The Trade-Off Between Short-and Long-Term Policy Goals

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The existence of long lags in the response of the real

sectors of the economy to changes in monetary policy instruments is

well documented. These lags may require an horizon for monetary policy

strategies which spans many calendar quarters. Even if long planning

horizons are desirable, specific operating strategies still must be

adopted for the actual short-run conduct of monetary policy. These,

however, should be consistent with the long-term goals. If short-run

considerations such as stabilization of money market interest rate

movements cause modification of the operating strategy, the long-run

goals in terms of income, employment and the price level may suffer.

The purpose of this paper is to discuss some of the areas in which

short and long-term goals may conflict and to attempt to evaluate the

costs to the long-term targets of imposing short-run side conditions

on policy actions.

I. Short-Run vs Long-Run Goals

Available econometric evidence indicates that variations in

monetary policy instruments can exert little influence on the non-

financial sectors of the economy in the short run. For example,

experiments with a recent version of the FRB-MIT econometric model

indicate that, other things equal, a $1 billion increase in the money

stock in a given quarter will produce only a $.3 billion increase in

nominal GNP in that quarter. Further, inspection of the coefficients for the relevant equations in the model suggest that even this small response is probably overstated. It is interesting to note that the long-run multiplier relation between money and nominal GNP is substantial. Other things equal a $1 billion permanent rise in the money stock leads to a permanent increase in nominal GNP of approximately $3.2 billion.

Given the short-run multiplier, attempts to establish short-run (quarter by quarter) control over the economy may require variations in policy instruments which are unacceptably large. An example may clarify the issue. Assume that during a generally inflationary period, the decision is made to attempt to stop the inflation within a single quarter. To accomplish this end, a sharp rise in interest rates, and probably a substantial reduction in the levels of the monetary aggregates, would be required during the quarter. Even if this strategy were successful, a new problem would immediately develop. With the passage of time beyond the quarter, the economy would continue its deflationary adjustment--probably at an increased rate--in response to the monetary restriction. If an over-response of the economy to the original policy restriction is to be avoided, policy must reverse itself immediately by sharply reducing interest rates and expanding the monetary aggregates. This easing of policy would require in turn a restrictive policy the next quarter. Thus, by never looking more than one quarter ahead, large short-term reversals of policy would be required

to stabilize the economy.

Whether or not this myopic strategy of trying to hit targets in the real sector on a quarter by quarter basis can be successful over the long run depends among other things upon the existing parameters of the system. [1] It is quite possible that pursuit of such a strategy would have no long run future because ever larger changes in monetary policy instruments would be required to achieve stability in the real sector. Even if the strategy would produce permanent economic stability it could create extreme fluctuations in financial markets.

It is quite possible, however, that large fluctuations in financial variables would alter interest rate expectations sufficiently to greatly weaken the efficacy of the myopic policy strategy. Rapid reversals of monetary policy may encourage investors to expect wide fluctuations in the path of short-term interest rates. In this situation, efforts to reduce long-term rates would be thwarted by investor expectations of a rise in rates in the near future. Thus, the pursuit of the myopic policy strategy could be self-defeating.

There are two obvious ways to approach the problem posed by the small amount of short-term control over the economy. First, monetary policy could pursue the myopic rule of attempting to hit a target quarter by quarter but subject the strategy to constraints imposed by financial conditions. Thus, a specific target value for employment or the price

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[1] For a simple treatment of this problem see E. Gramlich, "The Usefulness of Monetary and Fiscal Policy as Discretionary Stabilization Tools", a paper presented at the A.B.A. Conference of University Professors, Sept. 1969.

level would be pursued provided that the act of attempting to hit
the target did not cause "excessive" fluctuations in interest rates.
If the movement of interest rates were deemed undesirable, policy
instruments would be changed sufficiently to bring the interest rate
fluctuations within the allowable range. The imposition of such
constraints could greatly reduce the ability of monetary policy to
achieve short-term goals.

The second approach would involve a lengthening of the policy
planning horizon. In this situation, policy would take a longer view
than one quarter into the future. The aim would be to achieve the
best path of, say, employment over some time interval consistent with
acceptable performance of financial markets. Extension of the horizon
would allow problems of the real sector and of the financial sector
to coexist on a more equal basis. There would be no immutable constraints
placed on the system by money market conditions if the planning horizon
can be extended. However, by giving up some short-term control over
variables in the real sector, it should be possible to reduce fluctua-
tions in financial variables to more manageable proportions.

Conceptually, it should be possible to determine the trade
off between short-term control over employment and prices and stability
of the financial sector. In general, a lengthening of the policy
planning horizon to promote short-run stability in financial markets
will come at the cost of reduced control over nonfinancial variables.
Alternately a shortening of the planning horizon will come at the cost

of increased short-run fluctuations in financial variables.

Lengthening the horizon for major policy goals raises some obvious problems. Because the long-term goals of employment and prices are relatively far in the future, it is easy to give them a backseat to the short-run stabilization problems often encountered in financial markets. The problem with this approach is that over-attention to short-run problems can have important implications for the paths required to hit desired long-run targets. Further, if short-run constraints are continually imposed, it may be impossible to hit the long-run goals in the time specified. This may require a lengthening of the horizon and the realization of the ensuing costs of less desirable performance of the real sector.

The discussion in the previous paragraph suggests that over the longer run the goals of price and output stability may not conflict with the goal of money market stability. Over-zealous attempts to stabilize the money market in the short run may distort output and prices sufficiently that large changes in interest rates are required in the longer run to bring the economy under control. By allowing wider short-run fluctuations in money market conditions it might be possible to avoid large swings in interest rates over the longer run.

The discussion suggests that, given a set of initial conditions in the economy, there is an optimal policy strategy available. The strategy simultaneously determines the length of the planning horizon, the paths of target variables such as employment and prices over the period, and the expected stability of financial markets. The determination of specific strategies is a problem in optimal control

theory and is beyond the scope of this paper. Instead, the paper attempts to assess the trade-offs involved and illustrates problems which may arise from pursuing particular policy strategies.

II. Some Simulation Experiments

The purpose of this section is to describe some simulation experiments which were conducted in order to illustrate the problems encountered when short-term and long-term goals conflict. The structure of a recent version of the FRB-MIT model was used for the simulation exercises. $\underline{2/}$

The first simulation experiment assumes a monetary policy which focuses on the rate of growth of the money stock provided that the change in the Treasury bill rate over any quarter does not exceed some arbitrary value. The unconstrained growth in money is assumed to promote desired long run behavior of the real sector. If the policy determined money stock for a quarter would lead to a projected change in the bill rate over that quarter which exceeds the constraint value, the money supply was changed sufficiently to bring the change in the bill rate back to its allowable range. In situations in which policy is attempting to offset either boom or recession, this policy would lead to a performance of the economy which is inferior to one which is unconstrained.

If shifts in the demand for money are the source of wide interest rate fluctuations when policy is attempting to hit a money stock target, the situation is changed. Here, it would be appropriate to introduce interest rate constraints. Such constraints would automatically

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2/ Some of the simulation results reported here are drawn from an earlier paper on a related topic. See J. Pierce, "Some Rules for the Conduct of Monetary Policy," in Controlling Monetary Aggregates, Federal Reserve Bank of Boston.

satisfy the demand for money after some point. Limiting interest rate movements in this case would promote long-run stability.[3/] The results of the simulation experiments suggest, however, that one should have strong reasons for believing that shifts in money demand are causing wide quarter to quarter interest rate fluctuations. If unexpected shifts in aggregate demand are the cause, long-run goals may suffer greatly.

To illustrate the problems which arise during periods of excess aggregate demand, various simulations of the FRB-MIT model were run for the 1963-1968 period. A control simulation was first run which took all exogenous variables at their historical values but assumed that the money stock grew at a constant 4.25% annual rate. This was the constant rate at which the initial money stock in 1962-IV had to grow to achieve its actual value in 1968-IV. Additional simulation experiments were conducted applying the same exogenous variables and the same 4.25% money growth rate to the model provided that the Treasury bill rate did not change during the quarter by more than a specified absolute amount. If the bill rate fell outside the allowable range, bank reserves and the money supply were changed sufficiently to bring the bill rate back to the nearest boundary of the range. All

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3/ For a theoretical discussion of the desirability of interest vs money stock stabilization in a stochastic world see: W. Poole, "Optimal Choice of Monetary Policy Instruments in a Simple Stochastic Macro Model" Q.J.E. forthcoming.
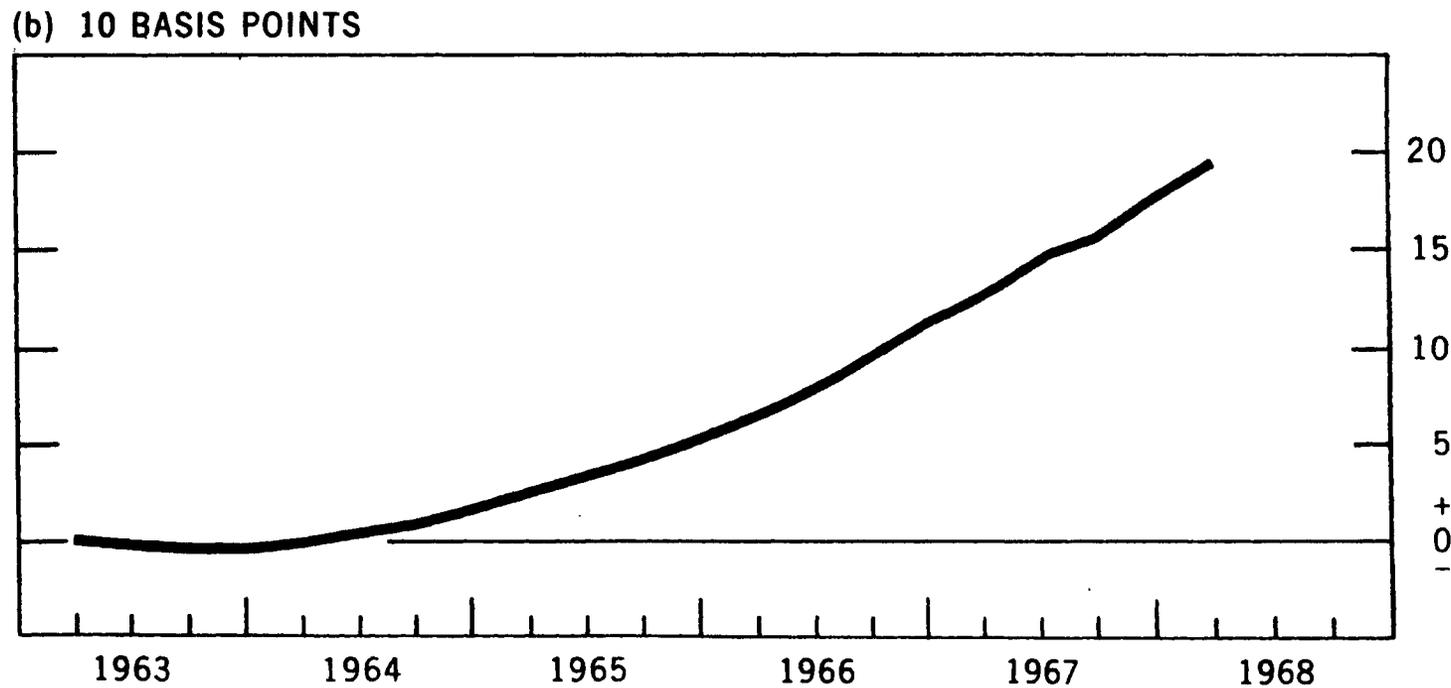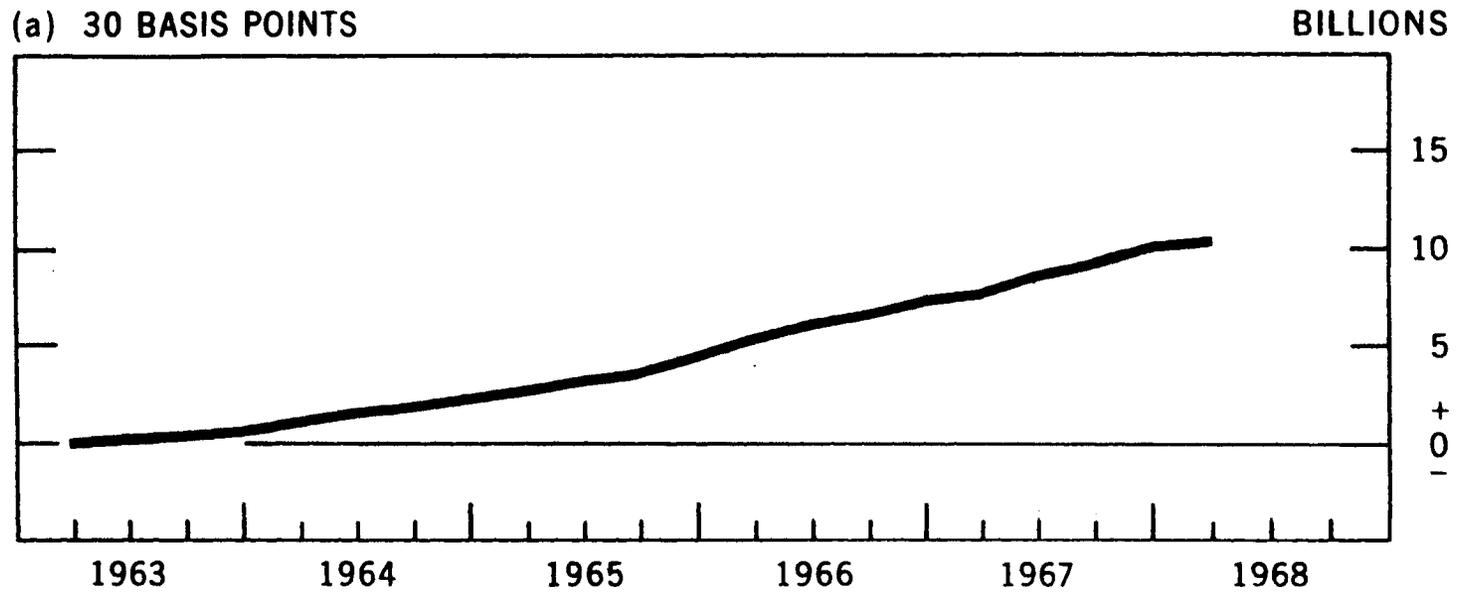
other exogenous variables were assumed to remain unchanged. Several

absolute change values were attempted; results for absolute changes of

30 basis points and 10 basis points are reported.

The results indicate that placing sufficiently narrow bounds

on the change in the bill rate can have a large impact on the simulated

value of GNP. Figure I shows the differences between the simulated

values of GNP for the steady rate of growth of money and those subject

ɔ maximum absolute changes in the bill rate of 30 and 10 basis points

respctively. In both cases because interest rates could not rise in

the later periods, there was a tendency to add to the existing excess

demand conditions.

As indicated above, if the source of interest rate fluctuations

is erratic shifts in the demand for money, interest rate stabilization

may be a reasonable course of action. The simulation results suggest,

however, that interest rate stabilization can be costly during periods

of strong excess demand.

It is interesting to note that if stabilization of financial

markets takes the form of bracketing the rate of growth of the money

stock, the problems encountered during periods of shifting aggregate

demand are diminished. Assume monetary policy attempts to hit an

employment target by setting market interest rates at appropriate levels.

Introducing a constraint on the allowable range of growth rates of the

money stock in this situation can under some circumstances lead to

improved policy performance. If the value of the interest rate is not

the correct one because aggregate demand is either stronger or weaker

FIGURE I EFFECTS ON GNP OF 4.25% GROWTH IN MONEY SUBJECT TO A MAXIMUM ABSOLUTE CHANGE IN THE BILL RATE: DEVIATIONS FROM THE STRAIGHT 4.25% GROWTH RULE SIMULATION

(a) 30 BASIS POINTS

(b) 10 BASIS POINTS

than expected, variations in the rate of growth of the money stock

can provide important evidence of this condition. For example, if

aggregate demand is stronger than expected, given the interest rate

and the demand for money, the growth in the money stock will be greater

than expected. If the acceleration in the money growth rate is taken

as a signal to raise the interest rate, the money growth rate will fall

and the excessive growth in aggregate demand will be reduced.

If the unexpected growth in the money stock is the result of

a sh ft in the demand for money then the monetary expansion should be

accommodated. In this situation, interest rates should not rise.

There is really no way to avoid making judgements concerning the causes

of money and interest rate fluctuations. If the source is unexpected

strength or weakness in aggregate demand, one course of action is called

for. If the source is erratic shifts in the demand for money, quite a

different policy reaction is required. The purpose of the simulation

experiments is not to "prove" that aggregate demand is always the cause

of money market fluctuations. Rather, the purpose of the exercises is

to illustrate the potential costs of pursuing a policy strategy which

implicitly assumes that money market fluctuations primarily are caused

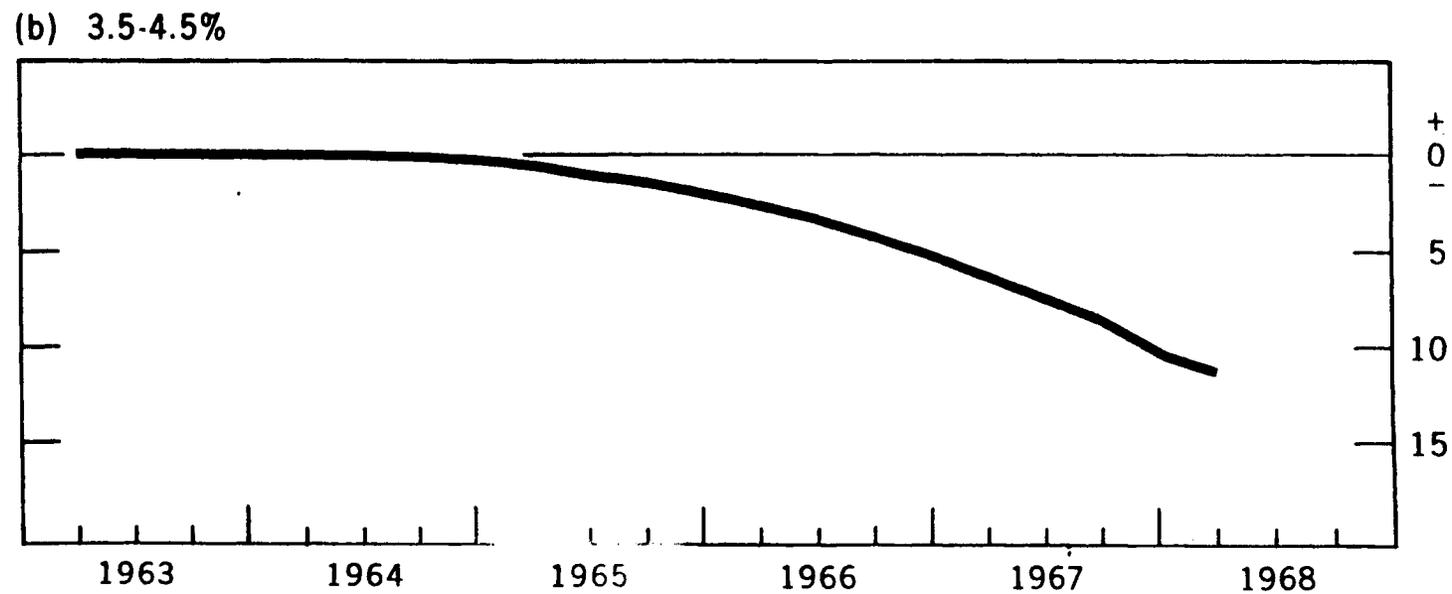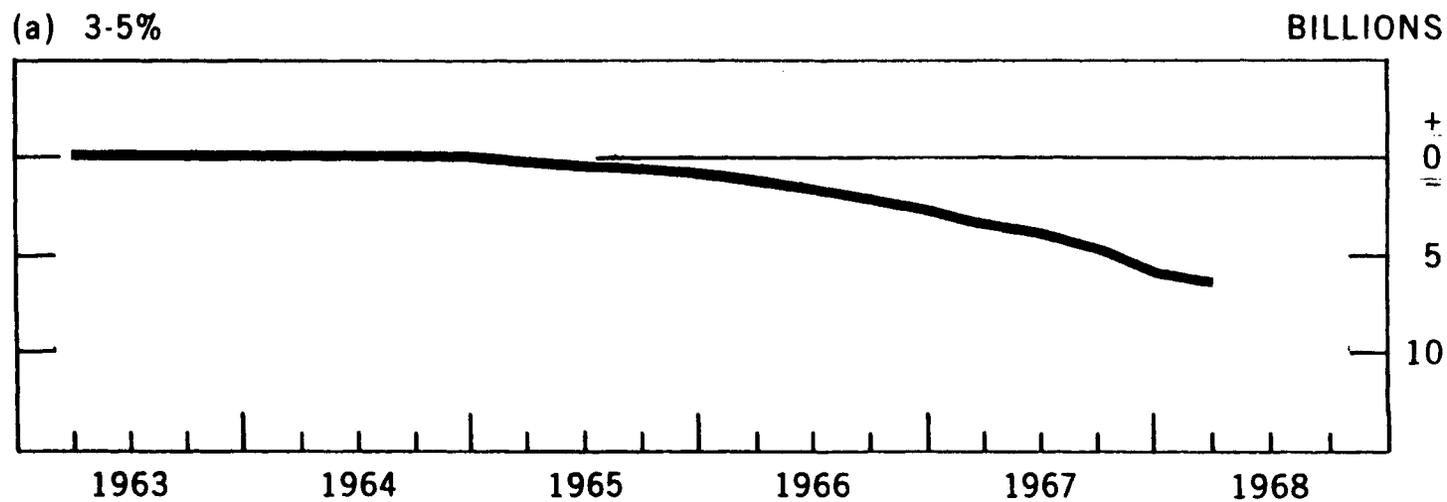by an erratic, unpredictable demand for money.

Simulation experiments with the model were conducted to measure

the impact of the money growth rate constraints. The control simulation

was one in which the interest rate was made to rise at a constant

annual rate from a base period of 1963-I to achieve its actual value

in 1968-I. In this simulation, the money stock is endogenous. Additional

policy simulations were then conducted imposing money growth rate
constraints on this interest rate policy. If the rate of growth of
the endogenous money stock fell outside the allowable range, the interest
rate was changed sufficiently to bring the growth in money back to the
nearest boundary of its allowable range.

Figure II shows the difference between the values of GNP
from the control simulations and those for maximum ranges of 3-5% and
3.5-4.5% in the annual money growth rate. The results indicate that
this combination of interest rate and money supply policies would have
been beneficial over the period of simulation.

Further simulation experiments were conducted taking the
conditions of the 1960-1961 recession as the starting point for the
policy exercises. The results were similar to those described above
for periods of excess demand. Control simulations were conducted which,
beginning with the third quarter of 1960 set a constant rate of growth
of the money stock. Given the actual history of the exogenous variables
in the system and given the initial conditions, the time required to get
initially to full employment was a decreasing function of the money
growth rate. Particularly rapid growth rates, however, lead to substan-
tial overshooting and can create chronic excess demand. Quite predictably,
imposition of a constraint on policy in the form of maximum allowable
quarterly changes in the Treasury bill rate made it more difficult to
hit the full employment target. The interest rate constraint produced
a slowing of the rate of expansion of output and employment from the
recession base and lengthened the time necessary to hit a full employment

FIGURE II
EFFECT ON GNP OF CONSTANT BILL RATE GROWTH SUBJECT TO MAXIMUM MONEY GROWTH RATES:
DEVIATIONS FROM THE STRAIGHT BILL RATE GROWTH SIMULATION

(a) 3-5%   BILLIONS

1963   1964   1965   1966   1967   1968

(b) 3.5-4.5%

1963   1964   1965   1966   1967   1968

target. The results also indicate that the degree of the slowdown
of economic expansion resulting from the constraint depends upon how
quickly the target level of employment is to be reached and how narrow
is the allowable range of the quarterly change in interest rates.

It should be emphasized that a restriction on changes in
interest rates is potentially less disruptive to the economy than is
a restriction on the level of rates. Constraints on the maximum short-
term change in interest rates can retard but not arrest desired adjust-
ments of the economy. The existence of ceilings or floors on the level
of interest rates may prevent the adjustments from ever occurring.
Pegging the level of interest rates can lead to a total loss of control
by policy over output, employment and prices.

The recession results for a money supply constraint are also
similar to those obtained for the excess demand case. A monetary
policy which attempts to achieve its objectives through influencing
money market conditions (interest rates) can be enhanced in the recession
case by imposing a constraint on the rate of growth of money. If the
course of aggregate demand proves to be other than expected, variations
in the interest rate promoted by the constraint imposed by an allowable
range of money growth rates will serve to push the rate of expansion in
the desired direction.

III. Conclusions

The brief discussion in Section II suggests that high
priority should be placed on coordinating short-run operating procedures
with the longer run goals of monetary policy. Failure to achieve such
coordination can lead to a serious reduction in the ultimate effective-
ness of monetary policy. Stabilizing short-term interest rate fluctua-
tions can lead to destabilizing shocks to the real sectors of the
economy.

Better information on the stability of the demand functions
in the economy is sorely needed. The focus of policy on money market
conditions may be badly misplaced if the money demand function is
relatively stable and predictable through time. Certainly the hypothesis
that the demand for money is erratic and unpredictable is not well documented.
It is curious, therefore, that policy decisions should revolve so strongly
on money market conditions.

It might be argued that the Central Bank is obligated to
stabilize the markets for debt instruments. An unfortunate paradox can
result here. An overly zealous attempt to stabilize interest rates can so
disturb the real sectors of the economy as to lead ultimately to extreme
variations in market interest rates. The experience of the last few years
appears to bear out this contention. It would appear that a monetary
policy based almost exclusively on stabilizing short-run money market
conditions is a luxury we can ill afford.

On a conceptual basis the appropriate course of action for
policy making appears to be clear. Given staff projections of the course

of the economy over the coming year or so, the instruments of monetary

policy should be set to promote the desired time paths of the variables

such as employment and prices over the period. In order to make such

decisions meaningful several policy alternatives should be illustrated

showing alternative time paths for the target values in the real sector.

The several policy alternatives should be compared both in

terms of the expected values of such variables as output, employment and

prices and in terms of the dispersion of these projections around their

expected values. In assessing the variability of the projections it

is necessary to provide evidence on the possible impacts on the projec-

tions of various shocks to the system. How sensitive are the projections

to shifts in the demand for money or in the demand for investment goods?

An analysis of the impact on the projections of alternative assumptions

concerning the values of certain key exogenous variables such as govern-

ment spending is also crucial. Furthermore it is quite likely that

the sensitivity of the projections to shocks and alternative values of

exogenous variables is not independent of the existing state of the

economy. At times projections are quite insensitive to fairly large

changes in the underlying specification of the system. At other times

they are extremely sensitive to these specifications. It is essentially,

therefore, that evidence be provided on the likely dispersion of relevant

variables around their projected values.

The fluctuations in interest rates and monetary aggregates

implied by the various policy alternatives should also be projected.

On the basis of all this information trade-offs between expected money

market stability and the behavior of variables in the real sector
can be assessed. The need for reliable econometric models and for
seasoned judgment in these exercises is obvious. At this point in
time, our ability to generate the required set of projections is
quite limited. These limitations suggest that policy strategies
should be fairly simple and straight forward. Elaborate policy
strategies do not seem consistent with our ability to assess and trace
through time the impact of policy acts on the economy.

Given the determination of a policy strategy over the coming
year or so, how can the strategy be reduced to day by day operating
procedures? Here there is need for a document like the Blue Book
which presents projections of financial conditions to be expected over
the near term. A blending of projections obtained from quarterly and
monthly econometric models is sorely needed. Conceptually, such blends
are difficult but possible. On the basis of these short-term projections
and the basic policy strategy mentioned above specific operating instruc-
tions can be formulated. Here, limitations on the ability to make
short-term projections suggest that fairly simple operating procedures
be adopted.

We now come to the central problem in this story. How can we
continue to link the basic policy strategy with operating procedures as
the economic forecasts are modified and as monetary policy strays off
course? As policy is currently conducted there is no effective means
of varying the basic strategy as new information comes in and there is
no way to relate changing conditions to actual operating procedures.

Ideally, we would like to generate new long-term forecasts each quarter and to map out new alternative policy strategies each quarter. Often, however, new information as it comes in leads to conflicting conclusions about changes in the future course of the economy. Further, econometric models and other procedures often do not predict with sufficient accuracy to allow useful quarter by quarter changes in implied operating strategy. The discussion of the original projections also suggests that the initial strategies may at times be very much in doubt.

A possible strategy under these conditions is to set quarterly operating instructions in terms of some combination of interest rates and money stock. A policy which sets an interest rate subject to constraints on the rate of growth of money is a very appealing candidate. By setting a range to the allowable growth of money, shifts in the money demand function are automatically accomodated up to the extreme points of the range. The width of the range should depend in part on estimates of likely quarterly fluctuations in the demand for money. In setting the range, however, it must be recalled that the wider the allowable range the greater the potential loss in output and employment when variations in aggregate demand are the cause of money growth fluctuations. For this reason, a relatively narrow band, e.g. 4-6%, seems desirable as a working principle.

Certainly, if there are persuasive arguments explaining why an unusual shift in money demand occurred in a particular quarter, then a money growth rate outside the range should be allowed. The point is,

however, relaxation of the constraints should be a rare event. In

every case that such a course of action is being considered, the

burden of proof should rest squarely on the shoulders of those who

believe that an unexpected movement of money outside the range is

caused by money demand and not by aggregate demand. Further, the

longer the condition of unusually high or low money growth persists

at existing interest rates the greater should be the presumption that

the interest rate is inappropriate and should be changed.

These recommendations do not call for a drastic departure

from current procedures. They primarily call for greater attention to

be paid to long-run objectives of economic stabilization policy. These

are designed to put short-run stabilization of money market conditions

in the context of possible costs to the economy in terms of income,

employment and prices.

Truely effective policy implementation requires that operating

strategies be explicitly set forth which are intended to achieve desired

long-term goals. Such strategies must be followed under conditions

of great uncertainty about the course of the exogenous variables in

the system and about the performance of our models. In such a situation

it would appear to be a mistake primarily to focus attention on the

uncertainties of the money market. Monetary policy decisions must come

to grips with the uncertainties we face with respect to aggregate demand.

A policy strategy which relies as much as possible on projections but

which also combines interest rates setting with allowable ranges on

the money growth rate appears to be most appropriate for the near future.