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TECHNIQUES OF MONETARY POLICY

Remarks by

Henry C. Wallich
Member, Board of Governors of the Federal Reserve System

at a meeting of the

Missouri Valley Economic Association

Memphis, Tennessee

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Recent changes in monetary policy techniques adopted by the Federal Reserve direct attention once more to a variety of issues in the monetary field that have been debated from time to time over the years. I am glad to have this opportunity to give you a quick review of the new procedures and of their relation to lagged reserve accounting and the role of the monetary base. To begin with, I shall sketch briefly the nature of the old procedures.

Money Supply Control Based on the Funds Rate

In 1970, the Federal Reserve for the first time instituted a money-supply target, using the federal funds rate to achieve that target. Essentially, the procedure was to set the funds rate at a level at which the desired growth of the money supply would be forthcoming. Estimates of the demand for money at different interest rates, given the level of income, were derived from quarterly and monthly models and judgmental estimates and were, of course, always subject to correction. This procedure was adopted in preference to one that would seek to control the money supply by

controlling reserves because, among other things, it promised less disturbance to financial markets from sharp fluctuations in the funds rate.

This procedure seemed to offer several advantages. It avoided sharp fluctuations in the federal funds rate that would result from deposit shifts and associated changes in the multiplier. More broadly, any short-run shocks originating from the money-supply side would be kept from influencing the volume of money. Holding the funds rate more or less constant and, given a stable demand function, the amount of money demanded, meant accommodating such shocks by reducing or increasing the supply of reserves consistent with funds-rate stability. Since the multiplier link from reserves to deposits was not relied upon, the procedure also did not rely on any particular structure of reserve requirements.

The procedure also had significant disadvantages, however. For instance, a shock to the money stock from the demand side, causing the amount of money demanded temporarily to deviate from the targeted level, would be accommodated and thus deprived of its self-correcting side effects. Concretely, a drop in the amount of money demanded below target, under a funds-rate approach, would not be allowed to produce the reduction in interest rates that would help to restore at least partly the targeted money supply. Neither would a rise in the demand for money be allowed to generate a partly self-correcting increase in interest rates. In either case, the open market desk would alter the volume of reserves sufficiently to neutralize any self-correcting interest-rate change. This would be an undesirable effect if the shock to the demand for money turned out to be only temporary and if the objective of policy was to keep money constant.

If, on the other hand, the shock implied a permanent change in the relation of money to income, making a change in money desirable, the desk's action tending to adjust the money supply to this changed demand would turn out to have been appropriate. However, if the change in money demanded arose from an undesired change in nominal income, the funds rate targeting procedure tending to accommodate such changes, at least in the short run, would represent an undesirable accommodation.

These technical problems of the funds rate procedure were overshadowed by even more serious implications at the policy level. Even though the funds rate was being controlled for the purpose of controlling the money supply, a widespread public perception developed, or perhaps persisted, that the Federal Reserve was seeking to influence primarily interest rates. This misconception became apparent from the comments following the Federal Reserve's change to a reserves procedure on October 6, 1979. But even a correct perception of the funds rate as being merely an operating instrument did not discourage the market from closely watching that rate, ready to make portfolio changes and thereby transmit the impulse to other rates whenever the funds rate moved. The link thus established between the daily funds rate and a wide range of short-term market rates made it more troublesome for the Federal Reserve to move the funds rate in pursuit of its money-supply target. This created a danger that the Federal Reserve might move too late and too little, and that meanwhile the money supply might run away in a procyclical direction. Interest rates would then not move enough in the course of an expansion or contraction to maintain the equilibrium between the market rate and the marginal efficiency of investment or, as Wicksell would have put it, between the market rate and the natural interest rate.

Advantages of the Reserves-Based Procedure

I shall briefly summarize the advantages of the new procedure before describing its technical detail, because these advantages are the mirror image of the disadvantages of the old.

At the technical level, the procedure of supplying a given volume of reserves and thereby aiming via the multiplier at a given money-supply target has the advantage of partly insulating the money stock against shocks from the demand side. Such demand-side shocks, in the face of a constant money supply, will move interest rates in a self-correcting direction causing at least part of the demand-shock effect to be reversed. On the other hand, if the demand-shock reflects a lasting change in the relationship of money stock to income, an adjustment of the money stock is desirable and failure to adjust would be destabilizing. Finally, if the shift represents an unwanted change in nominal spending itself, the automatic restraint would be desirable.

At the policy level, the reserve-based procedure has the advantage of minimizing the need for Federal Reserve decisions concerning the funds rate. Interest rates become a byproduct, as it were, of the money-supply process. To be sure, the public and the Congress will remain aware that the Federal Reserve has something to do with interest rates. But there is widespread public and political support for a policy of holding down the money supply which probably cannot be said of the mirror image of such a policy in terms of interest rates. The new procedure, therefore, has a better chance of avoiding a pro-cyclical bias.

Among the technical disadvantages of the reserve-based procedure must be rated the greater variability of interest rates, which tends to result when the volume of reserves demanded does not match the amount supplied. Market factors such as float, Treasury balance, and currency in circulation, all of which cannot be precisely predicted, virtually ensure that such discrepancies will occur from time to time. There is, however, no reason why the daily funds rate should be as closely linked to rates such as those on Treasury bills, commercial paper, and CDs as it was under the old procedures. These rates for the most part are for periods beyond one month rather than one day.

Another technical drawback is the dependence of the new technique on reserve requirements. The growth of nonmember bank deposits becomes increasingly troublesome. So does the difference among reserve requirements for different types of deposits and different sizes of banks. The two-week lag in reserve requirements represents another source of multiplier instability. These problems are avoided under the funds-rate procedure. In terms of the effectiveness of achieving a given money-supply target, past studies suggest that the two approaches are approximately equal.[1/] However, inertia in the adjustment of the funds rate to needed levels under the old procedure would in practice tip the balance in favor of reserves.

1/ I examined the pros and cons of the two alternative procedures in "Innovations in Monetary Policy," presented to the Southern Economic Association at its meeting in Atlanta, Georgia, on November 18, 1976, printed in Readings in Money, National Income, and Stabilization Policy, edited by Ronald L. Teigen, University of Michigan, pp. 219-225.

A more fundamental potential disadvantage of a reserves strategy is its possible impact on the foreign exchange market in times of recession. If a recession depresses the demand for money, a reserve strategy will allow interest rates to decline whereas a funds rate strategy automatically would keep interest rates up unless the funds rate objective were lowered. Many observers have commented on the possibility that such a decline in interest rates might adversely affect the dollar. Several qualifications, nevertheless, attach to this line of reasoning. In the first place, the FOMC does not allow the funds rate to move without limit but maintains a range, albeit one considerably wider than under the funds rate procedure. Second, the demand for money is dominated by the movements of nominal GNP which recently have reflected more the rate of inflation than the growth of real GNP. Third, as long as inflation expectations are high, they will probably tend to keep interest rates high at the long end and to some extent probably also at the short end. Of course, if inflation expectations are declining under these conditions, interest rates will come down and should come down and can probably do so without adversely affecting the exchange rate.

Details of the New Procedures

The Federal Reserve's new procedures, based as they are on reserves, are sometimes described as relying on the money multiplier. The multiplier links the totality of reserves to deposits and the money supply. Strictly speaking the Federal Reserve's derivation of the appropriate reserve paths does not rely on direct estimates of the multiplier. Instead, the public's projected demand for currency is subtracted from the targeted path for money,

giving an implied target for deposits. Then, the volume of required reserves is estimated separately for various reserve categories and type and size of bank. In arriving at total reserves allowance must be made for some amount of reserves to be absorbed by excess reserves. In the past, excess reserves have been rather insensitive to interest rates and have remained fairly constant at what seems to be a frictional level. Allowance must be made also for the absorption of reserves by bank liabilities that do not enter into the money supply, such as interbank deposits, Treasury balance, and, under the new definitions of the monetary aggregates, deposits of foreign commercial banks and monetary authorities. Aggregation causes an aggregate multiplier to fall out, but this multiplier is an implicit one only. To estimate the open market operations needed to achieve the path of total reserves, account must be taken of the impact on reserves of market factors such as currency in circulation, Treasury balances with the Federal Reserve, and float.

These calculations lead to a level of total reserves, which on February 6, 1980, consisted of $42.7 billion required and $556 million excess reserves. Given expected total reserves, a decision must be made as to what part of these total reserves is to be supplied through open market operations and what part through the discount window. That divides total reserves into nonborrowed and borrowed reserves. Both borrowed and nonborrowed reserves, of course, sustain deposits. The level of borrowing from the Federal Reserve, given the discount rate, is related to the funds rate. Banks are willing to pay a premium for federal funds purchased in the market over funds borrowed from the Federal Reserve because they know that they cannot borrow from the Federal Reserve without restrictions. Therefore,

the volume of borrowing from the Federal Reserve tends to rise as the funds rate rises relative to the discount rate. At the higher funds rate, with other market rates moving in the same direction, banks and nonbanks have reason to restrain their demand for funds.

Thus, it is not a matter of indifference whether a given volume of total reserves is derived almost entirely from nonborrowed reserves or whether it contains a significant component of borrowed reserves. The larger the borrowed component, the higher, other things equal, the funds rate relative to the discount rate, and the stronger the tendency toward restraint.

Technically, tighter control would be obtainable if the discount window were more severely constrained, but prediction of reserves is difficult, and noisy short-run shocks are common. This suggests the need for a temporary shock absorber at the discount window.

Under the new Federal Reserve procedures some level of borrowing needs to be assumed in order to arrive at an estimate of the need for nonborrowed reserves. Typically, an amount in line with the existing volume of borrowed reserves is plugged into the calculation. However, the FOMC can modify this, within a given estimate for total reserves, making allowance in that case also for an appropriate change in the funds rate relative to the discount rate. Alternatively, the FOMC can change the discount rate and thereby change the amount to which banks will want to borrow at a given funds rate.

The new procedure thus focuses upon a family of reserve concepts. Total reserves are most closely related to the monetary aggregates, given reasonably stable excess reserves. Nonborrowed reserves are less closely related to the aggregates, because borrowed reserves can change. For that reason, however, total reserves are less easily controlled by the Federal Reserve in the short run, whereas nonborrowed reserves are under its immediate control.

Borrowed reserves can be controlled by the discount rate and by the supply of nonborrowed reserves, except to the extent that lagged reserve accounting makes the borrowed reserves interest-inelastic. In practice this means that, under lagged reserve requirements the level of nonborrowed reserves determines the weekly need for member bank borrowing, given their predetermined level of required reserves and minimal excess reserves. Consequently, a rise in the discount rate will push the funds rate up by an approximately equal margin since, in the very short run, the banks must borrow whatever fixed volume of required reserves they need given the nonborrowed reserves supplied to them. I shall turn to the issue of lagged reserve requirements later in my talk. At that time I shall also deal with the monetary base, which is the last in the family of reserve variables considered under the new procedures, although at a lower level of importance.

Misconceptions Concerning the New Procedures

The new procedures of the Federal Reserve have given rise to some understandable misconceptions that suggest that the Federal Reserve has not been fully effective in making itself understood. I shall examine some of these now.

"Tightness should be measured by interest rates." Under the old procedures, watching the funds rate was the proper way to watch what the Federal Reserve was doing. Under the new procedures, it is the money supply that needs to be watched for such signals. The funds rate is a byproduct, within the wide limits set by the Federal Reserve. This is hard for Fed watchers to accept, not only because it is new, but more particularly because it is interest rates that most Fed watchers earn their money by, not the money supply. Moreover, interest rates are visible in the newspapers and on screens continuously, while the money supply figures appear once a week and are subject to revision. Nevertheless, in terms of the new procedures, it is wrong to say that the Fed has eased when interest rates go down. The proper test is whether the money supply strengthened more than very temporarily without the Fed acting to offset it by lessening reserve growth.

"Reserves are an indicator of monetary policy." Some who argue this do so because they are aware that the Fed is operating on reserves now, others because they believe that a move of reserves -- total, required, or nonborrowed -- foreshadows future movements in the aggregates. For the most part, this view, too, is misleading. Movements of reserves relate not only to the monetary aggregates, but also to shifts of funds among banks, among reserve categories, and among reservable liabilities included or excluded in the monetary aggregates. It is quite possible, for instance, to see reserves go down while the aggregates increase, or vice versa.

"Nonborrowed reserves do not control the money supply." It is sometimes alleged that the Federal Reserve focuses exclusively on nonborrowed reserves, allowing borrowed reserves to go where they will, because it believes

that borrowed reserves cause contraction instead of expansion. Obviously, borrowed reserves, which the bank receiving them through settlement cannot distinguish from nonborrowed, support expansion just as well as nonborrowed reserves do. The Federal Reserve, therefore, looks primarily at total reserves. It is aware, however, that an increase in the proportion of total reserves derived from borrowing, associated with a widening spread between discount rate and funds rate, has effects on other interest rates and on bank and nonbank behavior that are more conducive to restraint than if the same reserves had been supplied through open market operations.

"The funds rate at the time the Fed enters the market is a tip-off to where the Fed wants the funds rate." This was undoubtedly the case under the old procedures, and constituted one of the most important signals given by the desk to the market. The Fed usually did not enter the market unless the funds rate was moving in one direction or the other. The level at which it entered told the market something about whether the Fed wanted the funds rate to stop there, or at least wanted to slow down its movement. Under the new procedures, the Fed enters the market when its estimates of reserve availability tell it that there is a need to supply or drain reserves. The funds rate level at which this happens is largely fortuitous. It is only if the Manager lacks confidence in his estimates of reserve availability that he may take the movement of the funds rate as an indicator of whether the market, at the going rate, has a reserve deficiency or a reserve surplus. Since reserve estimates are being made continuously both at the Federal Reserve Board and at the Federal Reserve Bank of New York, with an input from Treasury on the important Treasury balance factor, the danger that the

Manager may fall back into manipulating the funds rate as a proxy for estimates of reserve needs is small.

"The Federal Reserve's role when on a money-supply target is essentially passive." It has been argued that adoption of a money-supply target is virtually synonymous with a money-supply rule which in turn means passivity of monetary policy. In response, it needs first to be noted that the short-run money-supply target, set monthly by the FOMC for overlapping three-month periods, is not invariant even if the long-term (one-year or possibly more) target is invariant. Short-term deviations from the long-term target are almost unavoidable. Some may be predictable in advance and those of a temporary nature could be accommodated without harm. Conditions in the financial markets and in the economy may make it more advisable or less advisable to get back on track immediately. Short-term monetary policy therefore needs to be mobile rather than passive.

More importantly, however, even a constant money-growth rule is by no means a prescription for central bank passivity. The consequence of a firmly adhered to monetary target under conditions of cyclical fluctuations implies wide fluctuations in interest rates. The natural tendency of the money supply and of a central bank concerned primarily about interest rates, is to be inadvertently pro-cyclical. The central banks will tend to move interest rates less than needed to preserve the Keynesian or Wicksellian equilibrium between the market rate and marginal efficiency of investment. A money-supply target will push the central bank in the direction of allowing or generating wider interest-rate swings. Conceivably even the larger swings induced by a constant rate of money growth will not be sufficient to maintain the required equilibrium since demand for money

varies with the interest rate. To maintain that equilibrium, the money supply, or at least its growth, might have to be altered, countercyclically. In any event, a money-supply target implies wide interest-rate swings and in that sense a highly activist monetary policy.

The Monetary Base

The monetary base, consisting of currency and member bank reserves, is often proposed as the best target for monetary policy. Under the new Federal Reserve procedures, this use of the base has been advocated in the context of a reserve aggregate for the Federal Reserve to aim at. More generally, however, the base has been proposed as a target in addition to, or in place of, monetary aggregates such as the M-1s and M-2. In support of the base, it is argued that it can be shown to be closely related to income, that it has not been as much exposed to demand shifts as have M-1A or B and M-2, and that its growth rate, on average somewhat higher than M-1A or B, has been a more reliable indicator of excessive money creation than M-1A or B.

Personally I believe that the entire money supply approach would have to be in even greater disarray than it is today before we should have recourse to the monetary base. The monetary base today consists of about $105 billion of currency in the hands of the nonbank public, $15 billion of vault cash held by banks, and $30 billion of member bank deposits with the Federal Reserve a total of about $150 billion. In other words, the base consists very predominantly of currency. There is something peculiar about the volume of currency outstanding in the United States, which amounts to approximately $500 per capita, because there is no evidence that a substantial

part of the total is held by businesses. Obviously it is not held by representative households either. Nobody knows how much American currency is held abroad, has been destroyed, or perhaps is used in some underground economy, but one guesses that the sum of such elements may be substantial. An aggregate containing such components does not inspire a great deal of intuitive confidence.

As a proxy for the M-1s and M-2, the base clearly is defective. In terms of reserves absorbed, it gives a weight of one to the currency component but a weight of only about one-eighth to demand deposits and one-twenty-fifth to the deposit component of M-2.

Whether the base tracks income better than do the M-1s or M-2 is partly a matter of one's econometrics. But in any event the direction of causation in the past was predominantly inverse. Currency holdings must be supposed to be mainly a function of retail sales. The base, therefore, was likely to have been determined by income more than the other way about.

The endogenous character of currency is troublesome in still another respect. When the public's demand for currency increases, the Federal Reserve automatically offsets it, under a reserves operating target, by providing the banks with reserves sufficient to cover the shortfall of reserves on the unwithdrawn balance of their deposits. Using the base as a policy guide would require a massive contraction or expansion of deposits with any temporary or permanent change in the ratio of currency to deposits. Such variations in deposits would in practice not be feasible. For these reasons the base is not even assuredly controllable, as is sometimes argued, let alone a dependable policy guide.

Lagged Reserves

The shift to a reserves-based procedure has injected new life into the old controversy about lagged reserve requirements. Since September 1968, member banks' required reserves are based, not on the reservable liabilities of the period during which reserves must be held, but on the liabilities of two weeks earlier. The advantage of this arrangement is that banks find it easier to establish their reserve liabilities and can avoid the extra costs, errors, and corrections implicit in contemporaneous reserve accounting. A second advantage, at least in the eyes of some, is that required reserves cannot be reduced by anything the banks can do during the reserve settlement period, such as selling off securities or cutting back on loans, even if system-wide deposits have meanwhile changed. The past is fixed, and the banks must scramble to find reserves or to dispose of excess reserves, allowing for a two-week carryover, if they want to avoid reserve excesses or deficiencies. Other things equal, therefore, interest rate swings will tend to be somewhat wider and pressure for adjustment stronger under lagged accounting as banks seek to obtain or dispose of funds before they go to the discount window. Given nonborrowed reserves, the discount window remains the sole source of adjustment.

Under contemporaneous reserve accounting, the scramble of the banks to acquire or dispose of reserves influences the volume of reservable liabilities and therefore required reserves to the extent that sales or purchases of securities or restraint or ease in lending alter deposits. This reduces the swings in interest rates that need to occur before banks are driven into or out of the discount window. The difference, however,

is slight because it takes an average of $8 of demand deposits and $25 of time and savings deposits to change required reserves by $1.

A significant advantage of contemporaneous reserves, however, can flow from the timing of efforts to adjust reservable liabilities at least under a reserves strategy. Under a funds-rate strategy, there is no such advantage. The distinction is a subtle one. Under a funds-rate strategy, the timing of the banks' efforts to adjust reservable liabilities is determined by the movement of the funds rate. That movement, in turn, is determined by the action of the FOMC and, between FOMC meetings, by the action of the desk which is guided by incoming information on the monetary aggregates. Lagged or contemporaneous accounting makes no difference under these circumstances.

Under the new procedures, however, the desk supplies reserves, and the banks, in turn feel their need for reserves, with a lag of two weeks. That is to say, they do not need to put up reserves until two weeks after reserve liabilities may have increased. Thus, pressure on the funds rate, as banks bid for reserves, comes only with a two-week lag. The process of adjusting deposits by adjusting loans and security holdings begins two weeks later, unless the Federal Reserve were to move interest rates so as to start the adjustment process earlier. Under the reserve strategy, therefore, lagged reserve accounting is likely to slow down adjustment.

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