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

August 13, 1973

Confidential (FR)

TO: Federal Open Market Committee

FROM: Arthur L. Broida

Attached is a copy of a memorandum from Mr. Axilrod to the Board, dated August 10, 1973, transmitting the report of the Staff Committee on Lagged Reserve Accounting. This is the report which the staff was asked at the July meeting of the Committee to have available by the time of the August meeting.

Arthur L. Broida
Secretary
Federal Open Market Committee

Enclosure

August 10, 1973

TO: Board of Governors

FROM: Stephen H. Axilrod

Attached is the initial report of the Staff Committee on Lagged Reserve Accounting. This report focuses on the issue of whether lagged reserve accounting does or does not impede the Federal Reserve's ability to control the monetary aggregates through a reserve handle. The conclusions and recommendations are summarized in the first three pages of the report.

The report provides a basis for Board discussion and decision as to whether in principle it is prepared to revert to a contemporaneous reserve system. Should the Board decide in the affirmative on this fundamental issue, the details of a contemporaneous system -- including the role of carry-over provisions, the lag in vault cash, whether reserves should continue to be based on end-of-day deposits, etc. -- could be prepared for decision in a relatively short time span.

Because of time pressure, and since the bulk of its research had been devoted to the question of lagged reserves initially assigned to it, the Staff Committee was not able to include a systematic analysis of the carry-over provision in this report. The Committee did recognize (p. 16 of the report) that continuation of the carry-over provisions would help ease bank relations problems in instituting a contemporaneous system. I would suggest that the main issue with regard to carry-overs is whether they should be enlarged and that the Board may wish to have this specific issue considered irrespective of its decision on lagged reserves.

First Report of the Staff Committee on Lagged Reserve Accounting

This report of the Staff Committee on Lagged Reserve Accounting will focus on the central issue of whether lagged reserve accounting does or does not contribute to monetary policy's ability to control bank reserves and monetary aggregates. When lagged reserves were introduced member banks were also permitted to carry over into the next week reserve surpluses up to 2 percent of required reserves (they already had a similar carry-over privilege for reserve deficiencies), the old country bank reserve period was reduced from two weeks to one week, and vault cash used in the calculation of reserves was lagged by two weeks. The Committee believes that the two week lag of required reserves in relation to deposits can be discussed on its merits as it affects control of the monetary aggregates independently of these other measures, although the Committee recognizes that many of the country banks considered lagged reserves to be in the nature of a quid pro quo for shortening the reserve period.

Our finding is that the lagged reserve accounting procedure makes no positive contribution to controlling monetary aggregates. If reserve aggregates are used as a handle of policy, the contribution of lagged reserve accounting is, if anything, negative. The Committee as a whole is agreed on the direction of effect, but members differ on the probable magnitude.

As explained in the ensuing text the Committee has found that lagged reserve accounting:

(a) significantly reduces the ability to hit a total reserve or RPD target in the interim between Committee meetings, though to a lesser extent a nonborrowed reserve target;

(b) is a less significant[1] limitation on the System's ability to control reserves and monetary aggregates over the longer run;

(c) adds to the tendency for day-to-day money market variability; and

(d) increases somewhat the range over which the Federal funds rate needs to fluctuate if monetary aggregates are to be controlled by use of a reserve handle.

With regard to member bank attitudes toward lagged reserve accounting, the Committee conducted a survey of Reserve Bank personnel who are in close contact with member banks. In an effort to avoid raising unnecessary bank relations problems at this time, the Committee did not sample member bank opinion directly. The response of Reserve Bank personnel suggested that the majority of member banks seem favorably disposed to lagged accounting because they believe it facilitates reserve management.

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[1] Messrs. Axilrod and Sternlight feel that lagged reserve accounting is probably of little significance as an impediment over a three month control period under current operating procedures.

This suggests that a bank relations problem might arise if the System were to return to a contemporaneous system.

In terms of the economic considerations, the Committee recommends abandonment of lagged reserve accounting and institution of a contemporaneous reserve accounting system. The members of the Committee are divided, however, on the degree of importance they attach to abandonment of lagged reserve accounting when considering monetary control over a longer term horizon. Thus, if bank relations costs are great some members of the Committee would favor retention of the current system, assuming the permissible range of variation in the funds rate is not unduly circumscribed. The Committee recognizes the potential for a bank relations problem, but also recognizes that many banks originally objected to a lagged reserve system, that bank opinion currently seems to be divided (and a number appear to be indifferent), and that a number of banks may not understand the potential disadvantage to them of the lagged system.

Analysis of the principal issues considered by the Committee is presented below. These issues include the relationship of lagged reserve accounting to reserve targets, to money market conditions, to Desk operations, to the demand for money, and to individual bank reserve management and bank relations.[1]

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[1] It should be pointed out that members of the Committee are not in complete agreement on analytic points, though differences are mainly matters of emphasis and degree.

Lagged reserve accounting and reserve targets

The two week lag in reserves means, technically, that the Desk's capacity to affect total reserves, or RPD, in the period between FOMC meetings is more limited than it would be under a contemporaneous system. Required reserves are essentially fixed in the two statement weeks after a FOMC meeting and in the statement week that includes the Tuesday meeting.

With required reserves fixed, all System open market operations can do in the two weeks just after an FOMC meeting is change nonborrowed reserves or, what is in effect the same thing, affect free reserves. RPD in those two weeks can be affected only to the extent that excess reserves are in the process changed.

Excess reserves are generally kept at near minimum levels by banks. In any given statement week, though, operations can force excess reserves on the banking system. It is much more difficult, however, to reduce RPD's because doing so would force reserve deficiencies on the banking system. Banks would offset such deficiencies by borrowing since by law they must attempt to meet their legal reserve requirements.

In any event, the Federal funds rate constraint will forestall an effort by the System to expand or contract excess reserves sharply relative to normal (though volatile) bank demands. As a result, the fixed required reserves will pretty much determine RPD in the first two week period following the Committee meeting.

The inflexibility of required reserves in the lagged system will under certain circumstances seriously limit the FOMC's

ability to hit a shortrun RPD target through current open market operations. For example, if deposits in the two weeks preceding and surrounding the FOMC meeting turn out to have been much higher than originally estimated at the time of the FOMC meeting, and hence required reserves in the target period much higher, this may raise RPD above target. The Desk would have a very difficult time getting down to target in the period between Committee meetings because actions taken in the first two week period just after the FOMC meeting would influence required reserves and RPD only in the last two weeks of the usual four week operating period. This may not represent sufficient time to move the desired average for the month down to target.

Of course, Desk operations would be affecting deposits in the whole four week inter-meeting operating period. Even though required reserves cannot be affected by Fed operations in the first two weeks, deposits can as, for example, banks sell assets to the public or restrict loans. The extent of deposit liquidation that might occur early in a period will depend on the speed of bank and public response in light of changes in money market conditions and interest rates. Given moderate changes in money market conditions, a relatively limited deposit response is likely in the first few weeks after an FOMC meeting but with the response becoming larger as more time passes.

While the exact nature and time path of the lagged relationship between deposits and interest rates is not fully known and is probably highly variable in any event, the deposit

response set in motion through the System's ability to control nonborrowed reserves and/or money market conditions in the short-run should technically permit attainment of an RPD target at least over a two or three month period, assuming that the Federal funds rate constraint were no substantial impediment. Given that assumption, over that period 2-week lagged reserve accounting would not appear to be a significant impediment.

While the preceding analysis indicates that lagged reserve accounting itself makes it more difficult to hit an RPD target in the very short run, as compared with contemporaneous reserve accounting, lagged reserve accounting would not be a similar technical impediment to a short-run nonborrowed reserve or nonborrowed RPD target. Conceivably, such a target might not be attained any more frequently than RPD because of the workings of the Federal funds rate constraint, but the odds on attainment would be greater.

Lagged reserves and money market conditions

Apparently one of the original purposes behind introduction of lagged reserve accounting was to moderate pressures for reserve adjustments within the banking system that tended to develop near the close of a reserve period. This was expected to occur because member banks would no longer be uncertain about their level of required reserves and therefore could manage their reserve positions better.

Our research indicates that money market conditions have, however, been more volatile toward the end of a statement week since the introduction of lagged reserves. There were greater day-to-day changes afterward toward the end of the statement week in member bank borrowings, the Federal funds rate, and the System's holdings of securities. For example, the average Monday-to-Tuesday change in the funds rate was 35 basis points in the two year period after the introduction of lagged reserve accounting in the latter part of 1968 and 18 basis points in the two year period before. The Tuesday-to-Wednesday change comparison is even more dramatic--29 basis points before and 83 basis points in the two years after. Analysis of two additional years of data does indicate a drop in the day-to-day change in the funds rate to around pre-lag dimensions, but this was accompanied by substantially larger changes in System holdings of U.S. Government securities as offsetting open market operations were required to moderate money market variability.

The tendency toward greater money market variability under lagged reserve accounting can be explained as follows. Suppose for example, a deposit and reserve drain from a bank reflects a move into currency or decline in float rather than a shift of deposits and reserves to another bank. In this case, there will be a very clear net increase in demand for Federal funds under a lagged as compared with a contemporaneous reserve system because the banking system has lost reserves but has not

also experienced a partly compensating fractional decline in required reserves. As a result, the funds rate will tend to rise more than otherwise. A part of the tendency to greater fluctuation will be moderated, of course, by increased Federal Reserve market intervention to keep the rate within a permissible band.

As well as leading to a greater tendency for money market conditions to fluctuate within a statement week, lagged reserve accounting also requires somewhat greater week-to-week movement of the funds rate to achieve a given money supply objective if that objective is sought through use of a reserve handle. For example, if M_1 turns out to be much stronger than desired in the initial week of an operating period, under a contemporaneous reserve system required reserves would rise and the money market would tend to tighten, assuming the Fed were following a nonborrowed reserve target or an RPD target. This tightening would set in motion forces leading to deposit destruction--to a small degree in the current week and more so in subsequent weeks.

Under a lagged system, the rise in required reserves would occur two weeks later, and money market tightening would not occur until that time. Bank adjustments leading to deposit destruction would also not occur until that time. But because two weeks have been lost, the Federal funds rate would have to

rise somewhat more than it would have under a contemporaneous system.[1]

It is most difficult to obtain an estimate of the amount of additional week-to-week variation in the funds rate that is needed to control money supply through reserves under a lagged system. The smallness of the two week lag reduces the amount because the delay in response is relatively short. Any relatively long lag in the relation between money demand and interest rates also reduces the loss from a small delay in response caused by the lagged reserve structure. On the other hand, the amount of additional week-to-week variation would be larger to the extent it was desired to get back on path within a very short period following an overshoot in money growth.

We have attempted to obtain an estimate of the degree of greater week-to-week variation in the Federal funds rate that would appear to be required from simulations on an experimental weekly money market model. The results are at best merely suggestive. Weekly models are difficult to work with. Specification and estimation of them are in an early stage of development.

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[1] On the other hand, it is possible that if the Desk were sufficiently alert to the stronger than desired M_1 as it occurred, it could immediately impose the more stringent conditions that would have developed automatically under the no-lag system. This assumes, of course, not only adequate deposit statistics but also more confidence in using decisions as to the funds rate rather than decisions about reserves as a means of controlling M_1. This is discussed in more detail in the section on the demand for money.

Moreover, so many complicated, large, and often random financial flows affect money markets weekly that the effect of lagged reserves is difficult to measure,or discern, within the large margins of error in the model.

Our best conservative judgment is that a 2 week lagged reserve system might require the Federal funds rate range associated with a reserve target to be 10--25 basis points wider than it otherwise would be under a contemporaneous system.[1]

Lagged reserves and Desk operations

One of the by-products of lagged reserve accounting has been that the Trading Desk has had the use of a required reserve figure that is not subject to substantial later revision. Under the previous contemporaneous system, revisions in required reserves were one of the significant sources of error in day-to-day projections of factors affecting reserve availability. Accordingly, the Committee undertook to review evidence of the extent to which a return to a no-lag system might again subject the Desk to this type of projection error, and to consider the ability of the Desk to cope with additional uncertainty from this source.

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[1] One Committee member--Mr. Sternlight--remains skeptical whether even this modest estimated increase in Federal funds rate variation is needed to achieve comparable control of M_1 under a lagged reserve system as compared with a no-lag system. He agrees that under a no-lag system, a bulge in M_1 produces an immediate rise in required reserves and upward pressure on the Federal funds rate, unless the Desk offsets that pressure. But he points out that under a lagged reserve system, the Desk may be able to observe the M_1 bulge and act quickly to restrict the supply of reserves, and bring about the desired money market pressure.

Our conclusion is that while removal of the lag would indeed subject the Desk to additional projection error, the increase would not be unmanageable. Moreover, since to some extent the impact of the projection misses would be in a "constructive direction" (i.e. unexpectedly absorbing reserves when it is appropriate that reserves be absorbed in order to reach FOMC reserve and deposit growth objectives) some of the increased uncertainty would be beneficial in its effect.

As to the possible extent of projection errors, the average absolute difference between Thursday projections of required reserves to be applied in the reserve week starting two weeks later (which are based on deposits in the week just beginning), and the actual requirements that finally emerged for that week turned out during 1972 to average about $165 million. Receipt of later information as the week progressed would no doubt reduce this error, but the extent of such reduction is hard to estimate since current reporting needs have not generated the urgency for such up-dated information that would exist under a no-lag system. A rough estimate is that by the morning of the final day of a given week, required reserves projections might be on average within about $75 million of the mark.

Some of the miss in required reserves projections would serve to offset misses from other factors, so that over-all reserve projections accuracy would not suffer to the full extent indicated above. In 1972, the average miss on Thursday projections of net change in weekly reserve factors would have been boosted from

about $240 million to about $300 million because of the inclusion of required reserves on a no-lag basis, while a rough guess of the increased miss in Wednesday projections of the current weekly changes in reserve factors because of unlagging required reserves would be a rise from about $90 million to perhaps $120 million (making some allowance for improved interim estimates of required reserves toward the end of the reserve week).

An increase in projection misses of this magnitude, while not particularly welcome, is not unmanageable. Moreover, a major potential advantage of the no-lag system is that easing or tightening of the money market caused by a miss in projecting required reserves would be in the proper direction from a policy standpoint. For example, if deposit growth was unexpectedly strong, the absorption of reserves through increased requirements would cause a tightening of money market conditions that might well be appropriate if the deposit surge was related to a genuine strengthening of the economy. On the other hand, the firming might be inappropriate from the longer run point of view if the deposit strength stemmed from transitory factors that might soon be reversed and had no bearing on the over-all state of the economy. In the latter case, of course, the money market tightening would be followed by an offsetting easing in later weeks.

Lagged reserve accounting and money demand.

If one were to take the view that we are reasonably certain about the characteristics of the money demand function--particularly the timing and intensity with which interest rates enter into that function--and that we could forecast the extent of transactions demand, then one could argue that money supply objectives could be attained by controlling, say, the Federal funds rate. Or one might simply take the position that in practice ad hoc adjustment of the Federal funds rate to incoming money supply figures (assuming they were accurate) would be as effective as working on reserves. Control through the funds rate without reference to reserve targets would be in contrast to controlling money by assuming that we have bet ter knowlege of how money relates to the supply of reserves.

It is difficult to argue that lagged reserve accounting has much relation to the public's demand for money. Thus, it should be pointed out that lagged reserve accounting is no impediment to an effort to control money through adjustments in the Federal funds rate, without reference to reserve targets. Lagged reserve accounting would still lead to a tendency for more day-to-day fluctuation in the funds rate than otherwise. But additional week-to-week variation would not be necessary to the extent that the Desk had accurate enough deposit figures to respond early to incoming data.

It is not the province of this Committee to take a position on the key question of whether the handle for monetary policy in terms

or controlling the money supply should be the Federal funds rate or some reserve aggregate. The FOMC appears to be giving weight to both.

The Committee does take the view, however, that existence of lagged reserves should not be used as an argument in favor of a Federal funds rate target. Lagged reserve accounting introduces a little more Federal funds rate variability than does contemporaneous reserves accounting if the FOMC chooses a reserve target, and lagged accounting is clearly an unnecessary impediment to achievement of very short-run reserve targets, though not so clearly an impediment to achievement of longer-run targets. On the other hand, although lagged accounting does not impede attainment of a Federal funds rate target, that target itself may or may not bear as close a relationship to a money supply objective as does a reserve target. Whether use of a Federal funds rate or some reserve aggregate provides the best basis in practice for achieving a given money supply objective needs to be determined on its own merits.

Bank relations.

An extensive bank relations effort was put in by the Federal Reserve at the introduction of lagged reserve accounting in 1968. Reserve Banks, for example, began providing member banks with forms in advance of a given statement week showing what required reserves would be in that week and the amount of reserve balances that needed to be maintained that week at the Fed (assuming normal vault cash holdings of the bank).

The knowledge of what reserve balances will be required in a forthcoming statement week seems to simplify reserve management for a large number of banks. The advantage of fixed required reserves appears to them to offset the disadvantage to banks from the fact that their deposit flows would be as uncertain as ever, so that the reserve balances available to meet the required reserves would also be uncertain.

Banks with large swings in deposits, such as those in state capitals, appear to be least enamored of lagged reserve accounting. The large number of relatively small banks, and banks with large branch systems appear most favorable toward the lag.

Because of the delicacy of the matter, and for fear of worsening bank relations if no constructive purpose was being served, the Committee has not contacted member banks, or asked Reserve Banks to make a special effort to contact member banks to ask about their experience and present position. Rather, the Committee has surveyed Reserve Bank personnel who are normally in continuous contact with member banks, such as accounting, discount, examination, and statistical reports officials.

The reports from Reserve Bank personnel indicate that member banks on the whole preferred lagged reserve to concurrent accounting. Ease and accuracy of reserve position management appears to be the one overriding consideration affecting bank attitudes. There were apparently some banks who felt that they could live with contemporaneous reserves if the Federal Reserve felt it necessary to revert, but this would of course

involve costs of retraining at member banks. It would also involve costs of training and of new forms at Reserve Banks.

If the Federal Reserve Board were to determine that it was leaning toward abandonment of lagged reserve accounting on monetary policy grounds, a more direct survey of member banks to obtain a clearer picture of their attitudes could be undertaken. The Committee would like to point out, however, that any bank unhappiness with institution of a contemporaneous reserve system would likely be moderated by continuation of the carry-over provision (which is specifically designed to permit easier adjustment to unexpected deposit and reserve flows), by any educational campaign that explains the monetary policy needed for the contemporaneous system and the relationship of lagged reserves to a volatile Federal fund market, and by knowledge that the costs to banks of instituting a contemporaneous system are mainly the one-time costs of change since continuing costs would not appear to be significant for the banking system as a whole (after weighing the pluses and minuses for different types of banks).

Stephen H. Axilrod, Chairman

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August 10, 1973