FUNDAMENTAL REAPPRAISAL OF THE DISCOUNT MECHANISM

SOME PROPOSALS FOR A REFORM OF THE DISCOUNT WINDOW

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Prepared for the Steering Committee for the Fundamental Reappraisal of the Discount Mechanism Appointed by the Board of Governors of the Federal Reserve System

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I. INTRODUCTION: GOALS TO BE ACHIEVED

The purpose of this paper is to outline several proposals for a reform of the Federal Reserve discount window. These proposals are aimed at achieving the following major goals:

i) To eliminate the discretionary and sometimes capricious elements that characterize the present administration of the window by permitting unrestricted use of such borrowing facilities by all creditworthy borrowers willing to pay the discount rate.

ii) To reduce the slippage that exists between nonborrowed (bank) reserves and the supply of demand deposits by reducing swings in free reserves, especially those of a procyclical character, and thus improve control of the Federal Reserve over the money supply and interest rates.

iii) To make available to smaller banks facilities analogous to those provided by the markets for Federal funds and certificates of deposit, from which these banks are now partially or totally excluded because of the small size of their operations.

iv) To contribute through item (iii) above and other devices to an improved spatial allocation of bank credit.

It is believed that the proposed reform would also make possible the achievement of two other goals:

v) To eliminate the announcement effects that result from sporadic and hence sizable changes in the discount rate, and

vi) To provide a stronger inducement than now exists for banks to become members of the Federal Reserve System, which would contribute to goal (ii).

II. PROPOSED DEVICES TO IMPROVE FEDERAL RESERVE CONTROL OVER THE MONEY SUPPLY WHILE PERMITTING UNRESTRICTED USE OF THE WINDOW

This section discusses six devices that it is believed would improve Federal Reserve control over the money supply while permitting unrestricted use of the discount window.

1. Sources of Slippage Between Nonborrowed Reserves and the Supply of Demand Deposits, and How to Reduce Them

As is well known, the slippage that exists between the volume of nonborrowed reserves, which the Federal Reserve controls largely through open market operations, and the supply of demand deposits can be traced primarily to variations in free reserves. Our primary concern in this section is with methods of reducing such variations while at the same time keeping the discount window open to all creditworthy borrowers willing to pay the price.

Other major sources of slippage--such as variations in the reserve ratio as a result of shifts of deposits between banks with different reserve requirements and between member and nonmember banks, changes in time deposits, and currency drain--would not be affected by the proposed reforms except indirectly through goal (vi) above.

The operation of the discount window obviously affects free reserves through borrowing. It is reasonable to suppose that the volume of bank borrowing is influenced in part by the profitability of borrowing, as measured by the spread between the discount rate

and short-term market yields; this supposition is supported by the empirical evidence. It is also generally agreed that a rise in aggregate demand and economic activity tends initially to be accompanied by a rise in short-term market yields unless it is accommodated by a commensurate expansion of the money supply.[1/] Under these conditions, as long as the discount rate is kept unchanged, a rise in demand tends to increase the profitability of borrowing; and since the rise in market rates also tends to reduce the demand for excess reserves, the result is likely to be a reduction of free reserves and thus a procyclical movement in the money supply, relative to nonborrowed reserves.

Under the present system this tendency is, of course, moderated by various limitations on the use of the discount window through regulations, frowns, and suasion. Such administrative limitations in turn seem unavoidable so long as the discount rate is changed only infrequently, permitting sizable fluctuations in the spread between it and short-term market yields and corresponding variations in the incentive to borrow. Furthermore, since changes in the discount rate have tended to occur infrequently, and often only after some debate within the Federal Reserve System, they have come to acquire a symbolic meaning (even if often a rather obscure one) apt

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1/ Cf. Section II.4 below.

to generate wide repercussions. And this very feature in turn has contributed to the practice of avoiding frequent changes in the rate.

Clearly the source of slippage between nonborrowed reserves and the money supply described above would be reduced if the discount window could be redesigned so as to minimize fluctuations in the incentive to borrow. The simplest way to achieve this result, of course, would be to shut the window altogether. But this solution is clearly inconsistent with preserving the essential role of the central bank as a "lender of last resort." Individual banks must have an outlet to which they can turn in case of "justified need" and, similarly, some methods must be provided by which the banking system as a whole can manage to satisfy reserve requirements in a way that is not unreasonably painful.

However, there is no reason in principle why borrowing from the discount window should not involve some significant penalty. Accordingly, one possible device to limit significantly the use of the window would be to set the discount rate at some level substantially above short-term market rates. There would then be an incentive for banks to avoid the risk of having to borrow and to repay promptly any borrowing that might have been incurred due to miscalculations of or unanticipated contractions in nonborrowed reserves. Yet banks could be allowed unrestricted use of the window

subject only to normal and prudent standards of creditworthiness, for use of the window would be limited by the cost of borrowing, without any need for fiat or frowns.

However, this approach has two major drawbacks: (1) Since the "penalty" would depend on the relation between the discount rate and market rates, it would still be necessary, in order to keep the penalty reasonably uniform over time, to change the discount rate from time to time. And that would perpetuate the announcement effects. (2) The method would in effect discriminate against small banks, which cannot make effective use of the Federal funds market as a source of funds. Indeed, if the banking system as a whole were out of debt, which presumably would be the normal circumstance under a penalty borrowing rate, the Federal funds rate would tend to hover below the rediscount rate and around short-term market yields, say the rate on 3-month Treasury bills (hereinafter referred to as 3-month bills; or in some instances, bills). Thus individual banks having access to that market could make up their deficiencies at that cost. Yet the smaller banks would have to pay the significantly higher penalty rate.

It is suggested that these shortcomings could be eliminated, while retaining the basic idea of a wide-open window at a penalty rate, by reorganizing the operation of the window along the lines set forth in sections 2 to 6 of Part II.

2. Outline of Proposed Reform--Basic Features

i) The window would be open to all borrowers willing to pay the discount rate as long as they met some appropriate tests of creditworthiness. To avoid uncertainties, each bank would be informed about the maximum amount of accommodation that it could expect to receive. The ceiling would be reviewed at stated intervals, except under special circumstances requiring a reappraisal of the bank's credit standing.

ii) The borrowing rate would be tied to a short-term market rate, say for the moment, the 3-month bill rate. This device would eliminate sizable, discontinuous changes in the discount rate and associated announcement effects.

iii) To maintain the penalty character of the window, the borrowing rate would be fixed at, say, last week's bill rate plus a fixed number of basis points, or plus a fixed percentage. Considerations relevant in setting the size of the penalty are set forth later.

iv) Borrowing at the window would be for very short terms--usually for a single day--though automatically renewable at the option of the borrower.

v) To avoid discrimination against smaller banks, the Federal Reserve would provide, for such banks, accommodations similar to those obtainable through the Federal funds (hereinafter abbreviated

FF) market. Specifically, those entitled to the special accommodation would be allowed to borrow at the window at a daily rate equal to that day's average FF rate plus a commission, consisting of a fixed but moderate number of basis points or a moderate percentage charge, as noted above. This facility could be provided for banks not exceeding a certain size or at particular locations, or perhaps more equitably, for loans not exceeding a stated modest size. If the latter device were adopted, one might expect that this facility would, in fact, be used only by the smaller banks with inadequate access to the FF market.

3. Elaboration of the Proposal

It should be noted that the reform outlined in section 2 is only part of a broader plan. Indeed, what has been proposed so far would be of no help in achieving goal (iv)--improved spatial allocation of bank credit--of Part I. To that end there is a separate proposal, described in Part III, to provide facilities for longer-term borrowing. Accordingly, the rest of Part II is concerned only with the operation of the "1-day window."

The first questions that need to be considered are: To what rate should the discount rate be tied? And how large should the premium be? These two questions are closely interrelated. Clearly, it would be desirable to anchor the discount rate to the yield of some market instrument of major importance--one that has a broad,

well-organized market. This would insure that the chosen rate would be "representative" and relatively free of erratic movements. From this point of view, the 3-month bill rate would seem to be an obvious choice, at least under present arrangements.

There are, however, two related problems to be considered. First, any specific instrument may, at times, reflect special influences. Second, there are some delicate issues involved in tieing a 1-day rate to a 3-month rate, if at the same time borrowing is unrestricted. In particular, "term structure effects" (for example, expectations of a forthcoming fall in the 3-month rate) might make it profitable to borrow short at a rate negligibly higher than the 3-month rate.

To avoid these problems, it would seem desirable to peg the discount rate substantially above the 3-month bill rate. One relevant guide in deciding on the size of the premium is provided by the consideration that, with a truly open discount window, the discount rate, by and large, would set the ceiling for the FF rate. In other words, as the FF rate approached the discount rate, the demand for funds would become highly elastic as would-be borrowers turned to the window. This consideration suggests that the premium should be sufficiently large to allow the FF rate to deviate from the bill rate as much as might be justified by term structure and other special circumstances affecting the bill rate, without making it "profitable" to borrow at the window.

While it is impossible to set an absolute limit, the above considerations suggest a premium on the order of 100 basis points, a margin somewhat larger than the largest amount by which the (weekly average) FF rate has exceeded the 3-month bill rate in recent years. (Unfortunately this experience is a very limited one since, as is well known, until early 1965 habits and convention prevented the FF rate from being bid above the discount rate; and this, of course, also tended to distort the relation of the FF rate to other rates.)

With such a differential, one could accommodate substantial variability in the proper relation between the FF rate and the short-term rate to which the discount rate was tied, without creating incentives to borrow at the window and hence without causing undesirable flurries in the volume of borrowing. An alternative, and probably more effective, device to guard against this source of difficulty is discussed below. This would be to rely on a floating differential.

But first, it is well to examine more closely both the long-run and short-run behavior of the proposed system--assuming the premium over the bill rate to be substantial but of fixed size. We propose to show that, under this system, free reserves would tend to fluctuate rather narrowly around a substantially constant "equilibrium" level. In other words, while fluctuations of free

reserves would not be (and should not be) altogether eliminated, deviations of free reserves from the constant equilibrium level would set up strong forces tending to move these reserves back toward equilibrium.

4. Behavior of Free Reserves and Supply of Demand Deposits Under the Proposed System

4.1 The analysis that follows is based largely on some very definite views as to the major forces that shape banks' portfolio management and their use of the discount window, as well as the behavior of short-term market yields. These views in turn appear to receive strong support from the empirical analysis of recent experience undertaken in the course of the MIT-FRB econometric research on the working of stabilization tools.2/

This evidence supports the view that the volume of free reserves outstanding at any given time reflects two basic sets of forces:

(1) An "equilibrium" component, to wit, the desired or equilibrium level of free reserves. This equilibrium level itself

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2/ Some of these results have already been published in de Leeuw and Gramlich, "The Federal Reserve-MIT Econometric Model," Federal Reserve Bulletin, Jan. 1968, especially pp. 13-16 and equations (1), (2), (3), p. 31; and Rasche and Shapiro, "The FRB-MIT Econometric Model: Its Special Features," American Economic Review, May 1968, especially Section IV C. Others are contained in yet unpublished memoranda of the project; it is expected that these results will be published in the near future. (See in particular Modigliani and Rasche, "Central Bank Policy and Money Supply," multilith, presented at the 1967 meetings of the Midwestern Economic Association.)

is the difference between (i) desired excess reserves, which depend on short-term market yields and tend to decrease as these yields increase, and (ii) the optimum volume of borrowing at the window, which is basically controlled by the spread between short-term market yields--such as the FF rate or the 3-month bill rate--and the discount rate. (Note, however, that the FF rate is an adequate measure of short-term yields only for the very recent period, in which that rate was not conventionally kept at, or below, the discount rate.)

(2) A disequilibrium component reflecting the inability and/or undesirability for banks to adjust instantaneously to unforeseen (or transient) changes in their deposits or in the demand for commercial loans. The unforeseen changes in demand deposits in turn reflect (i) unforeseen changes in nonborrowed bank reserves due to Federal Reserve operations and changes in currency holdings (and time deposits), and (ii) the unforeseen effect on demand deposits of expansion and contraction in bank credit itself. Component (ii) implies that, even in the absence of the changes under (i), the adjustment of free reserves to their equilibrium level tends to occur gradually over time--somewhat along the lines of the textbook description of the process of expansion of deposits in response to an initial disequilibrium. In addition, the process of adjustment gets disturbed by the changes under (i). Thus free reserves tend

to be high when there is an unforeseen increase in nonborrowed reserves or an unforeseen slackening in the demand for commercial loans, and to be low when the unforeseen changes are in the opposite direction.

The evidence referred to above also supports the view that changes in short-term market yields (say, the 3-month bill rate or the commercial paper rate) are accounted for largely by the interaction of the supply of demand deposits, controlled by the forces outlined above, and the demand for demand deposits, which is basically controlled by current and past levels of income and short-term market yields. It further suggests that in the "short run" (say, a quarter or less) the level of income is largely unaffected by variations in the money supply or short-term interest rates (at least as long as these remain within realistic limits). It therefore follows that, in the short run, the level of short-term market yields is controlled, in the last analysis, by the behavior of the outstanding stock of demand deposits.

4.2 In the light of the above interpretation of bank behavior, we can examine first what would happen to the "equilibrium" level of free reserves under the proposed system. To this end, it is convenient to ignore initially operations at the special discount window provided for small borrowings.

It should be evident that by floating the discount rate sufficiently above short-term market yields the desired or equilibrium

level of borrowing can be brought essentially to zero, and this would be true regardless of the level of the short-term rate. (By contrast, under the present system a rise in market yields increases the equilibrium level of borrowings unless, and until, counteracted by a rise in the discount rate.) It then follows that the equilibrium level of free reserves would itself tend to be constant except for the effect of market yields on excess reserves. However, this effect appears to be fairly moderate, except possibly for extremely low levels of market yields where "liquidity-trap phenomena" could become significant.[3/] Furthermore even this effect could be eliminated by the device of paying interest on excess reserves, as is discussed in section 6 beginning on page 26. But even without this device we are led to the conclusion that the equilibrium level of free reserves would tend to be stable (and prevailingly positive) under normal conditions, except for some tendency to decline mildly with the prevailing level of market yields.

Finally, we may note that if the system were in a position of equilibrium, with borrowings near zero and excess reserves in equilibrium, then one could expect the FF rate to hover around the

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3/ Analysis of recent years suggests that an increase of 100 basis points in short-term yields--in, say, the 3-month bill rate--tends to reduce excess reserves by somewhat less than $50 million within 1 month and by somewhat less than $100 million within one to two quarters.

bill rate. More precisely, in the absence of term-structure effects (that is, if short-term rates were anticipated to stay unchanged in the near future), it should tend to be quite close to the bill rate, though term-structure effects could cause it to deviate, within limits, on either side of the bill rate. This proposition seems fairly obvious and can be supported by a more rigorous analysis, which we need not spell out here.[4/] The above considerations have the following implication, which is important for an understanding of the workings of the proposed reform: provided the discount rate were set significantly above the 3-month bill rate, and if the system were in a position of equilibrium, the FF rate could be expected to be significantly below the discount rate.

We can now reintroduce the special "Federal funds window" for small operators and show that this does not significantly change the above conclusion. We need observe only that those who are eligible to use the special window and who find it economical to do so would be borrowing at a rate differing only by a small commission from the

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4/ The above conclusion rests on the assumption that bills will continue to represent an important component of secondary reserves and source of short-term liquidity. Should this premise lose its validity and bills cease to be held by banks in significant quantity--except for the purpose of satisfying collateral requirements--then the bill rate would no longer provide a reliable yardstick of short-term yields and hence would no longer be a suitable rate on which to anchor the discount rate.

rate available to any would-be borrower, namely, the FF rate. Since the relation between the FF rate and short-term yields was just shown to be such as to induce the banking system as a whole to hold positive free reserves, regardless of the level of short-term yields, we can infer that this relationship would provide the same incentive to special borrowers as a whole. Hence, they would also tend to hold a positive and relatively stable amount of free reserves; these reserves would probably exhibit some tendency to move inversely, but moderately, with the level of market yields. Note, however, that the amount of borrowing at the special, in contrast to the regular, discount window would not be zero since some operators would on the average be borrowing there, just as many other banks would, on the average, be borrowing from the FF market. All we are asserting is that the net free reserve position of the group as a whole would tend to be stable.[5/]

5/ At a more refined level of analysis one should recognize that the incentive structure would be a little different for those operating at the special window. In the first place, if they were short of reserves, they would be paying somewhat more than the larger operator using the FF market. In addition, they would probably earn less if they were long on reserves. In fact, small operators would probably tend to hold any excess funds in the form of excess reserves yielding nothing, instead of lending them in the FF market where they would yield the FF rate less transactions costs. (However, these qualifications do not require modifying our conclusions that their "equilibrium" level of net free reserves would tend to be stable though probably somewhat higher than for the larger operators, and probably also somewhat less responsive to variations in market yields.)

4.3 We can now examine the short-run, dynamic behavior of the model in response to developments pushing it out of equilibrium. For analytical purposes we can distinguish between disturbances originating in the economy and those originating from Federal Reserve actions, though of course in general both types of disturbances may occur simultaneously and reinforce or offset each other.

(i) Consider first the response of the banking system to a situation in which the Federal Reserve wished to hold down the money supply and raise short-term market rates. To this end the Federal Reserve would force an (unanticipated) contraction in non-borrowed reserves (relative to the normal seasonal and secular pattern). As a result, free reserves would initially fall short of the planned level. This implies an increase in the demand for, and/or a decrease in the supply of, funds in the FF market, which would immediately raise the FF rate. If the Federal Reserve action were sufficiently strong, the shortage of reserves would be such as to push the FF rate to the ceiling provided by the discount rate. At this point some banks would be induced to borrow at the window, thus acquiring the additional reserves needed to satisfy reserve requirements (plus the demand for excess reserves, probably somewhat reduced). But now the higher cost of borrowing (whether at the window or in the FF market) relative to other short-term market yields would put pressure on banks to reduce their asset portfolios,

thereby shrinking the supply of demand deposits and required reserves, until the borrowing had been eliminated and free reserves had moved back to equilibrium. In the process short-term market yields would, of course, tend to move up, which is presumably what the Federal Reserve intended. But note that this rise would not per se reduce the pressure for the banking system to get out of debt. Indeed, with the discount rate floating above the bill rate, a rise in the latter would not reduce the incentive for individual banks to avoid a net borrowed position.

(ii) Suppose instead that the Federal Reserve wished to expand the money supply and lower short-term market rates, and accordingly brought about an unanticipated expansion of nonborrowed reserves. Here initially free reserves would exceed the planned amount, causing an increase in supply and a fall in demand in the FF market. This would lower the FF rate relative to the bill rate, encouraging an expansion of banks' portfolios and the money supply and leading to an increase in required reserves. The incentive to expansion would persist until free reserves had moved back to equilibrium, and thus the FF rate had reestablished its equilibrium relation to the bill rate. Here again the bill rate would presumably fall in response to bank expansion, as intended. But this fall would not reduce the incentive to expand the money supply until the additional reserves had been absorbed by higher required reserves; for as long

as free reserves remained above equilibrium, the FF rate would tend to remain below the rate on bills and other short-term instruments.

(iii) By relying on the reasoning developed earlier, one can also readily establish that the pressures and responses described in (i) and (ii) apply equally to the subset of "small" operators having access to the special "Federal fund window."

In summary, an (unanticipated) expansion or contraction of nonborrowed reserves would, initially, be reflected largely in opposite movements of free reserves and of the FF rate, relative to the bill rate. But this would be only a temporary and (appropriate) cushioning reaction. For the movement of the FF rate in turn would generate incentives to actions that would tend to bring free reserves back to the initial equilibrium (except for the small effect of the change in short-term market yields on excess reserves). With free reserves moving back to the original position, the supply of demand deposits would tend to move commensurately with the change in nonborrowed reserves. The final change in short-term market yields (that is, the bill rate) would then depend on the size of the change in nonborrowed reserves and the (short-run) elasticity of demand deposits with respect to short-term yields.

(iv) Consider next the effect of an increase in the demand for money (an upward shift in the demand schedule relating money demand to short-term yields). This would tend to raise short-term

market yields, unless the money supply increased. But there could be no significant increase in the money supply so long as the Federal Reserve kept the level of nonborrowed reserves unchanged. Indeed, under these conditions, the money supply could expand significantly only through an increase in borrowing. But since the rise in the bill rate would be accompanied by a commensurate rise in the discount rate, there could be no incentive for banks to expand their borrowings. With borrowing unchanged, free reserves would also be unchanged, except again for a moderate decrease in response to the higher market yields, and hence the money supply would be basically unchanged, as stated above. Needless to say, if the Federal Reserve wished to prevent the bill rate from rising, it could do so by supplying additional reserves, in amount sufficient to increase the supply of demand deposits pari passu with the increased demand. The reasoning can be repeated mutatis mutandis, in the presence of a decrease in the demand for money and falling interest rates.

(v) A different and very important type of disturbance originating from the economy would be an (unanticipated) surge of demand for commercial loans. Banks, as we suggested earlier, would initially tend to accommodate the increase without a commensurate reduction in the rest of their portfolio. Hence, the supply of demand deposits and required reserves would in the first instance rise. But with nonborrowed reserves unchanged, the system would

be short of reserves, and hence the FF rate would tend to be pushed to the discount rate ceiling, opening up the window to an amount of borrowing needed to satisfy reserve requirements. But again the increase in the cost of borrowing (whether at the window or in the FF market) relative to short-term market yields would generate an inducement for banks to reduce their portfolios and the supply of demand deposits, until the borrowing has been eliminated and free reserves had moved back to equilibrium. Of course, the reshuffling of bank portfolios would likely involve some net liquidation of bills and other market instruments to accommodate the expansion of loans, which would result in some increase in short-term market yields. But once more this would not modify the incentive for the banking system to get out of debt to the Federal Reserve since the discount rate would be moving pari passu with the bill rate.

Similar conclusions hold mutatis mutandis, if an unanticipated decline occurred in the demand for loans.

The above analysis has one implication that is worth noting. It should be apparent that under the proposed reform a level of free reserves in excess of the constant equilibrium level would tend to be accompanied by an expansion of the money supply. Furthermore, the larger the excess, the larger the rate of expansion of the money supply would tend to be. Conversely, free reserves below that constant level would tend to be accompanied by a contraction of

the money supply at a rate commensurate with the negative gap. The proposed reform would thus tend to validate a view of long standing that there is a direct, reliable association between the volume of free reserves and the rate of change of bank credit and the money supply. Yet, paradoxically, this view is not warranted under the existing set-up in which the equilibrium level of free reserves is not stable over time because of variations in the spread between the discount rate and market yields. It is not inconceivable that reliance on that unwarranted view may have been responsible for certain past failures in monetary management.

5. Choice of the Penalty Rate--Case for a Sliding Differential

We are now in a position to set forth the main considerations that would seem relevant in setting the size of the differential between the discount rate and the bill rate, or other short-term rate, to which it was tied.

It follows from the analysis of section 4 that the essential implication of a large differential is that banks would tend to find it undesirable to stay substantially in debt for extended periods. But this means, in turn, that the volume of demand deposits could be kept under close control by the Federal Reserve through its control over nonborrowed reserves (and reserve requirements). At the same time, since a temporary shortage of reserves could push the FF rate as high as the discount rate, a large differential

would imply the possibility of substantial short-run variability of the FF rate and related very short-term market rates. By the same token, a small differential would imply more limited variability of the FF rate but at the cost of tolerating a larger and longer-lasting departure of the money supply from the level determined by nonborrowed reserves--that is, in essence, a looser coupling between nonborrowed reserves and the money supply.

The above considerations suggest that the choice of the differential would be dependent in large part on one's view concerning the nature of the monetary mechanism. Those holding that the cutting edge of monetary policy rests on the effects of such policy on interest rates and related financial yields would presumably be led to favor a set-up that minimized unintended movements of interest rates and hence to prefer a relatively small differential. On the other hand, those leaning toward the view that the money supply affects economic activity directly might well be led to favor a system that minimized unintended movements in the money supply, even if at the cost of larger short-run fluctuations in interest rates.

In my view, however, a reasonable choice of differential does not really require settling the thorny issue about the nature of monetary linkages. For whatever one's view on that issue, presumably it is generally agreed that departures from the intended

course, whether of the money supply or of very short-term market rates, can have a noticeable effect on the economy if they persist--but not if they are ephemeral. And this is particularly true once the rules of the game are well understood and stable and the participants have had a chance to adjust to them.

Hence, insofar as purely transient disturbances are concerned, the choice of the differential is unlikely to be of real consequence. On the other hand, in the case of marked and/or persistent departures, the Federal Reserve would soon have to reach a decision as to whether the most suitable response involved modifying the interest rate target or the money supply target, or some combination thereof. In such circumstances, the choice of the differential would therefore control only the character of the short-run, semiautomatic response of the model while the Federal Reserve made up its mind as to the appropriate eventual response.

In any event, the dilemma of choosing between a high or a low differential could be avoided by adopting a "compromise" system, which should prove largely agreeable to both points of view. The compromise would consist of <u>tieing the discount rate to the bill rate with a variable peg</u>. Under this scheme the differential would remain fixed at some base level as long as aggregate borrowing at the discount window remained below some stated amount. But if borrowing were to exceed this amount, then the differential would rise

with the volume of aggregate borrowing, according to a pre-established schedule.

By making the base level of the differential relatively modest, moderate and transient variations in the demand for money could be absorbed by an elastic money supply, with minor effects on market yields. This feature appears especially desirable in light of the difficulty in determining reliably the demand-for-money schedule, and hence the supply of deposits appropriate to a certain level of short-term rates. Yet, larger and more persistent disturbances, while still initially accommodated at the window, would be accompanied by a larger increase in the differential cost of borrowing, which would put pressure on banks to eliminate rapidly at least a portion of their borrowing. Such disturbances would thus tend to be communicated promptly to interest rates, unless of course the central bank decided to accommodate the larger demand by increasing the supply of reserves, thus reducing the effect on interest rates.

Finally it should be noted that while the schedule of penalty rates would influence the response to a tight money situation, such a schedule would have little influence in shaping the response to a loose situation, characterized by a rise in free reserves. That response would be controlled by the fall in the FF rate below market yields and by the speed with which banks would respond to this situation by expanding their portfolios of earning assets.

6. A Possible Minor Improvement: Payment of Interest on Excess Reserves

I have noted, in setting forth the anticipated behavior of the banking system under the proposed reform, that some variation in free reserves would continue to be present because of the negative association between equilibrium excess reserves and short-term market yields. Even this source of variation in equilibrium free reserves could be largely, if not totally, eliminated by the simple device of paying interest on excess reserves at a rate tied to short-term market yields.

It is suggested that the most effective arrangement would be to peg the interest on excess reserves a certain number of basis points (or a fixed percentage) below the FF rate. (The differential could be thought of as something in the nature of a commission paid to the Federal Reserve Bank for investing the free reserves of the banks owning them.)

This arrangement could be expected to have the following major effects: (i) If the differential were made sufficiently large--say on the order of 50 basis points, or even somewhat larger--there would still be an incentive, at least for larger banks, to invest unneeded reserves directly in the FF market to avoid the differential. Thus one would largely preserve a well-working FF market. (ii) Smaller banks not having ready access to the FF market would be able

to derive an income from their reserve surpluses commensurate with that earned by the larger banks, except for a reasonable commission. (iii) Because those now relying on the FF market as an outlet for their surplus funds would gain less from this activity than under the old system--to be precise, they would earn the differential instead of the full FF rate--one would expect that the equilibrium demand for excess reserves would increase. (iv) But under the new system the amount gained by investing surplus funds in the FF market instead of keeping them as excess reserves would become a constant--the differential--that would be independent of the level of the FF rate. Thus, while the equilibrium level of excess reserves would presumably tend to be generally larger than under the present system, it would become independent of fluctuations in short-term market yields.

Even greater stability in the level of excess reserves could be achieved by use of a sliding differential similar to that proposed above for the discount rate. That is, the differential would be kept constant as long as excess reserves were below some stated amount; but if excess reserves grew larger, the differential could be increased--thereby encouraging investment in the FF market, which would lead to a lower FF rate, and thus finally, through portfolio expansion, to a reduction in excess reserves.

One important caveat must be entered at this point. The stabilization of excess reserves results from making the opportunity

cost of holding excess reserves independent of the level of market rates. However, a difficulty would arise if the FF rate became so depressed as to be lower than the posted differential. Under such circumstances, because the interest paid on excess reserves cannot be less than zero, the differential itself would have to be reduced--which would lead to an increase in the desired level of excess reserves. What this means, of course, is that the payment of interest on excess reserves is an effective stabilizer of excess reserves only so long as the banking system does not encounter liquidity traps; but it affords no protection against a liquidity trap.[6/]

6/ It would be possible, in principle, to design the proposal so that it could afford some protection even against situations of very low returns from investments and associated very low market yields. But this would require the radical step of applying the differential even when the FF rate were so low as to imply a negative interest--or in other words, the levying of a penalty--on excess reserves. The general effect of such a penalty, of course, would tend to be that of making it possible for market yields to become extremely low--indeed in principle even negative. This, in turn, would clearly be a useful stabilizing mechanism. I must hasten to add, however, that it is hard to say just how effective this mechanism would in fact prove to be. For one thing, faced with a penalty on excess reserves, banks not finding any adequately yielding market instrument might endeavor to turn depositors away. It is unlikely that they would refuse deposits outright--because of long-run considerations. They might instead have recourse to service charges aiming at the same results. But this would still be a stabilizing influence for it would imply a negative return for holding money--a storage charge--which again would facilitate bringing market rates to very low or even negative levels and would encourage investments in real assets.

A great danger is the possibility that banks might artificially increase their deposits, in order to absorb excess reserves, by making ficticious loans to customers. It is impossible to predict just how widespread such a practice might become, what its effects might be, and how it could be prevented or limited. However, it hardly seems worthwhile to dwell on the issue of a penalty on excess reserves because for the moment at least, the likelihood of short-term market yields being so low as to create real problems seems rather remote.

III. PROPOSAL FOR SPECIAL BORROWING FACILITIES AIMED AT IMPROVING THE SPATIAL ALLOCATION OF BANK CREDIT

This section describes in brief fashion a proposal for creation of special borrowing facilities, the purpose of which would be to improve the allocation of bank credit--that is, goal (iv) above.

1. Proposal Outlined

The reform sketched in Part II hopefully would go a long way toward achieving the first three goals set forth in the Introduction. But it would do little toward the fourth--improvement of the spatial allocation of bank credit--except possibly insofar as it would tend to make more uniform, across the banking system, the cost of very short-term borrowing and the rate of return from very short-term lending.

In order to achieve goal (iv) and as a further contribution to goal (iii), I would like to advance a second proposal, the adoption of which, incidentally, would be largely independent of the implementation of the reform set forth in Part II. The essence of the proposal is to set up a second discount window (hereinafter referred to as the "term window")--one that would grant credit for an essentially fixed term, say 3 months, not repayable until maturity (except under special circumstances and/or with some appropriate penalty). The term window too would be open to any bank willing to pay the price, up to some limit determined by a creditworthiness

standard. At the same time, lending conditions would again be structured so as to stabilize the amount of borrowing, making it independent of the level of short-term market yields or of other indicators of monetary stringency. But in contrast to the first window, which would be designed to have a minimum of use, the term window would be designed to function as a substitute for an interbank loan market; and to perform this function on an adequate scale, the volume of borrowing outstanding might have to be substantial.

A market for interbank lending seems to have developed only to a very limited extent, except for overnight lending in FF market and through the correspondent banking system--a rather surprising phenomenon considering the very large number of banks that make up the U.S. banking system. To be sure, a satisfactory spatial allocation of funds could be achieved even in the absence of interbank lending, if there were adequate devices by which banks could attract funds from "surplus" areas to "short" areas. But until rather recently such a possibility has been very much limited by the levels of ceiling rates on time deposits and the prohibition of interest payments on demand deposits. More recently, increases in ceilings on time deposit rates and the development of a market for CD's have presumably led to some improvements. But there is reason to believe that even these developments fall short of adequacy

since the CD market is, in practice, accessible only to large, prime banks. The proposed term window could also be regarded as a device to extend to smaller banks facilities that are analogous to those provided by the CD market.

2. How the Term Window Could Contribute to Allocative Efficiency

Before inquiring how the terms of borrowing could be set so as to reconcile the goals of an open and extensively used window with that of a stable volume of loans outstanding, it would be well to ascertain in what sense the existence of the term window could be expected to improve the spatial allocation of bank credit.

Basically, the answer lies in the consideration that a window open to all on the same terms would tend to equalize the opportunity cost of funds among banks, and hence presumably also the terms on which credit would be available to would-be borrowers. It might be argued that this uniformity already tends to prevail, in the sense that under the present system all banks have the opportunity to invest in a common set of market instruments, and--what is more important--they all do invest, by and large, in certain instruments such as Treasury bills. It would therefore appear that the Treasury bill rate represents the common opportunity cost for all banks. But this is, in fact, not a valid inference since such bills are held not merely for their cash income but also, in part at least, to satisfy liquidity requirements (as well as certain other

requirements). One rather striking piece of evidence in support of this proposition is provided by the observation that many banks holding some bills in their portfolios have been willing to issue CD's at a significant premium over the rate on bills.

We must conclude then that, even though the cash yield is the same for all holders, the "total" yield, including the "liquidity" component, need not be the same. It follows that the opportunity cost of funds invested in other assets need not be the same for all banks, even if they all hold bills. In particular one would expect that when banks are compared on the basis of the relation of their supply of funds for lending relative to their lending opportunities, the opportunity cost would be higher for banks with lower supply-to-demand ratios than for banks with higher ratios.

Under these conditions we might expect that if banks that are relatively short of funds were enabled to borrow from banks with excess funds at a rate somewhat above the current bill rate they would, within some limits, tend to take advantage of this opportunity. The borrowing banks would then use the funds for expanding their loan portfolios (and possibly even their portfolios of short-term market instruments). For the lending bank the investment in the loan would presumably displace other assets, including some loans. And the redistribution of loans would presumably increase allocative efficiency.

The proposed term window would accomplish the same general result, though by a somewhat different route. Suppose the rate at the term window had been set somehow and that at this rate banks would borrow a certain volume of funds with which to expand their loans. In order to accommodate this demand, while keeping total reserves unchanged, the Federal Reserve would have to liquidate some of its portfolio of market instruments. This would raise market yields, thereby encouraging some banks--presumably those better supplied with funds-- to acquire market instruments at the expense of their other investments, including loans. Thus the final effect would be a redistribution of loans from more amply provided to less well provided areas through a somewhat circuitous route. In other words, the surplus bank would choose as a substitute for direct loans to its regular customers not loans to the less well supplied customers of other banks, but rather market instruments such as Treasury bills; such purchases by the bank with surplus funds would enable the Federal Reserve to exchange securities for cash, which it would lend to the "short" bank, which in turn would use those funds to expand its loans.

It might be noted from the above that one implication of the proposed reform might well be an increase in the yield on market instruments, especially short-term ones such as bills. As is well known, this is an effect that typically tends to accompany any

restructuring of the financial system whose result is more reliance on pure price rationing and less on other forms of rationing. It also follows from this analysis that the improvement in allocative efficiency one might expect from the proposed reform would depend on the views one had about the effectiveness of present arrangements for the spatial allocation of funds.

3. Operational Aspects

Having thus laid out the basic argument in favor of a term window, we can take up the problem of how to achieve simultaneously an open window and a substantial and yet relatively stable volume of borrowing.

Abstracting for a moment from "practicality," one could readily suggest a device that would accomplish the desired aim. Specifically, one could auction off on a regular schedule, say every week, a block of funds equal to the volume of loans that would come due in that week, somewhat along the lines of the present bills auction.

This approach probably deserves consideration in the light of the experience gained with the bills auction. Major drawbacks might be (i) administrative complexity and (ii) the fact that the auction might again give an edge to the larger banks, which are better equipped to participate in it. It is hard to say without further careful study how serious these shortcomings might be.

As an alternative, it may be possible to "simulate" closely an auction by a device similar to that suggested for the 1-day window: reset the borrowing rate at frequent intervals--say, once a week--and tie that rate to a short-term market rate--say, the 3-month bill rate or the CD rate--with a flexible differential, one that increases as the volume of borrowing increases.

With this arrangement one could not altogether avoid some variations in the volume of borrowing, but the variations could be kept within moderate bounds. One important feature that would tend to insure this result is that the shrinkage in the volume outstanding in any given week could not exceed the amount reaching maturity. Assuming a 3-month maturity, this amount would be approximately 1/13 of the outstanding volume. Furthermore, since this window would not be designed as a device for meeting short-run reserve requirements (which would be handled through the 1-day window), it would be quite appropriate to require that applications for loans to be taken down in a given week be filed some time in advance. Under these conditions the Federal Reserve would know in advance how the volume of borrowing at the term window would vary from week to week and could, if it wished, offset such variations by open market operations.

One could readily conceive of slightly more complex designs. For instance, the window could announce, say, 2 weeks in advance two

or more possible rates and ask for preliminary applications at each of the indicated rates. On the basis of this information it could set a final rate 1 week in advance and could accept as final all applications received at that rate. In short, it should not prove too difficult to design a system that would minimize fluctuations in the volume of borrowing outstanding and that furthermore could offset any remaining fluctuations through open market policy. It should be noted in this connection that there is little reason to be concerned with the danger that, in slack periods, the volume of borrowings would shrink beyond control. In fact, with a variable differential one could always go so far as to push the rate to a level below the bill rate, at which point the volume of borrowings would obviously become highly elastic because any bank could make a "hedged" profit by borrowing and using the proceeds to buy bills. (It is an open question whether under such conditions it would be preferable to let the borrowing shrink and to let the central bank purchase bills through open market operations.)

4. How Large a Target Volume of Borrowing?

It should be apparent from the discussion of section 3 that the smaller the target volume of borrowing, the easier the task of minimizing fluctuations in reserves caused by fluctuations in borrowings at the proposed term window. But it should be equally apparent that keeping the volume of borrowing low would reduce the

effectiveness of the proposal in achieving a better spatial allocation of bank credit.

To see how far these goals might be reconciled we might first ask this question: If one neglects the problem of stabilizing borrowing, how large a volume of borrowing at the term window might, in "the long run," be optimal? An answer to this question might be obtained by pursuing the idea that for smaller banks the term window should provide an alternative to the CD market. This criterion suggests the following answer: The volume of borrowing should be such that the rate necessary to induce it would be somewhat above prevailing CD rates for a maturity comparable to that offered at the window.

To understand the rationale for the suggested criterion, we may first note that a term-window rate close to the CD rate would tend to equalize roughly the opportunity cost of funds for all banks that were issuing CD's and/or using the window. To be sure, for banks not using either device the opportunity cost could be lower, presumably as low as the bill rate. However, since CD rates have tended, at least so far, to stay reasonably close to the bill rate, the difference in opportunity costs would remain within modest limits. At the same time it should be recognized that a lower rate at the term window would hardly be feasible, unless the window were somehow closed to banks issuing CD's--which would seem quite

undesirable and even inconsistent with the spirit of the proposal. The reason is that, with a completely open window, the borrowing rate would tend to set a ceiling on the CD rate. Or to look at this from a different angle, the demand for borrowing at the term window might be expected to become very elastic as the rate approached the CD rate.

These considerations suggest an operational and pragmatic approach toward the development of the term window. Suppose the Federal Reserve started out with a fairly modest target, say around $2 billion to $3 billion, which would imply a weekly turnover of $150 million to $200 million. If it then turned out that the rate needed to clear that volume of borrowing were on the average substantially above the CD rate, one could make two inferences: (i) that the window seemed to be contributing significantly to an improved allocation, filling a function not performed by present institutions (this inference could of course be further tested by examining the distribution of borrowing among banks and the apparent use made of the marginal funds acquired); and (ii) that there was a prima facie case for moving in the direction of increasing the target. It would then be possible to plan to have such an expansion occur gradually over time as experience was gained with operation of the window and with problems that might conceivably arise.

If on the other hand, even with a modest target, one should find that the rate tended to hover close to the CD rate and that the window was being used by banks that could have issued CD's, then one could infer that the target should be reduced, or even that the reform was contributing so little to the improvement of the system as to justify abandoning it.

5. Some Minor Complementary Suggestions

(i) It would seem appropriate to make the term window available only to banks that are members of the Federal Reserve System. This limited-availability feature, when coupled with the payment of interest on excess reserves (and a graduated system of reserve requirements), could go some distance toward providing an incentive for nonmember banks to become members, contributing to a better control of the money supply and short-term market rates.

(ii) One could relax the requirement that all borrowing at the window be for a single fixed term and allow some choice of terms, say between 2 months and 6 months. The rate for such loans could be tied to rates for the corresponding maturities on the chosen market instruments, be it CD's or bills, through a single differential applied to all maturities. However, this greater flexibility would complicate the task of stabilizing the volume of loans maturing in any given week. It is not clear that this refinement is worth the cost since banks could presumably manage, through

other transactions in short-term markets, to reconcile a fixed-term borrowing with their requirements. If the volume of borrowing at the window were sufficiently large, one might, as an alternative, conceive of developing some sort of secondary market, with or without the participation of the Federal Reserve.