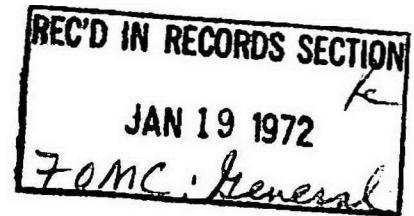




BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551



January 19, 1972

CONFIDENTIAL (FR)

TO: Federal Open Market Committee

FROM: Mr. Broida

Enclosed is a copy of a memorandum to the Committee from Messrs. Maisel, Morris, and Swan, dated January 17, 1972, and entitled "Third Report of the Committee on the Directive." It is contemplated that this memorandum will be discussed at the next meeting of the Committee.

A handwritten signature in cursive that reads "Arthur L. Broida".

Arthur L. Broida,
Deputy Secretary,
Federal Open Market Committee.

Enclosure



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January 17, 1972

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TO: The Federal Open Market Committee

FROM: Messrs. Maisel, Morris, and Swan

THIRD REPORT OF THE COMMITTEE ON THE DIRECTIVE

The Committee on the Directive believes that the period since its prior report (August 10, 1971) demonstrates the advantages the FOMC would gain by using reserves as its primary operating instruction to the Manager. An agreed-upon amount of reserves should be furnished steadily week-by-week subject to a proviso that the Federal funds rate not move out of a pre-selected band.

While the rate at which reserves are to be furnished should be based on a three- to four-month desired movement in monetary variables, the rate should be subject to revision at each meeting depending upon the FOMC's judgment as to what shifts are occurring in the demand and supply for the monetary aggregates; what changes are occurring in the economy; and what movements of monetary variables appear desirable given developments in the economy and any apparent shifting in the relationships among the supply of reserves, the movements in the monetary variables, and growth in output, employment, and prices.

Background

In our previous reports we indicated that the directive and related documents serve several important purposes:

(1) They enable the staff to present an estimate of where the economy is headed with existing monetary policy. Also, if the economy appears off the desired course, the staff can estimate which revisions in monetary policy may bring the economy closer to the FOMC's goals. Such presentations become particularly valuable in assisting the FOMC to look over a longer time horizon in making its decisions.

(2) They enable the FOMC to quantify monetary policy decisions by selecting for one or more calendar quarters ahead the movements and levels in monetary variables needed if the desired policy is to be achieved.

(3) They make it possible for the FOMC to instruct the Manager explicitly concerning the Desk operations it believes to be necessary to achieve the selected monetary goals. When between FOMC meetings the monetary variables appear to differ from their desired paths, the directive should also provide additional instructions as to when, and to what degree, the Manager should vary operations.

Despite the progress that the FOMC has made in making the directive more explicit, it is clear that there is room for improvement both in the directive itself as well as in the supporting documents. The December FOMC meeting dramatized some of the existing problems. The FOMC found it difficult to relate the analysis and projections in the Blue Book to the monetary policy that it eventually decided to adopt. In

particular, changes in Desk operations needed to achieve desired movements in the monetary variables were unclear.

In addition, with the existing form of both the directive and the staff analysis, much of the debate over desirable movements in monetary variables centered on projections for only the next month or two. Unfortunately, these short-term projections are subject to substantial error, due in large part to the "noise" inherent in weekly and monthly financial data. Furthermore, the great emphasis placed on this short-term analysis clouded the more basic and important issues concerning intermediate goals for the monetary variables over a longer horizon such as three or four months. As a result, when the FOMC decided upon a monetary policy, it had no effective way of selecting the operating procedures most compatible with obtaining these goals.

Recommendations

The Committee on the Directive believes that three major improvements can and should be made in the directive and its supporting documents.

Most importantly, the Committee on the Directive recommends that the directive contain more explicit operating instructions. The FOMC should issue operating instructions to the Manager to furnish nonborrowed reserves (adjusted for movements in reserves required for Government and inter-bank deposits) to the market steadily. The rate at which reserves are to be furnished should be selected by the FOMC based on what it believes consistent with inducing desired movements in the monetary variables. The rate should be maintained provided the average Federal funds rate for

any week does not vary by more than 100 basis points from a pre-selected expected average in the period between meetings. In other words, the total maximum change in the Federal funds rate could be the amount of change expected from current levels plus or minus 100 basis points. If the Federal funds rate tends to move outside this range, the rate at which nonborrowed reserves are furnished should be changed sufficiently to bring the funds rate back into its allowable range.^{1/}

Secondly, in order to enable the FOMC to arrive at better targets for monetary policy over the next three to six months, the staff should give the Committee a more complete picture of its views on recent and potential changes in the demand for and supply of the monetary variables. This analysis should include data on how these changes in the basic monetary supply and demand are expected to affect spending and therefore how the FOMC should influence the monetary variables in order to achieve the economy's goals.

For example, the demand for money depends upon aggregate income, other monetary transactions, the desire for liquidity, and interest rates. When demand is shifting, the FOMC should decide whether or not to alter the quantity of money it is willing to see created. The question as to the degree to which movements in the demand for money should be met will depend upon the Committee's views of what is happening to the economy and of what monetary policy will best aid in achieving national goals. The

^{1/} If during the interval between meetings, selected intermediate monetary variables give strong evidence that they are not tracking their desired path, consideration should be given to calling an interim meeting of the FOMC.

FOMC should not accept any monetary path as predestined. It should be willing to establish paths for the monetary aggregates in accordance with its best judgment as to what is causing alterations in demand. It should alter these paths in accordance with its judgment as to how monetary demand and the needs of the economy are shifting.

Similarly, because the FOMC has no direct means of determining the quantity of money likely to be supplied by the banking system, it needs to receive a better picture of the money "supply" function from the staff. The staff presentations should include an analysis of how and why the relationship between bank reserves or the Federal funds rate and the quantity of money supplied by the banking system is changing and how it is expected to vary.

Armed with this analysis of the demand and supply relationships, the FOMC would be in a much better position to determine appropriate paths for the monetary aggregates. In particular, it could determine whether or not previously selected paths for the aggregates were still desirable in the light of performance of the economy and any changes that had occurred in the demand and supply of the monetary aggregates. Furthermore, if an aggregate such as the money stock had strayed off course, the FOMC could determine the desirability and speed of returning to the previously selected path.

Finally, the staff should present a more complete analysis of the operations consistent with a given path for the monetary variables. The staff does present sets of money market conditions which it believes

would keep the monetary variables on selected paths. However, for the FOMC to function well, it requires more knowledge of what lags and elasticities the staff uses for these estimates. For example, when the FOMC instructs the Manager to lower the Federal funds rate by 1/2 per cent, over what period should it expect the aggregates to react? How great are the expected movements in each of the next three or four months? What other forces are expected to be moving the monetary variables in this period? What are their expected magnitudes? How can the actual movements in the past two months be reconciled with the previous month's staff statements?

Factors in the Operating Choice

In determining its operating instructions, it is important for the FOMC to distinguish between the decisions to focus attention on the monetary aggregates as a means of improving the FOMC's control over the economy and the decision concerning the best way to control the aggregates themselves. As we indicated in our first report, the Committee on the Directive believes that the FOMC can improve its ability to accomplish its basic policy objectives by placing emphasis on selecting desired movements in the monetary aggregates as intermediate targets for monetary policy. However, we want to stress the fact that the choice of operating directives, instructions, and variables is independent of the choice of intermediate targets for monetary policy. The FOMC or its individual members may (contrary to our views) choose interest rates, other monetary aggregates, the tone or feel of the market as the intermediate target,

or it may fail to agree on what monetary policy is or is attempting to do. No matter. It still logically can (and we believe should) operate between meetings through directives based on reserves.

Most Committee members would probably agree that no matter which variable he is using to measure policy, the System has had difficulties in projecting and controlling movements in that variable. We believe this results from the system used. The FOMC has sought to gain such control of monetary policy and of the monetary aggregates by small changes in the Federal funds rate. This procedure has failed to achieve its objective. Both the supply and demand functions for reserves and the monetary aggregates are subject to too many variations to assume that desired movements in the monetary aggregates can be achieved by minute changes in the Federal funds rate.

In addition, minor variations in the funds rate have led to expectational effects in the money market that have aggravated the control problem. For some time, changes in the Federal funds rate have been taken as evidence of a shift in policy. More recently, the money market has become aware that the FOMC is also concerned about the performance of the monetary aggregates. As a result, if the aggregates experience unusually rapid or slow growth, the market has come to expect the FOMC to respond by altering the funds rate. By acting upon these anticipations, the market intensifies pressures in the funds market, thereby making the Desk's job even more difficult.

The FOMC should recognize that it is possible to control the quantity of money or the general monetary atmosphere within tolerably narrow limits, but the Federal funds rate must be allowed to fluctuate rather widely. It surely cannot control the monetary variables if it maintains Federal funds rates either in a very narrow band or gradually moves the rate in either direction. The type of policy we have been following tends, unless the System is extremely lucky, to lead to a process whereby the quantity of money moves far from its desired path. When this occurs, bank reserves and the Federal funds rate ultimately must be moved dramatically in an attempt to lead the money stock back to its path. We have created an extremely inefficient control mechanism in which large adjustments of interest rates and reserves are required to correct instability in the movement of the money stock.

Which operating variable is selected by the FOMC for its directive to the Manager has little or no relationship to the variable or variables which the FOMC uses to measure monetary policy. Many of our discussions have been confused because of a failure to recognize this fact, and act accordingly. It is not a question of whether to select monetary aggregates or interest rates as the target for monetary policy. Both are related and will move erratically if operations are too inflexible. There is simply no way to avoid a trade-off between desired movements in the monetary aggregates and wider short-term variations in the Federal funds rate.

It is easy to overemphasize the significance of relatively sharp daily and weekly changes in the Federal funds rate. Since Federal funds trade on a day-by-day basis, it is reasonable to expect shifting financial demands to lead to daily variations in the rate. If the funds rate were allowed to vary more widely with these changes in demand and supply, it would not take market participants very long to adjust to their new environment and the undesirable expectational effects now being experienced would disappear. Many market participants would have a strong incentive to move toward somewhat longer term financing to avoid sharp daily variations in the cost of one-day money. Thus, the variability of the Federal funds rate would tend to be diffused over the whole spectrum of money market rates.

While it is clear that wider variability in the Federal funds rate is required to gain control over the aggregates, it is not so clear as to what is the best operating procedure to gain that control. Two alternative methods of operation are available which in principle could be used.

First, the Manager could be instructed to vary money conditions more widely in order to control the aggregates. This would require an accurate estimate of the response of the aggregates to changes in the Federal funds rate. While the Manager changes the Federal funds rate by altering the supply of bank reserves, under this policy the variations in reserves would be those necessary to obtain the desired change in the Federal funds rate. Changes in reserves would be determined by changes

in money demand and supply and by the amount the FOMC had determined to change the Federal funds rate.

As an alternative the Manager could be instructed to follow an explicit reserve path thought consistent with the desired path for the aggregates. In this case the Federal funds rate would be a residual determined by the movement in reserves coupled with the demand and supply of money.

The choice of this operating technique should depend upon the answers to three questions:

1. Which method of operations is likely to give the System maximum control with minimal undesirable market reactions?
2. Which method of operations is most likely to aid the FOMC to select a proper monetary policy?
3. Which method of operations is likely to insure the best possible communication between the FOMC, the Manager, the staff, and the public?

We believe, based on the studies done for this report shown in the Appendices and on the analysis of our two previous reports, that the Committee ought at this point to issue its instructions to the Manager in terms of desirable changes in the level of reserves rather than in terms of the Federal funds rate, or money market conditions. We recognize that there is no certainty that operating based on reserves will work out more successfully, but we believe that the history of the System and particularly the FOMC's recent experiences indicate high probabilities of greater success through a choice of a reserve target.

1. It is true that in a logically consistent system in which there were no projection errors, it would make no difference with respect to control as to which of the two procedures were selected. However, since we experience and have to allow for projection errors, an issue does arise concerning the better method of operation.

This issue reduces to whether the relationship between reserves and any monetary variable is more predictable than that between the funds rate and that variable. The appropriate operating target depends upon the relative predictability of the demand for money and the banking system's "supply" of money (its willingness and ability to supply deposits). If money demand is less predictable than money "supply," it is best to pursue a reserve target. If money supply is less predictable, it is best to pursue a Federal funds rate target.

We believe that demand is less predictable and, therefore, that the System can achieve better control by operating in terms of reserves. Furthermore, as we pointed out previously, reserves are what the Federal Reserve System is all about. There are major advantages to the System controlling directly through its operating instructions that for which it is responsible rather than granting control over the growth of reserves to commercial banks and the market.

2. While it is not obvious that selecting reserves as an operating target will aid in the better selection of proper monetary variables and therefore of a better monetary policy, we believe it will. The use of money market conditions as an operating target has built up a large

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mystique of operations, of markets, and of goals. As a result, basic analyses of what the System is trying to do and why get lost in the murky wallow of arguments over interest rates, market expectations, or monetary aggregates.

Each of these is at least as capable of achievement through reserves (and some more so) as through operating targets of money market conditions. If the System recognizes this and clears away the existing clutter by shifting its operating instructions, it should improve its analysis, allow it to correct errors more readily, and learn more about how it can achieve whatever target or variable it chooses for monetary policy whether monetary aggregates, interest rates, or market feel and expectations. The FOMC by properly structuring the directive should receive better staff aid. More importantly, it should improve its own debates and discussion and as a result come to a better collective judgment.

3. Finally, we believe that communications between the FOMC, the staff, the Manager, and the public will be improved by greater quantification in its operating instructions. Recent periods show clearly the difficulty of reaching an agreement as to what the directive means and how operations should be conducted under it. A reserve operating target should lead to far fewer misunderstandings.

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Attachments:
Appendices A, B, and C

Appendix A

Implementation of a Nonborrowed Reserves Strategy

As with the present procedures, a necessary background for the implementation of a nonborrowed reserve path would be the preparation of staff projections of alternative configurations of the relevant financial variables. Each alternative would contain projections of values for the various monetary aggregates and money market conditions variables believed to be mutually compatible. The Committee would then choose from among the alternatives the configuration that it prefers.

Again as at present, accompanying the various alternative Blue Book projections of monthly values for the aggregates there would be a translation of these monthly values into week-by-week projections. The projected week-by-week patterns, for example, would reflect projected seasonal patterns, the timing of Treasury financings and other relevant anticipated short-run developments. Included among these computations would be a week-by-week projection of the level of required reserves compatible with the other projections. The implied week-to-week target path for nonborrowed reserves would then be obtained simply by adding to the projected required reserves the projected level of excess reserves less projected borrowing, i.e. projected free reserves, compatible with the projected behavior for the aggregates.

As described in Appendix B, the virtue of a nonborrowed reserves strategy is that it does not accommodate deviations from projections in the demand for the aggregate of concern. Instead it sets in motion forces that tend to limit these deviations--a virtue wholly lacking in a rigid Federal funds rate strategy. At the same time, the defect of a nonborrowed reserves strategy is that it does not deal successfully with the problems of unforeseen shifts in the deposit mix. It is therefore dependent on correct projections of this mix or on the reserve multiplier for each monetary aggregate.

Unfortunately, shifts in such components as net interbank deposits and Treasury deposits are very difficult to project with accuracy and these components can at times have significant short-run effects on required reserves. The problem, therefore, is to modify the nonborrowed reserves approach to take advantage of its good feature, while minimizing or eliminating its inability to respond properly to unforeseen changes in the deposit mix. The proposed method is essentially to use a nonborrowed reserves target week-by-week that the Manager adjusts as needed to accommodate unforeseen movements in bank liabilities not included in the aggregate of primary concern to the Committee. We suggest that the Committee should pick total reserves corrected for reserves required for government and inter-bank deposits as its primary intermediate variable. This would simplify certain adjustments. Assume instead, however, that the Committee has selected M_1 as its target. In this case, an

unforeseen rise in Treasury deposits would cause the Manager to raise the nonborrowed reserve target for two weeks later by the amount of the increase in required reserves behind Treasury deposits. In this way, the Treasury deposit bulge would be accommodated and would not be allowed to set in motion an unwanted tightening of the money market that would tend to throw the M_1 target off its track in subsequent weeks.

In more general terms, the procedure can be described as one in which the Manager works with a week-by-week nonborrowed reserves target which, however, he is expected to adjust as needed by the amount of unforeseen changes in required reserves against liabilities not directly included in the Committee's target. Alternatively, and equivalently, the procedure proposed may be described as a free reserve target which, however, is changed as needed by the amount of unforeseen changes in required reserves against liabilities that are directly included in the Committee's target.

The precise way in which the proposal would have to be implemented, would differ depending upon whether the Committee was primarily concerned with the behavior of total reserves, M_1 , M_2 (defined here to exclude CDs), or the bank credit proxy. If either M_1 or M_2 are the aggregates of greatest concern to the FOMC, unexpected movements in Treasury deposits and net interbank deposits would provide by far the largest unexpected movement in required reserves and hence would require the largest adjustment of the nonborrowed

reserve path. Table I shows the actual and path growth rates for M_1 and M_2 for the period August 25, 1971 through December 29, 1971 along with the difference in the change in actual nonborrowed reserves from path and from the path adjusted for unexpected movements in Government and net interbank deposits. The final column shows the extent of adjustment in the path that would have been called for over the period. As the table shows, over this period allowance for unexpected movements in net interbank and Government deposits would have led to a fairly small adjustment to the path.

TABLE 1

	Annual Rates of Growth of Actual and Path of Money				Federal Funds Rate Average in Last Week of Period (Per Cent)	Difference in Change in Actual Non-borrowed Reserves Vs. Original Path Over 4-Week Period (Actual Path)	Difference in Change in Actual Non-borrowed Reserves Vs. Adjusted Path Over 4-Week Period (Actual Path) ^{2/}	Amount of Difference from Original Path Attributable to Unexpected Behavior of U.S. Gov't and Net Interbank Deposit
	Average Rate Over Preceding Period		End of Period Over End of Period					
	Path	Actual	Path	Actual				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(6)-(7)
<u>M₁</u>								
August 25	5.7	1.7	9.7	8.0	5.48	- 42	-220	+178
September 22	5.1	-4.0	6.8	-8.0	5.46	+202	+265	- 63
October 20	11.3	-3.4	2.3	0.6	5.14	-393	-370	- 23
November 17	9.4	3.4	1.1	-0.6	4.88	+ 2	-392	+394
December 15	-1.7	1.1	0.0	1.1	4.20	+624	+321	+303
January 12 ^{1/}	5.1	1.1	4.0	0.0	3.71	+204	- 82	+286
<u>M₂</u>								
August 25	6.3	4.0	10.3	7.2				
September 22	5.6	0.9	5.1	-0.6				
October 20	10.4	4.3	6.0	7.7				
November 17	7.8	7.7	2.3	6.5				
December 15	4.8	8.2	2.5	8.8				
January 12 ^{1/}	8.1	10.7	9.3	9.8				

^{1/} Latest deposit and reserve data are partially estimated.

^{2/} Adjusted path takes account of the reserve effect of actual behavior in U.S. Government and net interbank deposits as compared with the originally projected behavior.

APPENDIX B

EXAMPLES OF CONSISTENCY OF OPERATING TECHNIQUES

The choice between the Federal funds rate and reserves as the appropriate target to achieve control over the money stock depends upon the relative predictability of the demand for money and the "supply" of money. A couple of examples illustrate the point.

A Shift in Demand

Assume a situation where the Desk was instructed to achieve a particular M_1 path by maintaining the Federal funds rate at a level thought consistent with predicted money demand and supply relationships. Assume also that the public's demand for money ends up stronger than anticipated. Given prevailing interest rates the public would sell assets in an attempt to increase its money balances, thereby driving interest rates up. The Desk, however, would not allow the funds rate to move up so it would supply reserves. The banks would then utilize these reserves to expand the volume of demand deposits and essentially satisfy the higher demand for money balances. In this case, the aggregate target could not be achieved by controlling the funds rate.

In contrast, if the Desk had focused on reserves, closer control of the money stock could have been achieved. As the public demanded more money, commercial banks would attempt to respond to the higher demand for money by creating deposits through buying securities and expanding loans. But if the Desk were maintaining a given path of total reserves, the banks could expand their portfolio of earning

assets only to the extent that they were willing to reduce their limited holdings of excess reserves. Without new reserves, the ability of banks to expand the volume of loans and hence demand deposits would be severely restricted. Thus, the supply of money would be prevented from rising significantly to meet the increased demand for money, and interest rates, including the funds rate, would have to rise sufficiently to choke off the increase in money demand. If the Desk maintained a given path of nonborrowed reserves, there would be some offset as banks would increase their borrowed reserves and hence their deposits. Given the relatively low interest elasticity of bank demand for borrowed reserves, however, the offset would not be sufficiently large to prevent rising interest rates from reducing most of the initial increase in the demand for money.

A Shift in Supply

Assume a second situation, however, where the Desk was again instructed to achieve some given M_1 path by maintaining the Federal funds rate at some given level thought to be consistent with desired M_1 . Assume also that there was an unexpected upward shift on the supply side. This shift might occur, for example, because there was an unexpected movement of reserves from reserve city to country banks. Banks would, in this case, purchase more earning assets than anticipated, thereby driving interest rates down. The Desk, under instructions, however, would prevent the funds rate from falling by selling securities in the open market while at the same time reducing bank reserves. The Desk would continue to withdraw reserves until the desired funds rate

level was once again attained. Due to the reduction in reserves, banks would be prevented from expanding demand deposits. Hence, when the money supply shifted, the Desk would have achieved quite tight control over the aggregates by focusing on the Federal funds rate.

If the target had been set on reserves, the Desk would not have achieved the desired M_1 path. The upward shift in the supply function would imply that banks were willing to purchase a greater quantity of earning assets -- and hence supply demand deposits -- given reserves and interest rates (i.e. the reserve multiplier was greater than expected). With the expansion in the supply of deposits, interest rates would have to adjust downward in order to induce the public to hold a greater stock of money.

Whether the Desk set nonborrowed reserves or total reserves would condition the extent to which deposits would expand and interest rates would have to fall. If the Desk fixed nonborrowed reserves, there would be a partial offset to the expansion in deposits as banks reduced their borrowings in response to the decline in interest rates, again including the funds rate. This, in turn, would lessen the decline in interest rates themselves. If the Desk fixed total reserves, however, the decline in borrowings would be offset by a rise in non-borrowed reserves and the money stock would rise by the full shift in the supply function. In this case, interest rates would have to adjust downward sufficiently to induce the public to hold the full increase in the money stock. Thus, in the case in which there are unpredicted

shifts in the money supply function, the Desk would do a better job of controlling the money stock by fixing the funds rate rather than reserves.

Of course, in reality, there are errors on both sides of the equation. The choice of the Federal funds rate vs. reserves reduces to the question of the relative stability of money demand and money supply. Thus, the choice of the appropriate instrument is an empirical question. This question is addressed in Appendix C.

APPENDIX C

THE EMPIRICAL EXPERIMENTS

It should be stressed at the outset that problems in achieving desired paths for the aggregates stem not so much from the operating target itself as from the FOMC's difficulty in determining its goals, quantifying them, and instructing the Manager in a clear form as well as from an unwillingness to allow movements in the funds rate of sufficient size to achieve some fairly steady path for the aggregates. If it were allowed to tolerate wider fluctuations in the funds rate, the Desk could, in principle, probably achieve target paths for the aggregates equally well using either a nonborrowed reserve or a funds rate target. If the Committee adopts a nonborrowed reserve path as a short-run operating target, the path can be sustained only if wider funds rate fluctuations are tolerated. It should be stressed that these rate movements are on average the same ones which would be required for achieving desired growth paths for the aggregates if a target of money market conditions were retained.

To test this proposition, the staff conducted empirical experiments to determine whether operating on a nonborrowed reserve target would produce a more predictable response of the aggregates than operating on a flexible Federal funds rate target. The staff also conducted experiments to estimate the degree to which the control over the aggregates would be reduced by placing constraints or changes in the Federal funds rate.

Using a weekly money market model,^{1/} which specifies, among other things, the public's demand for money and time deposits, the banking system's demand for borrowing and excess reserves, and the banking system's ability to "create" deposits, the staff ran some experiments to test whether better control of the aggregates could be achieved by pursuing a reserves or a funds rate target. Two sets of successive six week simulations were run, the first set assuming that the actual unadjusted level of nonborrowed reserves was the desired target level and the second set assuming that the actual level of the funds rate was the desired target level. The difference between the actual levels of the aggregates and the levels predicted under each of the two operating regimes gives a measure of the errors which would be made in controlling the aggregates given that the target level of the policy variable (reserves or the funds rate) was achieved in every period.

The results of the two sets of simulations suggest that operating with a reserves target is neither better nor worse than operating with a funds rate target in terms of the resultant control of the aggregates. (Similar experiments with the monthly model lead to the same conclusions.) However, the results are not conclusive because both regimes produced relatively large errors, probably due to the fact that neither nonborrowed reserves nor the funds rate were truly exogenous

^{1/} H. Farr, S. Roberts and T. Thomson, "A Weekly Money Market Model: A Progress Report," a paper presented at the autumn 1971 Financial Analysis Committee Meeting in Minneapolis and at the December ASSA meetings in New Orleans.

during the period over which the model was estimated. Perhaps even more importantly, it was not possible to make adjustments in the simulations for movements in required reserves caused by unexpected shifts in Government deposits or net interbank deposits. Because the desk can adjust its nonborrowed reserve target rapidly to allow for these unexpected changes in required reserves, it can reduce the errors made in hitting the M_1 target. Thus, in practice, the use of a nonborrowed reserve path would probably be superior to the Federal funds rate as a means of controlling the monetary aggregates.

The staff ran additional simulations with the weekly model to estimate the degree to which placing constraints on changes in the funds rate would reduce control of the aggregates when unadjusted nonborrowed reserves were the primary operating variable. A "control" simulation with seasonally adjusted nonborrowed reserves growing at a constant rate from November 1966 to November 1970 provided estimated growth paths for the aggregates. Four sets of simulations were then run to see how much control of the aggregates would be impaired by placing constraints on the week-to-week changes in the funds rate. Whenever the week-to-week change in the funds rate exceeded the constraint, which ranged from plus or minus 100 basis points to plus or minus 300 basis points, the reserve path was abandoned for that week and the funds rate was allowed to change only by the amount of the constraint. It was assumed that the Manager would then attempt to get back on his reserves path in the next week. In the first set of simulations, the Manager was told to bring reserves fully back on target. In the second set, he was told to bring them half way back, and so forth, with

each successive set of simulations allowing a more gradual restoration of the reserves to the target level. If the necessary reserve adjustment implied a change in the funds rate greater than the constraint, the reserve target was again abandoned. If the change in the funds rate was less than the constraint, reserves were restored, partially or fully, to their target level.

A clear pattern emerges from the results of the simulations. The more quickly reserves are restored to their target levels and/or the larger the permissible week-to-week change in the funds rate, the smaller the deviations of the aggregates from their unconstrained paths, i.e. from the growth paths when no constraints were placed on changes in the funds rate. The analysis indicates that a constraint on the change in the Federal funds rate of plus or minus 100 basis points would not seriously hamper control of the aggregates provided nonborrowed reserves were quickly returned to their path.

In general, the staff analysis indicates that pursuit of a nonborrowed reserve target does appear to be a viable policy strategy and wide week-to-week fluctuations in the funds rate can be avoided without losing much control over the aggregates, provided the funds rate is allowed to drift where it will over longer periods of time.