainties involved with credit usage. After 1947 an interest escalator provision based on the Federal Reserve discount rate in the district where the loan was made was usually included to help mitigate interest rate uncertainties.¹⁸

¹⁴ Board of Governors of the Federal Reserve System, *Annual Report*, 1938, pp. 37-8.

¹⁵ Neil H. Jacoby and Raymond J. Saulnier, *Term Lending to Business*, National Bureau of Economic Research, Camden: The Haddon Craftsmen Inc., 1942, pp. 135-40.

¹⁶ Herbert V. Prochnow, *Term Loans and Theories of Bank Liquidity*, New York: Prentice-Hall, Inc., 1949, pp. 25-6.

¹⁷ Jacoby and Saulnier, *Term Lending to Business*, p. 77.

¹⁸ Herbert V. Prochnow, *Term Loans and Theories of Bank Liquidity*, p. 25.

A major defect was discovered in the shiftability theory similar to the one that led to abandonment of the commercial loan theory of credit, namely that in times of general crisis the effectiveness of secondary reserve assets as a source of liquidity vanishes for lack of a market. The role of the central bank as lender of last resort gained new prominence, especially in view of the changes of 1935 that broadened its potential role, and ultimately liquidity was perceived to rest outside the banking system. Furthermore, the soundness of the banking system came to be identified more closely with the state of health of the rest of the economy, since business conditions had a direct influence on the cash flows, and thus the repayment capabilities, of bank borrowers. The shiftability theory survived these realizations under a modified form that included the idea of ultimate liquidity in bank loans resting with shiftability to the Federal Reserve Banks. Under this institutional scheme, the liquidity concerns of banks were partially returned to the loan portfolio, where maintenance of quality assets that could meet the test of intrinsic soundness was paramount. The doctrine of anticipated income, as formalized by Herbert V. Prochnow in 1949, embodied these ideas and equated intrinsic soundness of term loans, which were of growing importance, with appropriate repayment schedules adapted to the anticipated income or cash flow of the borrower.¹⁹

The credit demands of business were well accommodated under this system of banking policy, and the use of loan commitments was freely pursued into the 1950's. This is shown in the Survey of Member Bank Loans for Commercial and Industrial Purposes, conducted by the Federal Reserve System as of October 5, 1955, which found that 56 percent of the 2,000 participating banks extended lines of credit.²⁰ In this survey virtually all banks with deposits of \$100 million and over extended credit lines as did 38 percent of the banks with less than \$20 million in deposits. Changing economic conditions, however, placed extra demands on the banking system that resulted in a new approach to balance sheet management, and businesses faced new financial challenges as the 1960's progressed. Under this emerging state of affairs, bank loan commitment policies would come to play a more important part in the credit process.

Liabilities Management This country entered a sustained period of rapid credit expansion in the

¹⁹ *Ibid.*, p. 402.

²⁰ Caroline H. Cagle, "Credit Lines and Minimum Balance Requirements," *Federal Reserve Bulletin*, Vol. 42, No. 6, June 1956, 573-9.

1950's that acquired explosive proportions in the 1970's. Banks were eager to participate in this process and share in the profit opportunities that it implied. They succeeded but only by radically changing the approach to liquidity that had been maintained from the earliest days of banking. From the 1780's through the 1950's, banks sought to assure their liquidity almost exclusively on the asset side of the balance sheet, the only exception being occasional borrowing at the discount window. In the 1960's they turned to the liability side of the balance sheet on a massive scale, and liabilities, especially short-term liabilities in nondeposit form, came to be viewed as completely controllable. This approach, which prevails today, is known as the liabilities management theory of liquidity.

Table I shows the extent of increases in credit from the 1950's to the 1970's, along with the changing importance of commercial banks in supplying this credit. In the eight-year period 1952-1959, a yearly average of \$33.2 billion was raised in U. S. credit markets, and commercial banks provided 21 percent of this amount. By the 1970's, the yearly average of funds raised increased to \$148.6 billion, of which 41 percent was supplied by the banking system. Corporate business played an important part in this credit expansion, its yearly average increase in funds raised moving from \$8.0 billion in the 1950's to \$49.3 billion in the 1970's; the banking system advanced 21 percent of these funds in the 1950's and 34 percent in the 1970's.

The flow of funds supplied by the banking system to the nonfinancial business sector has not been smooth, especially since the late 1960's. Chart 1, a plot of the three-month moving average of growth rates in bank business loans stated at annual rates, illustrates the magnitude and frequency of swings in bank business credit since 1960 and highlights the instability that has become prevalent in the last decade. Since the mid-1960's, there have been several major swings toward tightness that have been induced primarily as a result of restricted credit supply. These episodes have had an important expectational effect on the behavior of businesses. As a result of these episodes, business financial managers have been encouraged to seek protection against the possibility of recurring periods of tight credit, a behavioral trend especially noticeable since the "credit crunch" of 1966.

In 1966 the Federal Reserve adopted measures designed to restrict the rate of credit creation, which had accelerated rapidly in conjunction with business investment spending and Government expenditures

Table I

TOTAL FUNDS RAISED IN CREDIT MARKETS* AND FUNDS SUPPLIED BY COMMERCIAL BANKS

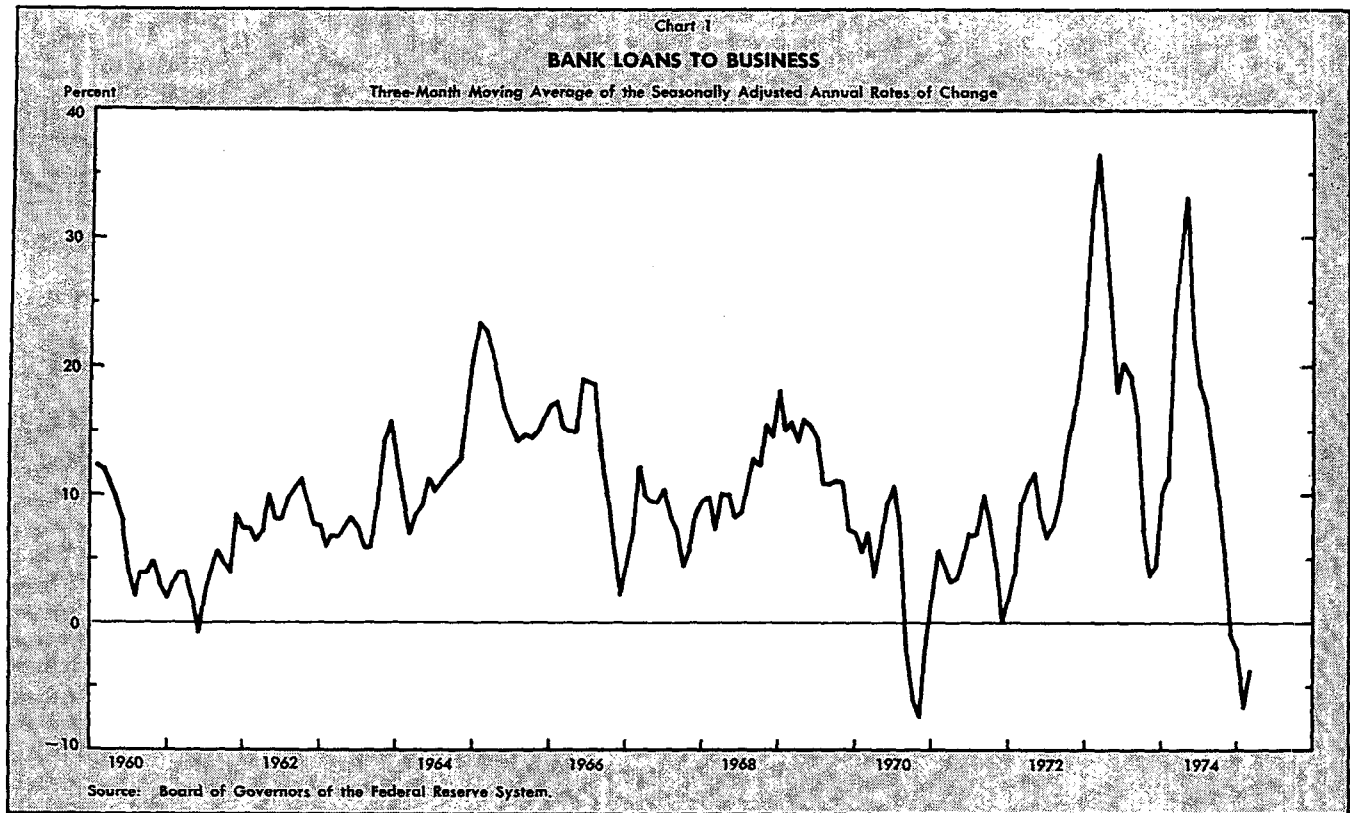
Period	Average Annual Flows \$ Billions			
	All Nonfinancial Sectors		Nonfinancial Corporate Business Sector	
	Funds Advanced	Bank Loans	Funds Advanced	Bank Business Loans
1952-1959	33.2	7.1	8.0	1.7
1960-1969	64.4	22.3	19.8	6.1
1970-1974	148.6	61.4	49.3	16.8

* Excluding equities.

Source: Board of Governors of the Federal Reserve System, Flow of Funds.

for the Vietnam War. This had a direct impact on commercial banks and, through them, on the financial markets in general. For some time prior to 1966, commercial banks had been restructuring their asset portfolios to include more higher-yielding assets, especially commercial loans and municipal bonds, at the expense of short-term Government securities. The emphasis on commercial lending, depicted in Chart 1 by high growth rates for 1965 and the first half of 1966, was supported by sales of CD's. When the yield on competing money market instruments rose above the 5.5 percent maximum rate on new CD issues in the summer of 1966, the Federal Reserve, contrary to past policy, did not raise Regulation Q ceiling rates. With this source of loanable funds effectively cut off, banks reacted by liquidating their holdings of municipal bonds. Given other unfavorable conditions in the municipal bond market, this action had the result of lowering prices dramatically, making further sales impossible. Banks found themselves with no other choice than to curtail business lending, and credit became unobtainable at any price—except for businesses with prearranged loan commitments. If any doubts about the possibility of recurring shortages of credit persisted after 1966, a similar experience in 1969 certainly acted to dispel them.

It is no coincidence that business demands for bank loan commitment arrangements surged and reached unprecedented proportions following the tight money episodes of 1966 and 1969, for these events demonstrated that the vigorous use of monetary policy for purposes of economic stabilization could result in severe credit shortages. The eagerness of businesses to enter into loan commitment



arrangements for defensive reasons, and to intensify their use of such arrangements during tight money periods, is clearly attested to in at least one bank's case history.²¹ In this example the dollar volume of disclosed lines of credit rose moderately but steadily from mid-1960 to mid-1966 and then leveled off before resuming an upward trend in 1969. Total firm commitments trended slightly downward from 1960 through early 1964 but then began a rapid climb that lasted through 1966. This rapid upward trend in total firm commitments was also present in the first half of 1968 and 1969 before falling off in response to an internal policy designed to reduce their volume. While the ratio of borrowings under disclosed lines of credit to total disclosed lines of credit showed only modest positive changes in 1966 and 1969-1970, the similar ratio for firm commitments increased remarkably in response to tight money. In the eighteen-month period from the beginning of 1965 to the middle of 1966, the ratio of total borrowings under firm commitments to total firm commitments increased from about 35 percent to over 55 percent; in the two and one-half year period from early 1968 to

mid-1970, the ratio increased from about 37 percent to about 60 percent.

It appears that aggregate demand for loan commitments continued to increase rapidly in the early 1970's. The results of a sample survey of large commercial banks revealed that the dollar volume of unused loan commitments to business firms increased by 68 percent between July 1970 and July 1972. The respective percentage increases were 55, 45, and 200 for confirmed lines of credit, revolving credits, and term loans.

Certain alterations in Regulation Q implemented between 1970 and 1973 signaled a change in emphasis for monetary policy away from credit availability toward the price rationing mechanism. By removing interest rate ceilings on CD's, a process completed in July 1973, banks were provided with the opportunity to remain active competitors for funds even in periods of rising interest rates. This basic change indicated to business borrowers that in future periods of tight money, the banking system would have the freedom to meet their credit demands, although at increased cost. While this may have initially reduced the perceived need of businesses for loan commitment arrangements, it has since become clear that, even under this new set of ground rules, periods may still occur that find banks unable to fulfill all business credit demands directed to them. The first example of this

²¹ The behavior of aggregate firm commitments and lines of credit at Mellon National Bank and Trust Company over the period 1960-1972 is described in James H. Higgins, "Loan Commitments," *The Journal of Commercial Bank Lending*, Vol. 54, No. 11, July 1974, 2-9. The techniques for managing loan commitments presented in this article are widely considered to be a model for other banks to follow.

situation occurred in the summer of 1974, when a two-tiered market for regional and money center bank CD's developed, which made it difficult for some banks to maintain or achieve desired liability positions.²²

It appears, then, that conditions continue to exist that make loan commitment arrangements desirable as protection against periods of credit stringency. At the same time, however, the willingness of banks to enter confidently and freely into such arrangements may have been reduced as a result of imperfections discovered in the liabilities management concept of liquidity. Given their adaptability in meeting many types of special business financial requirements throughout the history of U. S. banking, there is every reason to suppose that banks will also meet the current-day need for protection of credit availability. The current mood of prudence and caution will hopefully act to keep bank compliance with such demands within a range that can be reasonably managed under all possible financial market conditions.

Summary and Conclusions

Commercial banks have engaged in the practice of making loan commitments to business enterprise from the beginning of modern banking in the United States. Since the mid-1960's, however, there has been a significant change in approach to loan commitments that has resulted in enlarged demand and liberalized supply, thus increasing contemporary interest in the topic. This article traces the historical development of commercial bank loan commitment policies and offers an explanation for their recent increase in importance, using as a reference framework the various liquidity theories that have governed banking conduct in the U. S.

From the 1780's through the 1950's, commercial banks, according to prescribed theory, insured their liquidity by concentrating on asset management. Under the commercial loan theory of credit, theoretical restrictions on asset composition prevented banks from making long-term business loans. Informal renewals of short-term loans, implying guarantees of continuing credit, reconciled theory and the necessity to meet business demands for longer-term credit. Beginning in the 1920's with the shiftability theory of liquidity, an atmosphere more tolerant of

innovation was introduced and prevailed. Term lending began in 1933 and then grew rapidly, one result of which was to purge loan commitment practices of those arrangements whereby continuously renewed short-term loans supported long-term business investment. Term loan commitments and revolving credits were developed in this period, although they did not acquire early importance.

The liabilities management concept of liquidity became prevalent in the 1960's, at a time when aggregate credit demands were growing rapidly and as financial markets showed increasing instability. Business demands for loan commitments as a defense against credit shortages increased in the late 1960's, especially in response to the tight money episodes of 1966 and 1969, and were accommodated by banks operating under the liabilities management framework. While the perceived needs of businesses for defensive loan commitment arrangements may have moderated between 1970 and 1973 as a result of the removal of the ceilings on CD yields, the experience of restricted CD markets and credit availability in the summer of 1974 had the opposite effect. The general conditions that encourage demands for loan commitments continue to prevail, and past experience indicates banks will aggressively attempt to meet these demands.

The legitimacy of prudently managed loan commitment practices cannot be disputed, for they represent an economically useful service. Today loan commitments are especially important to businesses as a type of hedge against financial uncertainty. It does seem, however, that commercial banks and bank regulatory authorities should modernize their thinking to keep up with contemporary changes in the use of loan commitments. For their part, banks should recognize that loan commitments have become a distinct financial service and treat these arrangements accordingly. This includes the careful monitoring of loan commitment positions as part of the overall planning process and adoption of expanded fee schedules that fully cover the risk exposure connected with providing such services. Regulatory authorities should make an explicit determination of what constitutes appropriate bank involvement in the commitments area and apply these standards in the examination process. In these ways, ambiguity will be reduced, and some assurance will be provided that loan commitments will not occupy the position of a potential hazard to the banking system's stability.

²² The financial market disturbances in 1974 involving bank liabilities solicitation are treated in "Banking Developments in 1974," Federal Reserve Bank of Richmond, *Annual Report*, 1974, p. 13.