The Impact of CRR: Evidence and Analysis

The hypothesis that CRR should have had no impact on monetary control and federal funds rate volatility under borrowed reserve targeting is, in fact, supported by evidence drawn from the 1984 implementation experience. In terms of absolute average percent change, there was no significant difference in the weekly variability of either the M1 growth rate or the federal funds rate between pre-CRR and post-CRR sample periods.

On the other hand, there was a significantly reduced impact on reserve market dynamics observed following the 1982 shift in operating procedures, confirming that the switch to a borrowed reserve operating procedure had an important impact on reserve market dynamics. This has been suggested that the failure of CRR to dampen money and interest rate variability might be attributed to the change in operating procedures or to the failure of CRR to alter the reserve management practices of banks. But these two explanations are actually the same. In managing their reserves, banks do not react to the volume of reserves available, nor can they even be fully aware of that availability except through some market signal, the most important of which is provided by the federal funds rate.

To the extent that the federal funds rate is stabilized by the Federal Reserve's operating procedures, the banking system will not be induced to make timely reserve adjustments in response to deviations of money from target. The advantage of a nonborrowed reserve control operating procedure under CRR is that it can allow automatic offsetting movements in interest rates in response to short-run deviations of monetary growth from target, thus providing banks with the necessary signal to make timely adjustments.

However, under the current borrowed reserves operating procedure, the Federal Reserve manipulates the supply of nonborrowed reserves to accommodate unexpected demand changes so that the level of borrowing is maintained. Consequently, automatic funds rate movements in response to money shocks do not materialize, and the reaction of the federal funds rate to monetary deviations is largely dependent on discretionary adjustment of the borrowing target by the FOMC.

Conclusion: The Outlook

CRR is important not because it has improved the Federal Reserve's short-term monetary control, but because it makes possible a wider range of operating procedure choices in the future that may improve that control. Whether the potential of CRR is ever fully realized depends upon whether the Federal Reserve returns to a reserve-oriented operating procedure. A return to nonborrowed reserve operating procedures would include a role for CRR in speeding up the automatic funds rate response to monetary shocks as compared with the experience of 1979-82. Moreover, CRR would be an important element of a total reserve operating procedure. As long as policy is conducted as it is now, however, the advantages of CRR will be unrealized.

Michael R. Pakko is a research assistant with the Federal Reserve Bank of Cleveland. The views expressed herein are those of the author and do not necessarily reflect the views of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

Federal Reserve Bank of Cleveland

CRR and Monetary Control

by Michael R. Pakko

All depository institutions are required by law to hold reserves in proportion to certain deposit liabilities, to be kept either as cash in their vaults, or deposit with Federal Reserve Banks. Because these required reserves comprise the bulk of all reserves held by the banking system, the demand for reserves in the federal funds market is closely linked to the volume of deposits.

The reserve needs of an individual bank rise or fall daily, reflecting deposit and loan activity, and as the institution manages its reserve position by buying or selling reserves in the federal funds market. The Federal Reserve System has effective control of the total supply of reserves through its open-market operations and can manipulate reserve market conditions to affect bank deposits and portfolio adjustment decisions. Therefore, reserve requirements play an important role in the money supply process. They influence the reserve demand that interacts with the Federal Reserve's operating procedures to affect the course of deposit expansion and money stock growth.

In February 1984, the Federal Reserve implemented a regulatory change affecting the timing of reserve requirements. Since 1968, the average level of reserves to be held during a one-week 'maintenance period' had been based on a bank's average level of deposits during a one-week 'computation period' two weeks earlier. This arrangement, known as lagged reserve requirements (LRR), was replaced in February 1984 by a form of contemporaneous reserve requirements (CRR), in which both the computation and maintenance periods were lengthened to two weeks, and the lag between them reduced to two days (see figure 1)."
Early Criticism of LRR: Reserve Market Instability

When the Federal Reserve adopted LRR in 1968, the intent was to provide banks with better information about their required reserves. This, in turn, was expected to reduce end of week reserve adjustment pressures and related federal funds rate variability. However, subsequent studies found that end-of-week adjustment pressures increased after the implementation of LRR in 1968. In analyzing this effect, economists generally argued that the increased intra-weekly instability resulted from the untriggering of required reserves from deposit flows. Under CRR, a change in a bank's deposit liabilities resulted in automatic and equal changes in its actual reserve assets, and a partial offsetting change in required reserves. But under LRR, the change in deposits and actual reserves did not give rise to an offsetting change in required reserves until two weeks later. Thus, the reserve adjustment necessary in the current week became larger, and reserve adjustment became necessary two weeks earlier.

This need for greater reserve adjustment, combined with the tendency of banks to delay adjustment until near the end of the reserve accounting period, caused greater fluctuations in demand than under CRR. These fluctuations required either more end-of-week federal funds rate variability or more active manipulation of reserve supplies by the Federal Reserve to smooth interest rate movements toward the end of a week. In fact, after the implementation of LRR in 1968, increases in end-of-week variability were found to exist for both the federal funds rate and for the volume of Federal Reserve defensive open-market operations.

The October 1979 Operating Procedures: New Considerations

By the end of the 1970s, it was widely recognized that the federal funds rate operating procedure was not well-suited to short-term monetary control. Nontransitory deviations of money from its target would result in the Federal Reserve's supplying reserves to stabilize the rate, even though it might be with a quicker response. Thus, the Federal Reserve's Reserve Policy responses. By eliminating the deposit window as a temporary source of reserve supplies, they continued that the change in the Federal Reserve's reaction to monetary growth deviations, the existence of LRR delayed the funds rate adjustment, causing deviations of money from target to be accommodated until reserve demand caught up. To the extent that the disturbance was nontransitory, the delay allowed it to accumulate over time so that the federal funds rate response necessary to bring the quantity of money back to target took longer to occur than it might have been with a quicker response. Therefore, it was argued that the variability of money supply growth, and possibly the volatility of interest rates as well, would be lower with CRR than with LRR under a nonborrowed reserve operating procedure.

Other critics of LRR suggested that a total reserve operating procedure might be more effective for monetary control than the nonborrowed reserve operating approach. That the adoption of CRR was a necessary prerequisite to the implementation of the new operating approach.

The Adopion of CRR and the 1982 Operating Procedures

In 1982, the Federal Reserve's Board of Governors voted to implement a form of CRR, noting the monetary control advantages that it offered. It is expected that contemporaneous reserve requirements will improve the implementation of monetary policy to a degree by strengthening the linkage between reserves held by depository institutions and the money supply. (Federal Reserve Press Release, October 5, 1982, p. 1). While noting that the relationship between money and reserves would still be subject to a degree of uncertainty, the Board's statement was an encouraging indication of reserve-oriented-operating procedures were to be improved by the change.

But in the same month that the Board announced the intent to move to CRR, the Federal Open Market Committee (FOMC) announced that it would no longer change target federal funds rate variability. However, the change in the Federal Reserve's operating procedures were not implemented under LRR without causing excessively volatile conditions in reserve and money markets. Under LRR, the immediate response of the nonborrowed reserve path was absent, because required reserves were predetermined in any given week. If the discount window was eliminated and banks needed reserves to bid them away from banks with excess reserves, any change in excess demand or excess supply in the reserve market would generate wide swings in the federal funds rate. The more contemporaneous reserve requirements are, the more smoothly federal funds rate adjustments are likely to be under a total reserve operating procedure.

For a time, so that monetary policy became apparent that all of the aggregates would behave uncharacteristically for a time, so that monetary policy would have to be conducted in a more judgmental manner than it had since 1979. Therefore, the FOMC revised the 1979 operating procedures to allow a "flexible" nonborrowed reserve path. This strategy essentially amounted to setting an objective for borrowed reserves in order to achieve a "degree of reserve restraint" rather than trying to manage toward specific behavior of nonborrowed or total reserves.

Under CRR, the need for a target for borrowed reserves, the FOMC is following a policy that tends to smooth interest rate movements. Because of administrative regulation of discount-window borrowing, and many banks' general reluctance to borrow from the Federal Reserve, there is a connection between the volume of borrowing and the spread between the federal funds and discount rates. A larger spread between those rates is required in order to encourage banks to borrow at the discount window rather than pay the higher price in the federal funds market. Since banks' behavior is not exactly consistent with targeted money aggregates, borrowing at the discount window is expected to reduce end-of-week supply of reserves to maintain a growth rate.

Thus, the new procedures provided a mechanism by which money growth excesses were automatically accommodated by varied operations in the appropriate direction.

Although the new procedures did not implement under LRR without causing excessively volatile conditions in reserve and money markets, and provided no mechanism by which money growth excesses were automatically accommodated by varied operations, it was expected that the nonborrowed reserve operating procedure would tend to affect deviations in interest rates and to bring required reserve demand in line with reserve supply. But a total reserve operating procedure could not be implemented under LRR without causing excessively volatile conditions in reserve and money markets. Financial deregulation had resulted in the broadening of the types of deposits in which money growth excesses were accommodated until reserve demand were accommodated in these accounts, and as the public began to take advantage of these accounts, the monetary aggregates (M1 in particular) became subject to large deviations from their typical growth patterns.

Reducing emphasis on M1 implied that the potential impact of CRR was of less value. The CRR plan adopted by the Board was particularly suited to improve control over M1 rather than over the broader aggregates, because only reserves on demand deposits and other checkable deposits were moved to a contemporaneous basis. Other reserve requirements were left to be met on a lagged basis.

More importantly, the impact of CRR was unambiguously a change in operating procedures in late 1982. Shortly after weight given to M1 was reduced, it became apparent that all of the aggregates would behave uncharacteristically for a time, so that monetary policy would have to be conducted in a more judgmental manner than it had since 1979.