

Market Views of Monetary Policy and Reactions To M1 Announcements

*Jan G. Loeys**

The highlight of the week for any true “Fed watcher” is the Thursday afternoon announcement of the Federal Reserve’s most recent estimates of the monetary aggregates.¹ In recent years, financial markets throughout the world have reacted strongly to these announcements. The markets’ preoccupation with these weekly money numbers has been the subject of a lot of controversy; some have even likened it to a “giant crap

game.”² The markets’ response to these money stock announcements may not be irrational, however. Rather, money stock data may contain information that market participants use to revise their expectations about future monetary policy actions and credit market conditions.

These market expectations presumably depend upon the public’s perception of the Fed and its policies. If the market changes its view of monetary policymaking, it will also change the way it interprets monetary data and how it reacts to the money stock announcements. Therefore, observing

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¹Between February 1980 and February 1984, these estimates were released on Friday afternoon.

²Marcia Stigum, *The Money Market: Myth, Reality, and Practice*, (New York: Dow Jones-Irwin, 1983), p. 272.

changes in market reactions to the weekly money stock announcements may provide interesting information on how the public's perception of monetary policymaking has changed in recent years.

M1 ANNOUNCEMENTS AND MARKET REACTIONS

Every Thursday at 4:30 P.M., after the New York Stock Exchange closes, the Fed makes public a series of statistical releases. The release that has drawn the most attention is H.6, which contains detailed statistical information on the various money stock measures and their components. The public tends to focus on the Fed's latest weekly estimate of M1.³

The public's preoccupation with this weekly M1 number is evident in the turbulent motion in financial markets whenever the M1 estimate differs from what was expected. If the M1 estimate is higher than expected, interest rates on assets of all maturities tend to rise; if the M1 estimate is unexpectedly low, most interest rates tend to drop.⁴ Figure 1 shows how, in recent years, interest rates of different maturities have reacted to the announcement of an unexpected 1 percent increase in M1. The negative slope of the response curve indicates that short-term interest rates have reacted more strongly than interest rates on long-term assets.

At first glance, this phenomenon seems to contradict economic theory, which suggests that an increase in the money supply is associated with a *drop* in short-term interest rates (other things being equal), not a rise. But such a conclusion fails to recognize that money supply data are released with a lag. The M1 number announced on a Thurs-

day afternoon measures the average M1 level in the week that ended *ten days prior*. Therefore, the inverse relation between money and interest rates should be observed two weeks before the announcement. So it would be a mistake to look for rate declines just when the information is made public. Rather, there must be something about the announcement itself that causes interest rates to rise.

Economists have suggested that the explanation lies in what announcements about past money stock levels lead the market to expect about the future. It may be rational for market participants to use money supply data as a signal of Fed intentions for monetary policy. In particular, markets are likely to be concerned with how the Fed itself will react to the money supply figure.

INTERPRETING THE ANNOUNCEMENT

Since the early 1970s, the Fed has increasingly defined its long-run policy in terms of how fast it wants the money supply to grow. At the beginning of each year, the Fed sets targets for growth in several measures of the money supply over a four-quarter horizon. The targets, expressed as ranges, are announced publicly during Congressional testimony by the Fed Chairman. The Chairman also will indicate how the monetary objectives are related to the Fed's ultimate policy goals of price stability and sustainable economic growth.

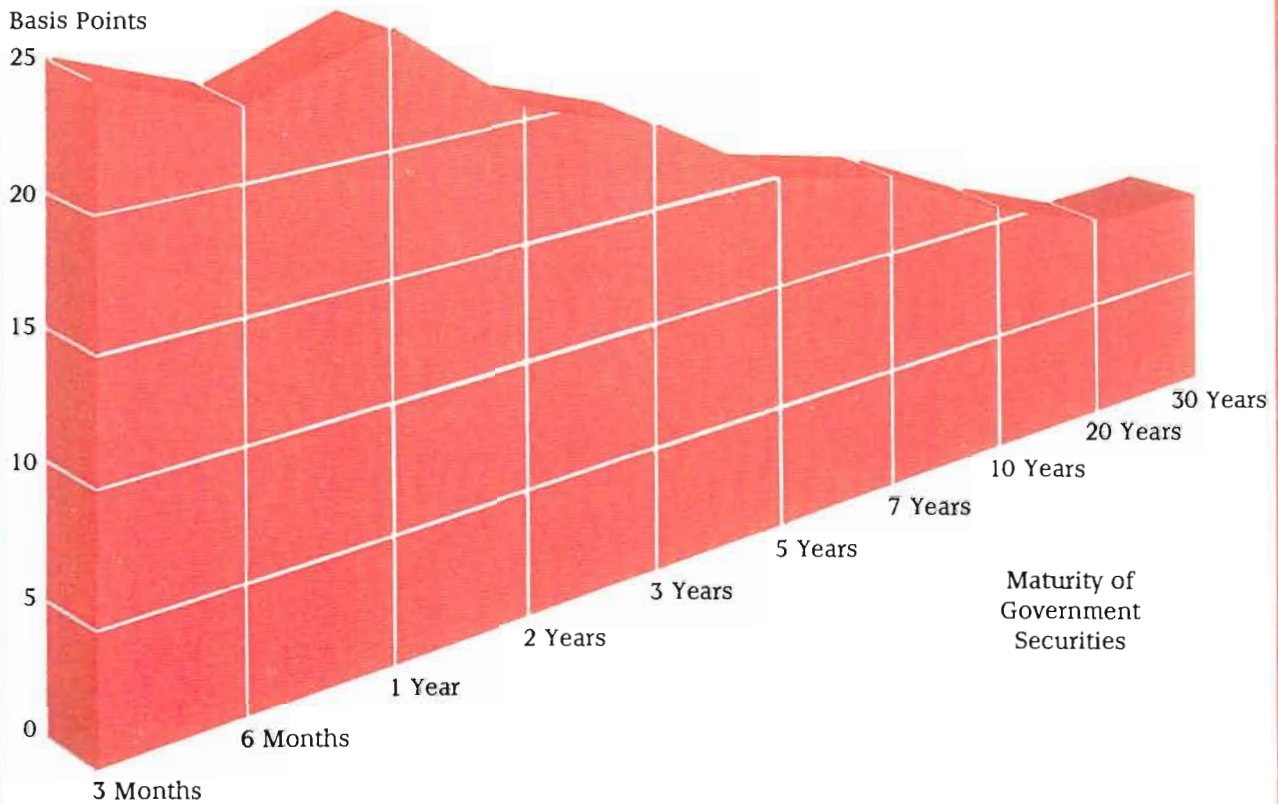
Financial market participants are concerned about the money supply for the same reasons the Fed is. In particular, people recognize that sharp fluctuations in the money supply can have damaging effects on the economy. If money grows too fast, inflation will accelerate. If money is in short supply, the pace of economic activity will falter. To gauge the future behavior of the economy, therefore, people will keep a careful watch on the behavior of money. And since the Fed plays a key role in influencing the money supply, people also keep an eye on the Fed.

In the eyes of many, the Fed's role is to keep the money supply "well behaved," that is, consistent with its ultimate goals of price stability and economic growth. If a particular movement in the money supply seems likely to inflict some damage on the economy, the Fed needs to take some corrective action to get money "back on track." Unfortunately, however, short-term movements in

³M1, the narrowest monetary aggregate, consists of currency, nonbank travelers checks, demand deposits, and other checkable deposits.

⁴The impact of money stock announcements can be felt in many markets, such as those for stocks, commodities, and foreign exchange. Economists have shown how, in recent years, the announcement of an unexpected rise in M1 has been followed by lower equity and commodity prices and a stronger value of the dollar vis-a-vis foreign currencies. For a survey of these studies, see Bradford Cornell, "The Money Supply Announcements Puzzle," *American Economic Review* (September 1983), pp. 644-655.

FIGURE 1
THE AVERAGE RESPONSE OF INTEREST RATES
TO MONEY ANNOUNCEMENTS OVER THE PERIOD
NOVEMBER 1977-DECEMBER 1983



This graph and the graphs that follow illustrate the rise in interest rates over the whole maturity spectrum one working day following the announcement of an unanticipated 1 percent rise in M1 (this amounts to \$3 to \$5 billion during this period). An unanticipated M1 change is measured as the announced M1 change minus the median change forecasted in a survey of government securities dealers (see the Appendix).

the money supply are highly volatile, and it is very difficult to know when a given change in money portends future trouble. Both the Fed and the public must make some judgments, nevertheless, about whether the behavior of money is getting out of hand. While the Fed makes little public comment on its views about short-run money movements, the market's interest rate response to money supply announcements tells us something about how people expect the Fed to react to a money supply fluctuation. If people expect a prompt

offsetting response by the Fed to a sharp rise in the money supply, short-term rates should rise, generating what's called a "policy anticipation effect." If market participants believe the Fed is delaying a necessary offsetting response to a bulge in the money supply, then long-term rates should increase with the announcement, producing an "expected inflation effect."

Suppose M1 rises above target and the market believes the Fed will act promptly to bring M1 back to target. How does the Fed do this? It tightens the

supply of reserves to financial institutions, which will force short-term interest rates to rise. In fact, the very expectation of this Fed action causes short rates to rise immediately.⁵ (The reason involves rational behavior on the part of financial institutions. If banks expect reserves to be more expensive in the future, it pays to acquire them today. But if all banks try to acquire reserves today, they drive up the interest rate on federal funds, the market where banks borrow reserves from one another.) Moreover, the more vigorously and the faster the market expects the Fed to react, the more short-term rates will rise. Thus, the policy anticipation effect explains an increase in short-term interest rates on the heels of the announcement of an unexpected money stock increase.

In reality, people do not always know where exactly the Fed wants M1 to be at each moment in time, in part because the annual targets for the monetary aggregates are expressed as ranges (rather than single points) and because the Fed does not make weekly announcements of its intentions. Moreover, because the monetary control mechanism is far from perfect, the Fed has not always been able to meet the annual target ranges for M1. In the face of this uncertainty about future money growth, the best forecast presumes the Fed will only partially compensate for a sharp rise above the long-run target, tightening up somewhat, but perhaps not enough to bring M1 “back on target.”⁶ This presumption implies that

⁵Short rates may rise even without the Fed tightening the supply of reserves. Between September 1968 and February 1984, during any given Thursday-to-the-following-Wednesday period, banks were required to hold a certain amount of reserves, as a percentage of deposits outstanding two weeks before. At the beginning of a statement week, a bank knows the exact amount of reserves it is required to hold on average during the coming seven days, but it does not know how much other banks must hold. The H.6 release published during any given week, however, contains estimates of the aggregate level of deposits for the week on which current reserve requirements are based. If these deposits, which make up most of M1, were higher than anticipated, banks know that total market demand for reserves during the current week is stronger than expected. As a result banks will raise the level of the federal funds rate they think clears the market, unless they believe the Federal Reserve will take offsetting actions. This 2-week lag in reserve requirement accounting was reduced to 2 days starting in February 1984, so this effect should have disappeared by now.

⁶This point was first developed by Gikas Hardouvelis, “Market Perceptions of Federal Reserve Policy and the Weekly

long-term money growth may be higher than previously expected. Since more rapid money growth leads to higher inflation, but with a lag (averaging 18 months to 2 years in empirical research), long-term interest rates will rise because lenders require a higher “inflation premium” to compensate their expected loss of purchasing power.⁷ This has been called the “expected inflation effect.”

Uncertainty about Fed intentions for long-run money growth, therefore, explains how both short and long rates can rise after the announcement of an unexpected surge in M1: short rates rise in anticipation of some Fed tightening, and long rates rise in anticipation of higher long-term money growth and, hence, inflation. The more uncertain people are about long-run money growth, the more likely they are to raise their long-run money growth expectations after the announcement of an unexpected jump in M1, and the less they will expect the Fed to tighten up in the near future. In other words, the higher this uncertainty, the more responsive long rates will be to money announcements, and the less responsive short rates will be.

HAS THE MARKET'S VIEW OF MONETARY POLICY CHANGED IN RECENT YEARS?

We have examined how the public's perception of monetary policy can affect the way interest

Monetary Announcements,” *Mimeo*, U.C. Berkeley (March 1983).

⁷Another possible explanation for the reaction of long rates is based on the expectations theory of the term structure. According to this theory, yields on assets of different maturities are not independent of each other because they apply to partially overlapping periods. For example, a five-year yield and a two-year yield overlap for the first two years. The three-year yield over the period starting two years hence—implicit in the difference between the five-year and the two-year rate—is called a forward rate. To assure that a movement in the yield on a longer-term maturity is not due merely to its overlap with a shorter-term maturity, the announcement effects also have been estimated using these forward rates (see Jan G. Loeys, “Federal Reserve Operating Procedures, Policy Uncertainty, and the Weekly Money Stock Announcements,” Federal Reserve Bank of Philadelphia, *Working Paper* (1983)). The estimated response curves were slightly lower than those for spot rates but were still significantly above zero—at least, up until the seven-year mark—except for the periods before October 1979 and during 1982. This result suggests that the overlap with short-term rates is not enough to explain the response of long-term rates of interest to money announcements.

rates react to money stock announcements. Observing changes in the response pattern of interest rates may, therefore, reveal something about how the public adjusts its views of monetary policymaking. An econometric analysis of the reaction of interest rates to money announcements over the period November 1977 to December 1983 suggested that there were three distinct shifts in the interest rate response pattern.⁸

The October 1979 Shift. The first shift occurred in October 1979. Figure 2 shows that

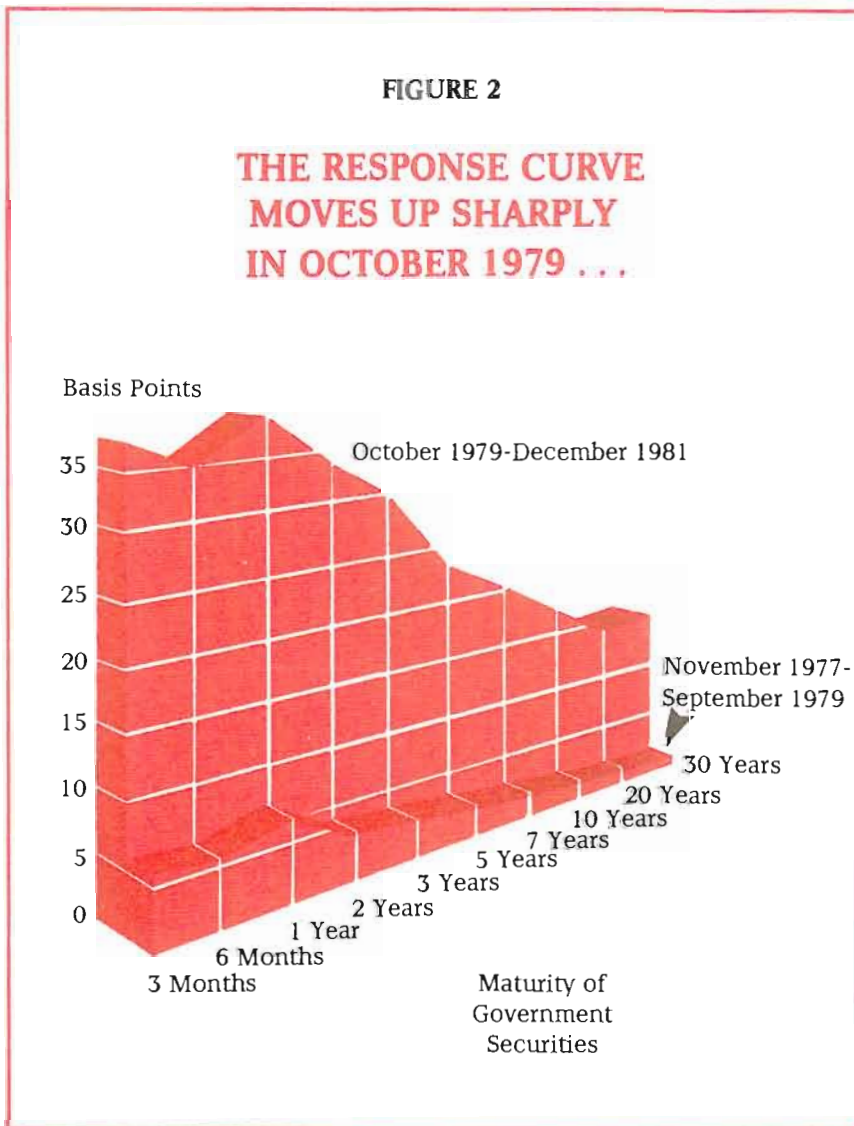
⁸See the Appendix for details on how these structural shifts were identified.

before this date only short rates reacted in any significant way to money announcements, but in October 1979 interest rates over the whole maturity spectrum began to respond much more strongly. The impact of the announcement of an unanticipated 1 percent rise in M1 on the 3-month rate rose from 7 to 37 basis points, while the response of the 30-year yield rose from essentially zero to 14 basis points.

The most likely cause of this shift is the October 1979 change in Fed operating procedures, which was essentially a change in its instrument to control the money supply. Prior to October 1979 the Fed focused on the federal funds rate as its instrument to control M1. If M1 grew too fast, the federal funds rate would be forced up, while, if M1 grew too slowly, this rate would be moved down. This approach did not work particularly well, however, because it did not allow enough flexibility in the federal funds rate to keep M1 on track. Consequently, more often than not the Fed failed to achieve its monetary targets.

Following October 1979 the Fed's operating procedures focused more on bank reserves in controlling money, which allowed more variability in short-term interest rates. It was argued that this approach would give the Fed better and closer control of M1 over shorter time horizons. The increased response of short rates immediately after the new procedures were announced indicates that financial markets expected that the Fed would indeed act faster and more vigorously to keep M1 under control.

The strong response of long-term rates of interest was surprising at first. It suggests that the abrupt change in policy made it difficult initially for market participants to determine exactly what the Fed was



up to.⁹ In particular, there may have been high uncertainty about what long-run money growth would be. Although the Fed was expected to act faster to keep M1 on target—and would thus control it over shorter time horizons—it was not immediately obvious what that target was.

Another consequence of the new operating procedures also bears considering. The federal funds rate became very volatile after the shift towards a reserves-based operating procedure. Therefore, changes in this rate could not be “read” anymore as signals of the Fed’s policy intentions. But reserves were also very volatile following the policy shift, and, therefore, also “unreadable.” In consequence, market participants might have come to rely more on money movements as signals of sustained deviations from the longer-run paths of money growth.¹⁰ These two factors, higher uncertainty about the direction of long-run monetary policy, and the increased importance of M1 fluctuations as potential signals of where the Fed is heading, may explain why long-term bond markets became more sensitive to money stock announcements.

The January 1982 Shift.

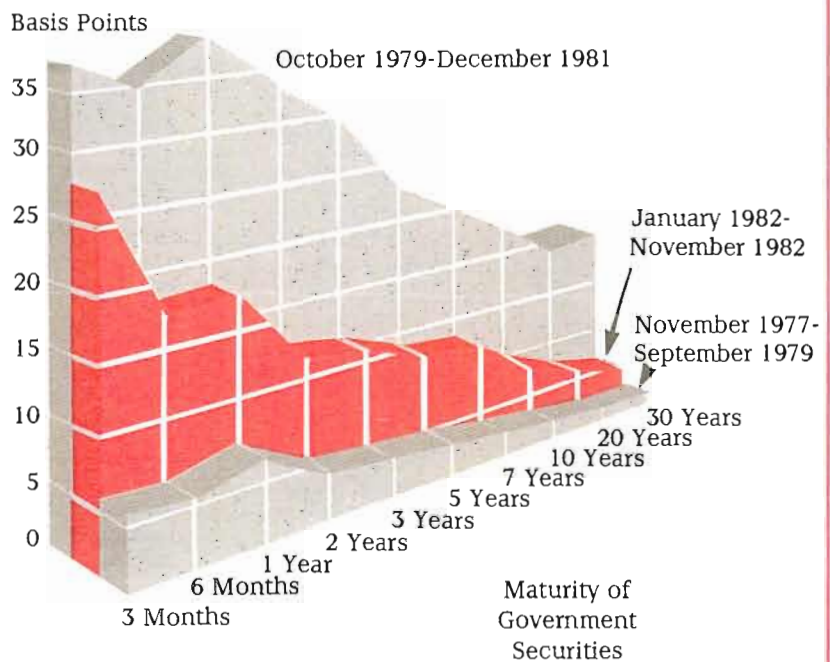
The second shift in the interest rate response curve took place around January 1982. Figure 3 shows that the curve moved back down, although not to its pre-October 1979 level. One explanation might be that, because of the recession that started in July 1981, financial markets expected the Fed to follow a policy directed more towards smoothing interest rates

than towards keeping the monetary aggregates close to target. However, there is no evidence that such a policy change did take place around this time: in fact, during 1982, the federal funds rate was as volatile as in 1980-81.

A more likely explanation is that after two years under the new operating procedures the public had gained some experience—and confidence—with how the Fed would react to money stock fluctuations. The drop in the response of the 3-month rate, for example, is not very significant, which suggests that the market had only marginally revised its perception of the Fed’s tolerance for short-run deviations of money from target. The response of long rates, on the other hand, dropped to a point that was statistically not very

FIGURE 3

... BUT DROPS AGAIN IN JANUARY 1982



⁹Recall that there had been no such abrupt change in Fed policy since World War II.

¹⁰For more details on this argument, see Loeys, “Federal Reserve Operating Procedures, Policy Uncertainty, and the Weekly Money Stock Announcements,” Federal Reserve Bank of Philadelphia, *Working Paper* (1983).

different from zero during 1982, which indicates reduced uncertainty about long-run monetary policy.

The December 1982 Shift. The third shift took place around the end of 1982, this time taking the form of a significant rise in the reaction of long rates together with a drop in the reaction of short rates (Figure 4). This flattening of the response curve occurred just two months after the Fed had decided to de-emphasize M1 in favor of the broader aggregates, M2 and M3. This decision was taken because of technical problems that were judged to make M1 unreliable as a guide to policy (see THE OCTOBER 1982 DE-EMPHASIS OF M1). The decline in the reaction of short-term rates to M1 announcements suggests that market participants "believed"

the Fed's statements concerning the reduced role of that aggregate in the policy process. The fact that the response curve did not drop to its pre-October 1979 level, however, indicates that financial markets did not perceive that the Fed had returned to targeting the federal funds rate directly. M1 still played a significant role, in the market's view, though less so than before.

The increased response of long rates indicates that in 1983, financial markets may have become more uncertain once again about the direction of long-term monetary policy. Articles in the financial press during 1983, for example, showed a lot of confusion about the stance of monetary policy, and the shape of the recovery. Perhaps market participants judged that prospects had increased

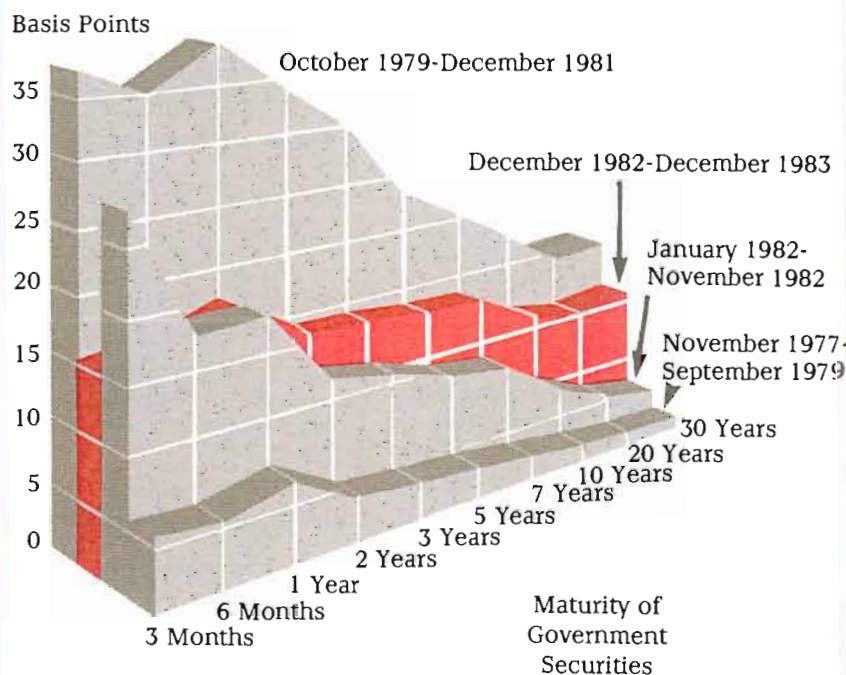
that the Fed would fail to keep long-term money growth from accelerating. If so, this would account for the increased responsiveness of long rates to money announcements.

CONCLUSION

The impact of monetary policy actions upon the economy depends crucially upon the behavior of consumers and businesses, which, in turn, is influenced by their expectations of future monetary policy. The way financial markets react to releases of the Fed's money stock estimates can provide valuable information on how markets perceive monetary policy operations. In general, the more short-term interest rates react to money announcements, the faster the Fed is seen to correct deviations of money from target. The more long rates react relative to short rates, on the other hand, the more uncertain the market may be about long-term money growth, or the more the market may be using M1 numbers as signals of where monetary policy is heading.

An analysis of the pattern of interest rate reactions to money

FIGURE 4
IN DECEMBER 1982
THE RESPONSE CURVE
TURNS FLAT



THE OCTOBER 1982 DE-EMPHASIS OF M1

Technical problems with M1 arose from two sources. First, the expiration of \$31 billion of all-savers certificates in October was expected to raise M1 temporarily because these funds would pass through transaction accounts before being redistributed to other assets. Second, Congress was in the process of allowing depository institutions to offer Money Market Deposit Accounts, which were expected to attract funds out of M1.^a Since both the magnitude and timing of these shifts were difficult to estimate, the Fed decided "that it would place much less than the usual weight on the [M1] aggregate's movements... and that it would not set a specific objective for its growth."^b This policy was continued throughout 1983 because of further deregulation—in the form of Super-NOW accounts—and because of a suspected shift in the demand for M1.^c Both these factors were judged to make M1 unreliable as a guide to policy.

^aFor more details, see "Monetary Policy and Open Market Operations in 1982," Federal Reserve Bank of New York, *Quarterly Review*, (Spring 1983), p. 41.

^b"FOMC Domestic Policy Directive," meeting held on October 5, 1982, *69th Annual Report*, 1982, Board of Governors of the Federal Reserve System, p. 125. This directive was not released until November, but Chairman Volcker mentioned it during a speech before the Business Council on October 10 (*American Banker*, October 13, 1982).

^c*Monetary Policy Objectives for 1983*, Summary Report of the Federal Reserve Board, February 16, 1983, p. 3.

announcements during recent years turned up three major shifts. The first shift, just after the October 1979 change in Fed operating procedures, reflects a market perception that the Fed would act faster and more vigorously to control M1 in the short run, although this abrupt policy change did seem to create some confusion about the Fed's long-run monetary policy intentions. A few years under the new operating procedures seems to have made the market more confident about the direction of monetary policy, as sug-

gested by the second shift in the market's response to money announcements, in early 1982. The third shift—around December 1982—is consistent with the October 1982 de-emphasis of M1 as an intermediate target of monetary policy, although the market did not seem to believe that the Fed had returned to a federal funds rate policy such as it followed before October 1979. Like the October 1979 change, however, this policy change did create some uncertainty among market participants about the direction of monetary policy.

APPENDIX

REGRESSING INTEREST RATES ON MONEY ANNOUNCEMENTS

The Data. Financial markets generally are thought to make efficient use of all available information. If, before M1 is announced, markets have reason to believe that the money supply has changed that week, interest rates will have incorporated that belief before the actual number is released. But if the announced change is different from what people expected, then the release contains new information and interest rates will be affected. The proper variable to explain interest rate movements around the M1 release time, therefore, is the unanticipated part of the announced change in M1.

Market expectations are usually not directly observable, and finding reasonable proxies for them has always been difficult for economic researchers. Fortunately, a survey of government securities dealers exists which has proven to be quite reliable as a proxy of market expectations.^a Each Tuesday, Money Market Services, Inc. of San Francisco surveys 50 to 60 dealers and asks them how much they expect M1 to change at the next announcement. The difference, expressed as a percentage, between the announced change in M1 and the median survey forecast is our measure of the unanticipated change in M1.

The reaction of financial markets is measured over the whole term structure of interest rates, from a three-month Treasury bill to a 30-year government security. Data on the monetary aggregates are currently released on Thursdays, at 4:30 p.m. To measure the impact of these announcements, one must obtain observations on interest rates closely before and after the release time. The change in interest rates is thus measured between the 3:30 p.m. closing yield on Thursday and the closing yield on Friday.^b The sample period extends from November 1977 to December 1983.

The Estimation.^c The 10 equations are specified as follows:

$$\Delta R_{it} = \alpha_i + \beta_i \Delta M_t^u + \varepsilon_{it} \quad \text{For } i = 1, 2, \dots, 10,$$

where ΔR_{it} denotes the change in the i -th rate of interest in week t , and ΔM_t^u the unanticipated change in M1 of week $t-2$, expressed as a percentage and announced during week t . The constants (α_i 's) are included to adjust for any systematic change in the interest rates not related to the money announcements. To account for the relatively high contemporaneous correlation (around 0.6) between the different error terms, the 10 equations were estimated simultaneously using Zellner's seemingly unrelated regression technique.

To test for stability in the response coefficients (β_i 's), slope dummy variables were introduced in each equation

$$\Delta R_{it} = \alpha_i + \beta_i \Delta M_t^u + \delta_i \Delta M_t^u D_t + \varepsilon_{it}$$

where $D_t = 1$ if $t \geq T$ and zero otherwise. The δ_i parameters measure the change in the β_i 's after time T . Inclusion of the dummy variables significantly raised the value of the likelihood function, which is a measure of how well the model fits the data, for almost any value of T . This indicates that the β 's were subject to at least one shift. The timing of this shift was decided by trying out different values of T , and choosing the one that maximized the likelihood function. A first (local) maximum was located for October 1979. Testing for further instabilities by including a second set of 10 dummy variables yielded a second breaking point around January 1982. A third breaking point was found around December 1982.

^aSee, for example, Jacob Grossman, "The 'Rationality' of Money Supply Expectations and the Short Run Response of Interest Rates to Monetary Surprises," *Journal of Money, Credit, and Banking* (November 1981), pp. 409-424, or Thomas Urlich and Paul Wachtel, "The Structure of Expectations of the Weekly Money Supply Announcement," *NBER Working Paper #1090* (March 1983). However, R. Hafer, "Weekly Money Supply Forecasts: Effects of the October 1979 Change in Monetary Control Procedures," Federal Reserve Bank of St. Louis, *Review* (April 1983), argues that since October 1979 these forecasts have been biased and inefficient.

^bBetween February 1980 and February 1984, M1 was announced on Fridays. For this period the change in interest rates is measured as the difference between the Friday and the Monday closing yields.

^cThis section summarizes the results of Loeys (1983), "Federal Reserve Operating Procedures...."

The Philadelphia Fed's Research Department occasionally publishes working papers based on the current research of staff economists. These papers, dealing with virtually all areas within economics and finance, are intended for the professional researcher. The nine papers added to the Working Papers Series in 1983 are listed below.

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1983

- No. 83-1 Robert H. DeFina, "Union-Nonunion Wage Differentials and the Functional Distribution of Income: Some Simulation Results from a General Equilibrium Model."
- No. 83-2 Nicholas Carlozzi, "The Structure, Parameterization and Solution of a Multicountry Simulation Model."
- No. 83-3 Nicholas Carlozzi and John B. Taylor, "International Capital Mobility and the Coordination of Monetary Rules." (Reissued in *Exchange Rate Management Under Uncertainty*, ed. J. Bhandari, MIT Press, 1984.)
- No. 83-4 Brian R. Horrigan, "Pitfalls in Analyzing Deficits and Inflation."
- No. 83-5 Herb Taylor, "The Role of the Discount Window in Monetary Policy Under Alternative Operating Procedures and Reserve Requirement Systems."
- No. 83-6 Brian C. Gendreau, "Carrying Costs and Treasury Bill Futures."
- No. 83-7 Edwin S. Mills, "Metropolitan Central City Population and Employment Growth During the 1970's."
- No. 83-8 Gerald A. Carlino, "Declining City Productivity and the Growth of Rural Regions: A Test of Alternative Explanations." (Revision forthcoming in the *Journal of Urban Economics*, 1984.)
- No. 83-9 Simon Benninga and Aris Protopapadakis, "General Equilibrium Properties of the Term Structure of Interest Rates."

83-1

**UNION-NONUNION WAGE DIFFERENTIALS AND
THE FUNCTIONAL DISTRIBUTION OF INCOME:
SOME SIMULATION RESULTS FROM A GENERAL
EQUILIBRIUM MODEL**

Robert H. DeFina

During the past two decades, a number of studies have established the ability of unions to obtain wages for their

members that exceed the payment to similar, but nonunionized workers. This article investigates empirically the impact that this wage differential has on the real incomes of union labor, nonunion labor, and capital. The analysis is accomplished by solving explicitly a numerically specified general equilibrium system with and without the union wage premium. Comparison of real factor incomes in each equilibrium yields the desired information. The findings indicate that union labor gains as a result of the differential, while nonunion labor and capital lose. This outcome is realized both in terms of real income levels and in a redistributive sense.

Selected Abstracts 1983

83-3

INTERNATIONAL CAPITAL MOBILITY AND THE COORDINATION OF MONETARY RULES

Nicholas Carozzi

and

John B. Taylor

The paper develops a two-country model with flexible exchange rates and perfect capital mobility for evaluating alternative macroeconomic policy rules. Macroeconomic performance is measured in terms of *fluctuations* in inflation and output. Expectations are rational, and prices are sticky; wage setting is staggered over time. The countries are linked by aggregate spending effects, relative price effects, and mark-up pricing arrangements. The model is solved and analyzed through deterministic and stochastic simulation techniques. The results suggest that international capital mobility is not necessarily an impediment to efficient domestic macroeconomic performance. Changes in the *expected* appreciation or a depreciation of the exchange rate along with differentials between *real* interest rates in the two countries can permit macroeconomic performance in one country to be relatively independent of the policy rule chosen by the other country. The results depend on the particular parameter values used in the model and suggest the need for further econometric work to determine the size of these parameters.

83-4

PITFALLS IN ANALYZING INFLATION AND UNEMPLOYMENT

Brian R. Horrigan

When can we know whether deficits cause inflation or inflation causes deficits? The correlation we observe between deficits and inflation does not permit an inference about causality. In steady state, higher inflation is always associated with higher deficits, regardless of what caused the inflation. The causal relation between deficits and inflation can only be inferred from a study of disequilibrium situations. In disequilibrium, the inflation-adjusted deficit is a better measure of the stance of fiscal policy than the conventional deficit.

83-5

THE ROLE OF THE DISCOUNT WINDOW IN MONETARY POLICY UNDER ALTERNATIVE OPERATING PROCEDURES AND RESERVE REQUIREMENT SYSTEMS

Herb Taylor

The paper uses a simple model of the reserves market to demonstrate the implications of discount window administration

procedures for short-run money control. It is shown that when the Fed uses a funds rate operating procedure to control the money stock, discount window procedures do not affect the volatility of the money stock. When the Fed uses a reserves operating procedure combined with lagged reserve requirements, a relatively liberal discount window policy is shown to improve money control. With contemporaneous reserve requirements, the case for a more restrictive discount window policy is stronger, though a penalty discount rate does not necessarily maximize short-run money control.

83-6

CARRYING COSTS AND TREASURY BILL FUTURES

Brian C. Gendreau

Researchers have consistently found that yields on Treasury bill futures differ significantly from corresponding forward rates implicit in the term structure of interest rates. This paper focuses on the borrowing costs faced by investors as the source of that difference. Rates of return attainable on forward bills created implicitly by financing Treasury bills with term repurchase agreements are calculated and found to be not significantly different from yields on Treasury bill futures contracts. These results suggest that risk premia in the repurchase market are reflected in Treasury bill futures yields, and can explain why those yields differ from forward rates.

83-7

METROPOLITAN CENTRAL CITY POPULATION AND EMPLOYMENT GROWTH DURING THE 1970s

by Edwin S. Mills

This paper studies the determinants of Metropolitan Central City Population and Employment Growth from 1970 to 1980 using census data for metropolitan areas with at least 250,000 population. Central city and suburban population and employment growth are analyzed in a four-equation model. Population and employment growth reinforce each other strongly in central cities. Suburban population growth stimulates central city employment growth, but suburban employment growth is at the expense of central city employment growth. Central city population and employment growth are affected strongly by variables over which communities have control. Many eastern and northern central cities could have replaced decline with substantial growth by better control of crime and taxes and by improved educational systems.



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