

Interest rate behavior in the current economic recovery

by John P. Judd

Nominal interest rates, and especially short-term rates, are clearly behaving atypically when compared with previous postwar economic recoveries in the United States. The conventional wisdom is that yields can be expected to move in a roughly procyclical pattern in response to rising demands for money and credit during economic upturns and reductions in these demands in downturns. During the present recovery, however, rates have not exhibited the expected upward movement and, in fact, are now lower across the maturity spectrum than they were at the onset of the recovery in March 1975. This decline has generally been more pronounced in short-term than in long-term rates, following the usual pattern of greater cyclical fluctuation in yields at the short end of the term structure.

This article focuses on short-term yields and suggests several factors which may have contributed significantly to their decline over the first year and a half of the 1975-76 upswing. Emphasis is placed upon the highly probable reduction in inflationary expectations associated both with the lessening of the actual rate of inflation in the recovery and with the elimination of some highly visible supply side difficulties, such as the oil embargo and certain crop failures. There was, in addition, relatively little upward pressure on interest rates stemming from the corporate sector, as several factors apparently contributed to atypical cyclical changes in the demand for and supply of short-term credit by nonfinancial corporations. These included a pronounced increase in the demand for liquidity and an unusually slow pickup in business spending (particularly on inventories), coupled with a strong rise in corporate cash flow and equity market financing. Finally, there is the possibility that a shift in the public's demand for money

balances played a role in depressing short-term interest rates. In any event, the factors which produced the atypical cyclical decline in short-term rates helped the United States Treasury conduct extensive debt financing without encountering increases in short-term rates. Equally important, the Federal Reserve was able to follow a policy of growth in the monetary aggregates which was widely regarded as moderate within a framework of declining short-term yields.

This article is divided into five sections. The first section contrasts the current situation with past cyclical behavior of interest rates in the United States. This is followed by sections analyzing how the inflation premium, the restructuring of corporate balance sheets, and the possible shift in the demand for money affected recent short-term interest rate movements. Some comments on the relative importance of these factors are contained in the final section.

Recent movements in interest rates

Until the beginning of the 1970's, interest rates across the maturity spectrum in the United States generally exhibited lagging procyclical movements.¹ This pattern is reflected in the four- to six-month prime commercial paper rate in the recoveries beginning in 1954, 1958, and 1961 (see Chart 1). This representative short-term rate reached a trough several months after the trough in economic activity and then increased fairly steadily through at least the first eighteen months of recovery. By this point in these three upturns, the yield on commercial paper was 79 percent higher on average than it was at the respective troughs. This pattern was not followed, however, in the two most recent recoveries: by eighteen months after the No-

¹ See Cagan [2]

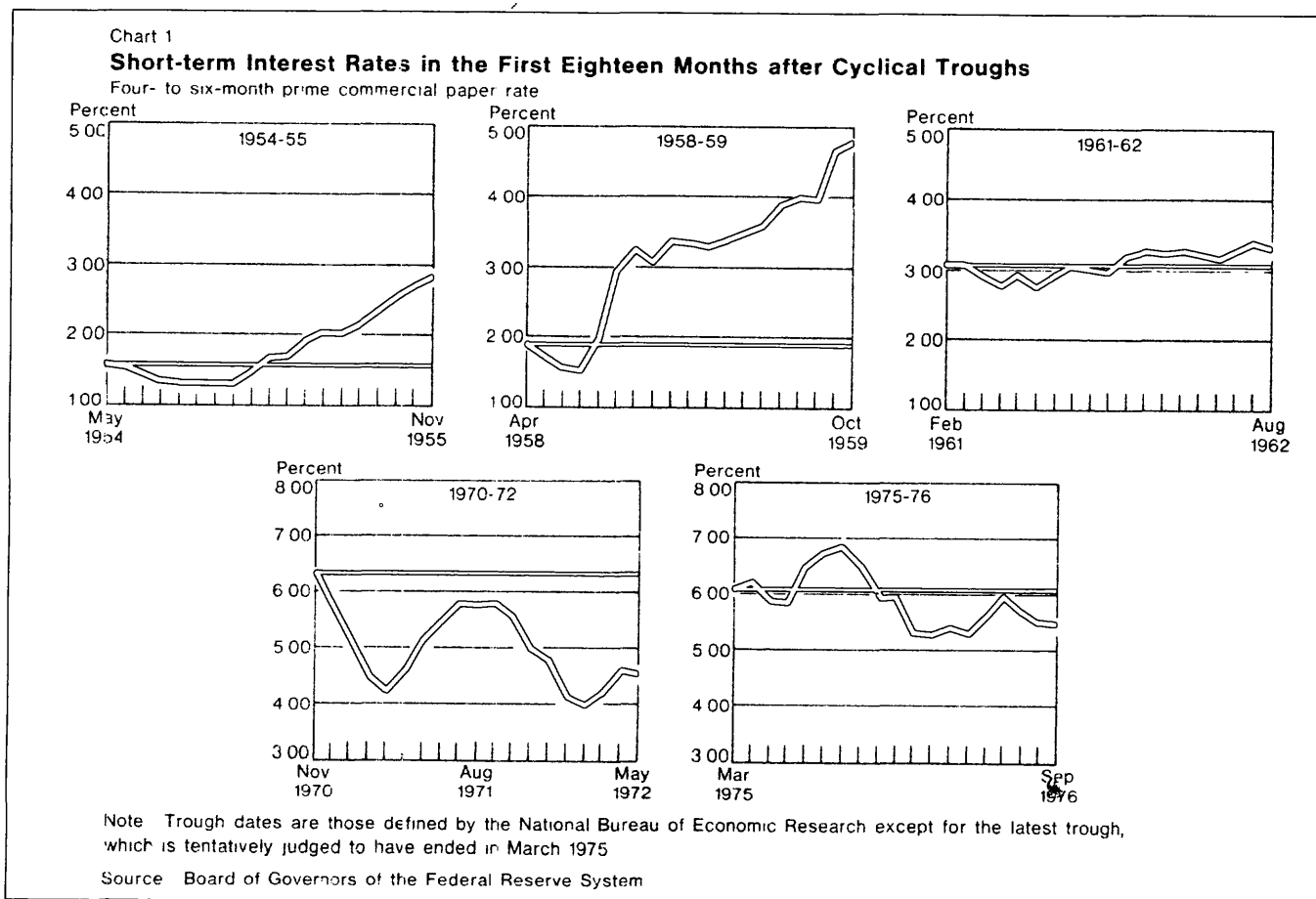
November 1970 trough the commercial paper rate had fallen from 6.30 percent to 4.51 percent, a 29 percent decline, whereas in the current upturn this rate has fallen from 6.06 percent to 5.45 percent, a decline of 10 percent.

It is difficult to interpret interest rate movements during the 1970-72 recovery because of the announcement and implementation of Phases One and Two of the wage and price controls in the summer and fall of 1971. The commercial paper rate behaved in its usual fashion from the business-cycle trough in November 1970 until shortly after the enactment of Phase One in August 1971 (see Chart 1). It then declined sharply. This has been attributed to suddenly reduced inflationary expectations following the announcement of the wage-price freeze.² It seems appropriate, however, to exclude this episode from the analysis because the precise magnitude and timing

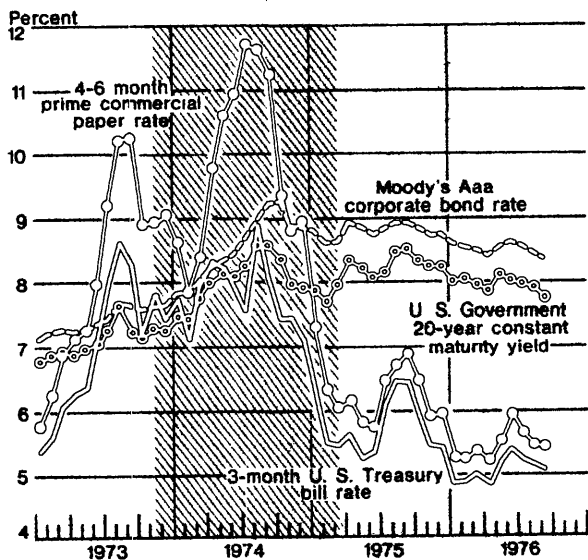
of the impact of Phase One and also Phase Two (with its Committee on Interest and Dividends) on price and interest rate expectations is uncertain.

Movements in most other short-term market rates and also in most medium- and long-term rates over the business cycles under discussion paralleled those of the commercial paper rate. The size of fluctuations, however, was generally smaller the longer the term of the security. For example, the average increase over the first eighteen months of the recoveries beginning in 1954, 1958, and 1961 was 157 percent for the yield on three-month Treasury bills and 79 percent for the four- to six-month prime commercial paper rate. At the long end of the term structure, yields on constant maturity long-term Government securities rose by only 17 percent on average and Moody's Aaa corporate bond rate increased by 12 percent. Similarly, interest rates during the 1975-76 recovery also have exhibited larger movements at the short end of the term structure (see Chart 2). By September 1976 the three-month

² See Cagan [2, page 50]



**Chart 2
Yields on Representative Short-term
and Long-term Securities**



Note: Shaded area represents a period of economic recession. The initial month is defined by the National Bureau of Economic Research to be November 1973. The final month is tentatively judged to be March 1975.

Sources: Board of Governors of the Federal Reserve System and Moody's Investors Service, Inc.

Treasury bill rate and the commercial paper rate had fallen to 93 percent and 90 percent of their March 1975 levels, respectively. Yields on both long-term United States Government securities and seasoned Aaa-rated corporate bonds, however, fell to only 97 percent of their trough levels. Hence, while interest rates have generally fallen during this recovery, the term structure of rates has behaved qualitatively the same as in previous cycles; long rates moved in the same direction but to a lesser extent than short rates. In view of this, the remainder of this paper will focus primarily on short-term yields.

The inflation premium

An important characteristic of short-term interest rates during the first eighteen months of postwar upturns is that, while they rose in the first three episodes and fell in the latter two, rate levels were generally lower in the earlier recoveries (see Chart 1). This situation reflects the secular increase in interest rates over the period usually attributed to the rapid runup in the rate of inflation beginning in the mid-1960's (see Chart 3). Higher rates of inflation may cause market participants

to expect higher future inflation, implying a decline in the anticipated purchasing power of debt maturing in the future. Under this so-called "Fisher" or "price expectations" effect, lenders will demand and borrowers will be willing to provide compensation in the form of higher nominal interest rates. Within a highly simplified setting, a fully anticipated 3 percentage point increase in the rate of inflation requires that (all else being equal) the nominal rate of interest rise by 3 percentage points to equate the demand and supply of credit.³

In addition to being an important element in the secular increase in nominal yields since the mid-1960's, the rate of inflation can be expected to play a role in the cyclical behavior of interest rates as well. For this role to be substantial, there must be a fairly short lag between changes in actual inflation rates and the associated expectations and/or changes in actual rates must be large. There is substantial evidence that prior to the 1960's both short-run and long-run inflationary expectations adapted to actual inflation incompletely and with a long lag, but that since then the adjustment has been fairly rapid and more complete.⁴ In addition, there is evidence that increasing actual inflation rates were the dominant factor in changes in the nominal Aaa bond yield from 1961 to 1971, whereas other factors were most important from 1954 to 1960.⁵

The increased role of inflation in the determination of nominal interest rates since the mid-1960's can be traced substantially to the widely different behavior of inflation in the two periods (see Chart 3). First, from 1953 through 1964 the average annual inflation rate (as measured by the percentage change in the consumer price index) was 1.3 percent, whereas in the period from 1965 through September 1976 this average jumped to 5.2 percent. In addition, the cyclical swings in these rates have been larger in the latter period, and the trend in inflation has been upward, unlike the earlier period. All in all, it would appear that the cost of not closely considering future inflation in economic decisions has risen significantly since 1964, providing a greater incentive for economic agents to observe carefully and react quickly to price

³ This one-to-one relationship between changes in anticipated inflation and nominal interest rates cannot, in fact, be expected to hold precisely. For example, progressive income taxation (all else being equal) implies that nominal rates will rise by more than the increase in anticipated inflation. For a theoretical and empirical discussion of the inflation premium and nominal interest rates, see LeRoy [6].

⁴ Cagan [2], Turnovsky [7], and Yohe and Karnosky [8] are among those whose research supports this position.

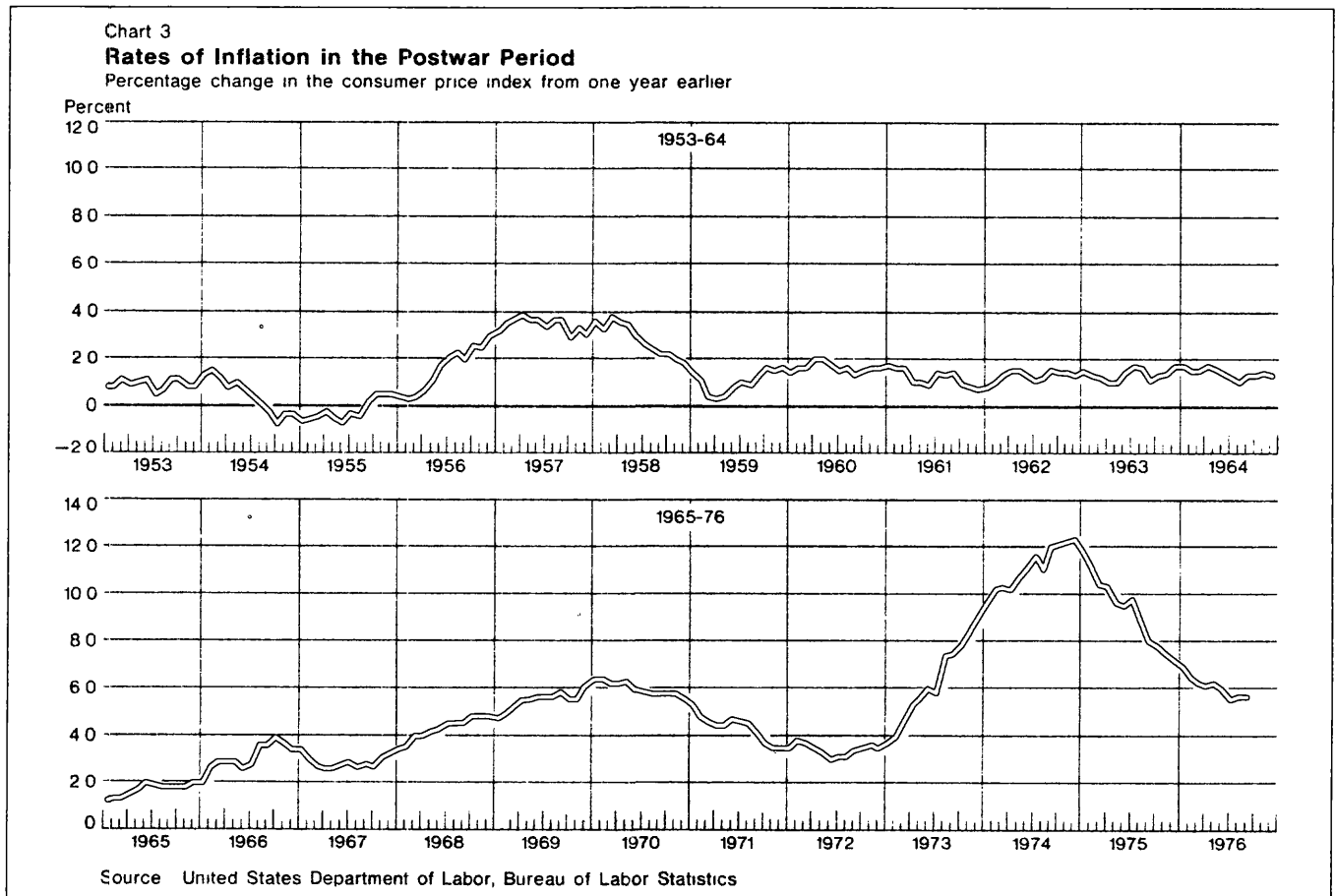
⁵ See Feldstein and Chamberlain [4].

changes. Moreover, even if reaction time has not increased materially since the mid-1960's, the greater size of cyclical price swings would have by itself increased the role of actual inflation rates in nominal interest rate movements.

While inflation may in general have become a more important determinant of interest rates in recent years, there is another reason, which is peculiar to the 1975-76 episode, for the rapid incorporation of decreases in the rate of inflation into expectations. It is widely held that the large price increases in 1973-74 were greatly affected by certain special factors not related to aggregate demand, such as the oil embargo and various crop failures. It was, therefore, reasonable for many participants to expect a diminution of inflation when these supply difficulties were resolved. Hence, the recently observed decline in the rate of inflation most likely confirmed these expectations and was translated quickly into a decline in nominal short-term interest rates. Since these expectations related to phenom-

ena widely regarded as temporary, short-term rates should have been affected to a greater extent than long-term yields. The data are consistent with this explanation, since three-month Treasury bill rates declined from 8.96 percent at their August 1974 peak to 5.08 percent in September 1976, while long-term Government bond yields dropped from 8.60 percent to only 7.78 percent over the same period. It should be noted, however, that this movement in relative yields is also consistent with the typical cyclical pattern described previously.

It is, of course, difficult to determine the exact quantitative relationship between the rate of inflation and a nominal rate of interest. The following rather crude calculation may be useful, however, in putting recent experience in perspective. If the commercial paper rate had increased during the first eighteen months of the 1975-76 recovery by the same percentage that occurred on average in the upturns beginning in 1954, 1958, and 1961, it would have attained a level of about 11 percent in September



1976. The level reached was in fact 5.45 percent, leaving a difference of about 5½ percentage points. The rate of inflation, as measured by the percentage changes in the consumer and wholesale price indexes, declined over the same period by 4.8 percentage points and 8.7 percentage points, respectively. Hence, a large part of the atypical behavior of short-term interest rates probably can be attributed to the diminution of the inflation premium.⁶

Corporate balance sheets

Another important element in the cyclical pattern of interest rates is the behavior of the demand for credit by nonfinancial corporations. The typical pattern of increased credit demands in the early stages of recoveries is related to increases in business spending during these periods. These increases have been, however, unusually small in the current upturn. During the first five quarters of the recoveries beginning in 1954, 1958, and 1961, the book value of inventories increased by roughly 3½ to 5 percent, while the percentage increase over a comparable period in the current upturn was only a little over 1 percent. This modest advance was probably related to the unusually high ratio of inventories to sales attained in the 1974 downturn and to the conservative approach to inventory spending taken by business in the wake of that experience.⁷ Moreover, during the first five quarters of the three previous upturns considered here, nominal business fixed investment rose by roughly 12.5 to 18 percent, but it was up only by 7 percent in the current episode. This situation may have been caused, in part, by the somewhat lower levels of capacity utilization reached in the 1974 recession than those in previous downturns. In light of these developments, it would seem that part of the reason that the credit market activities of the Treasury did not induce increases in interest rates is that business sector demand for credit has been unusually weak.

Even if business spending had increased in proportions similar to previous upturns, several aspects of the financial activities of nonfinancial corporations would have, by themselves, contributed to declines in short-term interest rates. These factors can be divided into three categories: corporate cash flow, equity market

financing, and the demand for liquidity.⁸ As the partial result of inflation and the tax cuts of 1975, increases in nonfinancial corporate cash flow less inventory profits in the current recovery have been larger than in any of the three previous recoveries being considered. During the first five quarters of recovery, this measure increased by 26 percent in 1954-55, 24½ percent in 1958-59, and 24 percent in 1961-62, but by 45 percent in 1975-76. This recent increase is especially telling when compared with the rather modest growth in capital expenditures (nominal business fixed investment plus changes in the book value of inventories) over the same period. In addition, equity market financing by corporations was substantially larger in the current recovery as compared with previous ones. Over the first four quarters of recovery, net funds raised through stock sales equaled about \$1.0 billion in 1954-55, \$2.1 billion in 1958-59, and \$1.5 billion in 1961-62 but equaled \$9.8 billion in 1975-76. These factors have contributed to unusual weakness in growth of the demand for credit, and especially short-term credit, in the current recovery.

Another financial factor which has been important in reducing short-term nominal yields is the improvement in corporate liquidity since late 1974. Through the 1960's and the early 1970's, there was a secular deterioration in the liquidity position of nonfinancial corporations as measured by certain standard ratios. This phenomenon may have been related to the almost uninterrupted business-cycle upswing during that period. The vulnerability of corporations to sudden changes in credit market conditions was not really demonstrated until the events of the most recent downturn in 1973-75. Toward the end of that recession, nonfinancial corporations suddenly altered their previous behavior in favor of increased liquidity. This situation is evident in movements in the ratio of liquid assets to current liabilities and in the ratio of short-term debt to bonds (see Chart 4). The former ratio declined steadily from a peak in 1959-III of 55 percent to a low of 29 percent in 1974-IV but has increased markedly since then. The latter ratio reached a trough in 1958-III of 36 percent, then increased to 67 percent in 1974-IV, but subsequently has fallen substantially. Hence, the pattern since late 1974 has been one of lengthening the maturity structure of debt and placing greater emphasis on liquid assets.⁹ Both of these factors have served to put downward pressure on short-term interest rates.

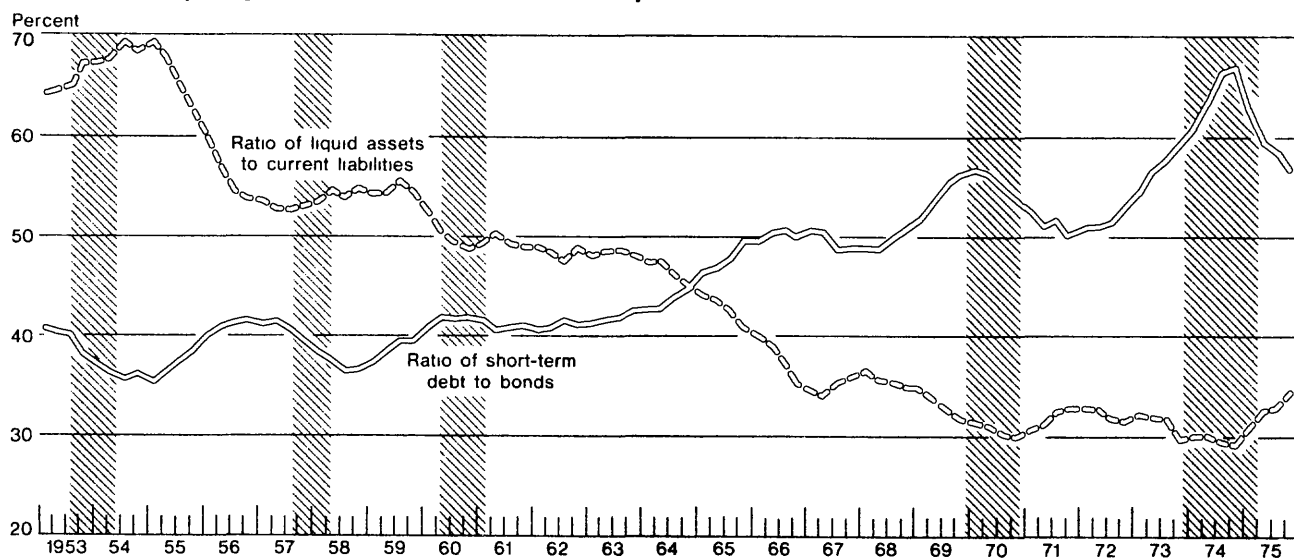
⁶ It should be noted that the important role of the inflation premium in nominal interest rate movements raises a question as to whether rates will exhibit a typical cyclical pattern of any kind in the future. This will, of course, depend heavily upon whether or not inflation rates resume the roughly procyclical pattern which has been less pronounced during the 1970's than in the prior postwar period.

⁷ Inventory investment may also have been sluggish in part because the anticipated rate of inflation declined, making the holding of physical assets less advantageous.

⁸ These points are discussed in detail by Harris [5] (also see [1] in connection with the demand for business loans but apply equally well to recent short-term interest rate movements).

⁹ The additional liquid assets have been mainly in the form of United States Treasury bills.

Chart 4

Selected Liquidity Measures for Nonfinancial Corporations

Note Shaded areas represent periods of recession as defined by the National Bureau of Economic Research except for the latest recession, which is tentatively judged to have ended in March 1975

Source Board of Governors of the Federal Reserve System

The demand for money

The preceding discussion has attempted to explain the unusual decline of short-term interest rates in the current recovery by analyzing the behavior of variables which normally would be expected to explain fluctuations in nominal interest rates. It may be, however, that recently observed interest rate behavior stems in part from a shift in the public's demand for money relative to that for other assets. This possibility has been raised by recent difficulties with econometrically estimated money demand equations. Some equations for M_1 have overestimated the demand for money to a progressively greater extent since the middle of 1974.¹⁰

These results at least raise the possibility of a yet unexplained and undefined change in the relationship between the demand for money and its explanatory variables. Such a change would be important for interest rate movements in the current upturn. If money demand has shifted inward, this would most likely imply simultaneous outward shifts in the supply of short-term credit. If the public demands less money at any given interest rate level than formerly was the case, it will presumably want to hold greater quantities of other liquid assets such as Treasury

bills, commercial paper, and deposits at nonbank thrift institutions. As demand shifts in favor of these other assets, short-term interest rates tend to fall.

Conclusion

This article has traced the unexpected behavior of short-term interest rates in the current economic recovery principally to changes in the inflation premium and to other factors affecting demand and supply in the market for short-term credit. Because it is difficult to evaluate the precise size of these effects and indeed even their relative importance, conclusions necessarily must be tentative. Nevertheless, even if allowance is made for fairly long lags in the response of inflationary expectations to actual inflation rates, a decline in the inflation premium since early 1975 would seem capable of explaining much of the recent decline in rates. This factor alone, however, should leave borrowers and lenders in about the same position as prior to the change in inflationary expectations, and should not affect the quantity of short-term credit. Since nonfinancial commercial paper plus business loans outstanding at all commercial banks declined at an average annual rate of 3.7 percent from March 1975 through September 1976, it seems likely that factors other than the inflation premium have had an effect. Among those proposed above, some have contributed to an increase in the supply of credit and

¹⁰ A recent paper by Enzler, Johnson, and Paulus [3] discusses these difficulties and the authors' numerous attempts to correct for them, none of which were particularly successful

others have produced a decrease in the demand for it. Both effects result in lower interest rates, but only the demand elements cause the quantity of short-term credit to fall as well. This suggests that the factors reducing credit demand—weak growth in business spending relative to available-internal funds, emphasis on equity market financing, and the lengthening of the maturity of the debt of nonfinancial corporations—have played a somewhat greater role than the factors increasing the supply of credit—greater demand for liquid assets by nonfinancial corporations and a possible contraction in the demand for money balances.

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