

# A PRESCRIPTION FOR MONETARY POLICY 1981

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**Our Current Economic Difficulties** It is no secret that the performance of the U. S. economy was far from satisfactory in the '70s. For example, real GNP rose at a 3.1 percent average annual rate from 1969 to 1979 compared with a 4.2 percent average annual rate of growth in the '60s. Besides lower real growth, the economy experienced two recessions in the '70s, in 1970 and 1974, and another in 1980, compared with only one in the '60s, in 1960. In addition, the 1974 recession was the most severe since the '30s. So not only has the U. S. economy sustained lower average growth, but it has also suffered greater instability as well in the '70s compared with the '60s.

These output statistics are even more disturbing when one notes that civilian employment grew at a faster 2.1 percent rate in the '70s than the 1.6 percent rate of the '60s. That is, more people were taking jobs, but output per man-hour or productivity growth slowed in the '70s.

Things were no less unsettling in international economic relations. The '70s began with a series of speculative attacks against the dollar until finally in 1973 the fixed exchange rate system among major western trading nations was abandoned for more flexible exchange rates. Another wave of speculative attacks against the dollar occurred in the fall of 1978. This loss of confidence in the U. S. dollar was associated with the spectacular rise of the dollar price of gold to about \$800. On November 1, 1978 the U. S. Government announced a major new program to support the dollar.

The economic difficulties just summarized have been severe, but the most pervasive and perhaps in the long run potentially the most dangerous economic problem of the '70s has been inflation. During the '60s the price level, as measured by the CPI, rose roughly 24 percent. During the '70s the price level rose roughly 98 percent. This means that the purchasing power of the U. S. dollar was roughly cut in half during the '70s. Inflationary anticipations rose along with actual inflation rates and so became incorporated into interest rates at which money was borrowed and loaned. Consequently, nominal interest rates rose on average throughout the decade. For ex-

ample, 4- to 6-month prime commercial paper yielded roughly 3.8 percent in 1960, 7.7 percent in 1970, and 11 percent in 1979. In December 1980 it was yielding roughly 16.5 percent per annum. Further loss of confidence in the dollar, again highlighted by run-ups in gold and other commodity prices, eventually led the Federal Reserve to make its October 6, 1979 policy decision to move away from interest rate targeting and toward reserve targeting in order to better control the monetary aggregates.

**What the Federal Reserve Can Do** This last comment brings us to the Federal Reserve, and in particular to the question of what the Federal Reserve can do to contribute to economic stability.

As everyone knows, the Federal Reserve makes monetary policy. At the risk of oversimplification, there are two competing views of the way in which monetary policy should be carried out. One view argues that the Fed has responsibility to manage interest rates. In its extreme form, some have argued that the Fed should keep interest rates relatively low in order to facilitate borrowing, spending, and economic growth.

A second view recognizes that managing interest rates is an extremely tricky business. When the Fed attempts to move interest rates below a prevailing market rate, it must do so by buying government debt in the open market with "freshly printed money" so to speak.<sup>1</sup> In other words, the Fed must accelerate

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<sup>1</sup> The Federal Reserve influences security prices and interest rates by buying or selling securities and thereby affecting their supply. Security purchases drive security prices up and interest rates down; sales do the opposite. When it buys a security, the Fed pays for it by essentially creating new money, money that hasn't been in circulation before, and when it sells a security the Fed receives money that had been in circulation, taking it out of circulation.

The money that the Fed pays out to purchase a security may be held as currency or bank reserves. If it is held as currency, the new money is associated dollar for dollar with an increase in the money supply. If it is deposited in the banking system and becomes bank reserves, it can support a multiple expansion of the money supply. In either case, the money supply rises when the Fed purchases a security; analogously, the money supply falls when the Fed sells a security.

money growth at least initially to try to depress interest rates. On the other hand, if for some reason the Fed sees fit to raise interest rates above a prevailing market rate, it must sell government debt in the open market and thereby reduce the money supply or reduce money growth.

The problem with attempting to move the interest rate away from some prevailing market rate in either direction is that resulting effects on money growth will eventually feed back on the inflation rate and, in turn, on anticipated inflation. And anticipated inflation will feed back on interest rates in the opposite direction from which the Fed wanted to move them. For example, if the Fed were to attempt to depress interest rates, more rapid money growth and higher inflation would put *upward* pressure on nominal interest rates as higher inflationary anticipations are built into nominal rates. This greater upward pressure on interest rates would force the Fed to buy greater quantities of government debt to keep interest rates down. But in so doing the Fed would further raise money growth, causing even higher inflation, anticipated inflation, and more upward pressure on interest rates. The ultimate consequence of this type of policy is an ever increasing rate of inflation. In order to bring inflation under control, the Fed would have to abandon its attempt to depress interest rates.

If actively attempting to manage interest rates is difficult, why shouldn't the Fed at least try to stabilize interest rates around a long-run value believed to be consistent with its policy goals? First of all, it is virtually impossible to know what that long-run value is. Second, even if the Fed knew it, cyclical changes in economic activity affect the supply and demand for money and credit and cause cyclical swings in interest rates necessary to clear the money and credit markets. Even if the Fed were to try to hold interest rates at an appropriate long-run average level, as soon as cyclical movement began forcing interest rates to deviate from that average, a cumulative process of increasing or decreasing money growth would develop. Eventually, the Fed would have to allow interest rates to fluctuate cyclically to regain control of the money supply.

Unfortunately, Fed policy in recent years has been characterized by attempts to smooth interest rate movements, attempts which have reluctantly been abandoned time and again in order to restore control over money growth and inflation. Moreover, since these efforts have usually involved an effort to keep interest rates too low, Fed policy has produced rising money growth on average, as well as our current high

average inflation and interest rates. This experience explains why the Fed has had to temper its direct concern for interest rates. However desirable low and easily predictable interest rates may be, economically speaking it has not been possible for the Fed to actively try to deliver that ideal.

So what can the Fed do? The Fed can and should concentrate on controlling the money supply. Specifically, the Fed should provide as steady a rate of monetary growth as possible over months, quarters, and years. There is little doubt that with appropriate control procedures the Fed could produce such close monetary control. To do so, however, the Fed must abandon its direct concern for wide swings in interest rates. Ironically, only by initially ignoring interest rate movements can the Fed hope to bring interest rates down, because only in this way can the Fed bring money growth down to a reasonably low rate and thereby bring inflation, inflationary anticipations, and interest rates permanently down as well.

Of course, pursuing such a policy takes nerve because the desired effects on inflation and interest rates may not appear immediately, mainly because it takes time to convince people that the Fed is serious. And it may appear to many that the Fed should be able to cope with its present difficulties by doing something active rather than by merely maintaining a steady rate of money growth. In addition, some people are afraid that by reducing the rate of money growth the Fed must produce a recession. Certainly this could happen if, for example, the Fed were to cut money growth sharply and in particular without warning.<sup>2</sup> However, this is not necessary. In principle, the Fed can announce and carry out a sufficiently gradual reduction in money growth to minimize potential adverse effects on employment and output.

**Criticisms of Strict Monetary Control** In the previous section it was explained why direct attempts to manage interest rates are counterproductive and that the most reliable way to keep interest rates low is to maintain a low rate of money growth. Six often-heard criticisms of the feasibility and advisa-

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<sup>2</sup> Friedman and Schwartz [2] present extensive documentation that sharp sustained reductions in money growth below trend have generally preceded recessions. Barro's [1] work supports the view that it is primarily when reduction in money growth has been unanticipated that it causes a reduction in economic activity. This work suggests that the Fed should not allow money to grow below its pre-announced targeted path without sufficient forewarning, for example, to speed the reduction in inflation. To do so would produce an unanticipated reduction in money growth that would run a particularly high risk of causing a recession.

bility of a policy of strict monetary control are addressed in this section.

*First: On Discretionary Policy* The first criticism argues against strict monetary control on the grounds that money growth should be manipulated as required to stabilize real economic activity and inflation over the short run. Unfortunately, it is at present impossible to reliably judge the short-run effects of alternative hypothetical monetary policy options on real economic activity. Econometric model simulations of competing policy options are theoretically unsound. That is, we don't yet have the *technical means* of deciding how alternately proposed rates of money growth will impact on inflation and employment in any relatively short time period, such as a year.<sup>3</sup>

Only the long-run effect of money on the economy is firmly and generally agreed upon. In the long run, money growth leaves real output growth relatively unaffected but it is the primary determinant of the rate of inflation.<sup>4</sup> This fact, coupled with knowledge that past attempts at discretionary policy have led to ever higher money growth rates, inflation, and interest rates, suggests that the Fed should accept a more modest goal of achieving and maintaining a reasonably low and steady rate of money growth.

*Second: On Reducing Inflation Without Recession* There seems to be a relatively widespread belief that reductions in money growth cannot decrease the inflation rate significantly over any reasonably short period of time without producing a recession. The late Arthur Okun's view is typical of such current pessimistic thinking about bringing down the rate of inflation. Okun's rule-of-thumb calculation is that the cost in terms of lost output per each 1 percentage point reduction in the inflation rate is 10 percent of a year's GNP. In the last months (August 1922-November 1923) of the great German hyperinflation of the 1920s, the inflation rate averaged roughly 300,000 percent at an annual rate, but the German inflation was virtually eliminated in early 1924 at the cost of roughly a 10 percent GNP gap. In other words, once a firm commitment to reduce money growth was established and meaningful economic reforms of the money supply process were put in place, the inflation was brought under control almost immediately and with a relatively small downward shock to output and employment.<sup>5</sup>

<sup>3</sup> See Lucas [5].

<sup>4</sup> Documentation on this is extensive. See, for example, Friedman and Schwartz [2].

<sup>5</sup> See Sargent [7].

There is an important lesson in the successful restoration of price stability following the German hyperinflation which is relevant for our own time. A reduction in money growth can bring the inflation rate down significantly in a short period of time, with relatively minor temporary reductions in real economic activity. But it must also be emphasized that for such a policy to work well, i.e., to affect inflation and not real economic activity, it is essential that the monetary authority announce and carry out real meaningful reform of its money growth policy. Suppose the monetary authority is truly committed to eventually bringing down money growth, but it moves in fits and starts or disguises its intentions, for example, to forestall criticism from groups hostile to its policies. Reductions in money growth, when they do come, will impact less on prices and more on real economic activity because there may be some doubt as to whether the money growth reductions will be sustained. The policy will work well only if the monetary authority establishes a commitment to bring money growth down that is credible to the financial markets and the public in general.

*Third: On Financial Innovation* A third argument against the feasibility of a policy of low and steady money growth starts with recognition that innovation in recent years in the financial markets has enabled a given rate of money growth to support more inflation. This point can be expressed with reference to the equation of exchange. The equation of exchange is written  $MV = PY$  where  $P \equiv$  the price level,  $M \equiv$  the money supply,  $V \equiv$  velocity, and  $Y \equiv$  real output.  $PY$  is money income. The effect of financial innovation allowing the money supply to serve more efficiently is represented in the equation of exchange by a rise in velocity. Real output is essentially secularly independent of velocity and money. Therefore, given the money supply ( $M$ ), a secular rise in velocity ( $V$ ) leads to a secular rise in the price level ( $P$ ), i.e., to inflation.

What are the implications for monetary policy of the increase in velocity due to innovations in cash management? Whether or not velocity is increasing due to financial innovation, the Fed must still concern itself with the long-run money growth rate, because as seen from the equation of exchange both secular money growth and secular velocity movement determine the secular inflation rate. If it so desires, the Fed can always cause money to grow at a slow enough rate to offset the effect of the secular rise in velocity on inflation. In any case, the Fed must maintain a reasonably low long-run rate

of money growth to produce a reasonably low long-run inflation rate.

*Fourth: On the Choice of Monetary Aggregate* An old criticism of the feasibility of monetary control argues that it is unclear which monetary aggregate should be strictly controlled. However, it does not matter so much which aggregate is chosen for the modest goal of maintaining a reasonably low secular rate of inflation. It is true that secular velocity movement associated with different monetary aggregates may differ. However, as mentioned above the Fed can take secular velocity movement into account in setting the rate of money growth for any monetary aggregate it decides to target. By appropriately compensating for the relevant secular movement in velocity, the Fed can achieve and maintain a low rate of inflation by directly controlling and targeting any well-defined monetary aggregate.

Currently the Fed is emphasizing M1B.<sup>6</sup> It includes all readily checkable deposits and it is currently the most inclusive aggregate for which all data are available at weekly intervals. However, the Fed could just as reasonably commit itself to controlling a narrower monetary aggregate such as the monetary base, or a broader aggregate such as M2.<sup>7</sup> However, what is crucially important is that one aggregate alone is chosen so that the Fed is not tempted to switch between one aggregate and another as a means of avoiding strict monetary control.

*Fifth: On the Government Budget Deficit* Many people seem to argue that government budget deficits, in and of themselves, constitute an independent impediment to monetary control. But what is the link people have in mind by which the Fed must finance government deficits? Since the Federal Reserve-Treasury Accord in 1951, the Fed has been under no formal obligation to monetize the government deficit, i.e., buy government debt, to maintain a given level of interest rates. Often, people have in mind an informal political constraint under which the Fed responds to increased government borrowing demands by monetizing the deficit so as to prevent interest rates from rising to levels that might be

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<sup>6</sup> M1B consists of currency, demand deposits at commercial banks, ATS accounts, NOW accounts, credit union share drafts, and other checkable deposits at thrift institutions.

<sup>7</sup> The monetary base consists of currency and bank reserves. M2 consists of M1B, overnight RPs issued by commercial banks, overnight Eurodollar deposits held by U. S. nonbank residents at Caribbean branches of U. S. banks, money market mutual fund shares, savings deposits at all depository institutions, and small time deposits at all depository institutions.

embarrassing. But really there is no difference between increased government and private credit demands as far as the Fed is concerned; resistance to upward pressure on interest rates from either source involves increasing the money supply. If the Fed were not to attempt to resist interest rate movements, it would not have to monetize government or private credit demands. In other words, the association of money growth with government deficits, if it occurs, is simply the outcome of the Fed's interest smoothing policy.

*Sixth: On the Payment of Competitive Interest on Deposits* Some argue that allowing the payment of competitive rates of interest on deposits could make monetary control more difficult. In fact, lifting regulatory restrictions on deposits would actually allow improved monetary control. If competitive rates of interest were paid on deposits, interest differentials between various types of deposits and other money substitutes would exhibit less variation, and the incentive for the public to switch among deposits and other money substitutes due to interest rate fluctuations would be reduced. Reducing such fluctuations in the public's holdings of liquid assets would improve the accuracy with which the Fed could forecast those holdings and thereby improve the Fed's ability to control whatever monetary aggregate it chooses to target.<sup>8</sup>

**The Post-October 6, 1979 Federal Reserve Operating Procedure** Having made the case for strict monetary control in the previous two sections, it remains to discuss the procedure for controlling the money supply. The Fed can control the money supply by either using the Federal funds rate or the volume of bank reserves as its control instrument. In the first case, the Fed directly manipulates the Federal funds rate to produce the desired money supply. In the second case, the Fed provides bank reserves so as to produce the desired money supply.<sup>9</sup>

Prior to October 6, 1979 the Fed had been utilizing the Federal funds rate as the monetary control

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<sup>8</sup> If legally required reserves were uniformly and solely applied to the monetary aggregate being controlled, reserves were assessed contemporaneously, and total reserves were employed as the instrument of monetary control, then monetary control might be relatively unaffected by legal ceilings on deposit rates. However, none of the above conditions exist at present. See footnote 17 and the discussion surrounding it.

<sup>9</sup> To directly fix the Federal funds rate, the Fed must buy or sell securities as the market requires to keep the rate fixed. On the other hand, to provide a specific volume of bank reserves, the Fed must buy or sell only the volume of securities necessary to achieve that desired volume of bank reserves, regardless of what happens to the funds rate.

instrument. But on that date the Fed, after concluding that the Federal funds rate was an unreliable instrument for controlling the money supply, decided to move to "reserve targeting," i.e., utilization of bank reserves as the instrument.<sup>10</sup>

Subsequently, it has come to be understood that reserve targeting cannot be adequately implemented within the lagged reserve requirement rules currently in force.<sup>11</sup> To see why, suppose the Fed were to attempt strict control of total reserves under lagged reserve accounting. When required reserves differed from targeted total reserves, the funds rate would begin to adjust to clear the reserves market. But under lagged reserve accounting, banks could not affect current required reserves. If the Fed were to stick to a targeted volume of total reserves that was inconsistent with required reserves, funds rate movements could not adequately clear the reserves market. Excessive and essentially pointless funds rate volatility would likely be associated with strict total reserve control with lagged reserve requirements.

In practice, the Fed has provided a mechanism for reserve market clearing with lagged reserve requirements by allowing the volume of discount window borrowing to adjust to funds rate movements.<sup>12</sup> Unfortunately, this mechanism has resulted in other difficulties for reserve targeting. As a result of its discount window policy, the Fed retains direct control of only the *nonborrowed* portion of total reserves. When nonborrowed reserves supplied by the Fed are less than required reserves, banks are allowed to borrow the difference from the discount window.<sup>13</sup>

In this setup, total reserves do not determine deposits. The Fed merely accommodates the demand for reserves required to support deposits on the books of banks two weeks ago. The Fed must control deposits in any given week by manipulating the funds rate to influence other interest rates and

the quantity of money demanded. In short, with the nonborrowed reserve control instrument and lagged reserve requirements, the funds rate still plays a central role as an intermediate target in the monetary control procedure; so the current operating procedure retains the major deficiency of pre-October 1979 means of monetary control, namely, effective reliance on the funds rate as an instrument.

The present procedure is even inferior to the old procedure in one important respect. The principal change involved in moving to nonborrowed reserve targeting has been that the Fed has affected the funds rate indirectly through the volume of borrowing it "forces" banks to do at the discount window. Because discount window administration imposes a nonpecuniary cost of borrowing that rises with volume, the more banks are "forced" to borrow at the window the higher they bid up the alternative cost of reserves in the Federal funds market, i.e., the Federal funds rate, relative to the discount rate. The Fed varies the "forced" volume of discount window borrowing by appropriately choosing nonborrowed reserve supply. This is how the Fed currently influences the funds rate and ultimately the money supply. However, the relationship between a given volume of "forced" discount window borrowing and the spread between the funds rate and the discount rate has appeared to the Fed as volatile and extremely difficult to predict.<sup>14</sup> In turn, the apparent instability of the relation between borrowing and the spread has made the short-term relationship between nonborrowed reserves and the funds rate difficult to predict. Consequently, the link between nonborrowed reserves and the money supply has been doubly weak under nonborrowed reserve targeting.<sup>15</sup>

The Fed has been considering moving to contemporaneous reserve requirement rules.<sup>16</sup> The main virtue of moving to contemporaneous reserve requirements is that it would allow the Fed to keep the

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<sup>10</sup> See "The New Federal Reserve Technical Procedures for Controlling Money" [6].

<sup>11</sup> Lagged reserve requirement rules require banks to maintain reserves against deposits they had on their books two weeks previously.

<sup>12</sup> The Fed provides reserves in two ways: (1) through outright purchase of securities and (2) by lending reserves through the discount window. The former are called nonborrowed reserves; the latter are called borrowed reserves.

<sup>13</sup> For extended periods of time since October 1979 the Fed has let the funds rate decline below the discount rate. In such periods there has been no incentive to borrow at the discount window for reserve adjustment purposes, adjustment borrowing has fallen essentially to zero, and the Fed has reverted to using the funds rate as an instrument as it did prior to October 1979.

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<sup>14</sup> See Goodfriend [4] and references contained therein.

<sup>15</sup> The new operating procedure is an improvement over the old in one important respect. Under the old procedure, when money growth and reserve demand moved up, the additional reserves were often supplied without an increase in the funds rate. Under the new procedure, when the additional reserves are provided through the discount window, the funds rate automatically rises as the additional reserves are supplied. The higher funds rate immediately works to bring money growth under control. See Goodfriend [3] for more discussion on this point.

<sup>16</sup> Contemporaneous reserve requirement rules would require banks to maintain reserves against deposits they have on their books in the current reserve statement period.

incentive to borrow at the discount window negative. This could be done, for example, by making the discount rate a fixed penalty rate slightly above the funds rate. Borrowed reserves would no longer have to be made available to assure that the reserve market clears. Contemporaneous reserve requirements would allow the banking system to bring current required reserves into equilibrium with targeted total reserves. In other words, contemporaneous reserve requirements would make it easier for the Fed to control total reserves.

The major potential attribute of total reserve targeting is that it could enable the Fed to manage money growth without concern for either the funds rate or borrowed reserves. If banks were to keep excess reserves, reserves held above legal requirements, to a minimum and reserve requirements were uniformly and solely applied to deposits in the monetary aggregate being controlled, then there could be a direct and relatively stable link between total reserves and deposits.<sup>17</sup> Monetary control could then be exercised directly through reserves with little concern for interest rates.

<sup>17</sup> Not all the above mentioned conditions are currently met in practice. For example, although they are being reformed under the Monetary Control Act of 1980, reserve requirements are not yet uniformly and solely applied to deposits in M1B, the aggregate of primary concern to the Fed.

The point in the text may be illustrated formally as follows:

- Let  $TR(t)$  = total reserves provided by the Fed in period  $t$
- $RD(t)$  = banks' demand for reserves
- $ER(t)$  = banks' demand for excess reserves
- $RR(t)$  = banks' required reserves
- $M(t)$  = the monetary aggregate being controlled
- $rr$  = legal reserve requirements on deposits in  $M$

Reserve market clearing implies

$$TR(t) = RD(t) \equiv ER(t) + RR(t).$$

Since  $RR(t) = rrM(t)$ ,

it follows that

$$TR(t) = ER(t) + rrM(t).$$

If  $ER(t) = 0$ , then

$$M(t) = \frac{TR(t)}{rr}.$$

Under the above conditions the Fed can closely control the money supply  $M$  in period  $t$  with total reserves supplied in period  $t$ . In fact such close monetary control can be achieved even if excess reserves are neither zero nor constant, as long as they are reasonably predictable. Currency has been ignored, but taking it into account would leave the point illustrated here essentially intact.

Now, a point which has been seldom made is that the degree to which strict total reserve control would improve monetary control depends critically on the behavior of excess reserves. Theory suggests that if the Fed were to tightly control total reserves and impose a large cost of reserve default, the demand for excess reserves would rise as a precaution against going deficient. If excess reserves were to become more significant, it would become more important to predict their volume in order to know the multiplier relation between a given quantity of total reserves and the money supply.

Since World War II, excess reserves have generally been relatively small. However, excess reserve behavior during that period is of little value in suggesting what excess reserve behavior might be in a regime of tight total reserve control. As pointed out above, excess reserve demand is critically dependent on the set of reserve management rules established by the Fed together with its monetary policy procedure, and the Fed has never attempted tight short-run control of total reserves. Rather the Fed has tended to supply those reserves that the banking system desired on a short-run basis, while allowing funds rate movements to proceed relatively slowly. The demand for excess reserves has been understandably small in that policy regime, but there is less reason to expect excess reserve demand to remain small under strict total reserve control. This last point is important because it means that even if contemporaneous reserve requirements are implemented, monetary control might not be most effectively achieved by moving to a fixed penalty discount rate and directly targeting total reserves.

If excess reserves should prove large and difficult to predict, then easing carryover restrictions, lengthening the reserve statement period, staggering reserve settlement periods, and/or alternative reforming of discount window administration might be considered.<sup>18</sup> Such reforms would allow the banking system more flexibility over time in meeting reserve requirements. The additional flexibility, especially if accompanied by timely publication of Fed informa-

<sup>18</sup> Easing carryover restrictions would essentially allow future reserve holdings to satisfy current reserve requirements. Lengthening the reserve statement period, by lengthening the period against which reserve holdings are averaged for the purpose of satisfying reserve requirements, would also essentially allow banks more time in meeting reserve requirements. Staggered reserve settlement and discount window reform could in effect allow such additional latitude for the banking system as a whole.

tion on reserve market conditions, should result in reduced day-to-day funds rate variability. In turn, less variability in the cost of reserves should help stabilize the demand for and improve the predictability of excess reserves.

On the other hand, given the demand for excess reserves, these reforms would make the relation between current reserve demand and reserve requirements against current deposits less predictable. The first effect would improve and the second effect would worsen the predictability of the relation between reserves supplied by the Fed and aggregate bank deposits. The overall value of these reforms in improving monetary control would depend on which effect dominates.

In summary, a strong case can be made for moving to contemporaneous reserve requirements from the point of view of monetary control. Because it allows the banking system to change current required reserves in response to current funds rate changes, contemporaneous reserve requirements should reduce funds rate volatility compared to lagged reserve requirements for any degree of reserve control. But what the Fed does with discount window administration affects the potential overall value of the move to contemporaneous reserve requirements. In particular, if current discount window administration is unchanged, then moving to contemporaneous reserve requirements would not allow the Fed to directly control total reserves. On the other hand, tight restrictions on discount window borrowing and strict total reserve control might increase the volume and unpredictability of excess reserves, thereby weakening the link between reserves and deposits. If excess reserves do prove a problem, then reforms such as those suggested above should be considered. At any rate, considerable study and perhaps experimentation will probably have to be done with subsidiary features of the monetary control apparatus to make the most of contemporaneous reserve requirements for improving monetary control.

**Conclusion** The main points underlying the prescription for monetary policy advanced in this article together with the prescription itself are summarized as follows:

(1) Attempts at directly managing interest rates require the Fed essentially to give up control of money growth and inflation. Sooner or later interest rates must be freed in order to restore control of money growth and to bring inflation under control.

(2) Since the Fed cannot directly manage interest rates as long as it wishes to retain control of money growth and inflation, it should abandon direct attempts to manage interest rates and concentrate on monetary control. By achieving and maintaining a low rate of money growth, the Fed can bring inflation and interest rates permanently down as well.

(3) Economists do not yet have the technical means of deciding how alternately proposed rates of money growth will affect inflation and employment in any relatively short time period such as a year, so discretionary manipulation of the money supply to influence economic activity is unreliable. Consequently, strict and steady control of the money supply is the most feasible and effective policy open to the Fed at present.

(4) Evidence from the German hyperinflation of the early 1920s demonstrates that a reduction in money growth can bring the rate of inflation down with a relatively small reduction in real economic activity, but this favorable effect requires that the monetary authority commit itself to a pre-announced and credible policy of reducing money growth.

(5) Financial innovation of recent years has allowed a given rate of money growth to support more inflation. Regardless of this fact, the Fed must achieve and maintain a reasonably low rate of money growth to produce a reasonably low rate of inflation. Moreover, the Fed can always cause money to grow at a slow enough rate to offset the effect of the secular rise in velocity on inflation.

(6) Any one of a number of monetary aggregates could be strictly controlled by the Fed, but it is less important which is selected than that the Fed chooses just one and does not switch among them once the choice is made.

(7) The size of the government deficit does not constitute an independent impediment to monetary control.

(8) The payment of competitive rates of interest on deposits would allow improved monetary control.

(9) On October 6, 1979, the Fed expressed a need to move from use of the Federal funds rate to reserves as the instrument of monetary control. Reserve targeting cannot adequately be implemented under the lagged reserve requirement rules currently in force. The Fed must go to contemporaneous reserve requirements as a necessary step in reaping the full potential benefit of reserve targeting in improving monetary control.

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