



BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

Mr. Partee

August 5, 1971

To: Federal Open Market Subcommittee
on the Directive

From: Staff (Messrs. Axilrod, Davis, Pierce, Sternlight)

Attached is a revised version of the staff report of July 29, 1971. The revisions were made on pages 8, 9, 10, 21, 22, and 27. Deletion of previous page 9 necessitated renumbering of pages 9 - 35.

CONFIDENTIAL (FR)

A Reserve Flow Target as a Short-Run
Tactical Approach for Open Market Operations

A. Summary

The following report outlines a possible technique for conducting week-to-week open market operations with a reserve flow strategy rather than with a "money market conditions" strategy of the sort currently in use. In brief, the procedure would operate as follows:

1. The staff would continue to provide a set of projections of those money market conditions and reserve numbers that would, in its best judgment, correspond with alternative sets of growth rates for the main monetary aggregates, such as M_1 , M_2 , and the bank credit proxy.
2. The Committee would choose the set of compatible growth rates for the aggregates it preferred. (In principle, the Committee's choice among alternative scenarios could equally well be based, instead, on preferences as regards the interest rate dimensions of these alternatives). The growth rates of the aggregates would continue to be specified for at least the period through the next meeting, and presumably also for a longer period of three months or more, as is currently the case.
3. As suggested in (1) above, the Committee's choice of monthly growth rates for the aggregates would have associated with it a staff projection of the corresponding monthly change in nonborrowed

and total reserves. The staff would also prepare a week-by-week projected path for nonborrowed reserves that is (a) consistent with the targeted monthly average level of nonborrowed reserves and that (b) would appear to have the best chance of keeping week-to-week fluctuations in money market conditions within reasonable bounds. This later requirement could be satisfied by taking account of the impact of known influences in week-by-week fluctuations in the demand for reserves stemming from such short-term factors as seasonal movements in required reserves and Treasury operations when projecting the week-by-week target path of nonborrowed reserves.

4. The week-by-week pattern of nonborrowed reserves developed in (3) would constitute the basic operating instructions to the Desk in implementing the Committee's policy decision. The Desk would then have the job of offsetting movements in market factors affecting nonborrowed reserves so as to meet the week-by-week nonborrowed reserve target projected by the staff as consistent with the Committee's policy decision.

5. In addition to choosing a desired growth path for the monetary aggregates, the Committee is also assumed to set limits, perhaps unchanged over long periods, perhaps redefined afresh at each meeting, to the maximum permissible week-to-week fluctuation in the daily average effective Federal funds rate. (If it chose, the Committee could also set maximum limits to the total cumulative change in the funds rate in a given direction over the period prior to its following meeting). If the Desk were to find that achievement of

the nonborrowed reserve target for any given week were to involve exceeding the permissible change in the funds rate, it would be expected to suspend temporarily its pursuit of the reserve target, seeking to return to the target path of nonborrowed reserves in subsequent weeks. The Committee could of course set additional side conditions constraining the Desk's pursuit of the week-by-week nonborrowed reserves target, such as maximum values for the level or the week-to-week change in the Treasury bill rate.

6. Although we believe that a nonborrowed reserve target would lead to closer control over the aggregates than a money market conditions target, there is still room for slippage. Therefore, the Committee is also assumed to instruct the Manager to modify the path of nonborrowed reserves in response to significant deviations of monetary aggregates from their desired path.

Before turning to a more detailed presentation of the procedure outlined above, the major advantages should be emphasized. First, the procedure suggested appears feasible from an operational point of view. To be sure, the Desk may mis-estimate operating factors, and therefore fail to hit precisely a given week's nonborrowed reserves target. However, essentially the same possibility for misses exists under a free reserve target such as has often been used in the past.

Second, a week-to-week nonborrowed reserves operating target seems likely in practice to improve control over the aggregates relative to the money market conditions approach now in use. Unlike

- 4 -

money market conditions, a non-borrowed reserves approach would not automatically accommodate shifts in the demands for deposits and bank credit. Moreover, it appears to be a safe procedure to follow if hedged with appropriate side conditions relating to maximum permissible variability in money market conditions and recognizing the availability of the discount window as a safety valve.

Third, the reserve strategy approach can be given a convincing underlying "philosophical" justification. Bank reserves are a magnitude that the central bank can control with a rather high degree of accuracy. Moreover, it is a magnitude that is traditionally thought of as the responsibility of the central bank. The Committee may, and normally will, set its reserve objectives with a view to achieving some specified behavior with respect to the monetary aggregates or, perhaps, with respect to financial market conditions. But in the last analysis, it does not really have control over these magnitudes. Public acknowledgment that the Open Market Committee was working with a reserve target on an operational basis might help make it clearer to the public what the Committee can and cannot accomplish and what it should and should not be held responsible for -- in particular, that it can not be held responsible either for short-run movements in the broader monetary aggregates or for the general behavior of interest rates.

Two cautions with regard to the proposed nonborrowed reserves operating strategy should also be noted. First, as suggested above,

the procedure is by no means a panacea for solving the difficulties of hitting given monetary or credit proxy growth rate targets with precision in the short run. The success with which a given target for, say, M_1 , can be hit by using nonborrowed reserves as a week-to-week operating target still depends heavily on the staff's ability to project correctly the relationship between reserves and the aggregate in question. The work done to date suggests that the problem will remain a difficult one. For example, in the two weeks ending July 14, both total and nonborrowed reserves were well below the levels that were thought to be consistent with the paths for other monetary aggregates adopted by the FOMC at its previous meeting. Nevertheless, M_1 in those two weeks was well above its projected path. Unanticipated changes in the deposit mix, among other things, can make for instabilities in the reserve-deposit relationship, particularly in the short run.

Second, the ability of a nonborrowed reserves operating target to improve control over the aggregates, as compared with present procedures, depends crucially on the Committee's willingness to allow sharper short-run variations in the Federal funds rate and, to a lesser extent, in other money market rates than it generally seems to have been willing to accept in the past. Indeed, if the constraints placed by the Committee on permissible maximum movements in the funds rate under a week-to-week nonborrowed reserves target were to be made sufficiently narrow, the "nonborrowed reserves" target would quickly become indistinguishable from a money market conditions target.

B. Choice of Reserve Targets

In discussing the FOMC's decision-making problem it is useful to distinguish amongst (1) the Committee's basic objectives (with respect to GNP, prices, unemployment, and the balance of payments), (2) its intermediate objectives (growth rates of the monetary aggregates, trends in the financial markets), and (3) its week-to-week operating targets. Most recently, for example, the Committee has generally sought to achieve its basic objectives by choosing growth rates in M_1 , M_2 , and the bank credit proxy as its intermediate objectives. It has sought to achieve these intermediate objectives, in turn, by directing the Desk's week-to-week decisions in terms of objectives for money market conditions (defined mainly in terms of the Federal funds rate), with general instructions to act to change money market conditions if the intermediate objectives appear to be running off track. (In fact, however, the extent of week-to-week changes in money market conditions have generally been quite modest.)

With respect to the reserve flow targets the staff has been asked to consider in this report, our view is that total reserves could have a role to play as an intermediate target, but that only nonborrowed reserves can feasibly be thought of as a week-to-week operating target. The Desk can "hit" a nonborrowed reserve target on a week-to-week basis to the extent that it can correctly predict and offset the influence of essentially exogenous market factors affecting reserves, such as float.

The situation is quite different for total reserves. In any given week, required reserves are determined -- absolutely determined under lagged reserve accounting and more or less determined, as a result of lags in bank responses to changes in reserve availability, even in the absence of such accounting. With excess reserves at very low levels, and with the demand for such reserves highly inelastic in the short run with respect to interest rates, total reserves are essentially fixed within a given statement week. Within the week, therefore, the volume of open market operations determines nonborrowed reserves and the fraction of total reserves that are borrowed, but these operations have relatively little influence on the size of total reserves, which are pretty much determined by banks' required reserves for a given statement week. In other words, under current conditions total reserves are essentially determined by past deposit behavior. For this reason, the present report confines its attention to nonborrowed reserves in discussing week-to-week targets for the Desk.

As noted above, however, a case can be made for total reserves as an intermediate target. First, in view of instabilities in the deposit mix, total reserves might prove easier to hit accurately on a monthly basis than particular deposit aggregates such as M_1 . Second, since the significance of short run changes in the relationship among M_1 , M_2 , and bank credit may not be clear, the

Committee may prefer to decide the volume of reserves it wants to provide, allowing the banks and the public to decide, at least in the short run, on the relative size of holdings of demand deposits, time deposits, and other bank liabilities. In this case, a week-by-week path in nonborrowed reserves would be projected that would be consistent with the desired path of total reserves.

sentence inserted

Nevertheless, the staff is inclined to feel that for the present at least, the Committee should continue to concentrate on M_1 , M_2 , and the proxy for its intermediate targets rather than turn to total reserves for this purpose. First, it is not really clear that a monthly growth rate target for total reserves could in fact be hit with substantially greater accuracy than similar targets for M_1 , M_2 , and the bank credit proxy -- although somewhat greater accuracy could be expected. Second, the Committee probably should make a conscious decision as to whether most emphasis should be put on M_1 , M_2 , or bank credit at any given time since these aggregates are thought by many to bear a closer relationship than reserve aggregates to economic activity and financial market conditions.

← previous last sentence deleted

On balance, the staff feels that since nonborrowed rather than total reserves must be regarded as the relevant operating variable for week-to-week purposes, and if the Committee agrees that M_1 , M_2 , and the proxy are more appropriate as intermediate targets than are total reserves, then total reserves really have little role to play in the decision-making process. *previous last sentence deleted*

previous page 9 deleted

C. Blue Book Projections and the Committee Decision-Making Process under a Nonborrowed Reserves Operating Strategy

Since all the deposit, bank credit, reserve, and money market interest rate variables are structurally related, a projection of any one magnitude logically implies a related projection for all the others. The Blue Book currently presents complete alternative sets of projections for these various indicators associated with alternative assumed values of some principal monetary aggregate, most particularly M_1 in recent practice. Thus, we have alternative sets of projections for monthly average levels (and growth rates where appropriate) for the principal intermediate targets, for average money market conditions, and for reserves. (Currently only total reserve projections are provided, but the logically-implicit projections for nonborrowed reserves are easily deduced from the average level of borrowings expected under given money market conditions.) The process of producing these sets of projections is logically independent of the intermediate targets chosen by the Committee and is also logically independent of the week-to-week operating targets on which the Manager is instructed to focus. Thus, moving from an essentially money market conditions operating approach to a nonborrowed reserves operating approach would not necessarily imply a change -- and not necessarily an improvement -- in the projections process, regardless of the particular combination of econometric and judgmental techniques used therein. As explained later (Section H),

however, we nevertheless believe that ability to control the aggregates would be improved -- although the projected relationship with interest rates would be no less uncertain than it is at present.

Under a reserves target, the Committee would choose as is presently the case, from among the alternative available scenarios. For example, Alternative A might involve a 5 percent projection for M_1 , an 8 percent projection for M_2 , a 5 percent three-month bill rate, and so forth. Alternative B's implications for these variables might be 7 percent, 10 percent, and 4.5 percent, respectively.

It should also be noted that Alternative A and B will have associated with them compatible average values for the Federal funds rate over the period between meetings and compatible monthly average levels (and changes) in nonborrowed reserves. If the projections always turned out to be exactly correct, it would obviously make no difference whether the Manager were told to operate with a Federal funds rate target or with a nonborrowed reserves target. The crunch comes, however, when the projected average Funds rate turns out to be incompatible with the associated growth rate projection for nonborrowed reserves. In this situation, the Manager is, under current conditions, expected to hold to the funds rate target range, or perhaps to move somewhat above or below it, and to let the unborrowed reserves go as they will. Under the procedure discussed here, however, precisely the opposite would be the case. The Manager would not be making a decision primarily about the Fed funds rate, with the result that the range of variation in this rate might well be wider than in the past.

- 11 -

Of course under either approach, the intermediate target might prove to be out of line with the operating target. The fact that there exists an (unknown) structure at any one time relating the entire set of reserve, money market and aggregate variables implies only that a logically consistent set of projections (as embodied, for example, in an econometric model of these markets) determines a projection for all the remaining variables once an open market operating target is fixed and the other relevant "exogenous" influences have been estimated. The resulting projections can fall apart in any number of ways. As noted, the Federal funds rate assumed to be consistent with the nonborrowed reserves target may not prove in fact to be realized. Similarly, the relationship between nonborrowed reserves and the funds rate may be correctly estimated, but the associated projection of M_1 may be in error. Or, to take another possibility, the successful achievement of a nonborrowed reserves target may be accompanied by the expected behavior of the funds rate and of M_1 , but the credit proxy may deviate from its projected path.

In practice, at least some slippage will occur among all these various interrelationships. This means, as discussed further in a later section, that the Committee may want to allow the Desk to move the operating target from its targeted path in response to a deviation in M_1 , for example, from its expected path. Moreover, if the Committee has multiple intermediate targets, say an X percent rate of growth for M_1 and a Y percent rate of growth for the credit proxy,

it must decide what action, if any, the Manager should take with respect to the operating target when, for example, M_1 is moving above target while the proxy moves below its targeted path. The point to be emphasized here is that these problems can and almost certainly will occur whatever the week-by-week operating target. Experience has shown them to be quite real under a money market conditions operating target and it would, no doubt, teach the same lesson under a nonborrowed reserves target.

D. Determining the Week-to-Week Path of Nonborrowed Reserves

Given the monthly average values of nonborrowed reserves implicit in the Committee's policy decision about intermediate objectives, there are any number of week-by-week time paths for nonborrowed reserves arithmetically compatible with the given monthly average value. The staff would, under the procedure we propose, choose among these compatible weekly time paths the path that seems likely to keep money market fluctuations within reasonable bounds. While it is impossible to specify precisely how this path should be determined -- and techniques would undoubtedly improve with experience -- the general approach could well be somewhat as follows.

First, the staff would estimate purely seasonal week-by-week changes in required reserves, as well as week-by-week changes in required reserves associated with projected (nonseasonal) Treasury operations.^{1/}

^{1/} There are many ways of making such estimates, and the technology of the problem is under more or less continuous investigation at the Board staff, at the New York Bank, and elsewhere in the System.

- 13 -

Second, the staff would compute the implied weekly average levels of nonborrowed reserves by adding the weekly changes computed in the first step to the estimated level of nonborrowed reserves in the final week of the previous month. An implied average monthly level for the new month would also be computed.

Third, the staff would compute the difference between the average monthly level arrived at in Step 2 and the target monthly average level implied in the Committee's policy decision.

Fourth, the staff would compute from the information obtained in Step 3 that constant weekly increment in nonborrowed reserves which would, when added to the weekly levels computed in Step 2, result in an average monthly level of nonborrowed reserves equal to the target monthly level. These weekly levels would then constitute the weekly nonborrowed reserve target to be used by the Account Manager.

The outlined above procedure would provide for accommodation of seasonal and other projected short-term fluctuations in required reserves to the extent compatible with achieving the monthly target for nonborrowed reserves. Putting it somewhat differently, the procedure would minimize week-to-week fluctuations in free reserves stemming from foreseeable seasonal and other short-run changes in required reserves, subject to the constraint imposed by the target monthly average level of nonborrowed reserves. A numerical example illustrating the computations required by the procedure is

presented in Example 1 below.

Example 1

<u>Statement Week</u>	<u>Projected Seasonal Changes in Required Reserves</u>	<u>Projected Change in Required Reserves Due to Treasury Operations</u>	<u>Total Projected Short-Term Changes in Demands for Reserves</u>
June 30			
July 7	+100	-40	+60
14	- 20	+10	-10
21	+ 70	+20	+90
28	-110	+60	-50

<u>Statement Week</u>	<u>Starting Level of Nonborrowed Reserves (Week of June 30)</u> (1)	<u>Level Assuming Short-term Changes in Required Reserves are Accommodated</u> (2)	<u>Change</u> (3)	<u>Same as (2) Plus Constant Weekly Increment Needed to Bring Average Monthly Level up to Target (+16 per week)</u> (4)
	40,600			
July 7		40,660	+60	40,676
14		40,650	-10	40,682
21		40,740	+90	40,788
28		40,690	-50	40,754

Monthly Average Target Level of Nonborrowed Reserves (Not seasonally adjusted) 40,725

E. Responding to Misses in Nonborrowed Reserves

The Desk's ability to achieve the targeted levels of non-borrowed reserves week-by-week depends on its ability to predict correctly, and then to offset, movements in operating factors affecting nonborrowed reserves. Projections of these market factors made at the beginning of the week may be subject to rather substantial margins of error. As the week progresses, the size of these errors diminishes. At the same time, however, the absolute dollar volume of open market operations needed to compensate for a given error in predicting operating factors since all data is computed on a daily average basis. Thus, a given dollar injection of reserves made toward the end of the week is "in" for a fewer number of days and has a correspondingly smaller influence on the daily average figure for the week than would the same injection at an earlier date.

We do not know at this point just how troublesome errors in projecting operating factors would be in using a week-to-week non-borrowed reserves target, although studies are currently in process to improve ways of quantifying and characterizing the size of these errors. No doubt these errors would be troublesome, but not fatally so. It is comforting, for example, to note that with required reserves for a particular week given in advance, errors owing to miscalculations of operating factors would be of exactly the same size for a free reserves target as for a nonborrowed reserves target. Free reserves were, of course, used as a week-to-week operating target with tolerable success on numerous occasions in the past.

- 16 -

One complicating factor in the case of a nonborrowed reserve target, however, is the fact that the Federal funds rate would probably be less useful to the Desk as a signal of misbehaving operating factors than it has apparently proved to be in situations where the Desk has sought to hold to essentially steady money market conditions. The Desk might, for example, have learned through experience that the \$250 million target level of free reserves it was working with tended to be associated with a 4 percent funds rate. If projected free reserves of \$250 prove to be accompanied by a 6 percent funds rate, the Desk would have good reason to suspect that the supply of reserves from market factors was being over-estimated and it could then act accordingly. It would be harder to use the funds rate as a source of information in this way in a situation where both this rate and free reserves were allowed to fluctuate fairly substantially from week to week. Nevertheless, the funds rate could still convey some information. Given required reserves, the non-borrowed reserves target would imply an expected level of free reserves. To the extent that the Desk had some feel for the probable relationship between free reserves and the funds rate over a range, departure of the funds rate from the value expected given the free reserves number would signal a corresponding departure of actual reserves from the expected level of reserves.

In the event that nonborrowed reserves do get off the track in any given week owing to errors in forecasting and offsetting

- 17 -

operating factors, there are two general types of response that could be made. The first would be to attempt to return in the following week to the level of nonborrowed reserves originally targeted for that week. Such an approach would mean that the Desk would tend to end up the month "on track" so far as the level of nonborrowed reserves in the final week were concerned. At the same time, however, the original "miss" would not be compensated for in the levels aimed at in subsequent weeks. For this reason, the monthly average level of nonborrowed reserves would be off target. Assuming subsequent weeks were "on track", this miss in the monthly average would equal roughly one-fourth the size of the miss occurring in the week the Desk was not on track.

An alternative approach would be to "overshoot" the originally targeted levels of nonborrowed reserves in the weeks subsequent to the "miss" in such a way as to leave the monthly average level on track. This approach, however, might involve putting the level of nonborrowed reserves off track in the final week of the month.

It is not really clear which of these two approaches is to be preferred -- or even that it makes much difference so far as controlling the broader aggregates is concerned. It should be noted, however, that aiming at a monthly average level of nonborrowed reserves is at least consistent with attempting to achieve the reserve number originally projected as compatible with the desired average level of the money supply (or other intermediate target). This consideration suggests the desirability of some attempt to overshoot

- 18 -

or undershoot in the remaining weeks of the month to make up for misses on nonborrowed reserves in previous weeks of that month. The danger of this type of compensation, to be sure, is that undue instability in the funds rate might result in some circumstances. This danger could be taken as a constraint on the extent to which such compensating operations should actually be carried out. At the same time, without a continuing effort to move back on the monthly path, the Desk could risk being so far off on average by the end of the month that the longer-run growth target of the Committee would be in jeopardy. Thus with a large error on the monthly average target, even larger funds rate fluctuations might ultimately be required to move back toward desired levels for future months, and this might force the Committee to accept a higher (or lower) aggregate target at its next meeting than it really wants.

Whether compensation in weeks subsequent to a miss would in fact tend to accentuate or dampen fluctuations in the Federal funds rate would depend in part on whether the original miss was itself in a direction that tended to accentuate or dampen such fluctuations.^{1/} The precise impact of reserve misses on the path of the funds rate

^{1/} For example, if the targeted weekly path of nonborrowed reserves already implies a generally downward trend in the funds rate, an overage in nonborrowed reserves might accentuate this trend beyond acceptable limits. In this case, some reserve short-falls in the following week or weeks might be deemed desirable.

would also be influenced by the existing system of "carry-ins" and "carry-outs" of excess reserves. This system tends to spread the upward pressures on the funds rate of a shortfall, for example, in nonborrowed reserves into the week following the shortfall. Perhaps the best solution, initially at least, would be to allow the Desk some leeway to make up shortfalls or overages in the level of nonborrowed reserves in the levels the Desk aims at in subsequent weeks if this is consistent with the presumably relatively wide (as compared with current procedures) range of money market fluctuations viewed as tolerable by the Committee.

F. Responding to Misses in the Intermediate Target

Even if the Desk successfully holds nonborrowed reserves in each week to the level indicated in the target path, an intermediate target variable such as M_1 , may, as noted earlier, nevertheless fail to respond as projected in the Blue Book. Most Directives issued over the past year or so have provided for such contingencies by instructing the Manager to shade the money market conditions operating target (basically the Federal funds rate) from its originally-specified Blue Book value in the direction designed to offset the drift in the intermediate target.

The same general approach could easily be adopted in a nonborrowed reserves operating strategy. Thus, for example, if an intermediate target such as M_1 were growing more slowly than expected, the Manager could be given leeway to raise the weekly nonborrowed

serve levels from the originally projected target levels. The staff could provide estimates of the increase in nonborrowed reserves most likely to get M1 back on track. On the other hand, the Committee might prefer to wait until its next meeting to assess the significance of the unexpected behavior of the intermediate target rather than to have the Manager depart from the original nonborrowed reserve target path between meetings.

*new
estimate
inserted*

G. The Problem of Optimal Control Periods

The two previous sections have dealt with the problem of responding to misses in the nonborrowed reserves operating target and of responding to a failure of the intermediate target (such as M_1) to behave as expected given successful achievement of the targeted path for nonborrowed reserves. As our discussion implies, we consider it reasonable to assume that the Committee will want to adopt some procedure for returning to the target path at some point. As suggested, however, the return to targeted behavior, whether as regards the operating target or the intermediate target, may involve costs in terms of wider fluctuations in money market conditions. This raises a question of the appropriate trade-off between the speed with which the targeted path is re-achieved and the size of the money market fluctuations that may be involved.

For example, suppose the Manager finds that as of the second week of the month, nonborrowed reserves are on target, but the money supply is running well above target. How far should he go in lowering his nonborrowed reserve target for the remaining weeks of the month in view of the probable upward pressures on the funds rate? Suppose,

further, that despite the Manager's best efforts, the money supply average for the month nevertheless winds up at the end of the period well above the level the Committee desired? Such a situation would face the Committee with the difficult task of deciding at its next meeting how far it wished to go over the following month in forcing the money supply back down to the Committee's longer-run intentions, again in view of the associated potential upward pressure on the funds rate.

In principle there exists a control strategy that would help to determine the optimal time period for returning to targeted paths once misses have occurred. The length of this period, would depend, at least in large part, both on estimates of the amount of economic disturbance attributable to given swings in the funds rate and of how long aggregates such as M_1 can deviate from targeted behavior before these deviations begin to have significantly undesirable impacts on the economy. On the basis of this information the Committee would choose its desired course of action.

A few comments may clarify some of the issues. On the one hand, it seems difficult to believe that precise control over any particular intermediate target on a month-by-month basis is necessary for good policy implementation. On the other hand, it seems equally doubtful that substantial deviations from desired values over periods of several months, such as have occurred at times with respect to the monetary aggregates, is acceptable either.

first part of sentence changed

words inserted

replace previous sentence

sentence changed

If reasonably close control over the growth rate of, for example, the credit proxy over a period as long as six months were considered acceptable, there would probably be little reason to depart from the present use of money market conditions as an operating target. Since a speedy or precise return to targeted behavior for the proxy would not be necessary in this case, a money market conditions operating strategy could, in all likelihood, be utilized to achieve such broad gauge objectives, at least given reasonable flexibility in adjusting the money market target in response to unfolding developments. Indeed, if the Committee were willing to make rather sharp month-to-month adjustments in its money market target, and were to allow the Manager wide latitude to vary the funds rate in response to deviations of the intermediate objective from its targeted path, reasonably good control over the monetary aggregates for periods as short as a quarter might be possible.

On balance, it thus appears that the problem of an optimal control period -- the problem of how fast the Manager and the Committee should seek to return to given targets following misses -- converges back to the familiar problem of how important it is to have reasonably close control over the monetary aggregates over what period of time and what price is acceptable in terms of money market stability. The next two sections in this report discuss the potential of a nonborrowed reserve target for improving control of the aggregates and the impact of such a strategy on fluctuations in money market conditions.

H. Impact on Ability to Control the Monetary Aggregates

There is no purely theoretical reason why the use of a week-to-week nonborrowed reserves target would provide any more precise control over aggregates such as M_1 than would any other weekly operating target, such as money market conditions. As noted earlier in connection with the Blue Book projections, all reserve, money market and monetary aggregate variables, are structurally inter-related. Corresponding to an X percent growth in M_1 there is a Y percent growth in nonborrowed reserves and a Z percent average Federal funds rate. If the projected relationships are correct, the Manager could achieve the same M_1 by aiming at the Y percent nonborrowed reserves or at the Z percent Federal funds rate. Since the projections will not, in general, turn out to be correct, however, the odds are great that neither the Y percent nonborrowed reserves nor the Z percent funds rate will in fact produce the X percent M_1 . Thus whatever the operating target, the Committee will probably find it necessary to regear this target at each meeting and, if he is given leeway to do so, the Manager will find it necessary to adjust his target, whatever it is, between meetings. Whatever the operating target, the size of the adjustments that should be made between meetings and from meeting to meeting will be highly uncertain.

Nevertheless, despite these inevitable problems, there remain real grounds to hope that adoption of a nonborrowed reserves operating target, would, in practice, improve the System's ability to control the aggregates. The main reason for this hope lies in the

belief that a nonborrowed reserve target would greatly reduce the tendency inherent in a money market conditions target to accommodate unforeseen shifts in the demand for the aggregates. We believe that such demand shifts are in fact responsible for a very large part of the observed tendency of the aggregates to deviate from their projected paths. If, under a money market conditions strategy, the Manager is not allowed to shade the Federal funds rate in response to shifts in the demand for the aggregate the Committee is seeking to control, or even if he does have such leeway but is very reluctant to move quickly or substantially for any number of good reasons, these shifts in demand will still tend to be more or less completely accommodated during the intervals between FOMC meetings. The resulting damage to the successful pursuit of the intermediate target is apparent.

Under a nonborrowed reserves target, by contrast, reluctance to shade the target between meetings would lead to no such tendency to accommodate shifts in demand. Assume that, for example, the demand for demand deposits proves stronger than foreseen in the Blue Book projections. If the Manager adheres to the nonborrowed reserve target, the expansion on demand deposits will tend to raise borrowings, to tighten the Federal funds market, and generally to set in motion forces that will tend to limit the extent of the expansion. Thus deviations from the target path will tend to be reduced. This same self-correcting mechanism will also tend to reduce the ex-post errors in the projected relationship between nonborrowed

reserves and deposits.

A closely related reason for expecting improved control over the aggregates under a nonborrowed reserves operating target is simply that freed completely from any commitment to any particular Federal funds rate, the Committee may find it more acceptable to set whatever values for the operating target (nonborrowed reserves) seems most likely to achieve the Committee's desires with respect to the aggregates. Thus a nonborrowed reserves target, which reduces the temptation for the Desk to accommodate shifts in demands for the aggregates between meetings, may well have a similar effect on the Committee itself. Such a target could make it easier for the Committee to give the Manager instructions that will in fact maximize the odds of achieving the aggregate growth rates the Committee actually desires.

It should be noted that if the Committee's intermediate objectives are focused on a particular aggregate among the group usually considered (M_1 , M_2 , and the bank credit proxy), and if the Committee wishes to give the Desk leeway to adjust its nonborrowed reserves operating target between meetings, the Desk should in fact reset this operating target when needed to allow for shifts in the deposit mix.

An example will make this point clear. Suppose the Committee is primarily interested in M_1 . Now the path of nonborrowed reserves projected as consistent with the M_1 target must also allow for the

- 26 -

projected behavior of items such as Treasury deposits and time deposits that are not included in M_1 . However, if either Treasury deposits or time deposits expand more rapidly, for example, than expected, the old targeted level of nonborrowed reserves will no longer be sufficient to support the targeted growth rate for M_1 . Thus the manager should, if the Committee wishes to give him this option, adjust the nonborrowed reserve path upward by the amount of unforeseen rise in required reserves against time and Treasury deposits.

Two further comments should be made on this problem. First, the existence of maximum permissible variations in the Funds rate would tend to cause the Manager automatically to adjust in the appropriate direction. In the example cited above, a surge in Treasury deposits might tend to force the funds rate up faster than the proviso allowed for, in turn forcing the Manager to supply more reserves than was called for by the original nonborrowed reserves target. Second, while the problem of unforeseen shifts in the deposit mix may often introduce major distortions over relatively short periods, they are not likely to be too troublesome over longer periods of several weeks. Deviations in Treasury deposits from projections tend to be essentially random and short-lived. Except during periods of sharp changes in market rates, and especially when these rates are fluctuating in the vicinity of Q ceilings, movements in time deposits can be projected with a relatively high degree of accuracy. Since required

*typed
corrected*

- 27 -

reserves against time deposits are relatively low, the reserve effects of deviations of time deposits from their projected values should prove to be relatively modest in size. Finally, whether deposit shifts between country and city banks can be a problem in the short runs, their effects tend to average out over a period of weeks.

Taking all the various considerations into account, the staff is hopeful that a nonborrowed reserves operating target would improve control over the aggregates. Only experience, however, could establish the extent of such improvement.

I. Effects on Money Market Stability

The effects of a week-by-week nonborrowed reserves operating target on the variance of money market interest rates can be divided into two groups: (1) the effects on the week-to-week variance of the Federal funds rate and of other short-term rates; and (2) the effects on the variance of short-term rates over periods of time longer than a week but less than cyclical in length, for example, the span from October 1970 to May 1971. It seems likely that adoption of a nonborrowed reserves strategy would increase both types of short-term variance in the Federal funds rate and in other short-term rates to some extent. How large the increases would be, however, would depend entirely on precisely how the Committee chose to implement the nonborrowed reserve approach.

As long as the Desk adheres to a fixed target path for weekly levels of nonborrowed reserves, short-run fluctuations in the demands for deposits will be reflected in fluctuations in free reserves and the funds rate to the extent that these demand fluctuations in free reserves and the funds rate have not been allowed for in the weekly nonborrowed reserves targets themselves. As already indicated, the target path for nonborrowed reserves would be drawn up to allow for seasonal changes and for other predictable sources of short-term shifts in the demand for reserves. Nevertheless, it is well-known that weekly seasonals are difficult to compute, and there are, in any case, large, essentially random and unpredictable week-to-week shifts in the demand for funds. We cannot say with confidence how

- 29 -

large an impact these shifts would have on week-to-week movements in the Federal funds rate. Some research that has been done by the staff bearing on this point, tends to be rather encouraging but the matter is far from settled.

In any case, if the Committee were in fact to adopt nonborrowed reserves as a weekly operating target, it might well wish to ensure against unduly large week-to-week movements in the Funds rate, at least until some experience was gained with the new approach, by placing constraints on these fluctuations. For example, the Committee might instruct the Desk to follow the weekly nonborrowed reserves path judged consistent with the Committee's basic policy choice, subject to the condition that the weekly average effective Federal funds rate not change by more than 75 basis points per week. Perhaps the Committee might want to add a further restriction limiting the size of the cumulative change in the Funds rate in any one direction over the period between meetings.

The staff wishes to emphasize its view that the market could tolerate larger week-to-week fluctuations in the Federal funds rate than it has normally experienced in the past. If constraints of the sort just mentioned were to be made too confining, they would seriously undermine the intent of a nonborrowed reserves strategy, undermine its potential for improving control over the aggregates, and essentially restore the status quo ante so far as open market tactics are concerned.

With respect to somewhat longer periods lasting for several weeks and perhaps several months, the effect of the nonborrowed reserves

approach on interest rate variance would again depend crucially on the Committee's willingness to tolerate greater variance in rates. In recent months, for example, the rate of growth of M_1 and M_2 have consistently tended to exceed the rate projected at given interest rates. If the Committee wished to adhere to a moderate monetary growth target in such circumstances, it would simply have to choose policy alternatives that implied, meeting after meeting, progressively, and perhaps fairly sharply higher short-term interest rates. This fact of life would be neither more nor less true under a nonborrowed reserves operating target than it is under a Federal funds rate target.

J. Some Miscellaneous Problems

1. Even Keel: Changes in the Federal funds rate are potentially disturbing during periods of Treasury financing for two reasons: First, they change expectations about the future levels of the funds rate and thereby influence rates on securities of longer maturity, including Treasury issues currently being priced or offered. Second, they influence the holding costs of the distributors (underwriters) of new Treasury issues. If fairly sizable fluctuations in the funds rate were to become commonplace, however, the effects of short-term movements in this rate on expectations about the future level of rates, and therefore on current rates on longer-dated instruments, would be considerably less important than they are at present. Put differently, changes in the funds rate would be less freighted with significance as to the future of monetary "policy" than is presently the case and would therefore be

less disturbing to market expectations. Thus the first objection to movements in the funds rate during periods of Treasury financing would be of reduced importance. The second problem noted above, the effects on holding costs, however, would remain. One approach to meeting the needs of "even keel" under a nonborrowed reserves approach would be to narrow somewhat the proviso with respect to maximum permissible movements in the Federal funds rate mentioned in the previous section, recognizing that if too narrow a band is placed on the funds rate the System will be more or less completely accommodative of Treasury financing needs and will be pursuing an "even keel" policy no different from the past.

2. Implementation of the new discount procedures. Implementation of the proposed changes with respect to member bank borrowing would no doubt increase the average level of borrowings for any constellation of discount and money market rates. At the same time, the new procedures would probably increase the interest rate elasticity of the demand for borrowed reserves since the "profit motive" would become a more overt factor in determining the size of borrowings. These developments would change the structural parameters of the markets for reserves, deposits and bank credit. For this reason, they would introduce, for a time, additional complications for projecting compatible constellations of reserves, deposits, bank credit, and short-term interest rates of the sort needed in the Blue Book. Because of the greater interest-elasticity of the demand for borrowings, given changes in nonborrowed reserves might have smaller effects on the Federal funds rate. At the same time,

the reaction of deposits and bank credit to changes in reserve availability might be slower to develop. These probable effects would appear to be independent of the System's choice of week-by-week open market targets, however. There is no apparent reason why special problems should be created in the case of a nonborrowed reserves operating strategy.

3. Nonborrowed reserves targets and the proposed liberalization of the reserve carryover provisions. It has recently been suggested that the right to carry over reserve deficiencies and surpluses of up to 2 percent of required reserves be increased to 4 percent, and that the right to carry forward excess reserves (up to the 4 percent limit) be extended in time beyond the current one week limit. These proposed liberalizing measures would accentuate the effects of the existing carryover privilege noted earlier: namely, they tend to spread over time the effects of reserve short-falls or surpluses on the Federal funds rate, reducing the impact on the week in which the short-fall or surplus occurs; at the same time, however, they slow to some extent at least, the response of the monetary aggregates to changes in the availability of reserves.

Probably the greatest source of concern in introducing a non-borrowed reserves target would be that a predetermined week-by-week target path for these reserves would in the face of hard-to-predict, short-run surges in the demand for reserves, produce unduly sharp movements in the funds rate. Thus, any technique that promises to

mitigate these effects, such as the proposed carryover liberalization, would be welcome. To be sure, the other side of the coin is the tendency of the carryover provisions to slow the response of the banks to changes in reserve availability. The likely size of this slowing effect, however, does not seem large enough to outweigh the benefits of the increased cushioning of money market rates implied by the proposed changes in the carryover privilege.

4. Lagged reserve accounting. While a carry-over surplus or deficiency in reserves tends to moderate money market fluctuations, it appears that lagged reserve accounting accentuates such fluctuations to a degree. They tend to have this effect because deposit drains or accruals are not accompanied by a corresponding proportionate decrease or increase in required reserves. Such movements in required reserves would of course cushion a fraction of the accompanying change in reserve position. Under a nonborrowed reserve target, these changes in reserve availability would tend to produce interest rate fluctuations. Under a money market target, large deposit (or reserve) gains or losses tend to be buffered by defensive open market operations keyed to maintaining a given Federal funds rate. It should be noted, however, the adverse effects on money market stability of lagged reserve accounting would be mitigated under a nonborrowed reserve target by the availability of reserves at the discount window.

It is unclear whether lagged reserve accounting has any significant delaying effect on the response of the banking system to monetary policy. Whether or not the lagged reserve accounting methods

currently in use delay the effects of monetary policy, they complicate operations by introducing an additional degree of money market instability and by almost completely divorcing nonborrowed from total reserves in the short run. While, to be sure, there is no reason to believe that lagged reserve accounting poses a serious impediment to the use of a reserve aggregate operating target, the possible operational problems will have to be watched closely.

5. Possible public announcement of the proposed new procedures.

If the Committee were to adopt the nonborrowed reserves operating strategy outlined here, it might well wish to consider some sort of public announcement connected with the change. One main purpose of such an announcement would be to prepare the markets for greater short-term fluctuations in the funds rate. This would be helpful because it would minimize the expectational effects of such fluctuations and thereby reduce the transmission of these fluctuations to other interest rates. A second possible function of such an announcement would be to get the public to focus on reserves as a magnitude the central bank can and should control. At the same time, the announcement might help to bring about greater public appreciation of the limitations existing on the System's ability to take precise responsibility for short-term control over the monetary aggregates.