

Research Department
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Interest Rates: Money Demand

The money-demand approach to interest-rate determination is considerably more complex than the inflation-expectations approach which we analyzed in our article last week. Among other reasons, this approach assigns an important role to economic variables other than the rate of inflation.

According to the money-demand approach, short-term interest rates are determined by the tension between the level of transactions in an economy and the availability of the means of settlement. One common measure of this tension is *velocity*, the rate at which money changes hands in an economy. There are as many measures of velocity as there are definitions of income and money, but it is common to use V_1 —the ratio of nominal GNP to M_1 , with the latter defined to include currency plus demand deposits.

According to the theory, when the level of business activity and GNP rises, cash needs increase. If this is not accommodated by a proportional rise in the money supply, then V_1 will increase. To induce people to adapt to the use of relatively less cash, i.e. higher velocity, interest rates must rise.

The determination of short-term interest rates through a money-demand relationship divides itself nicely into three parts: (1) forecasting the behavior of the economy

(money demand), (2) forecasting the behavior of the Federal Reserve (money supply), and (3) forecasting the interaction between the economy and the Fed.

The economy

In the theory of money demand the value of transactions determines the demand for money, but in practice some measure of nominal income is used—commonly GNP, personal income, or personal consumption expenditures—to proxy for this value. Whether the quarter-to-quarter variation in nominal income is due to variation in real income or to variation in prices is not significant. In determining the demand for money, any rise in nominal GNP will have a positive influence on interest rates. This fact makes the interest-rate predictions following from the inflation-expectations approach sometimes similar to the money-demand forecasts, since an increase in the rate of inflation with real economic growth unchanged will also add to nominal income directly. That is, higher inflation increases velocity and tends to push interest rates upward—a similarity to the inflation-expectations approach.

The Federal Reserve

A reduction in the amount of money available with nominal GNP unchanged means that the available money balances must roll over more frequently—i.e. velocity goes

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up, putting upward pressure on interest rates. Thus the ability to influence the quantity of money, according to the theory of money demand, is the source of the Federal Reserve's influence upon interest rates. This means that the future pattern of money-demand-determined interest rates depends to a great extent upon the rate of money growth the Fed will provide.

At first glance, the task of estimating the Fed's intentions for money growth—for M_1 (currency plus bank demand deposits), M_2 (M_1 plus bank time deposits) and M_3 , (M_2 plus thrift-institution deposits)—would seem to be a simple matter. Since early 1975 the Chairman of the Federal Reserve has provided the banking committees of Congress with a quarterly statement of the Fed's intended monetary growth rates for the year ahead. But interpretation of these intended growth rates is not a simple matter, because of several factors which make Fed intentions difficult to translate into information useful for forecasting interest rates.

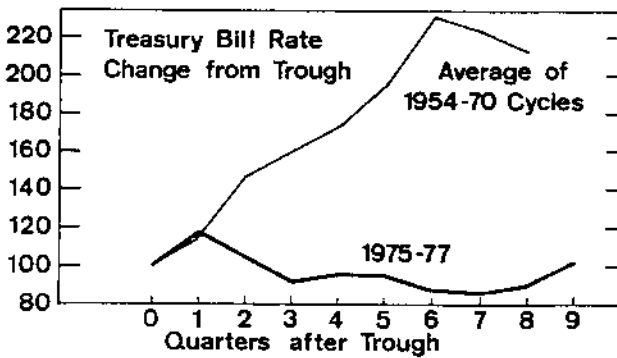
First, intended money growth rates are given as a range. (For example, in the fourth quarter of 1975, M_1 growth-rate targets were 4.5 to 7.5 percent for the four quarters ahead.) The interest rate consistent with M_1 growth of 4.5 percent in the first quarter of 1976 would be higher than the interest rate consistent with 7.5-percent growth.

Second, the intended money-growth rates are subject to alteration with unexpected changes in the economic environment. When the economy behaves in unexpected ways, monetary policy may change.

Finally, it is not always possible for the Fed to achieve its intended targets, as we can see by considering the targets established for the period from the fourth quarter of 1975 to the fourth quarter of 1976—4.5 to 7.5 percent for M_1 (as noted above) and 8 to 10.5 percent for M_2 . During this one-year period actual money growth for M_1 was 5.5 percent, in line with Fed intentions; but 10.9 percent for M_2 , considerably more than intended. In this case the Fed's intended growth-rate targets for the two kinds of monetary aggregates were inconsistent with one another, and it was therefore impossible for the Fed to perform as intended.

Additionally, the interaction of economic factors and Federal Reserve policy factors is important for forecasting short-term interest rates in the more distant future. An increase in nominal income without an increase in money growth will push interest rates upward, but as time passes, the higher interest rates will restrain investment and tend to bring economic growth back down. Similarly, an unexpectedly high rate of growth in money stock will reduce interest rates, but these lower rates will then strengthen investment and eventually a more rapid pace of economic activity will tend to push interest rates back up.

Percent



Expectations vs. money demand

It is possible to exaggerate the conflict between the inflation-expectations approach and the money-demand approach. The money-demand approach, as described here, is believed by some economists all of the time, and by all economists some of the time. Eugene Fama, an advocate of the inflation-expectations approach, made a relevant point in describing the pre-1951 period, when the Treasury-bill rate was pegged by the Fed, as one where "a rich and obstinate investor saw to it that Treasury-bill rates did not adjust to predictable changes in inflation rates." In other words, most economists including Fama would agree that, because of monetary influences, temporary variations in real returns are possible—which is another way of saying that interest rates do not necessarily represent efficient forecasts of inflation.

Similarly, few economists today would challenge the idea that a permanent increase in the rate of inflation, under conditions where all market participants are fully aware of this change in the economic environment, would raise interest rates by the amount of the increased inflation. So the consensus seems to be that, in the long run, levels of interest rates are determined by inflation, and in the short run, rates are substantially influenced by the Federal Reserve. The debate is about the length of the short run.

Interest rates today

Looking back upon the first half of 1977, analysts have examined a

number of reasons for low interest rates, such as relatively high foreign demand for U.S. securities and greater than usual corporate liquidity. But these after-the-fact explanations of interest-rate behavior make poor predictors of future interest rates.

In the first half of 1977, short-term interest rates should have risen sharply, according to either of the approaches that we have analyzed. Inflation rates exceeded 6 percent and temporarily went as high as 10 percent, suggesting according to the inflation-expectations approach that short-term interest rates should have risen in tandem with the early-year price upsurge. Furthermore, money growth rates were low in comparison to the rapid rise in nominal GNP—i.e. velocity was higher than expected—and this, according to the money-demand approach, also should have meant higher interest rates.

However, the increasing velocity of the post-1975 recovery and the stable levels of interest rates have not been typical of the velocity-interest rate patterns of earlier recoveries, so that money-demand relationships have been wide of the mark for some time. This partly reflects recent changes in tax laws, and partly a tendency of individuals and firms to use their cash balances more efficiently in the wake of the extremely high interest rates of 1974.

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