

TO: Federal Open Market Committee

DATE: November 2, 1976

FROM: Subcommittee on the Directive  
(Messrs. Partee, Chairman; Balles,  
Morris, and Wallich)

SUBJECT: Re-appraisal of  
nonborrowed reserves on  
basis of staff experiment.

At a special meeting on March 29, 1976, the Federal Open Market Committee held a discussion of the second stage report of the subcommittee on the directive, and in consequence asked the staff to experiment with the use of nonborrowed reserves as an operating target for the Desk in the periods between Committee meetings. While the focus was on nonborrowed reserves, the staff also tracked other reserve measures, such as total reserves and the monetary base.

The Open Market Committee has been kept up to date on this experiment through the Manager's weekly and monthly reports, his oral reports to the Committee, and the blue book. A detailed over-all analysis is contained in two attached staff papers. One--from the Trading Desk staff--describes actions the Desk believes it would have taken if it had been guided by a nonborrowed reserve target and the implications of these actions for the Federal funds rate, given certain constraints imposed on the experiment, such as that the funds rate was permitted to vary no more than  $\frac{1}{2}$  percentage point per week. The other--by Board staff--evaluates the staff's ability accurately to project the multiplier relationship between reserves and the monetary aggregates ( $M_1$  and  $M_2$ ) over an intermeeting period. This paper goes on to estimate whether  $M_1$  and  $M_2$ , during particular four or five week intermeeting periods, would have turned out to be closer to Committee expectations if a reserve target had in fact been achieved, assuming no Federal funds rate constraint.

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The subcommittee on the directive met with staff to discuss these results. This memorandum presents the subcommittee's evaluation of the experiment and contains our further recommendations with regard to the role of reserve measures in providing guidance to the Desk.

Before presenting our evaluation of the results, limitations inherent in the experiment should be stressed. The experiment was necessarily static, and not dynamic. Effects on the funds rate and the aggregates were estimated only for individual intermeeting periods, with each period considered independently from the preceding one. This procedure had to be followed because there is no way that the staff could reasonably judge how the FOMC in a subsequent meeting would react to new conditions created by efforts to attain a nonborrowed target in a preceding intermeeting period. While a combination of judgment and money market model results would permit some rough estimates of effects on  $M_1$  and  $M_2$  from achievement of a nonborrowed reserves target in a particular intermeeting period, these tentative calculations could not be carried into the future without making further assumptions as to FOMC reaction to new projections of the aggregates that the staff would have been called upon to present.

Nevertheless, we believe that the experiment still permits conclusions about the usefulness of a reserve target as an instrument for hitting a monetary aggregate target over a short-run operating period of four or five weeks. It does not, however, permit conclusions as to the value of a reserve target over a longer-run of three to six months; such conclusions have to be based on other evidence drawn from econometric research.

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Design of the experiment

At each FOMC meeting over the past six or seven months, the staff, in an appendix to the blue book, projected reserve measures thought to be consistent with the three short-run alternatives for the monetary aggregates presented to the Committee. The appendix showed the average level of reserves--nonborrowed reserves, total reserves, or the monetary base--for the four or five week intermeeting period that was believed consistent with alternative two-month growth rates for the aggregates. After the FOMC reached a decision as to its short-run operating ranges for  $M_1$  and  $M_2$ , the related nonborrowed reserve measure (which might have had to be modified from those presented depending on the particular  $M_1$  and  $M_2$  chosen by the FOMC) was taken by the Trading Desk as its operating target for experimental purposes.

The Desk then undertook to simulate operations as if that non-borrowed target were its operating guide. In the simulations, it did not generally look through to the monetary aggregates.<sup>1/</sup> In addition, the originally set nonborrowed level was not modified during the intermeeting period as new evidence became available that might suggest a change in the originally assumed multiplier relationship between reserves and aggregates (such as might be caused by changes in the deposit mix or by shifts in banks' demand for borrowings or excess reserves). Finally, the Desk operated within the Federal funds rate range adopted by the Committee for the interval. The Desk assumed it had flexibility to permit the rate to vary within that range, but by no more than 25 basis points in either direction from week to week.

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<sup>1/</sup> In one period the Desk looked through to the aggregates to some degree, and in another some attention was given to an ongoing Treasury financing.

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Experimental results

(1) In four of the six intermeeting periods from March through September that were analyzed the simulated level of nonborrowed reserves turned out to be within \$50 million of the "targeted" level. The original recommendation of the subcommittee on the directive had suggested a range of plus or minus \$50 million around the "target" level. It would appear, therefore, that even within the funds rate constraints imposed nonborrowed reserves were a technically feasible target most of the time. In contrast with the simulation, the actual level of nonborrowed reserves was within \$50 million of "target" only one time out of six.

(2) In four out of the six periods the simulated Federal funds rate would have been significantly different from the actual funds rate--with differences in a statement week in a 25 to 50 basis point range about one-third of the time. In all four of these periods, the funds rate would have been higher than actually developed. However, the significance of this asymmetrical result is limited by the lack of dynamic elements in the experiment; it is probable that the dynamics of the situation would have led to different funds rate movements, probably including periods of downward rate adjustment as the impact of earlier, more substantial upward rate adjustments worked through the financial system.

(3) Using a nonborrowed target, there would have been more week-to-week reversals of significant size in the funds rate during intermeeting periods--reversals of, say, about 25 basis points. This would have occurred in part because of weekly revisions in forecasts

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of required reserves, which, with nonborrowed reserves given, cause changes in free reserves and in the funds rate. Thus, a nonborrowed reserve target would, as was expected, cause somewhat more week-to-week variation in the funds rate.

(4) It proved to be most difficult to project the multiplier relationship between monetary aggregates and nonborrowed reserves over the short run. Even if the nonborrowed reserve target had been hit during an intermeeting period, the average absolute deviation in  $M_1$  growth from expectations would have been about  $4\frac{1}{2}$  percentage points, at an annual rate. The average absolute percentage deviations in multipliers predicated on total reserves and the monetary base were also sizable, though a little less than for nonborrowed reserves. (Similar results were obtained for  $M_2$  multipliers). The magnitude of these deviations is generally consistent with evidence from a variety of econometric studies.

(5) Given the slippage in the short-run relationship between reserves and the monetary aggregates, the experiment suggested that there would be virtually no improvement in the FOMC's ability to attain short-run (i.e. monthly or bi-monthly) objectives for the monetary aggregates, even if the Federal funds rates were unconstrained. If it were assumed that the Desk actually hit the nonborrowed target, the staff estimates that the  $M_1$  growth would have been closer to expectations only one-fifth of the time and further away three-fifths of the time. For  $M_2$ , on the other hand, the simulation would have been closer three-fifths of the time. But with one exception the magnitudes involved for  $M_1$  and  $M_2$

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would not suggest that the deviations relative to actual results would have been significant.<sup>1/</sup>

Conclusions and recommendations

(1) On balance, we would not recommend including a reserve objective in the short-run operating specifications given to the Manager. Evidence from the experiment of the past six months does not suggest that nonborrowed reserves--or any other reserve aggregate--would improve the Committee's ability to achieve short-run objectives for the monetary aggregates. Thus, there appears to be no advantage to including a reserve measure as a short-run operating guide (in addition to the funds rate) in instructions the Manager covering the interval between FOMC meetings. It might be argued that there is some advantage to including a non-borrowed reserve guide to the extent that it would lead to more flexibility in the funds rate and to less market concern with funds rate movements as an indicator of monetary policy. However, the reserve measure would, like RPD, shortly become non-operational unless the FOMC permitted the funds rate to fluctuate more; and even if the funds rate were permitted to fluctuate, the reserve guideline would not ensure closer short-run control of the aggregates under the present institutional structure.

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<sup>1/</sup> The exception was the April-May period of rapid monetary growth when it is estimated that adherence to a nonborrowed target would have brought  $M_1$  and  $M_2$  growth rates 1 and  $1\frac{1}{2}$  percentage points (annual rate), respectively, closer to target. In doing so, the funds rate would have been  $1\frac{1}{2}$  percentage points higher.

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(2) In order to provide background information for the Committee and the Desk, we would recommend (a) that the staff include in the blue book estimates of growth rates for the various reserve measures over the ensuing six months expected to be consistent with a movement in the aggregates toward the longer-run growth rates adopted for them by the Committee and (b) that analysis of past monetary developments in the blue book should evaluate recent behavior of reserves in relation to such expectations. While it appears clear that a reserve guideline is of little value to short-run control of the aggregates, reserves do appear to be fairly closely related to the aggregates over a longer-run period of six months or so. Considerable evidence for this was developed in the earlier work done for the subcommittee on the directive.<sup>1/</sup> The inclusion of material on reserves in the blue book would help provide a basis for continuing to include a reference to reserves in the directive. The subcommittee believes such a reference is desirable because it would help make clear that at least over the longer-run interest rates are determined by demand and supply forces in the market and not primarily by System action.

(3) We believe that research and analysis on the subject of the relation between reserves and the monetary aggregates has, since the subcommittee was formed in 1973, been thorough and that at this point further study and experimentation by the FOMC is no longer needed.

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<sup>1/</sup> The evidence was most recently updated and summarized in a memorandum of June 15, 1976 from Mr. Kalchbrenner to Mr. Axilrod entitled "The effects of averaging single-month monetary aggregates forecast errors over longer periods...." that was earlier distributed to the FOMC and is also included as an attachment to this report.

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We would suggest that the subcommittee on the directive might now be more usefully asked to explore any of the following: (a) how short-run objectives for the monetary aggregates may be better related to longer-run growth ranges adopted by the FOMC; (b) issues involved in establishing a base for and up-dating longer-run ranges for the aggregates, including such questions as base drift and the role of levels of the aggregates as compared with growth rates; and (c) possible changes in concepts of money that need to be taken into account in the FOMC's selection of both short- and longer-run monetary guides.