

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Deregulation, Money, and the Economy

by John B. Carlson

Nothing complicates the life of an economist quite like *institutional change*. When institutions change, patterns of behavior change, and long-standing economic relationships may break down. It often takes time for new behavioral patterns to stabilize and hence for new relationships to emerge. This lag frustrates the economist, who often must rely on historical relationships as a basis for analysis.

A key historical relationship has been the one between money and economic activity. Regulatory change in the financial industry in the 1980s was expected to affect this relationship. Many analysts believed that deregulation would enable depository institutions to pay higher yields on deposits and thereby claim a larger share of the household portfolio. This would in turn affect the relationship between money measures—comprised largely of deposits—and the level of economic activity.

More recently, other changes in the financial industry have made it difficult to interpret the behavior of the money supply. Over the past year, money growth has been unusually weak, raising concerns about the implications for the economy. While part of the weakness in money growth reflects a slowdown in economic activity, some of it can probably be attributed to financial factors.

This *Economic Commentary* examines the behavior of bank deposit yields in the period after deregulation and discusses some implications for deposit

variability and for the interpretation of money growth. Though the relationship between money and the economy appears to have the same general form as it did before deregulation, it has become less reliable for interpreting short-run movements of money.

■ Demand for Deposits and Opportunity Cost

An important determinant of the level of balances held in any given deposit is the forgone interest, or *opportunity cost*, of not holding the balances in nondeposit (that is, higher-yielding) financial instruments. The opportunity cost of a given deposit typically is measured by the difference between the market interest rate on a relatively risk-free, short-term asset (such as the three-month Treasury bill) and the rate paid on that deposit (its *own rate*).

From 1933 until the financial deregulation of the 1980s, virtually all consumer deposit rates were subject to some kind of ceiling or other restriction. Most significantly, checking accounts were prohibited from paying interest. Although banks found ways to alter the yields on deposits by offering gifts and providing free services for deposits, the restrictions were quite effective during periods of high and rising interest rates. At these times, banks could not respond competitively, and deposit flows were largely determined by rates paid on nondeposit instruments.

In the early 1980s, Congress authorized significant changes in U.S. banking regulations, giving banks and thrifts increased competitive powers and eliminating interest-rate restrictions on deposits. Has the relationship between money measures and the level of economic activity changed as a result of this financial deregulation?

The advent of deregulation raised questions about how deposit flows might be affected if banks were allowed to be more competitive in attracting funds. Such flows depend on how rapidly banks adjust their deposit rates in response to changing market rates.

For example, consider the case where deposit rates respond sluggishly to changes in market rates. A permanent increase in market interest rates would initially be associated with an increase in opportunity cost as market rates moved above deposit rates, followed by a decrease as deposit rates caught up. The demand for deposits would initially be reduced as the opportunity cost increased. If the deposit rates ultimately adjusted point-for-point, the opportunity cost of the deposits would be unaffected in the long run, as would the demand for deposits.

If, on the other hand, deposit rates adjust quickly but only partially to a change in interest rates (that is, not point-for-point), then the opportunity

cost of such deposits would move proportionally with movements in interest rates. Opportunity cost would be affected by changing interest rates, but less so than if banks were prohibited from responding to market conditions.

Finally, consider the extreme case in which deposit rates respond instantaneously to changes in market rates, so that a constant spread is maintained between them. In such a case, the opportunity cost of deposits would not change at all, and the demand for deposits would be largely unaffected by changes in market interest rates.

Because eliminating restrictions on deposit rates would enable depository institutions to respond more freely to market conditions, it was thought that deregulation would lead to less variation in opportunity costs, particularly during periods of high and rising interest rates.

■ Deposit Rates That Adjust Somewhat Quickly

The historical pattern of the interest rate paid on six-month time deposits illustrates how deregulation has affected the pricing of most small time deposits. Figure 1 shows that prior to deregulation, interest-rate ceilings were effective during several periods when yields on market instruments exceeded deposit ceiling rates. These times are denoted by the plateaus evident from the mid-1960s to the mid-1970s.

During these periods, banks and thrifts suffered great withdrawals of funds.

Depositors who held sufficient balances were purchasing instruments such as U.S. Treasury bills that were paying higher, unregulated yields. By 1973, money market mutual funds (MMMFs) began to appear. MMMFs acquired money market instruments and thereby allowed small investors to invest indirectly in market-yielding instruments. These funds involved little risk, often required only \$500 or less to open, and were reasonably liquid. MMMFs grew rapidly in the mid- and late 1970s at the expense of regulated deposit instruments.

Since deregulation, however, banks and thrifts have responded by pricing small time deposits competitively, adjusting them relatively rapidly in response to money market conditions (measured as the Treasury bill rate). Given the substitutability between six-month time deposits and Treasury bills, it is not surprising that depositories have adopted such a pricing strategy. Nevertheless, adjustment of the deposit rates has not been point-for-point and the opportunity cost has varied, albeit less than before deregulation. Thus, the demand for time deposits is still affected by changes in the level of interest rates.

■ Rates Paid on Checkable Deposits

Of the post-deregulation experience, the evolution of pricing strategies for checkable deposit rates was probably the most difficult to anticipate. Deregulation of such deposits was incremental. Negotiable orders of withdrawal (NOWs) were first allowed to appear at thrifts in New England in the early 1970s. Prior to the introduction of NOWs, households had no payment instrument that offered an explicit yield.

To circumvent the prohibition of interest payments on demand deposits, banks introduced automatic-transfer savings accounts in 1978, allowing (if only indirectly) interest earnings on checkable balances. In the early 1980s, Congress authorized NOW accounts nationwide for all depositories, although such accounts were subject to interest-rate ceilings roughly equal to those for passbook savings.

After NOW accounts came super-NOWs, which were permitted to pay market rates with initial minimum-balance restrictions of \$10,000. Figure 2 illustrates the rates paid on super-NOWs and NOWs. In 1986, all deposit restrictions were removed, thus eliminating the distinction between NOWs and super-NOWs. This meant that rates paid on personal checkable deposits could move with the market.

Perhaps surprising to some analysts, rates paid on checkable deposits have not been noticeably affected by the rise

in the general level of interest rates since deregulation. Consequently, the opportunity cost of checkable deposits increased substantially in 1988, and while falling somewhat in 1989 and 1990, remained relatively high.

The sluggishness of checkable deposit rates may reflect a number of different factors. First, when a bank changes the interest it pays on checkable deposits, all balances are immediately affected. This means that the average cost of the change to the bank is equal to the marginal cost. For time deposits, on the other hand, changes in the interest rates paid affect only new balances, so the average cost of these funds is less affected by the change than the marginal cost. Consequently, among retail deposits, there is a greater incentive for depositories to be more aggressive when pricing time rather than checkable deposits.

Another factor affecting the pricing strategy of checkable deposits is the implicit yield of the payment service—the ratio of the value of payment services to average balances held. Processing checks is costly. While some depositories charge per item processed, most account holders pay by earning less interest on their balances than they would on a nontransactions instrument. When interest rates change, the value of the payment service is unaffected, while the level of balances fluctuates. Thus, the implicit yield typically changes with interest rates. Because average balances generally fall in response to rising market rates, the implicit yield increases. Conversely, average balances tend to rise as market rates fall, causing the implicit yield to decrease. In principle, one might expect that the value of the services rendered would equal the forgone interest.

■ Rates Paid on MMDAs

In 1983, banks and thrifts were permitted to offer money market deposit accounts (MMDAs). These deposits had limited checking privileges but were not subject to interest-rate ceilings.¹ Their characteristics made them relatively close substitutes for MMMFs; hence, one might expect that MMDA

FIGURE 1 YIELDS ON SMALL TIME DEPOSITS AND 3-MONTH TREASURY BILLS

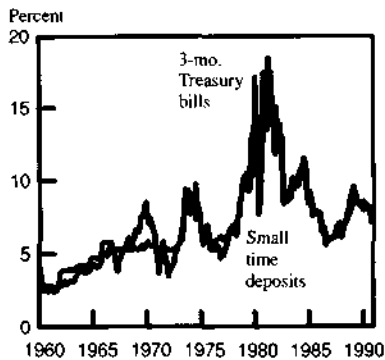


FIGURE 2 YIELDS ON CHECKABLE DEPOSITS AND 3-MONTH TREASURY BILLS

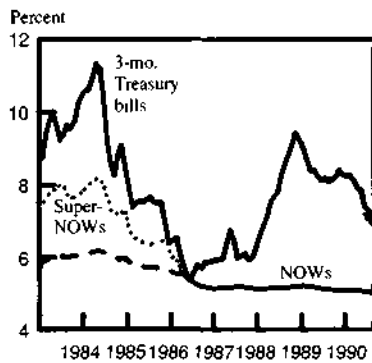


FIGURE 3 YIELDS ON MMDAs AND 3-MONTH TREASURY BILLS

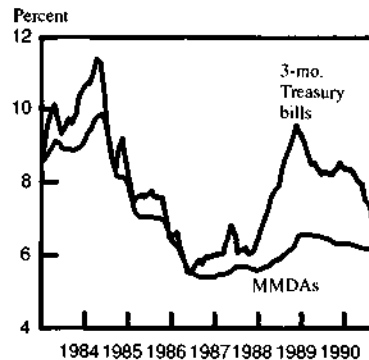
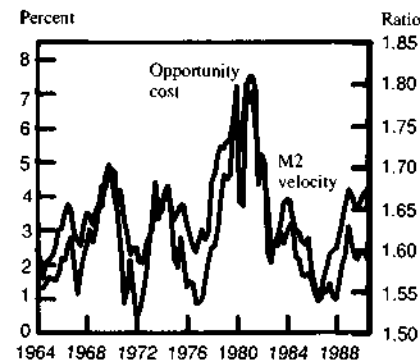


FIGURE 4 M2 VELOCITY AND OPPORTUNITY COST



SOURCES: Board of Governors of the Federal Reserve System, and author's calculations.

yields would be responsive to changes in money market rates.

While MMDA rates do move with other market rates (see figure 3), the response is somewhat less rapid and complete than the response of small time deposit rates. This probably reflects the fact that rate changes apply to all MMDA balances. Thus, the average cost of a change in MMDA rates equals the marginal cost.

The pricing patterns evidenced since MMDAs were introduced suggest that adjustments to market conditions appear to be asymmetric. Depositories appear to respond more completely when market rates are falling than when rates are rising.

■ **The Opportunity Cost of Money**

As noted above, many analysts believed that deregulation would allow depositories to compete more readily for funds

by paying interest rates that were more sensitive to market conditions. Moreover, it was thought that depositories, which were given expanded powers, would have more profit opportunities, allowing them to pay more for deposits. One might expect that the opportunity cost of deposits would be lower on average and would vary less than before deregulation.

M2—currently the most widely used measure of the money supply—largely comprises deposits at banks and thrifts.² Its opportunity cost is commonly measured as the difference between the Treasury bill rate and the share-weighted average of rates paid on deposits included in M2. Although the opportunity cost of M2 has recently been lower and less variable than historical standards, the effect of deregulation does not appear substantial. The opportunity cost of M2

is lower (see figure 4) largely because market interest rates have been lower.

■ **Opportunity Cost and M2 Velocity**

To the extent that deregulation may have lowered the opportunity cost of M2 relative to the general level of interest rates, one might expect that deregulation has affected the relationship between M2 and economic activity. One simple measure of this relationship is the velocity of M2—the ratio of nominal gross national product (GNP) to M2.

Figure 4 shows that, historically, M2 velocity has varied directly with its opportunity cost. When opportunity cost has risen, M2 velocity has also increased. Conversely, when the opportunity cost of M2 has been low, households have tended to hold a greater share of their assets as M2 components, and the ratio of spending to M2 deposits has fallen. This suggests that increased holdings of M2 are sometimes a portfolio choice that is unrelated to current and future levels of spending.

Many analysts expected M2 opportunity cost to be lower after deregulation, and thus expected the average level of M2 velocity to be lower. Indeed, by the early 1980s, M2 velocity had dropped to new lows, even beyond what the historical relationship with its opportunity cost would suggest. Some analysts argued then that the long-term average of M2 velocity had shifted downward. The implication is that the rapid money growth experienced during that period was associated with portfolio decisions of households and was not indicative of a surge in future spending. With hindsight, it is clear that the buildup in M2 balances in the mid-1980s was not associated with a subsequent surge in spending.

Curiously, since early 1988, M2 velocity has increased while its opportunity cost has fallen, bringing M2 velocity back to its long-term average value and suggesting that the long-term average velocity has not shifted downward. What is puzzling is why the relationship between M2 velocity and its opportunity cost has changed. While it is clear how the rela-

tionship between deposit rates and other interest rates might be affected by deregulation, it is not obvious why the link between opportunity cost and velocity would be affected.

Preliminary investigations suggest that the aggregate measure of M2 opportunity cost may not be accurate: It may not capture the "effective" cost of holding deposits. For example, time deposits involve a commitment of funds, possibly for several years. The relevant alternative interest rate for these deposits is more appropriately that of a U.S. Treasury note (security with maturities of one to seven years) rather than a three-month bill (used above). Ideally, one would want to estimate a disaggregated model where each alternative rate would correspond in maturity to that of the deposit rate. Unfortunately, data limitations do not allow the level of disaggregation that would be necessary to measure opportunity cost appropriately.

Another problem is that the deposit rates used in the opportunity cost calculation are based on the single most common rate paid. Some depositories have at times offered rates substantially above their most common rate. Hence, the most common rate is not relevant for calculating the opportunity cost of such deposits.

Finally, some analysts have argued that the breakdown in the relationship between velocity and opportunity cost may be related to the restructuring of the thrift industry. While the economic foundations for this hypothesis are not evident, preliminary analysis suggests that changes in the thrift industries' share of the economy's total deposit base help to explain the unusual behavior of velocity.

■ Conclusion

Recent evidence indicates that the relationships among M2, opportunity cost, and nominal GNP have changed. How these relationships have been affected by deregulation and by other changes in the financial industry is not completely understood, nor is it known whether effects have stabilized so that reliable relationships have emerged. This raises uncertainties about the interpretation of M2 growth in the short run.

If thrift restructuring is a factor in the recent weakness of M2, the effect on velocity is likely to continue, and money growth will be weaker than usual relative to economic activity. Thus, recovery from the recent economic downturn will not necessarily be accompanied by a sharp rise in M2 growth.

Without an economic basis for explaining the recent patterns of M2 velocity,

there is no compelling reason for concluding that the long-term average value of velocity has changed. On the one hand, the opportunity cost of M2 seems low for the prevailing level of interest rates, suggesting that velocity should be lower than its trend. At the same time, velocity appears to be higher than usual relative to the prevailing opportunity cost. The net effect is that these two disturbances largely offset one another right now.

■ Footnotes

1. MMDAs allow three debits per month.
2. M2 comprises currency in the hands of the nonbank public, checkable deposits, money market deposit accounts, small time deposits, money market mutual funds (general purpose), and overnight repurchase agreements. Deposits account for about 80 percent of M2.

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