

Lagged reserve accounting and the Fed's new operating procedure

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Adoption of the Fed's new reserves-oriented operating procedure on October 6, 1979, was greeted with praise by both admirers and critics of the Federal Reserve System. Especially encouraged were those who, for many years, had urged the Fed to abandon its interest rate operating procedure in favor of a reserves targeting procedure. These critics viewed the proposed new procedure as a major step in the right direction, even as they withheld final judgment until they saw how the new procedure was implemented.

There was a broad consensus, both within the Fed and elsewhere, that adoption of the new procedure would result in better short-run control of money at the expense of greater volatility in short-term interest rates. The expected increase in interest rate volatility was observed in 1980 and 1981. However, the effects of the new procedure on money stock growth were partly obscured by special influences during the early part of 1980, including the credit restraint program introduced in March, sharp increases in oil prices, and—for a short time during the spring—concern by policymakers over the consequences of sharply falling interest rates for the international value of the dollar.

Many special circumstances disturbed the "normal" operation of the money and capital markets in 1981. Most notable among these were the anticipation of record federal budget deficits and the redirection of government priorities and spending programs. These nonrecurring events make it especially difficult to separate the effects of the Fed's new operating procedure from the effects of other forces.

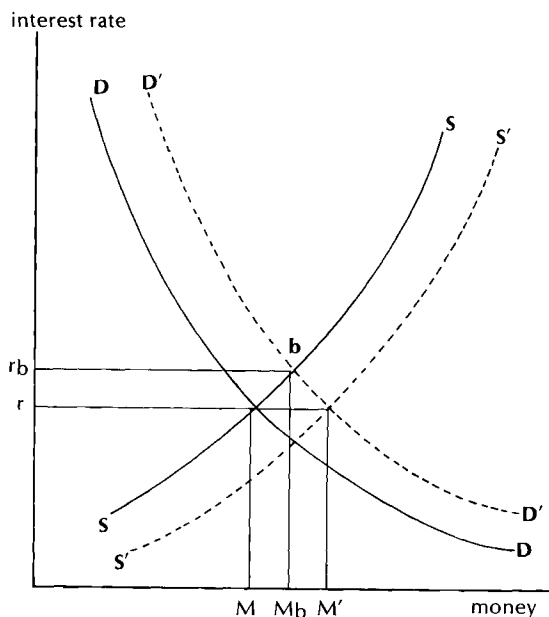
The likely effects of the new operating procedure on interest rates and money are examined in this article within an analytical

framework that differs considerably from those used in most other studies. Rather than focusing on the longer-run demand for money as the major determinant of money creation, this framework emphasizes the effects of short-run developments in the reserves and credit markets on the behavior of banks as suppliers of credit. In contrast to the usual textbook treatment of the money supply process as a mechanistic response by banks to their basic reserve positions, the article focuses on the key role of the federal funds rate. Drawing on these elements, the article then describes the implications for the new operating procedure of the lagged reserve accounting system that is now in effect. Finally, a number of conclusions are drawn about the behavior of interest rates and money under the new procedure that appear to be consistent with the observed data.

Money demand

The broad consensus regarding the effects of the new operating procedure rested on the prevailing theory of money stock determination. This theory assigns a very important role to the demand for money, the relationship between the quantity of money the public desires to hold and the level of interest rates, economic activity, and other variables. The curve DD shows the relationship between the quantity of money demanded and interest rates at a given level of economic activity. The quantity of money demanded increases as interest rates fall because the cost of holding money (in the sense of the interest foregone) falls. If the level of economic activity were to rise, more money would be demanded at every level of the interest rate, as indicated by the curve D'D'.

The prevailing model of money stock determination



According to the prevailing theory, the money stock is determined by the intersection of the money demand curve and the money supply curve. The curve SS represents a money supply curve. It shows how the quantity of money that will be produced out of a given level of reserves varies with the interest rate. The reason why the quantity of money increases with interest rates is that higher interest rates make it profitable for banks to manage their liquidity positions more closely, reducing their holdings of excess reserves and producing a greater quantity of money out of any given quantity of reserves. By changing the level of reserves supplied, the Fed can shift the money supply curve, so that $S'S'$ could represent the money supply curve at an increased level of reserves.

According to the prevailing view, the old operating procedure of concentrating on interest rates required that the Fed determine which interest rate on the demand for money schedule was consistent with the desired money stock. This proved to be a difficult task. More importantly, the interest rate tar-

geting procedure transformed unexpected shifts in the money demand function into disturbances to the money stock. To see this, consider a shift in the money demand curve from DD to $D'D'$. In order to maintain the target interest rate r , the monetary authority must increase reserves until the money supply curve has shifted to $S'S'$, thus reestablishing the target interest rate. But the money stock has clearly increased from M to M' . Given the pattern of shifts in the demand for money, the old operating procedure bought interest rate stability at the cost of increased volatility in money.¹

Like the old procedure, the new operating procedure focuses on the demand for money as the basic determinant of the level of the money stock. It requires the Fed to choose a target level of reserves which, given the expected demand for money, will produce the desired money stock. However, when a shift occurs in the demand for money, there is a definite advantage to the new procedure. Suppose that the demand for money shifts, as described previously, from DD to $D'D'$. Under the new operating procedure, the Fed leaves reserves unchanged, and the new equilibrium point is b . Interest rates rise to r_b and money to M_b . Evaluated in terms of the prevailing theory of money stock determination, the new operating procedure should reduce the volatility of money and increase that of interest rates.

The supply approach

As indicated above, the demand for money and shifts in the demand for money play a key role in the prevailing theory of money stock determination. This seems natural, inasmuch as economists usually think of quantities being determined jointly by supply

¹There could also be shifts in the supply of money function (e.g., in the relationship between excess reserves and interest rates), in which case an interest rate stabilization policy would reduce the volatility in money. The adoption of the new operating procedure assumes, and empirical evidence (e.g., the low level of excess reserves) suggests, that non-policy shifts in supply are smaller than shifts in the demand for money.

and demand. There is, however, an alternative way of looking at money stock determination that focuses on the supply of money and completely ignores the demand for money. In effect, this alternative approach rests on the assumption that the public will hold whatever quantity of money the Fed and the banking system combine to supply.

This alternative approach depends critically on the unique property of money as a means of performing transactions. Because of this unique function of money, certain monetary transactions must be interpreted carefully. For example, suppose that the Fed purchases securities from bond dealers with newly created money. The dealers' acceptance of money in exchange for the bonds in no way implies that they now wish to hold permanently higher checking balances. Indeed, it is highly unlikely that this is the case. It is more reasonable to assume that, because the Fed has offered a good price for the securities, the dealers have exchanged them for money as a prelude to buying other assets.

But while the dealers can easily eliminate that part of their increased money balances in excess of the amount they want to hold by buying other assets, that newly created money does not disappear. For the economy as a whole there is no reduction in money, but simply a redistribution. Similarly, when a bank creates new money by making a loan or buying securities, there is no presumption that the borrower or the seller of securities desires a permanent increase in his money balances. Again, however, when the money is used to purchase other assets it does not disappear, but simply becomes a temporary excess money balance held by another party.

This exclusive emphasis on the supply side in determining the stock of money may seem strange at first to economists. They are taught at an early stage in their training not to neglect either supply or demand in determining the quantity of a good or service actually produced and sold. The supply approach described here does not really violate the traditional approach, but may be considered a polar case of it. The essence of the supply

approach is that, because of money's unique quality as a means of transfer, the public's willingness to accept money in exchange for goods or services is virtually unlimited in the short run. In the long run, the demand for money is the mechanism by which the economy as a whole adjusts to the quantity of money supplied by the Fed and depository institutions.

There are some clues that an exclusive concentration on the supply side might be a valid approach to money stock determination. In the wake of the Great Depression of the 1930s, many economists advocated a system of 100 percent reserve requirements on demand deposits to prevent undesired changes in the money stock. While there may be problems with these proposals, it is widely conceded that they would give accurate control over money. Yet, the proposals never mentioned the demand for money. Rather, by eliminating excess reserves, such proposals would have made the supply curve of money perfectly vertical at any given level of reserves. Under these conditions, for money as for any other good, demand would affect only price; it would play no role in determining quantity. In this way the proposals for 100 percent reserve requirements would have translated the Fed's control over reserves directly into control over money.

A second clue to the validity of the supply approach to money stock determination is the widely acknowledged fact that the full response of the economy to a change in money occurs only with a considerable lag. This suggests that the public does not—indeed, cannot—immediately adjust its money balances to their long-run equilibrium levels. Rather, in the short run, the public passively accepts whatever level of money is supplied. Although individuals can adjust their holdings quickly, their actions in doing so simply displace other economic units from equilibrium. It is only through the repeated efforts of a long succession of individuals to adjust that a change in money has its impact on the economy. While the public cannot change the aggregate quantity of money, it

can eventually reach long-run equilibrium by inducing changes in economic activity (and/or prices) to the point where it is satisfied to hold whatever nominal quantity of money has been supplied.

The time interval between a change in the money stock and completion of the economic changes which make that money stock acceptable is what is usually referred to as the impact lag of monetary policy. For example, if the money stock is increased, holders will initially attempt to purchase other assets, both financial assets and existing and newly produced real assets. This will stimulate economic activity (and/or raise prices) until all of the increased money stock is demanded because of the higher volume of monetary transactions. Conversely, a decrease in the money stock will induce a fall in economic activity (and/or prices) until the reduced money stock is just adequate to handle the lower volume of monetary transactions.

The money supply process

The money supply process is the process by which the Fed induces banks to buy or sell assets, thereby creating or destroying deposits and changing the money stock. Textbooks generally describe the money supply process as a mechanistic response by banks to changes in their reserve positions. In this textbook scenario, a bank changes its asset holdings in response to the relationship between reserves and required reserves. If reserves exceed required reserves, the bank eliminates its excess reserves by buying an equal amount of assets, thereby creating deposits and increasing the money stock. Conversely, if a bank's reserves are less than its required reserves, then the bank eliminates its deficiency by selling an equal amount of assets, initially destroying deposits in the banking system (since in all likelihood the purchaser will pay for the asset with a deposit) and reducing the money stock. The process is pictured as continuing at each individual bank until aggregate required reserves equal aggregate reserves.

However useful the textbook scenario

may be as a pedagogical device for demonstrating how the banking system translates a change in reserves into a multiple change in money, it is not an accurate description of how banks behave. It is important to understand that banks respond primarily to the price of reserves, specifically the federal funds rate, in deciding whether to buy or sell assets, and thereby to create or destroy deposits.

A bank is a profit-maximizing intermediary that views the federal funds market as a potential source or outlet for funds. The bank neither knows nor cares about the aggregate level of reserves in the banking system and cares but little about its own preexisting level of reserves. Of course, it must have enough reserves to meet its required reserves, but it can always purchase or dispose of reserves in the federal funds market. If the spread between the rate of return on an asset and the federal funds rate is sufficiently wide, even a bank deficient in reserves will purchase the asset, creating deposits in the process, and cover the added reserve loss by purchasing even more reserves than otherwise in the federal funds market.

That bank asset adjustment decisions are affected by the price of reserves (federal funds rate), and not by preexisting reserve positions, is clearly demonstrated by the fact that many large banks consistently purchase more reserves in the federal funds market than their entire level of required reserves. Without the federal funds purchases, these banks would not only be deficient, but would actually have negative reserve levels. If banks responded solely to their basic reserve positions, these banks would long ago have sold assets to cover their basic reserve deficiencies.

The effect of the federal funds rate on the money stock is clear. Other things being equal, the higher the federal funds rate, the lower the money stock. A higher federal funds rate, in relation to the rates on other assets, makes it more attractive for banks to sell other assets and channel the reserves thereby obtained into the federal funds market, reducing deposits and the money stock. A lower federal funds rate makes it more

attractive to borrow reserves in the federal funds market and use them to purchase other assets, thereby increasing deposits and the money stock.

The basic relationship between the federal funds rate, the rate on bank assets, and the money stock is not dependent on the particular operating procedure or reserve accounting system that the Fed is using. However, the operating procedure and reserve accounting system do affect the manner in which the federal funds rate is determined and, consequently, the Fed's ability to control the money stock.

Interest rate targeting

An interest rate targeting procedure such as that followed by the Fed before October 6, 1979, is easily described within the supply approach to money stock determination. The first task of the Fed was to choose a federal funds rate which it believed would induce banks to hold a quantity of assets just consistent with the desired level of the money stock. Then, the Federal Open Market Desk (Desk) varied nonborrowed reserves through sales and purchases of securities in such a way as to keep the federal funds rate within a narrow range about this chosen level. The Desk was able to do this quite well.

But it proved to be extremely difficult to determine what interest rate was consistent with the desired money stock. That difficulty, together with an apparent reluctance to move the federal funds rate sufficiently to bring money quickly back to the target path following unanticipated deviations sometimes led to large cumulative departures from the announced ranges for as long as a quarter or more. Dissatisfaction with the results of the interest rate operating procedure ultimately led to the October 6, 1979 shift to the new operating procedure.

Reserves targeting

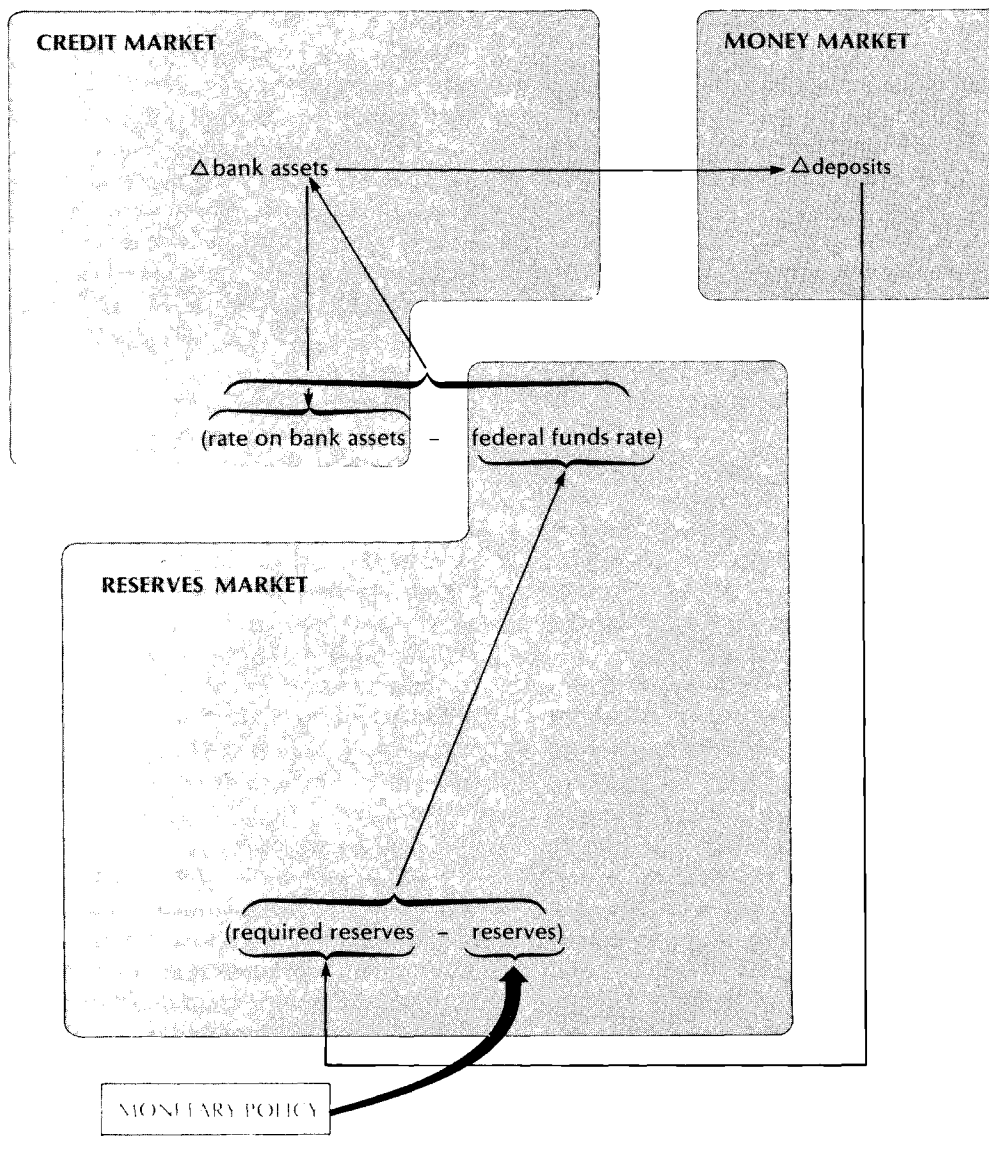
For many years academic economists and others have urged the Fed to adopt a reserves

targeting procedure for controlling the money stock. Before discussing the major features of the operating procedure adopted on October 6, 1979, it may be useful to describe the operation of a hypothetical reserves targeting procedure from the vantage point of the supply approach to money stock determination. Crucial to understanding such a procedure is the assertion made earlier that banks respond to the federal funds rate, rather than to their basic reserve positions, in changing deposits. This is not to say that the level of reserves is unimportant. Indeed, because reserves and the federal funds rate are interdependent, it makes no sense to say that one is important, while the other is not. But since the precise relationship between the federal funds rate and deposits may be difficult to ascertain, it may make sense to use reserves to guide the federal funds rate to the proper level to produce the target money stock.

Advocates of reserves targeting are asking that the money stock be allowed to adjust to a predetermined level of reserves. As discussed above, individual banks would be guided in making this adjustment by movements in the federal funds rate. However, it is precisely the difficulty of knowing the appropriate federal funds rate that argues for a self-equilibrating mechanism to set the rate and achieve the money target. Under a reserves targeting procedure, the role of the Fed is confined to providing a level of reserves believed consistent with the desired money stock, given the level and structure of reserve requirements. The reserves market is then supposed to guide the federal funds rate to whatever level is required to obtain the desired level of deposits, as illustrated in the accompanying schematic diagram.

Suppose, for example, that required reserves are greater than the level of reserves (presumably meaning that the actual money stock exceeds the targeted level). The shortage of reserves causes banks to bid up the federal funds rate. As the federal funds rate rises, banks respond by selling assets—thereby destroying deposits and reducing the

Reserves targeting procedure



money stock—and channeling the funds into the federal funds market. The federal funds rate will continue to rise until banks have sold enough assets, thereby raising other interest rates, and destroyed enough deposits to reduce required reserves below the level of

reserves provided. Conversely, if required reserves are below the level of reserves provided, the federal funds rate will fall and banks will buy assets, lowering other rates and increasing deposits (and money), until required reserves move up into equilibrium

with reserves.

In a system in which *current* deposits affect *current* required reserves, the purchase (sale) of assets can raise (lower) required reserves by increasing (decreasing) deposits. This does not change the aggregate level of reserves, of course, but simply redistributes them. Indeed, the essential characteristic of a total reserves targeting procedure is that the federal funds rate, deposits, and required reserves all adjust to a preestablished level of reserves.

Lagged reserve accounting

The reserves targeting procedure described above depends critically on the existence of a direct relationship between current deposits and current required reserves. However, under the lagged reserve accounting system in use since 1968, current required reserves are determined not by deposits in the current week but by deposits two weeks earlier. In two ways this system is difficult to reconcile with the hypothetical reserves targeting procedure described above.

First, lagged reserve accounting constrains the level of reserves that the Fed can provide. If the level of deposits two weeks before were such that required reserves are greater than the targeted level of reserves, the Fed has little choice but to provide enough reserves to cover the predetermined level of required reserves. This explains what may appear to be a common misunderstanding about the new operating procedure. Although the new procedure is often referred to as a reserves targeting procedure, the description just given makes it clear that the Fed cannot always closely control total reserves, but only the mix between borrowed and nonborrowed reserves.² The fact that the Fed

²That is, although the Fed must provide at least enough reserves to cover the level of required reserves, it has a choice of how to provide the reserves. The greater the amount of reserves provided through open market operations (nonborrowed reserves), the smaller the amount of reserves that banks must borrow through the discount window, and therefore the lower the federal funds rate.

targets nonborrowed reserves would seem to be implicit recognition that there are times when hitting a targeted level of total reserves is not feasible.

The second problem posed by lagged reserve accounting for a reserves targeting procedure is always present, even when the Fed is not constrained from hitting the targeted level of total reserves. Consider a situation in which the level of deposits two weeks ago was below the desired level. This means that the quantity of reserves demanded—which reflects primarily the level of required reserves—is below the level of total reserves that would be consistent with the Fed's desired level of the money stock. In this case, the Fed could achieve the necessary level of total reserves simply by supplying a sufficient amount of nonborrowed reserves.

However, because the quantity of reserves demanded is less than the quantity supplied, the federal funds rate must fall. As it falls, banks respond by purchasing assets and increasing deposits. But, unlike a system in which an increase in current deposits increases required reserves, raising the demand for reserves and thereby halting the decline in the federal funds rate, under lagged reserve accounting there is nothing in the increasing deposit levels to cushion the fall. Required reserves were determined two weeks earlier and cannot be changed. Deposits could go literally anywhere in the current week and not affect the federal funds rate at all.³ Under lagged reserves, banks continue to purchase assets and create deposits until the rate on bank assets moves into equilibrium with the lower federal funds rate.

Market volatility

Lagged reserve accounting has profound implications for the new operating procedure.

³Changes in deposits in the current week do not affect the demand for reserves in the current week, which was determined by the deposit level two weeks earlier. Even though changes in deposits in the current week will affect the demand for reserves two weeks from now, there is no way that this will influence the demand or supply of reserves in the current week.

ture. It was noted earlier that, according to the prevailing view of money stock determination, the new operating procedure was expected to stabilize short-run changes in money at the expense of increased short-run volatility in interest rates. But under lagged reserve accounting, the supply approach to money stock determination suggests a different result.

According to the supply approach, changes in deposits occur because of changes in the spread between the rate banks can earn on assets and the rate charged for reserves (federal funds rate). Deposits will change if, and only if, banks have an incentive to exchange assets with the public. The key to understanding the effects of the change in operating procedure on the volatility of interest rates and money lies in examining the implications of different reserve accounting schemes as well as different operating procedures for the process by which the rate spread is returned to equilibrium.

Consider an example using the supply approach to money stock determination. Assume that the banking system is in equilibrium when the rate that banks can earn on assets increases. According to the supply approach to money stock determination, such an increase may arise not only from an increase in the demand for money, but from any change in the credit market which raises interest rates. The initial response to the increase in the rate on bank assets is that banks will attempt to buy assets and thereby increase deposits.⁴ The final result depends on the reserve accounting system as well as the operating procedure.

Reserves targeting. Consider the case in which deposits in the current week determine current required reserves and the Fed is targeting total reserves—i.e., the situation usually assumed when speaking of a reserves targeting procedure. In this situation, as soon as banks attempt to buy assets and increase the money supply, required reserves increase and the shortage of reserves causes the federal funds rate to rise. It continues to rise until there is no longer any incentive for banks to increase their asset holdings. That is, the federal funds rate increases until it has returned the gap between it and the rate on bank assets to an equilibrium level.

In the end, interest rates have risen and the money stock has increased only to the extent that the higher interest rates have led banks to reduce excess reserves. In this situation, according to both the prevailing view and the supply approach, more volatile interest rates are associated with less volatile short-run changes in money.

The old operating procedure. Now consider a second situation, in which lagged reserve accounting is being used, but the Fed is targeting an interest rate—i.e., the old operating procedure. Again, assume that the rate on bank assets rises. Banks again buy assets, increasing deposits and money. But because current required reserves were determined by deposits two weeks earlier, the change in deposits has no effect on the demand for reserves and no impact on the federal funds rate. The only way that a change in the federal funds rate can occur would be if the Fed decided to make it occur. The schematic diagram of the old operating procedure

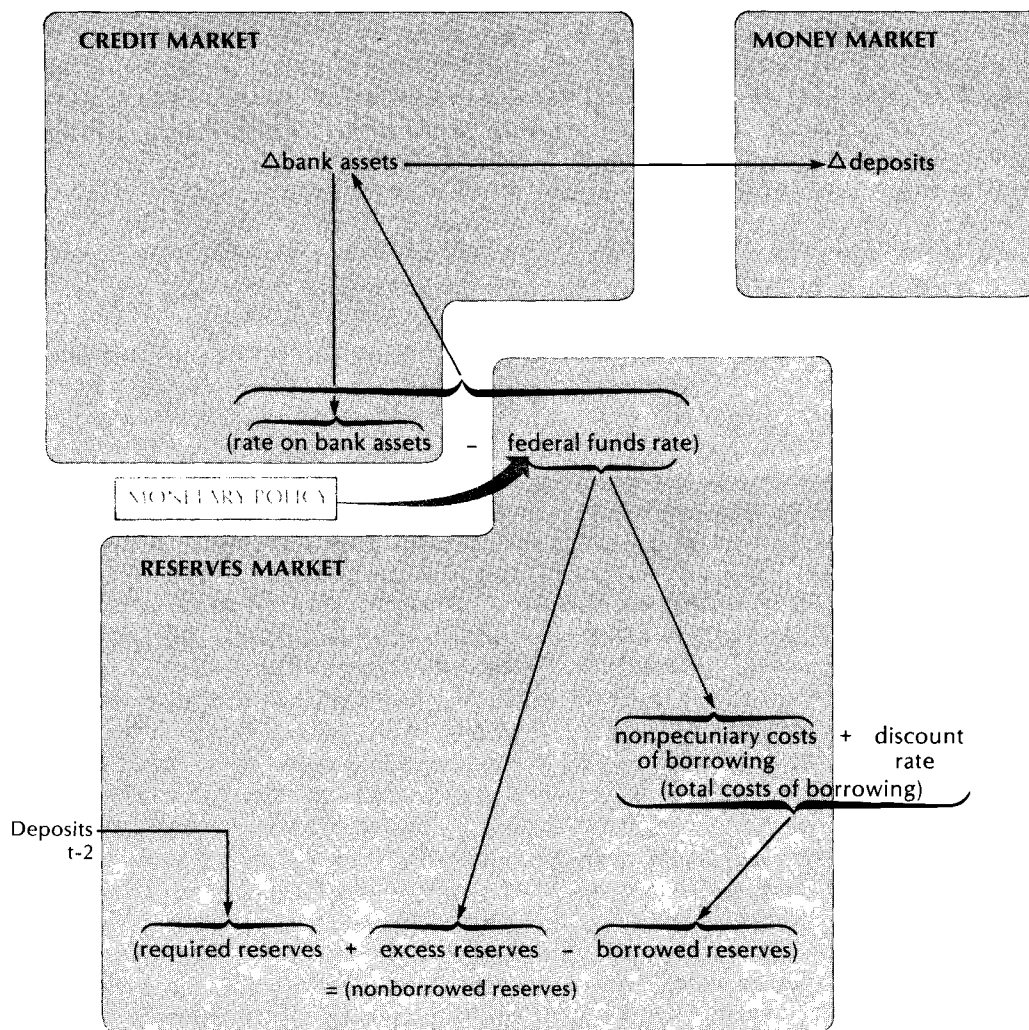
⁴The supply approach assumes the following bank response mechanism:

$$\Delta \text{ Deposits} \approx \Delta \text{ Bank Assets} = f(\text{Rate}_{\text{bank assets}} - \text{Expected Rate}_{\text{federal funds}})$$

This response mechanism says that banks exchange assets with the public on the basis of the difference between the rate on bank assets and the expected rate on federal funds of the same maturity. If the rate on bank assets is above the expected rate on federal funds of the same maturity, banks will purchase assets (loans or securities) from the public, thereby creating deposits, and cover the

reserve loss with purchases in the federal funds market. Conversely, if the rate on bank assets is below the expected rate on federal funds of the same maturity, banks will reduce their asset holdings obtained from the public, thereby reducing deposits, and sell the funds obtained in the federal funds market. Policy affects the money stock through the impact of the current federal funds rate on expected federal funds rates in the future. The greater is the impact of a movement in the current federal funds rate on expected future federal funds rates, the greater is the impact on money.

The old operating procedure



procedure shows that the Fed directly sets the federal funds rate and that the connection between deposit changes and required reserves in the current week is severed by lagged reserves. Since, under an interest rate targeting procedure, the Fed is only moving the

federal funds rate by small increments, the disturbances to the spread between the rate on bank assets and the federal funds rate from movements in the federal funds rate are small. Under a lagged reserve system there is no mechanism that automatically matches

movements in the federal funds rate to movements in the bank asset rate. The disturbances to the spread are thus the sum of two independent interest rate movements—the movement in the bank asset rate arising from shifts in the credit market and the small movements in the federal funds rate produced by the Fed. In the example being considered, banks achieve equilibrium by purchasing assets and increasing deposits until the rate on bank assets has been lowered to its previous level and the equilibrium spread has been reestablished. In the short run money increases but interest rates are unchanged.

Notice that even if the reserve accounting system had been one in which current deposits determined required reserves, the results would have been the same as long as the Fed operates through interest rates. This result is consistent with the widely acknowledged fact that the reserve accounting system is irrelevant if the Fed is targeting an interest rate.

The new operating procedure. Finally, consider a situation in which the reserve accounting system is again lagged reserves, but the Fed is targeting a level of nonborrowed reserves—i.e., the new operating procedure. Again, under lagged reserve accounting, banks reach equilibrium by changing their asset holdings (and the money stock) until the interest rate on bank assets moves into equilibrium with the federal funds rate. The new operating procedure does not differ from the old procedure in this respect. The

main difference between the new procedure and the old one is that the Fed no longer stabilizes the federal funds rate in the short run. Consequently, short-run movements in the federal funds rate are much more volatile.

Although this increased volatility of the federal funds rate was anticipated when the new procedure was adopted, it was viewed as the necessary cost of improved control of the monetary aggregates. However, another important consequence of the new procedure seems not to have been fully appreciated. This is the fact that the short-run changes in bank assets and deposits necessary to equilibrate the bank asset rate to this more volatile federal funds rate will generally be larger than under the old procedure.

The key to understanding this seemingly implausible result is to keep in mind that federal funds rate volatility is beneficial in stabilizing short-run movements in money only if it serves to reestablish equilibrium between the rate on bank assets and the federal funds rate, as it would under a reserves targeting procedure in which current deposits determine current required reserves. Greatly increased federal funds rate volatility that is unrelated to the rate in the credit market—which, as was discussed previously, is characteristic of a lagged reserve accounting system—will serve to widen the departure from equilibrium more often than to narrow it.

The dramatic increase in the volatility of the federal funds rate under the new operating procedure makes the departure from

Weekly interest rate and deposit volatility

Period	Federal funds rate		Demand deposits			
	Average absolute deviation	Standard deviation	Nonseasonally adjusted		Seasonally adjusted	
			Average absolute deviation	Standard deviation	Average absolute deviation	Standard deviation
Oct. 20, 1976 - Oct. 10, 1979	1.375	1.810	.799	1.028	.574	.756
Oct. 20, 1976 - Oct. 12, 1977	1.668	2.153	.805	1.004	.588	.735
Oct. 19, 1977 - Oct. 11, 1978	1.136	1.423	.756	.932	.579	.778
Oct. 18, 1978 - Oct. 10, 1979	1.320	1.813	.837	1.151	.557	.750
Oct. 17, 1979 - Oct. 8, 1980	5.700	7.326	1.110	1.384	.651	.820
Oct. 17, 1980 - Oct. 7, 1981	4.020	5.183	.992	1.271	.651	.846
Oct. 17, 1979 - Oct. 7, 1981	4.860	6.315	1.016	1.333	.663	.845

All data use weekly percentage changes. Measures of volatility are the average absolute deviation about the mean and the standard deviation. Seasonally adjusted demand deposits are adjusted by taking the difference between the current figure and the figure 52 weeks earlier.

equilibrium much larger, on average, than under the old procedure. The further the two rates are from an equilibrium relationship to one another, the larger are the changes in deposits required to achieve equilibrium. Thus, the new operating procedure yields not only increased volatility in interest rates—which was generally expected when the new procedure was adopted—but also somewhat increased week-to-week volatility of deposits. That the volatility of both the federal funds rate and deposits has increased since adoption of the new operating procedure is shown in the table. However, as will be noted later, this increased week-to-week volatility in deposits could well be accompanied by a reduced volatility in deposits over longer periods of time.

The change in procedure

It is a truism of economics that the federal funds rate, like any other price, is determined by the interaction of supply and demand. Yet, there are important differences under different operating procedures in how supply and demand interact to determine this basic link in the money supply process. The usual conception of a reserves targeting procedure implicitly assumes that the supply of reserves is set first and that the federal funds rate responds to shifts in the demand for reserves through the impact of current deposit changes on required reserves.

Under lagged reserve accounting, however, it is impossible for deposit changes in the current week to affect the federal funds rate, because required reserves were determined by deposit levels two weeks earlier. With the demand for reserves in the current reserve maintenance week essentially fixed, the federal funds rate and deposits respond only to changes in the supply of reserves. The structure of the present reserve accounting system prevents the federal funds rate from performing the role that it should in a reserves targeting procedure. The effect of the shift to the new operating procedure is to change the way the supply of reserves deter-

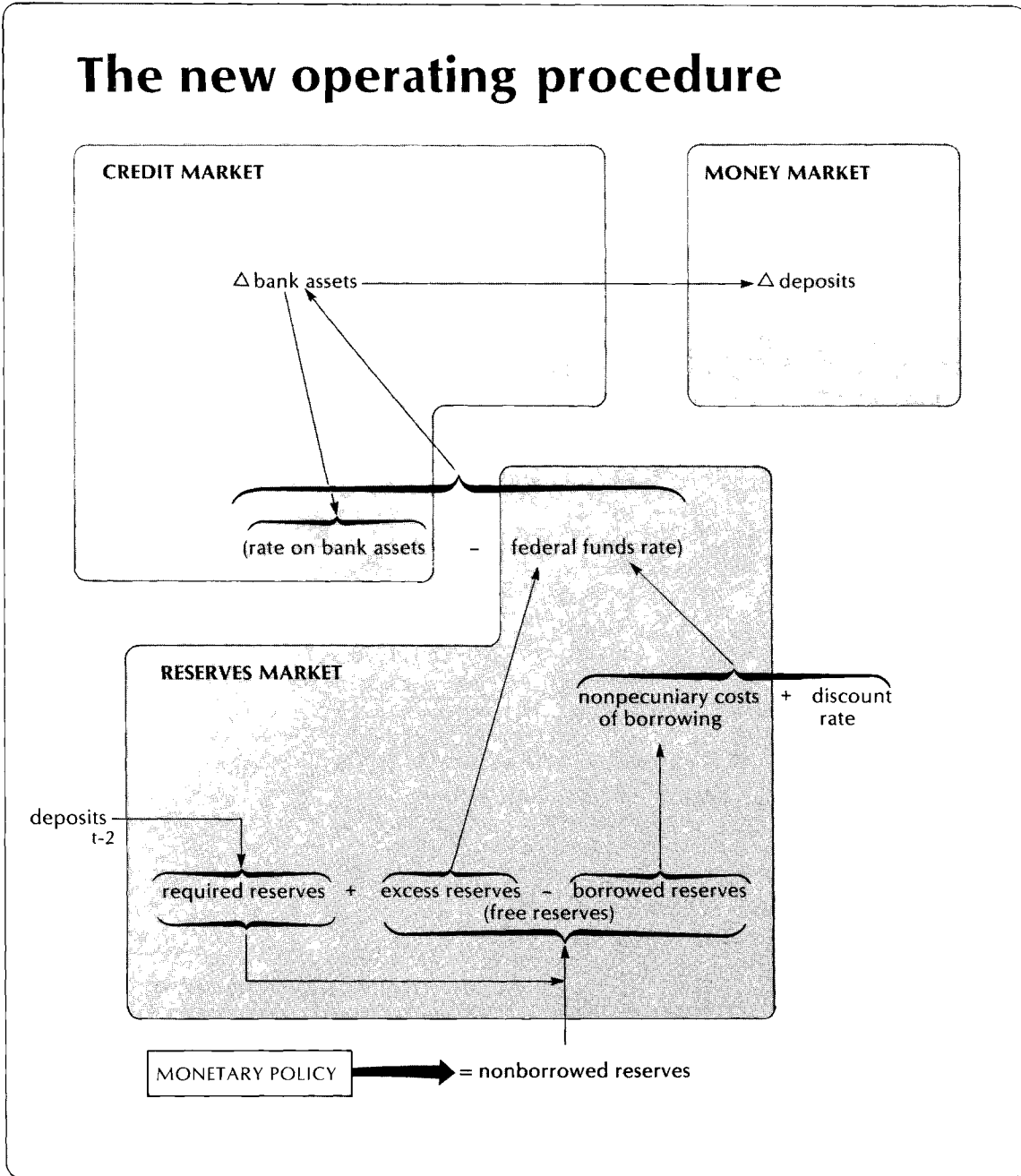
mines the federal funds rate.

Under the old operating procedure, it was clear how the Fed used the supply of reserves to determine the federal funds rate. Having chosen a target level of the federal funds rate, and with required reserves set two weeks earlier, the Desk varied the level of nonborrowed reserves to achieve that target. Under those conditions the Fed knew the federal funds rate it was producing, and the levels of borrowed and nonborrowed reserves fell out as a consequence of the discount rate and the operation of the discount window, as shown in the schematic diagram of the old operating procedure.

Under the new operating procedure, the Fed begins implementing policy by providing some level of nonborrowed reserves. As before, given the discount rate and the manner in which the discount window is administered (i.e., the nonpecuniary costs of borrowing), the level of nonborrowed reserves determines the federal funds rate. But under the new operating procedure the Fed does not know precisely the level of the federal funds rate that will result from the level of nonborrowed reserves provided. As shown in the schematic diagram of the new operating procedure, the supply of nonborrowed reserves still determines the federal funds rate, but at one step removed. And that determination has become much more complex because the federal funds rate associated with a particular level of nonborrowed reserves now depends on the discount rate and the nonpecuniary costs of borrowing at the discount window.

The preceding analysis explains why the increased short-run volatility in the federal funds rate that accompanied adoption of the new operating procedure has resulted in increased short-run (weekly) deposit volatility. However, the adoption of the new operating procedure could well bring an improvement in monetary control. The major criticism of the old operating procedure was not that short-run (weekly) deposit volatility was too large, but that the monetary authority was reluctant to move the federal funds rate

The new operating procedure



enough to prevent longer-run deviations of money stock growth from target. If the new operating procedure allows the federal funds

rate to move more in response to deviations of money stock from target, then it is likely to improve longer-run monetary control.