

Weekly Money Announcements: New Information and Its Effects

Richard G. Sheehan

THE consensus among economists is that monetary policy has its primary effects over relatively long time intervals — that is, quarters or years rather than days or weeks. Financial market participants, however, devote considerable attention to the weekly money stock announcement, despite substantial “noise” in the series.¹ Moreover, some economists recently have “discovered” that an announcement of an unexpectedly large money stock increase causes interest rates and U.S. exchange rates to rise and stock prices to fall.²

At first glance, the weekly impacts on financial markets may seem to contradict the consensus that money has its primary effects over longer horizons. In this paper, we show why money stock announcements may have an impact on financial market variables on a daily or weekly basis even though the principal effects of monetary policy are felt over substantially longer periods. The explanation for this apparent contradiction is the adjustment of financial markets to new information. The focus is on financial markets since their adjustments to new information tend to be more rapid than the adjustments of other markets.³ The paper examines three hypotheses that relate money stock surprises to financial market prices, the relationships between these hypotheses and the existing empirical evidence that attempts to discriminate between the hypotheses.

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¹That is, much of the week-to-week movements in the money stock are unrelated to any economic phenomenon. See Pierce (1981).

²For a sample of these results, see Cornell (1983b), Hardouvelis (1984), and Urich and Wachtel (1984).

³The standard assumption is that financial market prices adjust rapidly to changes in their determinants, within a span of hours or at most days, while prices in other markets tend, for a variety of reasons, to adjust more slowly. See Fama (1982).

MONEY ANNOUNCEMENTS AND MONEY EXPECTATIONS

Before examining the effects of money announcements, one must begin with an obvious observation: the money stock announcement itself does not create money. It does, however, create new information about the money stock. At the time of the announcement, the level of the money stock to be announced has already been determined. Thus, any response resulting from the announcement is due to new information rather than new money. In the following analysis, it will be important to distinguish between these two.

Announcements about the weekly money stock typically are made on Thursday afternoons at 4:30 p.m. EST; at this time the Federal Reserve Board releases figures on the stock of money (M1) for the statement week ending 10 days earlier.⁴ If changes in the money stock itself have an immediate impact on financial markets, that impact will begin to be felt almost two weeks *before* the announcement when the money stock itself changed.⁵

The evidence discussed below suggests that the money stock announcements themselves appear to

⁴Information also is released on the monetary base for the week ending one day earlier, the components of the money stock and the monetary base, and the aggregate portfolio of weekly reporting banks.

⁵The hypothesized short-run impact on interest rates of changes in the money stock is termed the “liquidity effect.” For example, the Federal Reserve may buy government securities and in so doing provide currency and reserves. To convince economic agents to part with the securities in exchange for money, the Federal Reserve’s purchase of securities will bid the price of securities up, thus bidding the yield down. This liquidity effect occurs as soon as the stock of money is increased. See Brown and Santoni (1983) for evidence about the existence, magnitude and duration of the liquidity effect.

influence interest rates independent of any effect that the actual money growth may have had. To explain why the money announcements — which carry only new information — may influence interest rates, one must distinguish between expected and unexpected money announcements.

Theoretical Effects of Expected and Unexpected Money Announcements

The money stock figures, when announced, are not reported in a vacuum. Financial market participants have substantial information on current and previous interest rates and previous money announcements, allowing them to form expectations about the likely amount of the money stock to be announced. Current asset prices are based in part on expected future economic conditions, including future money stocks. Observers generally believe that if financial markets are efficient, only the unexpected component of the money stock announcement should influence financial variables. The expected component conveys information already digested by the markets and incorporated in the prices and yields of financial assets. Consequently, only surprises matter, not because they provide new money, but because they provide new information that may be useful in predicting policy-makers' actions and the behavior of both real and nominal variables. The money stock announcement, to the extent that it is expected, commonly is assumed to have no impact on economic activity.⁶

THE IMPACTS OF UNANTICIPATED MONEY ANNOUNCEMENTS

There are a number of hypotheses about why money surprises influence financial market variables. The following sections compare three hypotheses and their underlying assumptions. All three hypotheses are based on the assumption that financial markets efficiently use all available information. Thus, current interest rates, exchange rates and stock prices reflect the implications of the expected future money stocks.

The analysis of the alternative hypotheses is based on the Fisher equation, which divides the current nominal interest rate into the expected real return over the holding period of the asset and the relevant anticipated rate of inflation. The money announce-

ment can affect market rates of interest by altering perceptions of the real rate of interest, expected inflation or both.

Expected Liquidity Effect

Under this hypothesis, an unexpected change in the money stock that moves it away from its annual target will be followed by changes in the opposite direction to get money growth back on target.⁷ The expected liquidity effect, therefore, is based on the belief that the Federal Reserve has credibility in pursuing its objectives for the money stock. The expected liquidity effect is based on financial market participants believing (1) that Federal Reserve policy is, at least in part, adhering to a long-run monetary aggregate target; (2) that it will take the necessary steps to achieve its target over a relatively short time period; and (3) that such actions will change interest rates.⁸

The impact of an unexpectedly large money stock announcement based on the expected liquidity effect is illustrated in figure 1. The cone formed by the solid lines in figure 1 represents the Federal Reserve's target range for money growth.⁹ At any point in time, market participants know past announced money stock levels and have formed expectations about the future path of the money stock, given by the line \hat{m}^e in figure 1. The slope of this line represents financial markets' expectations of the money growth rate based on available information, including some estimate of the Fed's desired short-run growth rate.¹⁰

⁷Unexpected money deviations here refer exclusively to those as seen by financial market participants. The money announcement itself is assumed to reveal no information to the Federal Reserve. See Ulrich (1982).

⁸While there may be professional debate over the impact of monetary policy on the real interest rate, there is general agreement among economic textbooks that monetary policy does play a significant role. For example, see Dornbusch and Fischer (1984).

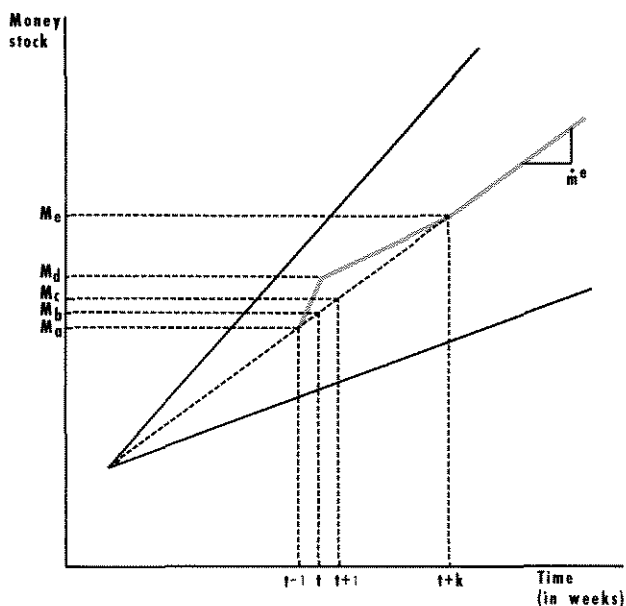
⁹Money growth in this and the following sections refers exclusively to M1 growth since data on the M2 and M3 monetary aggregates are released only monthly. The Federal Reserve is required by Congress to state target ranges for all three monetary aggregates.

¹⁰To focus on the expected liquidity effect and the impact of an unexpected money shock, we temporarily abstract from the noise in the series. In fact, the actual money stock numbers on a week-to-week basis as initially released form a saw-toothed pattern with an upward trend. In a more realistic setting, expected money may also be expected to fluctuate substantially as market participants attempt to adjust their forecasts due to a host of changing economic and institutional factors.

The most common measure of expected money is the median of a survey of market expectations of money growth conducted weekly by Money Market Services, Inc. A time series forecast is infrequently used instead. Regressions of actual money changes on expected money changes indicates that about 30 percent of all money changes are expected. Thus, money changes have a large random component, but are not entirely unpredictable.

⁶See Cornell (1983b) for an explicit statement of this assumption. It should be noted, however, that more general models can be developed in which expected and unexpected announcements are both important. For example, see Belongia and Sheehan (1985b). These more general models have not been widely applied.

Figure 1
Expected Liquidity Effect



To focus on the expected liquidity effect, assume that the money stock for the week announced previously was M_a . Just before the money announcement, interest rates, exchange rates and stock prices reflect the assumption that M_b is the money stock to be announced. Further assume that the announcement of the money stock during week t is then made and reveals that the money stock was, in fact, M_d rather than M_b .

The expected liquidity effect assumes that financial markets believe the Fed will adhere to its previous policy and will take action to return the money stock to its expected path.¹¹ This temporary tightening may begin even before the money announcement, since the Fed develops estimates of the money stock before its announcement. During this period, higher nominal interest rates will be expected. If the long-run growth rate in the money stock is assumed to remain unchanged, the rate of expected inflation should also remain unchanged. Thus, short-term real interest rates should rise as short-term nominal rates rise.

¹¹The analysis in figure 1 is presented in terms of money growth vis-a-vis its expected growth rate. Alternately, it is possible that no reaction (or a smaller reaction) would be expected until the money stock went outside of the Fed's stated target range. For example, see Roley (1983).

Long-term rates will rise to the extent that they are an average of the current short-term rate and expected future rates.

The strength of the expected liquidity effect may vary over time.¹² A deviation of announced from expected M1 will typically have a larger effect on interest rates when market participants think the Fed is placing greater emphasis on controlling M1. Thus, the expected liquidity effect should have been stronger from October 1979 to September 1982 when the Federal Reserve targeted on nonborrowed reserves as an intermediate target.

It is not widely recognized that the expected liquidity effect also makes an assumption about the permanence of the shock underlying the unexpected change in money, assuming the Fed is not the cause of the shock. If the cause is temporary — for example, a winter snowstorm delaying check clearance — no Fed intervention is required. When the disturbance is removed, the stock of money will return to its expected growth path even without Federal Reserve intervention. A movement from M_a to M_d during week t will still be expected to yield money stock M_e in week $t+k$ even without Fed intervention. Thus, a positive shock perceived as temporary will not result in expected monetary tightening or higher interest rates. In contrast, if the shock is perceived to be permanent, then discretionary policy action will be required to return to the expected path as discussed above.

If the change is temporary but the adjustment back to the expected path is slow, policy action may be expected. For example, if delays in processing tax refunds were an important but temporary factor in lowering money growth, the Fed might act to offset factors that would otherwise result in a temporary

¹²For example, see Roley and Walsh (1984) and Gavin and Karamouzis (1984). The most important institutional change was the switch in the Federal Reserve's operating procedures for conducting monetary policy. Before October 6, 1979, the Federal Reserve primarily focused on interest rates in the short run, although there were explicit monetary aggregate targets since 1975; see Wallich and Keir (1979). From October 1979 through September 1982, to improve monetary control, the Federal Reserve adopted a policy of targeting on nonborrowed reserves in the short run. Since then, the Federal Reserve has pursued a more flexible policy, paying somewhat more attention to interest rate fluctuations than it had in the previous period, although not reverting to the pre-October 1979 regime. See Wallich (1984) and Gilbert (1985).

Institutional changes since 1977 also include changes in the money stock announcement date (switched from Thursday to Friday and back to Thursday), a change from lagged to contemporaneous reserve requirements (in February 1984), and the changes associated with financial deregulation. Any of these, in theory, could alter the informational content of the money stock announcement.

decline in the money stock. Thus, the expected liquidity effect is also predicated on the assumption that the cause of an unexpected money change is permanent (or of long enough duration to prompt an expectation of Federal Reserve intervention).

Inflation Premium Effect

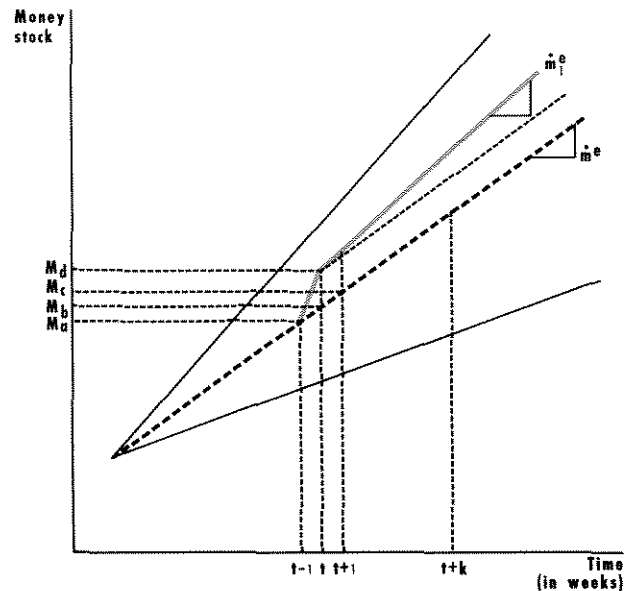
The inflation premium hypothesis, like the expected liquidity hypothesis, focuses on market perceptions of Federal Reserve behavior in response to money surprises. In sharp contrast to the expected liquidity effect, this hypothesis assumes that the Federal Reserve will not react to offset unexpected money fluctuations.

Again assume the Federal Reserve has a target range for money growth given by the cone in figure 2, and the dashed line represents expected money growth. The last announced value of the money stock was M_a , and M_b is the level expected to be announced in the current week. Also assume the actual announced value is M_d , yielding a positive money surprise of $M_d - M_b$.

The inflation premium effect assumes that the surprise will not be offset but that the money surprise will induce (or is the result of) changes in the Federal Reserve strategy toward less restrictive monetary policy. Thus, the money stock is not expected to return to its former target path but is expected to move along a new path as indicated by \dot{m}_1^e in figure 2. The slope of this new path generally will be greater than that of the previous expected path, which indicates higher expected money growth and thus higher expected inflation.¹³ The inflation premium effect predicts that the increase in expected inflation will lead to higher nominal interest rates for as long as this inflationary policy is expected to last.

A crucial assumption underlying the inflation premium effect is that an increase in the money stock, at least in part, signals an easier monetary policy stance.¹⁴ An unexpected increase in the money stock

Figure 2
Inflation Premium Effect



announcement leads financial market participants to revise upward their perceptions of expected future money growth and expected inflation. What does this assumption imply about financial market participants' view of Federal Reserve policy? To the extent that the Fed has stated monetary aggregate targets, market participants must believe that those aggregates may not be the sole target of policy.

The inflation premium effect, like the expected liquidity effect, also assumes that unexpected shocks are perceived as permanent or only slowly self-correcting. If the shock were perceived as temporary, Fed intervention would be unnecessary, and money growth would return to its original expected path without Fed intervention.¹⁵

Money Demand Effect

A third hypothesis suggested as an explanation of positive money surprises leading to interest rate increases focuses on money demand effects.¹⁶ Suppose

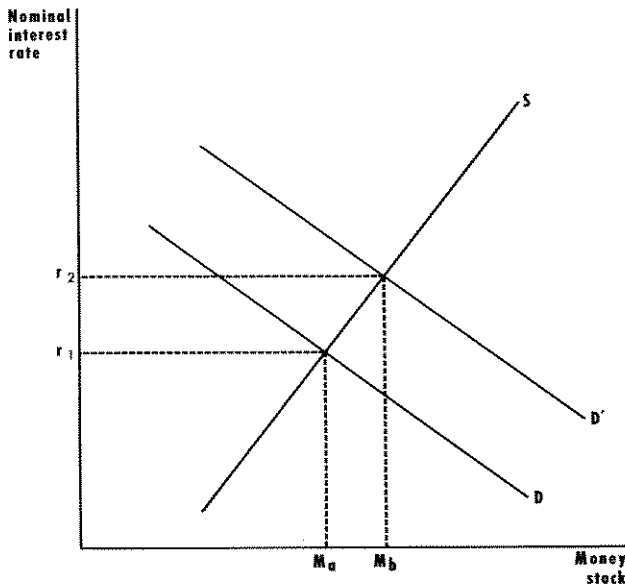
¹³If the slope along \dot{m}_1^e is less than that along \dot{m}^e , the two paths will ultimately converge, as they are assumed to do in the analysis of the expected liquidity effect. Alternately, the growth path could have exactly the same slope, $\dot{m}_1^e = \dot{m}^e$, before and after an unexpected increase in the money stock. In this case, money growth before and after the one-week shock would be expected to be the same. The long-run money growth rate would increase only by the amount that the one-week increase had an impact on the average. Since money growth influences inflation only with a substantial lag and since a one-shot level change in the money stock is generally small in relation to, say, the year-to-year change in the money supply, a simple step up in the level of the money stock would usually have little effect on the actual or the expected inflation rate.

¹⁴Again, this discussion assumes financial markets believe the Fed is using a single target within the cone.

¹⁵This statement also abstracts from considerations such as interest rate smoothing. For example, a temporary shock may lead to Fed intervention to smooth the adjustment to equilibrium. In addition, if the shock were temporary but led to a permanent shift in Fed policy, it could also have the effect shown in figure 2.

¹⁶This effect has also been titled the real economic activity effect. See Cornell (1983b).

Figure 3
Money Demand Effect
 (Expected future supply and demand curves)



money demand depends in part on expected future output, a situation considered by Fama (1982). Since expectations about future output are unobservable, financial market participants cannot determine aggregate money demand. The money announcement then conveys information not only about money demand but also about expected future output. An increase in money demand due to an increase in expected future output is expected to persist and cause interest rates to be bid up. This effect is illustrated in figure 3, which focuses directly on market perceptions of money supply and demand. While an increase in money demand may lead market participants to also expect an increase in money supply, it is assumed in this section that only the money demand curve has shifted. The case of money demand and supply both changing is discussed below.

Before the money stock announcement, the expected future money supply and demand curves are given by S and D, respectively. After an unexpectedly large money announcement, the future money demand curve is perceived to have shifted (permanently) from D to D'. Interest rates in the future are expected to rise to equilibrate the money market, and the expectations of higher future rates lead current rates to rise in anticipation. Note that it is the new information about the location of the present and expected future demand curves that influences interest rates. Any ac-

tual shift in the demand curve, subject to the limitations noted above, would already have had its impact felt before the announcement.¹⁷

Distinguishing Between the Alternative Effects

The three effects described above all predict that an unexpected money stock increase will lead to higher nominal short-term interest rates. In an effort to differentiate the impacts of the expected liquidity effect, the inflation premium effect and money demand effect, some studies have examined the implications of the alternative effects on stock prices and exchange rates.¹⁸

Based on the expected liquidity effect, some have argued that, because the money surprise leads to higher expected interest rates, it depresses the present discounted value of future dividends, thus lowering stock prices. In addition, the expected liquidity effect predicts that, after taking into account exchange rate risk, higher expected real returns in the United States relative to, say, Germany should induce a capital inflow that will be accompanied by a rising value of the dollar vis-a-vis other currencies.

The inflation premium effect predicts that an unexpected money stock increase will lower exchange rates, as U.S. inflation increases relative to inflation in other countries. The inflation premium effect makes no prediction about the effect of an unexpected money stock increase on stock prices.¹⁹

¹⁷A shift in money demand that is not due to a shift in expected future output is not necessarily associated with any change in stock prices.

One particular money demand effect that is sometimes considered separately is the reserve settlement effect. This effect existed only under lagged reserve requirements when the timing of the money announcement was such that it revealed information about current reserve demand. Consider a money stock announcement, say, on August 26, 1982. Data on the money stock was released then for the week ending August 18, 1982. But deposits for the week ending August 26, 1982, determined required reserves for the week ending September 2, 1982. When the money stock numbers were released, they may have contained incremental information on the demand for reserves.

An individual bank may know its own reserve requirements prior to the money announcement, but it has only limited information on aggregate reserves and thus on the federal funds rate expected to prevail for the remainder of the reserve settlement period. An unexpected money increase generally implies that deposits, as well as the demand for required and total reserves, are all greater than expected. The reserve settlement effect demonstrates how institutional characteristics can influence the relationship, say, between money announcements and interest rates.

¹⁸For example, see Cornell (1983b).

¹⁹See Cornell (1983b) for a more detailed explanation.

In contrast, the money demand effect implies that an unexpectedly large money announcement will increase stock prices due to the underlying increase in expected future output. The international value of the U.S. dollar may increase due to the direct impact of an increased money demand as well as the indirect effect of greater money demand leading to higher real interest rates and resulting capital inflows.²⁰

COMPARING THE HYPOTHESES: SUBSTITUTES OR COMPLEMENTS?

Previous studies have advanced the three hypotheses presented above as competing theories to explain why unanticipated money announcements alter financial market variables.²¹ In fact, the three effects do not necessarily compete and may be either substitutes or complements. Consider a simple example in which they are complements. As in figures 1 and 2, the expected money stock prior to the announcement at time t was M_e , while the announced value was M_a . The expected liquidity effect again predicts a slowing of money growth from time t to $t+k$. Assume that this tightening is expected to be only partially successful. In terms of figure 2, the money growth rate will be between \dot{m}^e and \dot{m}^a . In this scenario, nominal interest rates will be expected to rise due to both the expected restrictive policy and higher expected inflation. Simply stated, monetary policy is expected to be tighter after the unexpected increase, but not tight enough to restore the former growth rate.

Figures 1 to 3 each focus on one monetary disturbance. There is, however, substantial noise in the weekly M1 series. Thus, temporary shifts cannot readily be distinguished from permanent shifts. Furthermore, in light of this uncertainty which all financial market participants face, the Federal Reserve may be expected to hedge its response to fluctuations.²² Thus, it is plausible that market participants may expect monetary policy to be tighter after an unexpected increase, but not tight enough to restore the former growth rate.

Both the expected liquidity and the inflation pre-

²⁰It should be noted that the relationship between real interest rates and capital inflows has only recently been emphasized. See Batten and Ott (1983). Previously the emphasis would have been placed on relationships like an expected expansion leading to a rise in imports and a drop in the U.S. exchange rate.

²¹In fact, Cornell (1983b) introduces an additional theory, the risk premium hypothesis, based on increased monetary variability requiring larger risk premiums. Since neither he nor Belongia and Kolb (1984) found any evidence of its existence, it is omitted here.

²²See Brainard (1967) for a formal model making this point.

mium effects are based on the assumption of a permanent money market shock that may prompt Federal Reserve response. While such a shock need not originate in money demand, clearly it could. If it does, then the expected liquidity and inflation premium effects cannot be distinguished from the money demand effect.

Further complicating the analysis of the money demand effect is that it presumes a shift in money demand, but market participants are unlikely to believe money demand can shift without some Fed response based on its presumed targets. Thus, the money demand effect may imply, say, an expected liquidity effect in response. For example, assume money demand increases and the Federal Reserve is believed to be focusing exclusively on a monetary aggregate target. The increase in money demand, *ceteris paribus*, will lead to increases in both the money stock and interest rates as figure 3 demonstrates. Furthermore, the announcement of a money stock increase could lead financial market participants to expect the Fed to reduce the money supply in order to maintain its monetary aggregate target. This tightening, however, is the expected liquidity effect.

Alternately, if financial market participants believe the Federal Reserve is trying to peg nominal interest rates, the expected Fed response to a money demand increase would be very different. An increase in money demand would prompt the Fed to increase the money supply to prevent interest rates from increasing. In this scenario, the unexpected money announcements should have no effect on interest rates. Between the extremes of focusing exclusively on interest rates and focusing exclusively on a monetary aggregate, both the expected liquidity and inflation premium effects may be present.

EVALUATING THE EMPIRICAL RESULTS

The findings of previous empirical analyses of the impact of anticipated and unanticipated money announcements are summarized in table 1. The results presented indicate considerable disagreement among previous studies.

Short-Term Interest Rates — Unexpected Changes

Most studies conclude that short-term interest rates are significantly and positively influenced by unanticipated money announcements. While this is true in both the pre- and post-October 1979 periods, the ef-

Table 1

Summary of Empirical Results

	Pre-October 1979		Post-October 1979	
	Unexpected Money Changes	Expected Money Changes	Unexpected Money Changes	Expected Money Changes
NOMINAL INTEREST RATES				
Short-Run	+ Grossman (1981) Urich and Wachtel (1981) Roley (1982) Urich (1982) Cornell (1983a) Roley (1983) Roley and Troll (1983) Loeys (1984) Urich and Wachtel (1984) Judd (1984) Gavin and Karamouzis (1984)		+ Roley (1982) Cornell (1982) Cornell (1983a) Cornell (1983b) Shiller, et. al. (1983) Roley (1983) Roley and Troll (1983) Loeys (1984) Belongia and Kolb (1984) Urich and Wachtel (1984) Roley and Walsh (1984) Hardouvelis (1984) Judd (1984) Gavin and Karamouzis (1984) Hein (1985) Belongia and Sheehan (1985)	- Bolongia and Kolb (1984) Urich and Wachtel (1984) Gavin and Karamouzis (1984) Hein (1985) Belongia and Sheehan (1985)
	0 Cornell (1983b) Roley and Walsh (1984)	0 Grossman (1981) Urich and Wachtel (1981) Urich (1982) Cornell (1983b) Roley (1983) Urich and Wachtel (1984) Roley and Walsh (1984) Gavin and Karamouzis (1984)	0 Roley and Troll (1983)	0 Cornell (1983b) Roley (1983) Roley and Walsh (1984)
Long-Run			+ Cornell (1983a) Cornell (1983b) Loeys (1984) Roley and Walsh (1984) Gavin and Karamouzis (1984)	- Gavin and Karamouzis (1984)
	0 Cornell (1983a) Cornell (1983b) Loeys (1984) Roley and Walsh (1984) Judd (1984) Gavin and Karamouzis (1984)	0 Cornell (1983b) Roley and Walsh (1984) Gavin and Karamouzis (1984)	0 Shiller, et. al. (1983) Hardouvelis (1984) Judd (1984)	0 Cornell (1983b) Roley and Walsh (1984)
STOCK PRICES				
	- Pearce and Roley (1983) Pearce and Roley (1985)		- Cornell (1983b) Pearce and Roley (1983) Pearce and Roley (1985)	
	0 Cornell (1983b)	0 Cornell (1983b) Pearce and Roley (1983) Pearce and Roley (1985)		0 Cornell (1983b) Pearce and Roley (1983) Pearce and Roley (1985)
EXCHANGE RATES				
			+ Cornell (1982) Cornell (1983b) Engel and Frankel (1984) Hardouvelis (1984) Gavin and Karamouzis (1984)	- Gavin and Karamouzis (1984)
	0 Cornell (1983b) Gavin and Karamouzis (1984)	0 Cornell (1983b) Gavin and Karamouzis (1984)		0 Cornell (1983b)

+ indicates a significant positive effect was found.

- indicates a significant negative effect was found.

0 indicates an insignificant effect.

fects are substantially larger in the latter period.²³ For example, Judd (1984) finds that a 1 percent positive money surprise would increase the three-month Treasury bill rate by only 6 basis points before October 1979, but by 36 basis points after September 1979.²⁴ That this is true is consistent with financial markets believing that after September 1979 the Fed placed substantially more weight on short-term money stock movements in their efforts to achieve monetary aggregate targets. Apparently, the market believed the Fed's statements that its procedures were being changed. The very small estimated coefficients before October 1979 indicate that financial markets believed the Fed was less interested in short-term movements in the money stock before then.

That an unexpectedly large money announcement increases short-term nominal interest rates cannot be used as evidence to distinguish between the expected liquidity, inflation premium and money demand effects, however. All three predict a positive relationship between the two.²⁵ Thus, previous research also has

²³There is also substantially greater interest rate volatility in the latter period. In addition, studies that have attempted to assess the impact of money surprises have been faced with the task of sorting out the influences of other factors such as a change in the day of the money announcement, a discount rate surcharge, credit controls, etc. See also the institutional changes mentioned in footnote 12. Most studies have simply chosen a period (or periods) for analysis and assumed that non-money-announcement effects were unchanging over that period. Whether this approach is valid is debatable. It should be noted, however, that most estimated equations can explain only 30 percent or less of the fluctuation in interest rates around the time of the money announcement.

²⁴In general, no attempt is made here to present the magnitude of estimated coefficients since the studies differ with respect to time periods, definitions of the dependent variable (e.g., federal funds rate vs. three-month Treasury bill as the short-term interest rate) and equation specification. In addition, all the studies except Judd (1984), Loeys (1984) and Gavin and Karamouzis (1984) make no systematic study of differential effects occurring after October 1982 when the Federal Reserve deemphasized the M1 monetary aggregate.

²⁵Cornell (1983b) states:

The dramatic shift in the market response to money supply announcements after October 6 is difficult to reconcile with the expected inflation hypothesis. If the money supply announcements are providing information about future money growth, there is no obvious reason why the Fed's stated intention to control monetary aggregates should induce a positive correlation between announced innovations in money and changes in interest rates. In fact, it is more reasonable to conclude that the correlation would decline because week-to-week variation in the aggregates would no longer provide information about long-run policy.

Cornell's argument is that the expected liquidity effect predicts a greater response to money surprises pre- vs. post-October 1979, while the inflation premium effect predicts no change in response. This lack of change with the inflation premium hypothesis, however, is based on the assumption that the change in operating procedures did not alter market participants' view of the money supply process. The inflation premium effect could also be associated with a greater response to a money surprise after October 1979 if, for example, an unexpected increase in the money stock after that date is viewed as having a greater probability of signaling monetary ease than under the previous operating procedures.

focused on financial market variables for which the responses to money surprises might differ. These variables include long-term interest rates, stock prices and exchange rates.

Long-Term Interest Rates

Studies that have considered the impact of money announcements on long-term interest rates have been unanimous in concluding that neither announcement surprises nor anticipations influenced long-term rates prior to October 1979. This is again consistent with financial markets believing that the Federal Reserve was pegging interest rates before October 1979. After September 1979, with limited analysis there is some evidence that expected announcements have no impact on long-term rates. Expected increases in the money stock may lead to higher inflation and higher long-term interest rates, but do not necessarily lead to higher inflation and interest rates immediately after the money announcement.

The results concerning announcement surprises are mixed. Studies that have used long-term forward rates such as Shiller, et. al. (1983), Hardouvelis (1984) and Judd (1984) generally have found no significant response.²⁶ These findings are not consistent with the inflation premium effect. A money surprise is apparently expected to be quickly offset by the Fed and thus has no effect on long-run inflation expectations. Alternately, financial market participants could simply believe that weekly money announcements, from a long-run perspective, convey little or no information useful in forecasting long-term interest rates.

Studies such as Cornell (1983a) that have used changes in actual long-term rates, which include the effects of short-term rates, have found significant effects. Whether these effects are the result of market participants' short-run expectations about current or prospective short-term interest rates or whether they truly convey information about inflation expectations has not been determined.

Stock Prices

Relatively few studies have considered the implications of money announcements on stock prices. Stock prices apparently decreased in response to positive money surprises in the post-September 1979 period. In the pre-October 1979 period, there is no consensus

²⁶Gavin and Karamouzis (1984) find the four-year forward rate three years ahead is significantly influenced by money surprises, while the 23-year forward rate seven years ahead is not.

on whether money surprises influenced stock prices (table 1). Expected changes had no effect on stock prices in either period.

These results are inconsistent with the money demand effect. If the money announcement reveals an increase in money demand due to an increase in expected output, stock prices should increase.²⁷

Exchange Rates

The exchange rate results presented in table 1 indicate that neither anticipated announcements nor surprises significantly influenced exchange rates before October 1979. After September 1979, money surprises have resulted in significant appreciation of the dollar relative to some currencies, in particular the German mark and the Swiss franc. Other exchange rates, such as those relative to the British pound and the Canadian dollar, have not appreciated significantly. To date, there apparently have been no joint tests of the significance of money surprises on all exchange rates.

The evidence that exchange rates generally did not depreciate is also inconsistent with the inflation premium effect. The inflation premium effect predicts that an unexpectedly large money announcement, associated with higher expected inflation, should lead instead to lower exchange rates.²⁸

Short-Term Interest Rates — Expected Changes

Most studies also indicate that expected money announcements had no impact on short-term interest rates before October 1979. After then, table 1 indicates a consensus that expected money announcements had significant negative effects on short-term interest rates. This result is inconsistent with any of the competing theories and the efficient markets hypothesis.²⁹ Thus, either the efficient markets hypothesis is incorrect, the theories as they are currently formulated or tested are insufficiently detailed, or other factors are changing that are correlated with expected money.

²⁷This conclusion implies only that the money demand effect by itself cannot explain all of the impacts of the money announcements.

²⁸The exchange rate results imply only that the inflation premium effect by itself is not capable of explaining all the impacts of money announcements.

²⁹After October 1979, an expected increase in the money supply would cause movement down the money demand curve with a resulting decrease in interest rates. Market efficiency implies that this decrease in interest rates would occur immediately upon the change in expectations. Thus, if the money supply is expected to increase prior to the money announcement, interest rates would already have adjusted to this expectation prior to that announcement.

It is difficult to argue that the efficient markets hypothesis is incorrect. If it were, it would imply that profitable trading opportunities exist based only on knowledge of expected money.³⁰ Given that the money announcement is widely forecasted and both the forecasted and announced values are widely disseminated, it seems unreasonable to expect profitable trading opportunities to remain for long. It seems more plausible to attribute the significance of expected money either to correlation between expected money and omitted variables or to limitations in the underlying theory.³¹

CONCLUSIONS

While a number of theories have been advanced to explain why money stock announcements, particularly the component that is unexpected, influence financial market variables, this paper shows that these theories are not generally competing. For example, the expected liquidity and inflation premium effects may be complementary depending on financial market participants' perceptions of Federal Reserve goals. Some empirical results are inconsistent with either the inflation premium effect or the money demand effect alone. The expected liquidity effect, by itself, can explain the responses of interest rates, exchange rates and stock prices to unexpected money announcements. There is no reason, however, to believe that this effect, or either of the two others, operates in isolation.

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- ³⁰To be precise, the efficient markets hypothesis would allow trading rules to exist with a positive gross return that was less than the transaction costs of making the trades.
- ³¹See Roley (1983) and Hein (1985) for examples of the former. A full discussion of the potential impacts of expected money is beyond the scope of this paper. For more details, see Belongia and Sheehan (1985b).

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