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Recent Techniques of Monetary Policy

By Henry C. Wallich

Federal Reserve policies are subject to widely differing interpretations. This would probably be the case even if all members of the Federal Open Market Committee shared an identical interpretation; which is hardly plausible. If 12 people are always of the same view, 11 are dispensable. But even at the level of the techniques by which FOMC policy is implemented, there may be different views of "how monetary policy really works." In this paper I provide my own view, which may not be shared by every member of the committee and the staff, and in all details possibly by none.

Today it seems to be widely believed that the Federal Reserve's present technique for controlling the monetary aggregates is the same as that in use prior to October 1979, before the reserve-targeting method was initiated. Observers have noted that the funds rate has moved smoothly, as was the case before October 1979 when the Federal Reserve was controlling the growth of money by influenc-

ing the quantity demanded via the funds rate and short-term interest rates generally. The policy record now speaks of "the degree of reserve restraint." Since the record began to speak of the operating instruments in these terms, there have been no sharp, sustained interest-rate movements such as were characteristic of the tight reserve-targeting procedure after October 1979. How are these observations to be interpreted?

Recent funds-rate movements have indeed differed noticeably from the volatility of the period from October 1979 through the fall of 1982, after which the automatic character of the reserve-targeting method was largely modified. Changes in overall reserve positions of depository institutions since the fall of 1982 largely have reflected deliberate policy judgments rather than an automatic response to deviations of monetary aggregates from pre-set target paths. Nevertheless, the Federal Reserve has not reverted entirely to the old technique. One piece of evidence is the temporary quarter-end statement-date pressures that still affect the funds rate. These pressures were largely absent prior to October 1979.

While short-term interest rates, and, among

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them, the funds rate, have reassumed some of the role they played in controlling the money supply before October 1979. a new layer of indirect control has been added to the pre-1979 procedures, employing a market mechanism. It is not the funds rate that is used as the operational instrument but a level of nonborrowed reserves derived as the difference between estimated total reserves and the desired level of borrowing at the discount window. This can also be viewed as aiming at a particular level of borrowing implemented by means of the nonborrowed-reserves path. The resulting funds rate reflecting this level of borrowing, therefore, has some input from very short-term market forces. The procedure amounts to an indirect way of influencing the funds rate and other short-term rates which, in turn, affect the demand for money. Observers may differ as to whether, given the relative frequency of nonborrowed-reserve path adjustment, this procedure is better described as targeting on the nonborrowed path or on the level of borrowing.

From the point of view of the market, where I believe these things are well understood, the focus on the level of borrowing is significant because it leads to a different interpretation of Desk operations. The funds rate level at which the Desk enters the market to conduct open market operations does not convey the decisive message that the market tries to unravel, as it did in the days before October 1979. It is not indicative of any particular rate desired by the Desk. It is simply the rate that happens to prevail on a day when the manager believes that reserves should be added or drained in order to achieve the desired level of discount-window borrowing on average for the reserve-maintenance period. The action reflects the Desk's assessment of reserve availability, rather than a desire to move the funds rate, although the action, of course,

may affect the rate. Some aspects that may create a contrary impression are dealt with later in this paper.

Direct and indirect targeting

What is the advantage of pursuing indirectly a target that can also be influenced or controlled directly? Principally, it is to give greater scope to market forces. Direct action runs the risk of introducing discontinuities and rigidities. It foregoes the opportunity of benefiting from a smoothing effect of the market. Judgment errors in setting the objective of direct actions are less likely to be corrected by the input from the market. This applies primarily when "indirection" implies an interaction between a price and a quantity. It applies also, however, to the relationship of two quantities, such as when borrowed reserves or total reserves are determined by operating on nonborrowed reserves. At the same time, one must keep in mind that indirection, giving room to market forces, can introduce a degree of slippage that may interfere with attainment of the target.

The issue whether to address a target variable directly or indirectly is posed at various stages in the monetary-policy transmission mechanism. At each stage, policy confronts, in simplest terms, a price and a quantity. It can determine price directly, by operations in the market, and allow quantity to be determined indirectly. Alternatively, it can determine quantity directly, with varying degrees of precision, and thereby influence price indirectly. In one or two instances, the key relation may be between two quantities, one or both of which are parts of a larger total.

For a discussion of some of the alternatives available at each stage in the transmission mechanism, the following stages are relevant, in descending order of closeness to the real

sector and ascending order of controllability by the central bank:

1. Intermediate targets—the money supply and interest rates, principally long-term rates.
2. Instrumental targets—total reserves and money-market rates.
3. Operating targets—nonborrowed reserves implied by borrowed reserves intentions and the funds-rate range.

These layers could perhaps be structured somewhat differently and even telescoped, but they reflect the hierarchy of markets and instruments as they appear to me.

Intermediate targets

At the level of intermediate targets, the policymaker confronts, in simplest terms, the relationship between money and interest rates. He can influence either one directly—money by means of a total reserves technique, relying on the money multiplier, or interest rates by buying and selling at a given rate. Alternatively, he can influence each variable indirectly—the money supply through short-term interest rates, interest rates through the money supply. It need hardly be said that this two-variable relationship functions within a general-equilibrium model with many variables determined simultaneously.

Why should the policymaker prefer one intermediate target or the other, and why, having made his choice, should he prefer the direct or the indirect technique, if he is given the choice only between money supply and interest rates as intermediate targets?

As for the choice of intermediate target, this presumably will depend on the policymaker's view of the transmission mechanism of monetary policy. He may believe that expenditure behavior of firms and households is driven by interest rates—in the broad sense of including all kinds of monetary and nonmonetary

returns—or by the money supply, for instance, through a real-balance mechanism. If he believes, as I do, that monetary policy works primarily through interest rates, he must choose between implementing his interest-rate policy directly, through market intervention, or indirectly, through the money supply. In the very short run, setting interest rates directly usually—not always—is possible for the central bank, through discount-rate and open-market operations. In an extreme sense, it could do so by simply pegging a rate through unlimited purchases and sales of securities at that rate. Naturally, if the interest rate established by this technique is not consistent with a stable rate of inflation, it will have an increasingly disequilibrating effect, causing inflation to accelerate or decelerate. Inability to guess or calculate the equilibrium interest rate gives the policymaker an important reason for not trying to set it directly but instead letting the market do so.

To be sure, the policymaker also does not know what rate of money growth will generate equilibrium (constant-inflation) interest rates; but his risk of error is smaller. If he sets an inflationary rate of money growth, the long-run result will be stable, not explosive, inflation. Thus, letting the market set the interest rate for a given money-growth target is a safer way of achieving an equilibrium interest rate than trying to set it directly.

A secondary reason for choosing a money-supply target is its public information effect. Setting (and adhering to) a target informs the public that an effort is being made to control inflation. Reducing the target over time creates a desirable and persuasive expectation of secularly diminishing inflation. Setting interest rates directly would not clearly convey a sense of controlled and diminishing inflation. The role of interest rates in curbing inflation is widely misunderstood. Not a few members of

the public apparently believe that because interest enters into many prices, higher interest rates mean more inflation, which is to say that the micro effects outweigh the macro effects. Public support for a money-supply targeting policy is likely to be stronger than for an interest-rate policy, although the experience in recent years of very high interest rates under a money-supply regime may have changed that perception somewhat. In short, the advantage of influencing interest rates by targeting money is that it gives the market a chance to prevent errors that might occur if interest rates were set directly.

Instrumental targets

If it is decided to target on money, whether because the policymaker believes that money drives the economy directly, or because he believes that targeting money is a good way of indirectly targeting interest rates which then drive the economy, again there is both a direct and an indirect technique, this time at the instrumental target level, applying to time horizons of a month or two. The central bank can target on total bank reserves which, together with the money multiplier, determine the money supply. This is a relatively direct approach, giving only limited leeway to market forces via endogenous variation in the multiplier. Slippage, of course, is still possible if control of reserves is less than perfect, or if the multiplier is unstable owing to shifts among deposit categories, changes in excess reserves, and other factors. Even given such slippage, the interaction of a relatively rigid money-supply mechanism with a demand for money that is itself stochastic probably will produce sizable variability of interest rates, at least over the short and intermediate run.

One indirect technique of controlling the money supply at the instrumental target level

involves control of short-term interest rates themselves so as to evoke a level of demand for money and a resultant stock equal to the target for the money supply. Given the demand curve for money, a shift in the supply curve changes interest rates along the demand curve, as reserves are added or drained to achieve the desired rate level. The money stock, in this framework, depends on the position and shape of the money-demand curve: it is demand-determined. This approach therefore gives the market greater scope for influencing the money stock. As a result, the money stock is vulnerable to error both in estimating the money-demand function and in predicting the values of arguments in that function, particularly income. Moreover, there is a substantial lag in the impact of money-market rates upon the amount of money demanded, with about half of the effect being estimated to occur within two or three months. In any event, in this process, interest rates are likely to be far less variable than under the reserves approach. The danger is that changes in money-market rates will not be made quickly enough when the level consistent with the targeted money supply has been misjudged.

Another indirect technique is to target on nonborrowed reserves, which allows both short-term interest rates and the money stock to be determined in part by the public's demands for money and by the depository institutions' demands for borrowed reserves. This approach is, in a sense, a compromise between total reserves and interest rates as instrumental targets, with the outcome for interest-rate variability likely to fall between these alternative regimes.

Operating targets

Finally, at the level of day-to-day or week-

to-week operating targets, which are those the Federal Reserve can control most closely (various components of reserves, and the federal funds rate), a choice once more must be made between direct and indirect approaches to targeting reserves or the funds rate, respectively. Using total reserves as the day-to-day operating target—which the Federal Reserve has never done—would be a very direct approach, leaving little scope to the market. All kinds of slippage—especially by means of the discount window, but also through reserve carryovers—have to be avoided, or else changes in these magnitudes would have to be compensated by open-market operations. These would have to be massive, since in open-market operations a multiple of the initial increase, for example, in discount window borrowing would be required in order to offset further borrowing as banks sought to make up for further absorption of reserves by open-market operations. Quite possibly, banks would seek to protect themselves by carrying large and variable excess reserves, thereby possibly introducing slippage between total reserves and the money supply. All this severely limits the possibility of targeting on total reserves, to say nothing of the consequences for interest rate variability.

Targeting on nonborrowed reserves—which the Federal Reserve did after October 1979 and still does on a day-to-day basis—is a more indirect technique. The various elements of slippage in the process—discount-window borrowing, reserve carryover and, until recently, the effect of lagged reserve requirements—allow the market some leeway. Targeting on nonborrowed reserves also allows for a degree of automaticity. A deviation of the monetary aggregates from target alters required reserves. Given a constant supply of nonborrowed reserves, the deviation changes discount-window borrowing and tends to alter the funds rate and other short-term rates. These rate

changes—downward when the monetary aggregates are undershooting the target, and upward when they are overshooting—tend to push the money supply back toward target over time. The strength of this automatic control feature, however, is at best moderate. While this technique was in use from October 1979 to fall 1982, it had to be supplemented on occasion by discretionary action in changing the discount rate, or in raising or lowering the non-borrowed-reserves path, thus reducing or increasing the need for borrowing and thereby accentuating the change in short-term rates.

A second alternative, also at the day-to-day operating level, is targeting on the funds rate. Once more, there is a choice between relatively direct and indirect techniques. The direct approach, in its extreme form, was represented by the familiar pegging operations practiced during and immediately after World War II. The Fed fixed certain rates by buying and selling (mostly buying) Treasury obligations throughout the maturity spectrum at fixed prices. A different, much less drastic, approach was that employed before October 1979. A range was set for the funds rate, sometimes as narrow as one-half percent and rarely more than 1 percent. This range was subject to revision between FOMC meetings if growth in money and/or credit moved outside specified "tolerance" bounds. The Desk bought and sold securities so as to keep the rate within the range, or around a particular area of it, on a weekly average basis and at times on a daily basis. Reserves under this procedure became demand-determined, which made timely adjustment of the funds-rate range very important.

The procedure gave some scope to market forces, in the sense that the funds rate was able to move, although only moderately, in response to market forces such as reserve sup-

plies and bank reserve management strategies. It gave further scope to the market in the sense that control of the money supply was relatively indirect. Because demand forces were allowed so much influence on the growth of money, the procedure, in turn, yielded to a nonborrowed-reserve strategy beginning in October 1979.

Since the fall of 1982, the nonborrowed-reserve strategy and its automaticity have given way to a technique that allows the funds rate to be determined by the market, through the targeting of discount-window borrowing from one reserve-maintenance period to the next, implemented by allowing a flexible nonborrowed-reserves path. At the FOMC meeting, an intended borrowing level is set, as a policy decision. This level of borrowing is then deducted from the total of required reserves consistent with the target path for the money supply and an assumed level of excess reserves—in order to derive an initial path for nonborrowed reserves. However, during the intermeeting period, as money and reserve demands deviate from the trajectories set at the time of the FOMC meeting, the intended borrowing level is sought through appropriate adjustments to the initial nonborrowed-reserves path.

The post-fall 1982 procedure differs from the post-October 1979 procedure in that, as anticipated total-reserve demand diverges from initial projections, nonborrowed reserves are adjusted weekly in seeking to achieve a chosen level of borrowed reserves. In contrast, under the October 1979 procedure, borrowing was allowed to change consistent with the attainment of a nonborrowed-reserves path targeted for the entire intermeeting period—although subject to technical adjustments. An assumed level of borrowing under the older procedure was set only initially at the beginning of the inter-FOMC period, but borrowing

would subsequently diverge from that initial assumption reflecting unforeseen movements in the demand for money and reserves. This was the automatic feature of the technique which at times was reinforced by discretionary path changes.

The relation of the borrowing level to the funds rate, which has been one of the most familiar features of the money market, always has been relatively loose. Since a chosen level of borrowing is consistent with any of a range of values of the funds rate, current operating procedures cannot be regarded as a form of rate-pegging. Demands for discount borrowing by banks no doubt reflect market judgments about present and future deposit flows and likely reserve conditions. Since these considerations play an important role in determining the funds rate, it is clear that the present procedure allows at least one additional degree of freedom with respect to the pre-October 1979 technique.

Interpretations of desk operations

From the point of view of the Fed watcher, the present technique offers problems of interpretation quite different from those of the pre-October 1979 procedure. Under the old procedure, the rate at which the manager entered the market was highly significant. Ordinarily, it meant that he did not want the rate to move substantially beyond that point, or even that he would like the rate to stop somewhat short of the rate at which he had entered. When the market had had an opportunity to explore the upper and lower limits of the range, it had a fairly good understanding of prevailing policy. So long as the market believed that the rate objective remained unchanged, moreover, it would help the manager stabilize the rate, believing that when it had reached one of the limits any move could only go in the other

direction.

Today, the funds rate range set by the FOMC is much wider than before October 1979, typically 400 basis points. Its extremes, in fact, are rarely explored. So long as the level of borrowing is maintained, there is little reason to expect the funds rate to move strongly, at least for longer than transitory periods. The manager's entry into the market does not signify that one of the limits of the range has been reached, but that, given the borrowing target and the associated nonborrowed-reserves path, reserves need to be added or drained according to Fed projections of reserve availability. In some degree, this is indicated by the fact that entry continues to occur at a set time of day instead of, as during the pre-October 1979 regime, at varying times prompted by intra-day movements in the funds rate. When the reserve objective has been reached, there is no reason why the rate should not move against the intervention if that is the direction of market pressures.

Uncertainty about the reserve projections available to the Desk sometimes may create the impression that the Desk is indeed working to influence the funds rate directly instead of seeking to influence the borrowing level. In the absence of trustworthy projections, the funds rate at times may be a more accurate indicator of reserve availability than the reserves projections. If the manager decides to act on the signal from the funds rate in assessing the volume of reserves needed, he may create the appearance that he is working to influence the rate rather than the supply of nonborrowed reserves consistent with the intended borrowing level.

In setting the intended borrowing level, the FOMC must make an assumption about excess reserves. This can be regarded as a technical assumption, however, to be modified later by the staff implementing the directive in accord-

ance with evidence of changes in the demand for excess reserves. Ordinarily such changes are not large and can be reasonably well evaluated.

The degree to which the funds rate is determined more reliably by borrowed reserves or by net borrowed reserves (borrowed reserves less excess reserves) is unresolved. There are partisans of both borrowed and net borrowed reserves. Econometric work does not seem to give a decisive answer. It should be noted, however, that when the value of required reserves is known, as under lagged reserve requirements, any nonborrowed-reserves target, rigorously pursued over the reserve-maintenance period, is equivalent to a net-borrowed-reserves target. Under contemporaneous reserve requirements, the same is true to the extent that required reserves can be estimated and that nonborrowed reserves are made to vary with required reserves. A word may, therefore, be appropriate at this point about the recently introduced contemporaneous reserve requirements.

Contemporaneous reserve requirements

The shift from lagged to contemporaneous reserve requirements (CRR) reflects a phase in Federal Reserve thinking when it seemed particularly important to tighten and speed up the response of reserve conditions to deviations of M1 from its target path. Lagging required reserves by two weeks implies that, during this period, the expansion of deposits is not directly constrained by reserve availability. Banks theoretically could create deposits without limit, although it strains credulity that they would exploit this opportunity, not knowing where the reserves would come from two weeks later or what they would cost. More plausibly, the response of banks to changes in deposits and the associated changes in short-

term interest rates, may be somewhat delayed by the two-week lag in the need to put up reserves. Actually, under its reserve-targeting strategy, the Federal Reserve in effect often cut the two-week lag to one, by recalculating the average level of borrowing implied by a constant intermeeting average level for non-borrowed reserves as soon as incoming weekly deposit data indicated changes in future borrowing needs. This was done by lowering or raising the weekly nonborrowed-reserves path, thereby producing some borrowing response one week earlier than it would have occurred otherwise. The recent move to CRR thus potentially speeds up initial responses by one week rather than two.

In any event, CRR seemed a logical complement to the automaticity of the reserve strategy. Their adoption reflected a degree of frustration stemming from the fact that the diverse features of the strategy, in the form of greater variability of interest rates, were much in evidence, while improved control over the money supply was less so. The change seemed unlikely to do harm and capable of doing some good. It implied an effort to go as far as possible in the direction of making the rigorous reserves strategy effective.

Subsequent experience with the behavior of M1 was largely responsible for making this approach less viable. Changes in operating techniques, beginning in the fall of 1982, therefore, downgraded the role of M1 and reduced the degree of automaticity. This seemed to make moot the case for CRR, at least for the duration of this policy approach. On the other hand, concern that CRR would lead to greater volatility of interest rates diminished for the same reason. What remained was a moderate potential improvement in the reserve aggregates-to money-supply relation that may help reduce one element of slippage in the mechanism and that

expanded the menu of feasible operating procedures for future consideration.

Some comments on the aggregates

A major reason for modifying the automatic reserve-targeting technique has been the erratic behavior of M1 demand relative to its primary determinants. This, in turn, seems to have reflected, at least in part, the transition to a different composition of the aggregate, in the course of the rapid increase in NOW accounts and, subsequently, super-NOWs. Approximately one-fourth of M1 now bears explicit interest. For the \$90 billion of regular NOW accounts, this rate is not a market rate, though it is for the \$40 billion of super-NOWs. It will become so, for the regular NOWs, as the minimum balance to open super-NOW accounts—which have no interest-rate ceiling—declines to \$1,000 in January 1985 from the present level of \$2,500 and then is entirely eliminated in January 1986. The ceiling rate on regular NOWs is close enough to the market, however, to allow small changes in market rates to produce large variations in the opportunity cost of holding regular NOW balances, so long as their rate typically remains at the present ceiling levels. For the time being, this may have made M1 more interest-elastic than before.

However, as the share of super-NOWs grows, and particularly when the minimum-balance requirement for all NOW accounts is removed, rates on the interest-bearing component of M1 increasingly will be market-related. This would reduce, perhaps substantially, the interest elasticity of this aggregate. The control of M1 through an interest-rate strategy then would function largely to the extent that interest rates influence GNP and thereby M1 demand. Of course, the possibility of controlling M1 through a total-reserve strat-

egy would remain. But, given a low M1 interest elasticity, the demand for the aggregate would not be much affected by interest-rate variations. Interest-rate volatility resulting from an effort to control M1 through total reserves, therefore, might become even more severe.

Instability in the demand function for M1 during 1982—which did not occur for the first time in that year—along with the impending introduction of MMDAs and maturing of All Savers Certificates—prompted the downgrading of the aggregate as a target in 1982. The demand function seems to have stabilized somewhat in the meantime, but with altered properties. For instance, the large interest-bearing component in M1 is likely to produce more rapid growth of the entire aggregate in the future, relative to nominal income and other monetary aggregates. In past years, the difference in the growth rate between M1 on one side, and M2 and M3 on the other, averaged on the order of 3 percentage points, with cyclical variations. A secular difference of 1-2 percentage points now seems more likely. This smaller difference is reflected in the Federal Reserve's 1984 targets of 4-8 percent for M1 and 6-9 percent for M2 and M3. At constant rates of interest, velocity may tend to grow in the 1-2 percent range.

Currency also seems to have been experiencing some instability. Until very recently, its average rate of growth had risen to 10 percent or so. This would not by itself be enough to disrupt seriously the rehabilitation of M1 as a usable target. Its implications are more serious for the monetary base. With currency growing at 10 percent, setting base growth much below its 1983 average rate of almost 9 percent would mean that total reserves, which make up only 20 percent of the base, would have to decline. Reservable deposits would have to do likewise. This, in turn, would, of

course, have a severe impact on M1, the deposit component of which is the principal user of reserves. Accommodating changes in the composition of M1, on the other hand, i.e., by offsetting fluctuations in the currency/deposits ratio, would be tantamount to targeting on reserves.

M2 has also undergone a change that over several years has substituted market-related for regulated interest rates. The interest sensitivity of the aggregate accordingly must be presumed to have diminished. M2, in this sense, has already undergone some of the development that may be ahead for M1. Not enough time has passed, however, to provide adequate data for a test.

Can we shed velocity?

Recent vicissitudes of the aggregates, and prospective future changes, raise questions about the time-honored concept of velocity. The notion of a simple velocity relation between nominal income and money is so deeply embedded in the lore of money that it may seem quixotic to try to eradicate it. Nevertheless, in my view, that is what should be done. It is, after all, a primitive concept, clearly inferior to that of a demand function for money. Its calculation leaves out of account the effects of interest rates, wealth, inflation, and other arguments that may play a role in the money-demand function. Its theoretical foundations are weak, unless the demand function is connected to a velocity expression. Secularly, it should decline if money is a luxury good. Historically, since World War II, that has not been its trend, although the upward trend of interest rates and inflation during that period is partly responsible. The most appropriate way of defining velocity, by relating money to income with a lag, or without, is heuristically rather than the-

oretically founded.

Debates about whether or not there have been shifts in velocity, and how they should be reflected in money-supply targeting, are conducted much more meaningfully in terms of the stability of the demand function for money. Otherwise, changes in velocity that occur along a stable demand function may be confounded with changes associated with a shift in the function. Velocity may even remain stable while offsetting changes occur within the demand function. The principal loss from shedding the simple notion no doubt would be to the reputation of the economic profession, that would probably be accused once more of creating an unnecessary confusion.

C/10

FROM: RACHEL LOMAX
DATE: 22 OCTOBER 1984.

MR LANKESTER

cc: Mr Cassell (fyi)
Mr Sedgwick
Mr O'Donnell
Mr Johnston ✓
Mr Hood
Mr Wood
Mr Neilson
Mr Heywood
Mr Heath o.r.
Mr Blower

MONETARY CONTROL

I attach a draft note for your meeting with the Bank, now provisionally arranged for 4.30 on Wednesday afternoon.



RACHEL LOMAX

MONETARY CONTROL: POINTS FOR DISCUSSION

1. The purpose of this note is to suggest an agenda for a discussion of some technical questions about the way in which market operations are conducted at present. The potential scope for official action to influence interest rates may be relatively limited within the framework of the MTFs for reasons which would be true under almost any method of operation - a point recognised in the 1980 Green Paper for example (see attached quotes). But it is still important to understand how far the present balance between official and market influences over interest rates reflects deliberate choices about the way in which we operate and how far that balance is capable of being changed by changes in operating methods. We should like to return to the broader question of whether the balance ought to be changed at a later meeting.

Money market operations

2. Official open market operations are the by-product of actions designed to supply cash to the banking system. In principle, the authorities can do this either by buying assets from the bank or by acquiring claims on them (by lending either direct or via the discount market). Official leverage depends on the banking system having some demand for cash, however small. This demand reflects:

- the banks' need to supply cash on demand to their customers
- their need to settle accounts with central government and
- to meet their $\frac{1}{2}$ per cent cash ratio obligation to the Bank of England.

3. Till money represents working balances against cash withdrawals by the general public. Excess reserves (operational balances) could be zero if banks could overdraw. Under present arrangements they can be seen as precautionary balances against the risk of this being necessary. The scale of excess reserves is presumably related to the opportunity cost of holding non-interest bearing balances and the penalties attached to overdrawing on

ank of England accounts. (For familiar reasons, which are implicit in the nature of our current arrangements for prudential supervision, cash is not important to the banking system as a source of prime liquidity).

4. The authorities have a range of possible choices. They can fix the terms on which they are prepared to supply cash and supply it on whatever scale is necessary to get the markets to deal at these rates. Alternatively, they can fix the supply independently of expected demand and allow interest rates to bear the full burden of adjustment. There are lots of intermediate points on this spectrum. The authorities could take a prior decision about interest rates and operate so as to achieve it, subject to some constraint on the quantity supplied, or they could take a quantity decision and operate subject to some constraint on the acceptable variation in interest rates.

Present arrangements

5. Present arrangements are summarised in the attached annex, taken from the July paper on "Resisting a rise in interest rates".

They represent an intermediate point on the spectrum. In broad terms, the Bank routinely supplies cash on terms of its own choosing to meet the banking system's need to settle outstanding balances with the central government and to meet the non-bank private sector's demand for cash, plus whatever is needed to bring operational balances back to their previously agreed target level. In effect, it accommodates all normal needs for cash. But not any that arise as the by-product of its own decisions about the terms on which to deal.

6. Given this approach, a necessary condition for exerting any official influence on market interest rates is that the amount of cash held by the banking system should vary relative to normal needs. If the central government always ran a deficit just large enough to meet the demand for cash, the Bank would not need to do anything, and interest rates would be entirely determined by market forces. But this is not sufficient. For

xample, if the authorities were able to conduct open market operations at rates that were tied to inter-bank rates by some formula, they would have no leverage over market rates at all, at least so long as the scale of official operations is not intended to change the overall liquidity of the system from day to day - only to keep the supply of cash in line with demand.

7. As a minimum, therefore, the potential scope for official influence depends on:

- a) there being a need for official intervention to keep the system supplied with cash, and
- b) the authorities' determination to supply cash only at a rate of their own choosing.

The system under pressure

8. How does the system work in practice? When the Bank's dealing rates are in line with the market there is clearly no problem in just supplying the system's need for cash. But in this case the Bank is not obviously doing anything more than steady the market. What technical scope is there for pulling against the tide?

9. Suppose market rates are below the rates at which the Bank wants to deal - either because it is resisting a fall in rates or trying to initiate a rise. So the prices at which the Bank is willing to buy or sell bills are below market levels.

- If there is a shortage no one will want to sell bills. But, acting commercially, the Bank can reject offers and force the houses to borrow at the end of the day at penal rates. The additional visibility given by 2:30 lending may be useful, but it is not essential in order to enable the Bank to relieve the shortage at a rate of its own choosing. (Failure to use 2:30 lending if the market thinks it is available may cause confusion; but that is a separate issue).

TABLE 1

	<p><u>Market shortage</u> Bank <u>buys</u> bills</p>	<p><u>Market surplus</u> Bank <u>sells</u> bills</p>
<p><u>Dealing rates below market rates</u> Resisting a rise in rates Initiating a fall in rates</p>	<p>Market a willing seller, at Bank's rates. Visibility needed. Over assisting is helpful.</p>	<p>Market is not a willing buyer. Failure to mop up surplus is helpful.</p>
<p><u>Dealing rates above market rates</u> Resisting a fall in rates Initiating a rise in rates</p>	<p>Market is <u>not</u> a willing seller. Penal rate lending helpful; so is under assisting.</p>	<p>Market is a willing buyer, at Bank's rates. Failure to mop up surplus is counter-productive; <u>over</u> assistance is helpful.</p>

- Sticking to the rules is more difficult if the market is in surplus. In principle, dealing should be easy. Plenty of people should be willing to buy cheap bills. But if there is uncertainty about the Bank's intentions, it may not get sufficiently low bids (and in this case, acting commercially means accepting the highest price first). So the Bank may need to signal its willingness to accept lower prices, either directly or by selling more bills than is needed to mop up the surplus, relieving the resulting shortage by late lending. In principle, the Bank could also drain liquidity from the system by calling for Special Deposits.

10. Putting downward pressure on rates (to resist a rise or initiate a fall) is difficult within the present rules, whether there is a shortage or surplus. In this case the Bank wants to buy or sell bills at above market levels.

- If the system is short, dealing is again easy. But the Bank may not be able to show a sufficiently low stop rate if, in their anxiety to secure a good allocation, the houses do not offer bills at sufficiently high prices. The Bank cannot reasonably reject offers of cheap bills. Nor can it charge a below market interest rate on late lending. So the success of the operation again depends on a degree of visibility.
- If the market is in surplus, the ability to conduct operations at a rate of the Bank's choosing may involve a willingness not to mop up excess funds for a time. The Bank will not get bids at prices it wants to accept whether or not it publicises its dealing rates. But, acting commercially, it can reasonably reject cheaper bids and wait until the pressure of excess funds forces prices up to levels at which it is prepared to deal.

Those possibilities are shown schematically in table 1.

11. The preceding discussion over-simplifies by implicitly assuming shifts in the whole structure of rates relative to the Bank's dealing rates (and vice-versa). Circumstances in which this happens are relatively rare - though last July was a recent example. More usually, the term structure pivots when market expectations change. So there is usually some maturity at which the Bank can deal. If rates are expected to rise, the Bank may only be able to buy longer dated bills, but it should be able to sell short-term bills; and if rates are expected to fall, it may be possible to relieve shortages by dealing in bands 1 and 2 whilst surpluses can only be mopped up by selling longer dated bills.

12. In these circumstances, confining dealings to bands 1 and 2, as originally intended, would make it quite impossible to resist a rise in interest rates if the market were short, or to resist a fall if the market was in surplus. Dealing would be impossible at rates of the Bank's own choosing in circumstances where failing to correct the market imbalance would be positively unhelpful to the authorities' objectives for interest rates.

Acting commercially

13. The foregoing analysis assumes that the Bank always aims to act commercially in responding to market bids or offers of bills. Is this an invariable rule? How easily can it be bent or side-stepped? (eg. by rejecting all offers of relatively cheap bank bills, where the Bank has the alternative of relieving the shortage entirely at higher prices in public sector bills). How far is the Bank constrained by "commercial considerations" in choosing the terms for late lending? Would the Bank ever lend at below market rates (and what is the appropriate definition of market rates for these purposes?)

Signalling devices

14. In many of the cases identified earlier, the Bank's ability to deal at rates of its own choosing depends on signalling its

willingness to deal on attractive terms. What are the ways of doing this under the present arrangements? Possibilities suggested by recent experience include:

- over/under assisting on whatever scale is necessary to enable the authorities to demonstrate their "stop" rate.
- an early dealing round on days when the market is only modestly short (less than £500 million)
- failing to act strictly commercially (eg. by careful choice of the paper in which to deal).

What other techniques are available short of posting official dealing rates? Would suspension of the 7 day rule for accepting bills be considered high profile action, or example?

15. Other ways in which the Bank can give a general indication of its views about interest rates, at least in principle, include:

- varying the size of the weekly Treasury bill tender to enable it to show a rate in line with the Bank's current dealing rates
- 2:30 lending
- calling for Special Deposits (or releasing SD's)

Would a call for special deposits or 2:30 lending be regarded as high profile action nowadays? How frequently have other signalling devices been used in practice?

Market in which the Bank intervenes

16. If interbank rates are the trigger for changes in retail interest rates, what is the advantage of dealing in the bill markets?

- Does dealing primarily in bills make us ultimately dependent on round tripping to keep control over interbank rates? If not, what ensures that changes in bill rates are transmitted to the interbank market? Might there be an advantage in occasionally dealing in both markets simultaneously?
- Does the relatively small size of the bill market make it easier to deal at rates of the Bank's own choosing? Is the argument about "giant counterparties" still valid now that the clearers are net borrowers in the interbank market?
- Why are gilts/export credit repos considered preferable to dealing in the interbank market?
- Is the banking system's behaviour dependent in any way on whether the authorities operate on the asset or the liability side of their balance sheets? Is there a difference in credit risk as far as the Bank's point of view?
- Has the growth of the bill mountain altered the balance of the argument about intervening in the interbank market?
- Has the exclusion of public sector deposits from £M3 changed the balance of the argument to any significant extent?

Maturity of operations

17. What effect does the maturity at which the Bank intervenes have on the structure of interbank rates? Is the principal effect of heavy intervention at one maturity to open up arbitrage opportunities between bills and interbank markets? Is heavy intervention at one maturity always likely to create arbitrage opportunities - and if not, why not? Is it plausible to argue that the Bank's ability to pin down the structure of market rates (bills as well as interbank rates) is less when expectations of changes in rates are widely and strongly held - so it is in those circumstances that the maturity of intervention will be of least significance.