

STABILIZING THE DOLLAR IN A GLOBAL ECONOMY

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Every Thursday afternoon investors, reporters, and financial commentators anxiously await the latest figure on the nation's money supply. About every six weeks speculation mounts as the Open Market Committee of the Federal Reserve prepares to decide the course of monetary policy over the coming weeks. In the days following the meeting, money market participants and observers digest the clues in the Fed's buying and selling habits in an effort to determine if a policy change is at hand.

These familiar events certainly offer high drama, copious news-copy, and abundant opportunities for wagering, but they do not reflect an effective way to run monetary policy. At a practical level this approach is fraught with uncertainty. People are unsure of precisely what monetary policy is today or what the Open Market Committee will decide it should be tomorrow. The theoretical problems are also quite basic. The approach assumes that the Federal Reserve is an omniscient, omnipotent regulator of the quantity of money in the economy. The Open Market Committee is assumed to know precisely which money aggregate to stabilize, to know whether that number should be higher or lower, and to have a dependable technical staff that can readily achieve the desired result. These heroic assumptions, however, are at odds with the way world money markets operate. Casting the Fed in its role as only one player in this market raises serious doubts about the ability of current policies to maintain dollar stability. In fact, the global framework implies that truly effective policy requires a completely different set of rules.

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Peering Out into the Global Economy

While the importance of foreign markets is beginning to gain the attention it deserves, most monetary policy discussions in this country look no further than the Golden Gate Bridge or Statue of Liberty. The United States and its money markets are assumed to exist in isolation. Attention is focused almost exclusively on the Open Market Committee, with all dollars assumed to emanate from that source. Certainly the United States is large relative to most other countries, and much of its commerce and financial activity is self-contained. But in a world where telecommunication signals can be beamed instantaneously around the world, where space shuttles circle the earth every 90 minutes, and where everything from oranges to Mercedes are dispersed from where they are produced to the far corners of the earth, the importance of individual country borders fades. Countries are increasingly interconnected, and any policy that ignores a sizable chunk of the system must be immediately suspect.

There exists no better example of this interconnected economic system than the international money market. Today's money market is a highly technical, highly mobile operation. The latest movements in the money market are sped instantly via satellite around the world. Computers of large banks and other corporations continuously monitor interest rate and exchange rate quotations from markets in Europe, America, and Asia for fleeting profit opportunities. With the push of a telex button millions or even billions of dollars can change hands halfway around the world.

In this organized world money market, U.S. residents and the Federal Reserve are important participants, and the dollar is an important currency. But the U.S. dollar is only one of the primary monies traded, and the American people constitute only a fraction of those worldwide who use dollars. The Federal Reserve is only one of the institutions that supplies liquidity to the global market. Other central banks supply liquidity denominated in other major currencies. Even within the world dollar market, the Fed finds that an increasing number of dollars come from private institutions. When a person in the United States wants more money, he therefore has several alternatives. The money could come from the Fed, from foreign countries or the Euromarkets, and involve dollars or some other currency. Rather than an omnipotent supplier of money, the Fed is but one participant in the competitive, global money market.

A simplified analogy clarifies this point. There are 12 Federal Reserve Banks overseeing the regulation of banking institutions in their jurisdictions. Each district reserve bank issues paper money

bearing the bank's unique seal. In a sense there are 12 separate monies and 12 separate central banks across the United States. Yet few would consider the Federal Reserve Bank of Dallas capable of implementing an independent monetary policy. The Dallas Fed supplies its own unique dollars, and its region is one of the largest in the country. But it still cannot control the number of "Dallas Fed" dollars, much less the total number of dollars, in its district. Banks and individuals have several avenues for transferring money to or from any of the other regions. A "tightening" of monetary policy by the Dallas Fed would create incentives for Texans to shift their loan demands "abroad." Texans would hold more dollars with non-Dallas seals or more deposits in non-Texas banks. Despite the physical and financial size of the Dallas Fed region, it is recognized that the money market is "global," incorporating all states.

Likewise the Federal Reserve must contend with the private sector's alternatives in today's global market. The U.S. market cannot be isolated. I now briefly examine how two of these potential avenues, the Eurodollar market and holdings of foreign currency-denominated money, diminish the Fed's ability to control the quantity of money.

The Eurodollar Money

The Eurodollar market can provide a cushion for the private market against the Fed's policy. If the Federal Reserve attempts to reduce the number of dollars in circulation, Eurodollar activity can expand. Domestic borrowers discover that at prevailing interest rates they cannot find as much financing as they desire, so they turn to the Eurodollar market to borrow more for their projects. With higher loan demand, Eurobanks offer slightly higher interest rates to attract more deposits to finance the loans.

This expansion does not imply a corresponding decline in domestic dollar deposits. The reason is that while domestic banks are required to hold reserves in only one type of asset—the monetary base—Eurobanks have no such requirement. When a Eurobank has dollars deposited into its accounts, it transfers any monetary base assets back to the home office in the United States. In return the Eurobank receives a deposit at the home office to use as its reserves. The U.S. monetary base is unaffected, but the global quantity of dollar deposits rises. Therefore, as the Fed attempts to reduce the quantity of deposits created in the United States, the expanding quantities of Eurodollar deposits help to keep the total quantity of dollar deposits unchanged.

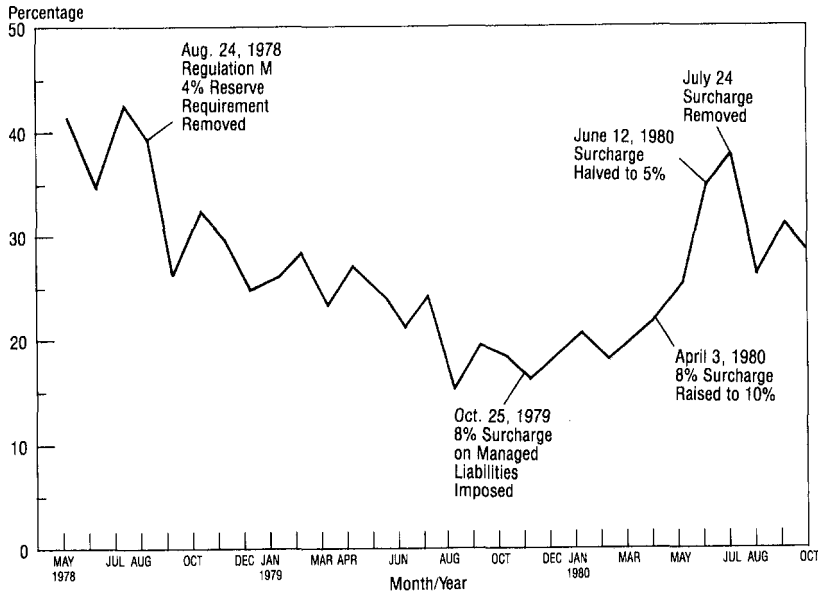
An interesting example of how Euromarkets are used to circumvent Federal Reserve policy is the reaction of banks to President Carter's 1 November 1978 attempt to restrict dollar growth. Part of the proposal was a directive by the Federal Reserve doubling the reserve requirements on large certificates of deposit (CDs) from 2 percent to 4 percent. Although the change was intended to slow the growth rate of the U.S. money supply, its major effect was simply to switch part of the CD market from the United States to the Eurodollar market. Creating dollar CDs now became relatively more expensive for the home office and relatively cheaper for Euromarket branches. Not surprisingly, the relative amount of large denomination CDs issued in the Eurodollar market rose steadily in the months following the November 1978 reserve requirement increase. The dollar liabilities of foreign branches of U.S. banks as a percentage of large U.S. domestic market CDs grew from 12.8 percent in November 1978 to 23.0 percent in August 1979.

In October 1979 the Federal Reserve tried again. An additional reserve requirement of 8 percent was applied against CDs of domestic banks above a certain level. This time, however, the Fed tried to plug the Euromarket loophole by simultaneously adding an 8 percent reserve requirement against any additional liabilities to foreign branches above a prescribed level. But as before, banks found ways to circumvent these restrictions on managed liabilities. The new loophole appeared because not only do banks have a choice of whether to raise funds through the parent bank or Eurobranches, but they also can choose which branch will make the loans. There is no requirement that money raised in the Euromarket be lent again to the U.S. private market through the parent bank. The loan could just as easily be booked directly from the Eurobranch. U.S. banks now found the reserve requirements on liabilities to foreign branches taxing the first lending route, but not the second. The reaction was predictable: a greater proportion of funds borrowed through Eurodollar deposits were lent directly to U.S. companies (or their foreign subsidiaries) by the foreign branch (Figure 1).

The Euromarket reacted similarly the following March, when the Federal Reserve raised the marginal reserve requirement and widened the range of liabilities to foreign branches to which the marginal reserve requirement applied. Direct lending again rose sharply. Following the elimination of the marginal reserve requirements in July 1980, the proportion of direct lending again decreased.

The Fed, of course, has tried other kinds of restrictions. Today, not only do CDs and liabilities to foreign branches have reserve requirements, but the same requirements also apply to the direct loans of

FIGURE 1
FOREIGN BRANCH LENDING: EVADING THE COSTS OF REGULATION



NOTE: Direct lending of foreign branches to U.S. private market as percentage of total foreign branch lending to United States. Data unadjusted for seasonal variation.

SOURCE: *Federal Reserve Bulletin* (Washington, D.C.: Federal Reserve Board); see also Miles (1984).

foreign branches to U.S. residents. If Citicorp's Cayman branch lends dollars to General Motors in Detroit, Citibank in New York has to hold noninterest-earning reserves against the loan. Again, however, there are abundant opportunities to circumvent these restrictions. For example, the Cayman branch could lend to a foreign subsidiary of GM, which in turn could lend to the Detroit office. Or GM could borrow from the Cayman branch without receiving a direct loan, say by floating debt on the European commercial paper market.

The Euromarket is a clear example of how the global market permits banking activity to move beyond the Fed's control. The Fed's influence over the quantity of dollars is clearly shrinking. At the end of 1971 the net size (excluding interbank deposits) of the Eurodollar market was only about \$20.9 billion. By 1975 this figure had more than tripled to \$63.8 billion, and by the end of 1983 it had surged to

at least \$353.2 billion. This 1983 figure is equivalent to 65.7 percent of M1, 16.1 percent of M2, and even 13.0 percent of M3.

The Role of Foreign Money

The existence of global money markets opens other opportunities to blunt the impact of the Fed's attempts to control the growth of money. One of these alternatives is foreign monies. Traditional approaches to monetary policy assume that individuals and businesses in the United States conduct their business only in dollars, so the Fed (from which all dollars are assumed to emanate) can influence the level of business. This assumption, however, is somewhat analogous to the assertion that Texans use only dollars with Dallas Fed seals or only deposits from Texas banks.¹ But Texans have a choice; they can borrow from banks in other regions or use dollars with different seals.

In the global money market, dollars are only one of several monies that people and institutions use for trading or making investments. They could, for example, conduct their international business in Swiss francs, deutsche marks, or other money assets over which the Federal Reserve has little direct influence. The idea that Americans would have some of their cash holdings denominated in other currencies is not astounding. Travelers, traders, and people in border areas have always employed foreign monies in their dealings. Furthermore, it is common to assume that bond and equity holders diversify their portfolios across currency denominations. Diversification reduces the risk of exchange rate depreciation, which can potentially inflict capital losses on assets denominated in a given currency. The money diversification argument simply extends this common sense behavior to the decisions about how to hold money.

The issue of money diversification has been discussed in the economic literature under the topic of "currency substitution." The basic argument is that as currencies have become more volatile, the incentive to diversify monies has increased. The diversification in turn produces private market flows of money between countries. The theoretical implication is that even with perfectly flexible exchange rates the central bank cannot insulate the domestic money supply from foreign countries. Empirical research indicates that such money

¹This analogy does not strictly hold because the intervention by the various Federal Reserve Banks to buy and sell at parity dollars with seals from other districts makes these dollars perfect substitutes on the supply side.

diversification may be a significant phenomenon (Miles 1978; Miles and Stewart 1980; Brittain 1981; Laney 1981; McKinnon 1982).

More Conventional Problems with the Traditional Approach

What Is the Relevant Money Supply?

The existence of the global market raises some serious questions about how omniscient and omnipotent the Fed really is. However, the global market is only compounding other doubts about the relevance of the traditional policy approach. For example, a basic assumption is that the Fed effects its policy by varying the quantity of money. But what precisely is this "money"? The monetary literature abounds with articles trying to define precisely what should be included in a relevant definition of money, yet the debate on this fundamental policy point is far from resolved. Ask any two economists, and you are bound to get at least three different answers. Particularly in the last decade, as inflation and regulation have spurred financial innovations, economists have come increasingly to realize that what is used for money in the United States extends far beyond such traditional concepts as M1 or even M2.

Today M1 includes currency in circulation, demand deposits, and other checkable deposits such as negotiable orders of withdrawal (NOW accounts) and credit union share draft balances. These components are all liabilities of institutions that at least appear to be under the control of the Federal Reserve. Hence the attractiveness of M1 as a policy guide; it is an aggregate that the Fed might be able to influence directly. There are, however, numerous domestic alternatives to the monetary assets included in M1. For example, there are time deposits, certificates of deposit, money market shares, repurchase agreements, commercial paper, and credit cards, not to mention such global market alternatives as Eurodollars. These alternative monetary assets fall less and less under the control of Federal Reserve regulations, and their wide availability means they are increasingly likely to respond to the demands of the private sector. They provide direct methods for the public to get around the dollar liquidity policy of the Fed.

Today's M2 is closer to a relevant definition of money than M1. M2 adds to M1 not only small time deposits, but also such assets as overnight repurchase agreements, overnight Eurodollar deposits in the Caribbean, and money market mutual fund shares. These newly included assets are clearly outside the Fed's control. Is even M2 the relevant definition then? Probably not. If overnight Eurodollars at

Caribbean branches (included in M2) are relevant, why not overnight Eurodollars at other banks? Any why not longer-term Eurodollars? Longer-term Eurodollars at Caribbean branches do not appear until the broad measure of liquidity, L. Longer-term repurchase agreements do not appear until M3. Money market funds that belong to institutions also do not surface until M3. In addition, with the current incentives to increase returns and reduce costs in financial markets, financial innovations continue to appear. Such innovations should be included in any relevant money supply, but the Fed typically does not control these assets. Quite likely, the innovation occurred in the first place to avoid a Fed regulation or barrier. Money market funds grew in response to interest rate ceilings. The growth of the Eurodollar market reflected efforts to avoid Regulation Q, rising reserve requirements, and other Fed-imposed restrictions.

Given these alternative assets, were the Fed, say, to reduce the supply of the monetary base in an attempt to reduce M1 (or M2), the private sector could respond with greater use of money market funds, repurchase agreements, and credit cards. The Fed's policy might even successfully reduce M1. But since the relevant definition of money instruments includes more than what is measured by M1, the decline provides a false signal. The decline in M1 is offset by the rise in the alternative instruments. While the Fed, through its limited powers, might alter the relative proportions that the public holds in regulated versus unregulated money, it is unable to control directly the total relevant quantity of money.

What to include in the relevant money supply is not a new issue. Discussions can be found in Gurley and Shaw (1959), the Radcliffe Committee Report (1959), and even the 19th-century debate between the British banking and currency schools. It is an empirical question that may never be resolved to everyone's satisfaction. One empirical criterion that has been suggested is the degree of correlation between a particular definition of money and nominal GNP. By this measure the empirical justification for L (which the Fed clearly does not control) is at least as strong as that for M1. This year's percentage change in nominal GNP is significantly related to this year's change in L. Statistically there is a percentage point for percentage point change in the two numbers. In fact, the movements in L even explain marginally more of the variation in GNP than do the movements in M1.

Can the Fed Control M1?

Even if the problem of defining money is put aside, are traditional policy approaches likely to succeed? Assume domestic M1 is the

relevant money. Are we assured in even that extreme case that the Fed can adequately regulate the “money supply” to achieve its stated policy objectives? Contrary to prevailing perceptions, it is far from clear that the Fed would be the dominant player in this scenario. Any standard money and banking textbook describes how the reported M1 is the end product of decisions by the Fed, the public, and commercial banks. The Fed attempts to influence M1 through open market operations, minimum reserve requirements, and the discount rate. The public affects the level of M1 by choosing how much money to hold in currency versus deposits, and by deciding what proportion of deposits will be transaction versus time deposits. Banks can influence the supply of money by deciding whether to hold reserves over and above those required by the Fed. The textbook then summarizes these various influences as the product of two components: the monetary base, assumed to reflect the influence of the Fed, and the money multiplier, reflecting primarily the influence of the public and commercial banks. An enlightened book would then question which of the two components exerts more influence over the level of money. Unfortunately, many of the books stop short of this question, assuming instead that the Fed’s behavior dominates movements in the money supply. But that relationship has been far from perfect. In fact, historically, swings in the money multiplier have had a significant effect on the movements in money.

For example, Cagan’s (1965) study of the determinants of the money supply showed that the monetary base and the Federal Reserve’s actions were by no means the dominant force determining the course of money. In fact, over the period 1875–1960, the public’s ability to vary the amount of currency relative to bank deposits (the currency ratio) accounted for about one-half of the cyclical variation in money. Cagan commented (p. 24):

[I]n discussions of cyclical movements, high-powered money and the reserve ratio have generally received all the attention, while the currency ratio has been little noticed. One reason for the differential treatment is that sources of variation in high-powered money and the reserve ratio involve activities of the government and banks—both easy to discuss (and exaggerate)—whereas sources of the variation in the currency ratio involve actions of innumerable holders of money and are, except in panics, obscure. While many students of the money supply have been aware of variations in the currency ratio, the present results highlight their importance, not only in panics but also for all cycles in the money series.

A subsequent study by Laffer and Miles (1977) of the post-World War II period reinforced Cagan’s findings. We found that over months,

quarters, and semiannual periods the public's abilities to influence the ratio of currency to deposits and the composition of deposits were far more important than changes in the monetary base for explaining the movements in M1. Not until annual changes did the influence of the monetary base begin to become important. But in most of the years examined, the United States was under the Bretton Woods fixed exchange rate system, which permitted the monetary base to flow easily into and out of the country. With integrated global markets, it is quite possible that even these annual changes in the monetary base reflect changes caused by the public's demands as much as Federal Reserve policy.² The results of these two studies, therefore, seriously question the Federal Reserve's ability to control even M1 with any accuracy.

Some Other Questions

Global markets, domestic money substitutes, and the responses of the public certainly raise some haunting questions about recent approaches to monetary policy. They are, however, not the only sources of concern. For example, even if the problems of defining and controlling the relevant money supply could be solved, other informational problems remain. We would still have to measure accurately the supply of money at a given time, and our track record in this area is far from perfect. The most celebrated mistake occurred in the fall of 1979. While the person at Manufacturers Hanover Bank responsible for transmitting the weekly data to the Fed was on vacation, the substitute inadvertently placed some figures in the wrong column and the weekly money supply figures were misquoted by \$3.5 billion.

The problems of measurement are exacerbated by the need to correct the data for seasonal patterns and trading day variations. Because these adjustments are estimates, just like the raw numbers, the opportunities for errors abound. These errors show up as the data are revised. In fact, there is very little relationship between the pattern of period-to-period changes in the initially released data and the pattern in the data after final revisions have occurred. Thus, preliminary or first-released data may be of very little use for guiding policies based on historical (completely revised) data.

The seasonal adjustment problem also raises doubts about other assertions underlying current policies. For example, causality tests

²Recent allegations about the Bank of Boston and other banks failing to report substantial foreign shipments of dollar currency are important evidence that, even without fixed exchange rates, the Fed may not control the quantity of, much less have an accurate measure of, total Federal Reserve liabilities in domestic circulation.

by Sims (1972) and others have probed for evidence of a unidirectional causal relationship running from the money supply to nominal income. However, Feige and Pearce (1979) found that when a Sims causality test was applied to seasonally unadjusted data for money and income, in almost all cases there was an absence of causality. Feige and Pearce found similar results in two other test procedures they examined. They concluded "that the empirical results are highly sensitive to the use of seasonally adjusted data" (p. 530).

Where Does This Leave Us?

The questions raised thus far about our approach to monetary policy emphasize the failings of the money *supply* as an explicit, dependable, direct policy signal that both the Federal Reserve and the public can use with confidence. The impact of giving the money supply a central role in determining monetary policy in our global economy can therefore be summarized in one word—uncertainty.

Money is a yardstick. It is a means of conveying information about the relative and absolute prices of all commodities we purchase or sell. What therefore is of direct concern to most of us is not the *number* of dollars in the economy, but the *stability* of the dollars we hold in our wallets and bank accounts. Is the prevailing yardstick giving us meaningful information for making decisions about not only today, but tomorrow or even a year from now? The uncertainty exists because the monetary authorities fail directly to transmit or act upon the information we need about the value of the yardstick. Instead the world is characterized by guesswork. Businesses and commentators, for example, are busy guessing "Will the money supply be up or down?" "How will the Fed respond to such a change?" and "What is the probable impact of the Fed's reaction?" These questions do not have obvious answers, as witnessed by the money market column of the *Wall Street Journal* where "experts" change their opinions almost daily. The Fed's choices are also full of uncertainties. How big is the money supply? Is that too much money? How much or what type of intervention, if any, is necessary? The potential problems and errors multiply.

The role of the dollar as a yardstick is analogous to yardsticks used in specific industries. Take, for example, shoe sizes. Like the dollar, shoe sizes are an information system, providing a way to compare different pairs of shoes at one time, or over time. All size 10C shoes, for instance, should be almost precisely the same size, regardless of which style shoe is chosen. As long as local shoe sizes remain stable, they are profitably relied on and used by all. But suppose the system

were not stable. The shoe industry would quickly fall on hard times if shoe sizes fluctuated from month-to-month, much less day-to-day. Each month a person wanting shoes would have to have his feet remeasured. Shoes marked as a certain size would also have to be dated. With sizes changing every month, it would be hard for store owners and customers to order pairs of shoes. Ordering would require forecasting what sizes will be on the day the order is shipped. The necessity to forecast repeatedly (not to mention occasionally forecasting incorrectly) raises the cost of using the system. Obviously the worth of such a yardstick declines. At some point people will resort to ignoring the yardsticks completely ("I'll just keep trying on pairs until one fits"), developing their own system, or maybe using a more stable foreign system. The industry experiences a period of turmoil, uncertainty, and slow growth.

The shoe industry avoids such turmoil by setting up and maintaining a basic unit of account, the standard shoe size. Either the government sets the standards and makes sure that the standards are maintained, or a trade group agrees on an acceptable standard. In either case a system for transmitting relevant information to the market is created. Shoe sellers and consumers then adjust their behavior accordingly.

It is the same for money. The basic money yardstick must be determined. Again, the government can set the standard for what its monetary liabilities are worth and make sure the standard is retained. But where the government fails to set the standard directly, the private market settles on the value of the standard. Under current monetary policy, the government does not set the standard. Instead we are bombarded with quotations about the estimated money supply. To continue the analogy, it is a little like walking into a store to buy a pair of shoes and being shown all the foot measures in the store. You wonder what the number of measures has to do with buying a pair of 10C shoes. The financial markets face a similar quandary. They desperately want information about the size of the yardstick but instead are shown the approximate number of one type of measure sticks. How is this number to be interpreted? Is a certain number of this type of measure stick directly associated with a specific size of yardstick? Few would claim it is. The Fed is no longer providing the information the market needs.

Stabilizing the Dollar in a Global Economy

The problems of trying to stabilize money aggregates in a highly flexible, global money market have been outlined. What are the

alternatives? How can the dollar be most efficiently and effectively stabilized in a global economy? My answer has three major points. First, our approach to monetary policy must be shifted 180 degrees from focusing on the quantity of money to focusing on its price or value. The Fed should agree to adopt appropriate "price rules" where some relevant market prices are stabilized. Under price rules, a target value is chosen for each price, and the Fed's sole guide is to keep that value stable.

A price rule works because the Fed is defining the basic monetary unit of account in terms of something observable. The Fed calls the basic unit of its liabilities the dollar. It then tells the market that these dollar liability units will always be redeemable at a certain price in terms of the observable item. The basic dollar unit now has a specific value. Even better, so too do all the forms of money that are convertible into the basic unit. Bank accounts, Eurodollar accounts, money market mutual funds, etc. may not be controlled directly by the Fed, but as long as the issuers of these monies define and redeem these accounts in dollars, the Fed is stabilizing the *value* of these monies, too. Immediately we see that the Fed need no longer worry about the quantity of monies it cannot control; its only concern would be the value of the money it issues directly, standing ready to define it, and as a result helping to bring stability to even the monies beyond its direct grasp.

One of the advantages of such a policy is that it eliminates most of the current guesswork. Information is transmitted directly through the marketplace (by watching the appropriate commodity or financial quotations) to both the Fed and the private sector. The Fed knows precisely when to redeem and how much. Any tendency for the target value to move requires the Fed to step into the market. The Fed also knows that it must remain in the market as long as the tendency for movement remains. No elaborate information gathering or ad hoc policy planning is required. The private sector also knows what to expect. This side of the market is interested in the Fed continuing to "play by the rules." The private market has only to check the targeted value. If, say, spot silver prices are targeted, is the dollar price of silver stable? If the price does move from the target value, does it start moving back? If so, the Fed is doing its job. The public simply watches the commodity ticker tape for the latest quotes.

While the Fed is busy assuring the stability of the value of money, the quantity of money takes care of itself. The Fed does not have to worry whether or why money demand has risen or if velocity is stable. If the private sector wants more money, for whatever reason, the Fed will find out soon enough. The dollar price of the target commodity

will fall, requiring the Fed to react by buying back the commodity in exchange for money. At the stable target price, the private sector sees that the available money expands and contracts with its needs.

Second, one price rule is not sufficient. At least two price rules are needed. The reason is that there are three prices we would like to stabilize: the spot price level, the forward price level, and interest rates. People are concerned not only with what they must pay for groceries today, but also with what they will have to pay six months, a year, or two years from now. Using only one price rule, the government could stabilize today's price level or the price level a year from now, but not both. To simultaneously stabilize both sets of prices, the Fed would have to carry out two separate price rule intervention mechanisms.

If a policy to stabilize both spot and forward prices were adopted, it would also act to stabilize the third price, the market rate of interest. The ups and downs in interest rates primarily reflect shifts in the expected rate of inflation, which in turn reflects how much the market expects the value of the basic dollar unit to depreciate over time. If the spot and forward values of the dollar unit were being directly stabilized, so would the expected change. Hence, interest rates would become stable. The closer the stabilized forward price is to the stabilized spot price, the lower would be the market rate of interest. Of course the two stabilized prices do not have to be spot and forward prices. The Fed could choose alternatively to stabilize an interest rate and one of the two price levels. For example, the two targets could be spot prices and interest rates on one-year T-bills. Stabilizing these two prices is equivalent to stabilizing the price level one year forward. In other words, stabilizing any two of the three relevant prices stabilizes the third.

This discussion of the three price targets illustrates why a return to a simple spot gold standard is not likely by itself to be the panacea some proponents claim. A simple gold standard is a spot price rule. It attempts to stabilize today's price level in terms of gold. Without an additional price rule, however, it does little to stabilize either the forward price level or interest rates. Inflation in the near term may fall, but we have no guarantee of what the price level or inflation will be in the longer run. To provide the guarantee, the spot market intervention would have to be combined with intervention to target either the forward price of gold or a market interest rate.

The third point is that ideally the interventions chosen would overcome two objections to a commodity standard, the "terms of trade" problem and the fear that reserves could become depleted. The terms of trade problem is most pronounced when the price of

only one commodity is targeted. Say the Fed were stabilizing the spot dollar price of wheat, and for whatever reason, the value of wheat in terms of other commodities were to shift. While dollar wheat prices might remain stable, dollar prices of other commodities and goods would shift up or down. In this scenario, targeting the spot price of wheat does not guarantee stable prices in the spot general price level. The obvious solution is to employ a price rule involving a basket of commodities instead of just one. The broader the basket, the closer the basket approximates the general price level, and the smaller the terms of trade problem.

The finite reserve problem occurs as the government's stockpile of the targeted commodity declines. The market begins to fear that the government will no longer be able to stand behind its policy, and the price rule collapses in the ensuing run on reserves. The solution to this problem would be to design an intervention mechanism whereby the Fed did not actually have to hold reserves.

In *Beyond Monetarism* (1984) I discuss one possible set of price rules that could overcome these problems. One price rule would require the Fed to target and stabilize the interest rate on long-term government bonds. The intervention scheme would direct the open market desk to buy bonds as interest rates rose to the upper limit of the target range, and sell them as the lower limit is approached. The Fed would continue to buy and sell as necessary to keep the interest rate within the targeted band. The other price rule would require the government to stabilize the price of a futures contract for a broad bundle of commodities. The innovative aspect of this proposal is that the futures contract, like many current financial futures contracts, can be payable in cash rather than the actual commodities. The need for the government to hold commodity reserves is eliminated.

The contract would be a promise to pay the cash equivalent of a predetermined weighted average of commodity prices on the settlement date. If the price of the contract rises toward the upper limit of the range, the Fed just creates new ones and offers them on the market at the target price. If the price falls too far, the Fed buys back contracts at the target price. The government could at any moment be long or short in these contracts. The number of contracts outstanding is not important, only the stability of the price at which they settle. While this commodity contract does not now exist, a proposal is currently before the Commodity Futures Trading Commission to permit trading of such a contract on the New York Futures Exchange. The contract would be based on the Commodity Research Bureau's index of commodity futures.³

³See "The CRB Futures Price Index—A 'Basket of 27 Commodities' That May Soon

Conclusion

Twenty years ago under the Bretton Woods System, we had relatively stable price levels, stable interest rates, and stable exchange rates. The heart of that system was a set of price rules in which the United States focused on stabilizing dollar interest rates and the dollar price of gold, while other countries focused on stabilizing the dollar value of their currencies. Starting in the mid-1960s, however, that system was dismantled, and the focus of monetary policy was shifted in an entirely different direction. The ensuing period has been characterized by increasingly unstable dollar prices, interest rates, and exchange rates.

It is this volatility of prices that we all seek to redress. While my proposal may or may not provide the final answer to this problem of dollar stability, it does point out the major issues. We must get away from discussions of the amorphous supply of money and refocus our attention on what is happening to its value. We must get the Fed away from futile, vaguely defined monetary policies and return it to more efficient policies with some chance of success. We must eliminate the uncertainty that exists for both the Fed's Open Market Committee and the retired bond holder. Although the precise details of this policy need further refinement, it is clear that the policy must involve price rules.

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ASSESSING THE FED'S CONTROL OF DOMESTIC MONETARY POLICY

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Marc Miles (1986) offers two contrasting assessments of the capacity of the Federal Reserve to conduct domestic monetary policy. On the one hand, he asserts that money targeting by the Fed is futile because of private sector alternatives to dollar holding exemplified by the Eurodollar market and foreign-currency denominated money, domestic money substitutes, and money measurement difficulties. On the other hand, he asserts that if the Fed were to adopt his rule to stabilize two of three prices—spot commodity prices, futures prices, and an interest rate—its control problem would vanish. Each of the assessments is a gross distortion. The facts do not support Miles's description of the conditions in which the Fed currently operates, and economic analysis does not support Miles's vision of how the Fed should operate. Let me detail the reasons that his views are unacceptable.

The Eurodollar Market

According to Miles, one proof that the "Fed's influence over the quantity of dollars is clearly shrinking" is that in 1983 the Eurodollar total figure was the equivalent of "65.7 percent of M1, 16.1 percent of M2, and even 13.0 percent of M3." Miles clearly believes that Eurodollars are M1 money. Except for insignificant amounts, they are not. Even if Eurodollars are short-term deposits—and predominantly they are not—they first have to be converted into a checking deposit with a U.S. bank before they can be used as means of payment. If Eurodollar banks hold demand deposits with U.S. correspondents, those deposits in fact reduce the money supply to the U.S. nonbank sector.

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The Eurodollar market is essentially a market for lending time deposits and largely an interbank money market, with banks both parties in Eurodollar transactions. The Eurodollar market channels funds from banks with net nonbank deposits to those with net nonbank loans. The market—a response to U.S. regulation—exists because of low transactions costs. These costs are often higher between banks within the United States when they deal with each other directly than when they deal with each other indirectly through the Eurodollar market. The ultimate objective of the transactions is to channel funds from a nonbank lender to a nonbank borrower but a chain of several banks intervenes. As a result, interbank wholesale transactions are a multiple of retail transactions with nonbank customers. Eurobanks distribute liquid assets, usually a large time deposit or a certificate of deposit, with a maturity as short as overnight or as long as several years. These funds appear on the asset and liabilities side of Eurobank balance sheets, with the spread between the interest rates at which they will be able to borrow and lend in the future determining the match of maturities of assets and liabilities.

Policy measures the Fed undertakes are not impaired by the Eurodollar market. If the Fed sells Treasury bills in the open market, dollar liquidity declines. The existence of the Eurodollar market makes no difference. Moving funds from or to New York to or from London or the Cayman Islands does not offset the rise in interest rates at home as well as abroad due to the decline in dollar liquidity. Miles's assertion that the Eurodollar market shrinks the Fed's control over dollar creation is unfounded.

Currency Diversification

Miles is more restrained in his statement about the effect of foreign monies in blunting "the impact of the Fed's attempts to control the growth of money." He notes, "the theoretical implication is that even with perfectly flexible exchange rates the central bank cannot insulate the domestic money supply from foreign countries," and cites empirical research that "such money diversification may be a significant phenomenon."

No one will dispute the theoretical proposition that domestic residents might demand foreign currency to reduce exchange risk or to minimize transaction costs. Similarly foreign residents might demand currency from abroad as well as their own currency. In an empirical analysis for Canada and the United States for 1960–1975, Miles reported statistically significant substitution between Canadian and U.S. dollars. Other formulations have questioned the specification of the

demand function that Miles used and reported insignificant substitution. But even if a statistically significant result is obtained, the relevant question is the quantitative size of currency substitution. The evidence is that Miles has greatly exaggerated the importance of the effect of currency substitution on the behavior of U.S. money aggregates.

The demand for the U.S. dollar appears to respond to change in domestic interest rates to a far greater extent than it responds to change in the rate of return on other currencies. This seems also to be the case for the advanced countries generally, not merely for the United States. For less developed countries with excessive monetary growth and high inflation rates, dollarization is often the response of domestic money holders. This phenomenon tells us nothing about Federal Reserve domestic monetary control. Contrary to Miles's account, foreign money holding in the United States thus far has been a negligible problem for the Federal Reserve.

Domestic Money Substitutes

Miles argues that if the Fed were to reduce the supply of monetary base and thereby possibly reduce M1, "the decline in M1 is offset by the rise in alternative instruments." Let me note parenthetically that Miles's reference to credit cards as an alternative to money betrays misunderstanding. The use of credit cards does not increase the money supply. It merely permits a temporary deferment of payment in money for a purchase. The seller may claim immediate payment from the credit card issuer but the purchaser must ultimately repay the loan extended by the credit card issuer.

The pronouncement that the liabilities of nonbank financial intermediaries are close substitutes for M1 money that would change in the direction opposite to that sought by the monetary authorities, thereby frustrating their attempt to control the quantity of money, can be traced at least as far back as the 19th-century British banking and currency schools controversy, was tentatively revived by Gurley and Shaw in the 1950s and stated without qualification in the 1959 *Report* by the Radcliffe Committee.

Miles, following this tradition, refers to "regulated versus unregulated money." However, every issuer of so-called unregulated money must maintain a checking account deposit in a commercial bank to enable holders of those issues to convert them into means of payment. There is no escape for these issuers from effects of changes in Federal Reserve provision of reserves to the commercial banking sector.

Gurley and Shaw popularized the terms inside money, meaning money issued by banks, and outside money, meaning base money issued by the monetary authorities. Inside money has always been constrained by the obligation of issuers in a convertible fiat money system to redeem their liabilities on demand in outside money units. Institutions offering close substitutes for monetary items have been similarly constrained because they redeem their liabilities with inside money. Only outside money cannot be altered by transactions among the public or between the public and the banks other than the central bank.

No one has yet produced evidence that a Fed decision to reduce the growth rate of the monetary base does not have the predicted contractionary consequences for the economy, or that its decision to expand the growth rate of the monetary base does not have the predicted expansionary consequences. There is no evidence that domestic money substitutes have interfered with the Fed's power to contract or expand the economy.

Definition of Money

Miles asks, what precisely is money? The concept of money as a collection of assets that yield identifiable pecuniary and nonpecuniary services has not changed over the centuries since monetary economies emerged from barter conditions. What at times has been ambiguous are the empirical counterparts of the concept. In the 19th-century controversy about the definition of money centered on bank notes following their introduction and later on deposits. The new instruments that have recently been introduced all represent adjustments to a transition from regulatory control of interest payments on deposits to an unregulated market determination of those payments. The transition period is likely near its end. If history is a guide, the assets now commonly used as money will be acknowledged in a definition that will gain acceptance until the next example of an inside money newcomer appears.

Behavior of Currency Ratio

Miles attempts to clinch the argument with respect to the Fed's alleged impotence by citing the feedback effect of business on the currency ratio. About half of cyclical variations in the rate of change of the quantity of money is attributable to the contribution of the currency ratio, the balance divided about equally between the base and the reserve ratio. During business expansions larger currency holdings relative to deposits reduce the ratio's contribution to money

growth; during business contractions, smaller currency holdings relative to deposits increase the ratio's contribution to the growth rate of money. The behavior is similar to that of the currency-consumer expenditures ratio.

If there is one variable that the Fed can observe for which it has time series data for the past 70 years, it is the currency ratio. What would prevent the Fed from neutralizing movements in the currency ratio by open market operations if it believed that the ratio was not affecting money supply growth in the manner that the Fed desired?

Measurement Errors

For Miles to suggest that weekly measurement errors and seasonal adjustment problems in the money figures diminish Fed control is a proposition that only the naive will credit. What the Fed can control without any measurement problems is its own balance sheet. With respect to the frequent and substantial revision of the money figures, since the Fed is itself the primary source of data required to measure the money supply, it can surely improve the procedures involved in estimating the money aggregates. With respect to seasonal measurement problems, it is the Fed that injects seasonal movements into the money aggregates. The seasonal factor in money is not there because of climate or similar circumstances. The seasonal movement the Fed injects is sizable and variable from year to year. There is no seasonal factor to correct until the Fed has introduced seasonal movements.

Miles's Proposals

Miles does not propose to eliminate the Fed after this demonstration of the futility by his lights of the Fed's efforts to control money growth. Instead he replaces the impotent image with an image of a purposeful and effective authority. The Fed's sole guide, according to Miles, should be to keep the value of two of three prices stable within a target range, leaving open the choice as between spot and forward prices, or spot prices and interest rates on one-year T-bills or possibly long-term government bonds.

There are at least three fatal problems involved in the proposal. It overlooks lags in the effect of the Fed's actions, it ignores conflicting signals that the price and interest rate series may emit, and it confounds movements in the price series that are nonmonetary in origin with responses to monetary impulses.

The Fed does not directly control the price level. The link between price changes and monetary changes over short periods is loose and

imperfectly known. The stock of money *on the average* is systematically related to the price level. Over short periods of time there is much variation in the relation. There is much evidence that monetary changes have their effects on prices only after a considerable and variable lag. If spot prices are rising, that may be the effect of expansionary actions the Fed has taken months or even in years past. Contractionary actions that are then begun may not have their effect until months or years later, and will therefore be pursued with a roller-coaster effect. When spot prices are falling and futures prices rising or spot prices rising and futures prices falling, as any chart of the movements of the two series will show is not uncommon, what should be the Fed's guide? And if interest rates agree with one of the price series but not the other, is the action the Fed is supposed to take based on a changing two-thirds majority?

Short- and long-term interest rates, as we know from yield curves, do not parallel one another. Which rate should the Fed regard as the determinant of its actions? If interest rates are rising beyond the target band, should the Fed be reducing its earning assets because, according to Miles, "ups and downs in interest rates reflect primarily shifts in the expected rate of inflation." My understanding of interest rate behavior is that, over periods up to about six months, a reduction of the Fed's earning assets will reduce liquidity in the economy, thus inducing a rise in interest rates, and exacerbating the upward movement Miles argues will be stabilized.

Finally, movements in prices reflect the influence of nonmonetary as well as monetary factors. Miles is quite correct that in this respect a broad-based index is superior to the spot price of gold. Price movements of individual commodities may reflect relative demand and supply conditions in the market for that commodity more so than aggregate demand conditions. Spot commodity prices and futures commodity prices, however, cover only two dozen or so raw materials that are peculiarly subject to relative price changes. Actions intended to stabilize these prices may well destabilize the price level in general.

Having offered this bill of particulars indicating why I reject Miles's assessments that the Fed is impotent to achieve noninflationary monetary growth and that its influence would be benign and effective if it attempted to stabilize prices and interest rates, let me conclude on a positive note. I agree fully that the spectacle of tea-leaf reading of the Fed's intentions following the weekly money announcement and the six-weekly FOMC meeting indicates that something indeed is wrong with the way monetary policy is currently conducted.

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