Board of Governors of the Federal Reserve System

Speech

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The Federal Reserve's Tools for Responding to Financial Disruptions

Since the onset of financial market strains late last summer, the Federal Reserve has been acting in a decisive, timely, and flexible manner in fostering the objectives of price stability and maximum employment. In particular, the Federal Reserve's actions have been aimed at supporting market liquidity, mitigating the downside risks to economic activity, and promoting moderate growth over time.

In my remarks here, I would like to explain how the Federal Reserve has used four different tools to accomplish these objectives.[1] I will first examine three tools for supporting market liquidity--namely, open market operations, the discount window, and the newly developed Term Auction Facility. Then I will discuss some important principles for adjusting the target federal funds rate, which is the primary tool for addressing the macroeconomic implications of a financial market disruption. As usual, my remarks reflect only my own views and are not intended to reflect those of the Federal Open Market Committee (FOMC) or of anyone else associated with the Federal Reserve System.[2]

Supporting Market Liquidity

As I pointed out in a speech last October, one of the fundamental reasons that the Federal Reserve was established in 1913 was to ensure the provision of ample liquidity during financial market disruptions (Mishkin, 2007a). In fact, my own academic research has examined the recurring financial crises that occurred prior to the founding of the Fed (Mishkin, 1991). These crises exhibited a consistent pattern of very sharp upward spikes in interest rates, reflecting a surge in demand for liquidity without any corresponding change in supply, and these interest rate fluctuations were associated with significant adverse consequences on the broader economy.

In contrast, during more recent episodes of financial market turmoil, as in October 1987 and the fall of 1998, the Federal Reserve has contributed to the stability of short-term funding markets by boosting the supply of liquidity in line with changes in demand. In each case, the Federal Reserve's actions were successful in preventing sharp upward spikes in short-term interest rates and in insulating the macroeconomy from these financial market developments. Moreover, those episodes have highlighted the extent to which the provision of liquidity in an environment of heightened uncertainty can play an important role in allowing financial institutions to make more-accurate judgments about the solvency and creditworthiness of prospective borrowers (Mishkin, 2007a).

In that context, I would now like to describe the three tools that the Federal Reserve has used over the past six months in providing liquidity to the financial system.

Tool #1: Open market operations

Open market operations are the most powerful and often-used tool for keeping the federal funds rate close to the target rate set by the FOMC.[3] In principle, the Federal Reserve could influence the federal funds rate by purchasing or selling any type of asset, but in practice, most assets are not traded readily enough to serve this purpose. For open market operations to work

effectively, the Federal Reserve must be able to engage in these transactions quickly, at its own convenience, in whatever volume may be needed to keep the federal funds rate near the target rate. Moreover, it is appropriate for such operations to be conducted using securities that are traded in a broad and highly active market, thereby ensuring that these transactions do not generate distortions or disruptions in that market. Thus, with the broadest and most active of all U.S. financial markets, Treasury securities are ideal for conducting open market operations.

In early August 2007, depository institutions faced the possibility that emerging pressures in financial markets could have significant effects on their balance sheets, and this uncertainty generated a considerable increase in demand for short-term funds. On August 10, the Federal Reserve underscored its commitment to providing ample liquidity to facilitate the orderly functioning of financial markets, stating: "The Federal Reserve will provide reserves as necessary through open market operations to promote trading in the federal funds market at rates close to the Federal Open Market Committee's target rate" (Board of Governors, 2007a).

As is clear in chart 1, the Federal Reserve was generally successful in keeping the federal funds rate from spiking above the target rate; indeed, the effective federal funds rate was somewhat below the target rate at times. Nonetheless, the volatility of the federal funds rate in recent months reflects the extent to which daily changes in demand for reserve balances have been unusually difficult to predict.[4]

Tool #2: Overnight lending through the discount window

The Federal Reserve's second tool for supplying liquidity during a financial disruption is to provide fully collateralized overnight loans directly to commercial banks and other depository institutions, which I will refer to collectively as banks. The Federal Reserve extends this credit through the *discount window*--that is, the lending facility at each of the regional Federal Reserve Banks. (The phrase "discount window" harks back to the good old days when loans were provided by a human being sitting behind a bank window.)

The primary credit facility is the main program under which the Federal Reserve extends loans to depository institutions.[5] Under this program, each loan is extended for very short terms (usually overnight) to a depository institution in sound financial condition, and the interest rate on such loans is referred to as the "discount rate." Since 2003, the discount rate has been set above the usual level of short-term market interest rates, and during normal times this rate has been maintained at 100 basis points (1 percentage point) above the federal funds rate target.

As a tool for providing liquidity to the financial system, the discount window is distinct from open market operations in two important respects. First, open market operations influence the supply of short-term funds to the market as a whole, whereas loans through the discount window are made directly to individual institutions with particular needs for liquidity. Second, open market operations are conducted using U.S. Treasury and agency securities, whereas loans through the discount window can be made against a much wider range of collateral.

In its August 10 announcement, the Federal Reserve reaffirmed that it stood ready to provide liquidity not only through open market operations but also via discount lending by stating: "As always, the discount window is available as a source of funding" (Board of Governors, 2007a). By August 17, the Federal Reserve had determined that the significant strains in short-term money markets warranted further accommodation in the provision of liquidity through the discount window; thus, the spread between the discount rate and the target federal funds rate was reduced to 50 basis points, rather than the customary 100 basis points, and the lower spread has been maintained since then (Board of Governors, 2007b).

In addition, the Federal Reserve adjusted its practices to facilitate the provision of discount window financing at terms of up to thirty days, renewable at the request of the borrower. These changes were aimed at assuring banks of the availability of a backstop source of liquidity. Banks subsequently borrowed only moderate amounts at the discount window but some institutions placed additional amounts of collateral with the Federal Reserve Banks, suggesting that these institutions

perceived the discount window as a potentially significant source of liquidity under some contingencies.

Nonetheless, the discount window has two notable limitations as a tool for easing strains in money markets. First, a bank may be reluctant to borrow from the discount window, worrying that such borrowing might come to light and lead market participants and other institutions to draw adverse inferences about the bank's financial condition. This so-called stigma problem may largely account for the extent to which discount window borrowing has generally remained at moderate levels in recent months.

Second, lending through the discount window can pose challenges for keeping the federal funds rate close to its target, especially during periods of financial market disruption. The Federal Reserve's open market desk--that is, the staff at the Federal Reserve Bank of New York who actually conduct open market operations on a daily basis--must take into account the fact that loans made through the discount window add reserves to the banking system, and thus, all else equal, could tend to push the federal funds rate below the target set by the FOMC. In ordinary circumstances, these borrowings are relatively small and predictable, and this influence can be offset using open market operations to drain a corresponding quantity of reserves from the system. But in times of financial market strains, these borrowings can become larger and more difficult to predict.

Tool #3: The new Term Auction Facility

Despite the Federal Reserve's provision of liquidity through open market operations and the discount window, strains in term funding markets persisted and became particularly elevated in early December in response to year-end pressures. The magnitude of these strains can be gauged using the spread between Libor--that is, the London interbank offered rate--and the overnight indexed swap (OIS) rate at the same maturity, because the OIS rate reflects the average overnight interbank rate expected over that maturity but is not subject to pressures associated with credit and liquidity risks to the same degree as Libor.

As shown in chart 2, the one-month and three-month Libor-OIS spreads were at low levels through the month of July but increased markedly in August and early September at the onset of the financial market turmoil.[6] The one-month spread declined during the fall but rose sharply again toward the end of the year. In association with these wider spreads, liquidity in term bank funding markets deteriorated substantially.

To address these pressures, the Federal Reserve introduced a new policy tool called the Term Auction Facility (TAF).[7] With this tool, the Federal Reserve auctions a pre-announced quantity of credit to eligible borrowers for a term substantially longer than overnight; thus far, each auction has involved a term of one month. As with primary credit, a depository institution is eligible to participate in a TAF auction if the bank is judged to be in generally sound financial condition, and a wide variety of collateral can be used to secure the loan. The minimum bid rate for each auction is established at the OIS rate corresponding to the maturity of the credit being auctioned.

The introduction of the TAF was announced on December 12 in conjunction with related announcements by the Bank of Canada, the Bank of England, the European Central Bank, and the Swiss National Bank (Board of Governors, 2007c).[8] The first two auctions were held on December 17 and 20, for amounts of $20 billion each, and were very well subscribed: A large number of banks participated in each auction, and the total value of bids was about three times as large as the amount of credit auctioned. The resulting interest rate in both cases was about 50 basis points above the minimum bid rate but well below the one-month Libor rate prevailing in financial markets at that time. In recent weeks, the Federal Reserve has conducted three more auctions (most recently, last Monday) for amounts of $30 billion each. The spread over the minimum bid rate was about 7 basis points for the January 14 auction, 2 basis points for the January 28 auction, and 15 basis points for the February 11 auction; these spreads were much lower than in December, apparently reflecting some subsequent easing in the pressures on banks' access to term funding.

The TAF appears to have been quite successful in overcoming the two problems with conventional discount window lending. Thus far, the TAF appears to have been largely free of the stigma associated with borrowing at the discount window, as indicated by the large number of bidders and the total value of bids submitted.[9] Furthermore, because the Federal Reserve was able to predetermine the amounts to be auctioned, the open market desk has faced minimal uncertainty about the effects of the operation on bank reserves; hence, the TAF has not hampered the Federal Reserve's ability to keep the effective federal funds rate close to its target.

Isolating the impact of the TAF on financial markets is not easy, particularly given other recent market developments and the evolution of expectations regarding the federal funds rate. Nonetheless, the interest rates in term markets provide some evidence that the TAF may have had significant beneficial effects on financial markets. As can be seen in chart 2, term funding rates have dropped substantially relative to OIS rates: The one-month spread exceeded 100 basis points in early December but has dropped below 30 basis points in recent weeks--though still above the low level that prevailed before the onset of the financial disruption last August.

Monetary Policy Response to Macroeconomic Developments

Although the TAF and other liquidity-related actions appear to have had positive effects, such policy responses cannot fully address fundamental concerns about credit quality and valuation or relax the balance sheet pressures on financial institutions. Thus, these measures cannot eliminate the effects of the financial market turmoil that have the potential to lower aggregate spending and cause a contraction in economic activity. Moreover, as I have previously emphasized, *macroeconomic risk* refers to the elevated probability that a financial disruption could lead to an adverse feedback loop in which economic activity declines, leading to even greater uncertainty about asset values that worsens the financial disruption and generates a further deterioration in macroeconomic activity (Mishkin, 2007c, 2008). Monetary policy--that is, the management of the target federal funds rate--is the Federal Reserve's best tool for influencing the course of economic activity and mitigating the degree of macroeconomic risk.

Tool #4: Changing the federal funds rate target to respond to macroeconomic risk

In the speech on risk management that I gave last month, I outlined a systematic approach for coping with financial market disruptions (Mishkin, 2008). In this approach, policy needs to respond aggressively when a large financial shock becomes evident, and the degree of policy inertia in such circumstances may well be markedly lower than in more-routine circumstances. By cutting the target federal funds rate to offset the negative effects of financial turmoil on aggregate economic activity, monetary policy can reduce the likelihood that a financial disruption might set off an adverse feedback loop. The resulting reduction in uncertainty can then make it easier for the markets to collect the information that facilitates price discovery, thereby hastening the return of normal market functioning.

To achieve this result most effectively, monetary policy needs to be timely, decisive, and flexible. First, *timely action* is crucial when an episode of financial instability becomes sufficiently severe to threaten the core macroeconomic objectives of the central bank. In such circumstances, waiting too long to ease monetary policy by lowering the federal funds rate could adversely affect the confidence of households and firms and thereby contribute to further deterioration of the macroeconomy; waiting too long might also increase the overall amount of easing that would eventually be needed.

Second, policymakers should be prepared to take *decisive action* in response to financial disruptions. In such circumstances, although the most likely outcome--referred to as the modal forecast--for the economy may be fairly benign, there may be a significant risk of more-severe adverse outcomes. In such circumstances, the central bank may prefer to take out insurance by easing the stance of policy further than if the distribution of probable outcomes were perceived as fairly symmetric and more tightly clustered around the modal forecast.

Third, *policy flexibility* is crucial throughout the evolution of a financial market disruption. During the onset of the episode, this flexibility may be evident from the decisive easing of policy that is

intended to forestall the contractionary effects of the disruption and provide insurance against the downside risks to the macroeconomy. However, it is important to recognize that financial markets can also turn around quickly, thereby reducing the drag on the economy as well as the degree of macroeconomic risk. Therefore, the central bank needs to monitor credit spreads and other incoming data for signs of financial market recovery and should be prepared to take back the insurance once the recovery becomes clearly established. Thus, at each stage of the episode, the appropriate monetary policy may exhibit much less gradualism than would be typical in other circumstances.

A central bank must always be concerned with inflation as well as growth. As I have emphasized in an earlier speech about inflation dynamics, the behavior of inflation is significantly influenced by the public's expectations about where inflation is likely to head in the long run (Mishkin, 2007a). Therefore, preemptive actions of the sort I have described here would be counterproductive if these actions caused an increase in inflation expectations and in the underlying rate of inflation; in other words, the flexibility to act preemptively against a financial disruption presumes that inflation expectations are firmly anchored and unlikely to rise during a period of temporary monetary easing. Indeed, as I have argued elsewhere, a commitment to a strong nominal anchor is crucial for both aspects of the dual mandate, that is, for achieving maximum employment as well as for keeping inflation low and stable (Mishkin, 2007b). Policymakers therefore need to closely monitor information about underlying inflation and longer-run inflation expectations, and the central bank must be ready to hold steady or even raise the policy rate if the evidence clearly indicates a significant rise in inflation expectations.

In my view, the Federal Reserve's recent monetary policy actions--reducing the target federal funds rate by 1 percentage point last fall and by a further 1-1/4 percentage points in January--have been consistent with these principles for coping with macroeconomic risk.

First, we have been proceeding in a *timely* manner in countering developments that could threaten economic or financial stability. In particular, the stance of monetary policy has been eased promptly in response to the rapid deterioration in financial market conditions, which had worsened the economic outlook and contributed to the emergence of pronounced downside risks to economic growth and employment.

Second, I believe that the Federal Reserve has been acting and will continue to act *decisively*, in the sense that our lowering of the federal funds rate target has reflected the evolution of the balance of risks to the macroeconomy. The disruption in financial markets poses a substantial downside risk to the outlook for economic growth, and adverse economic or financial news has the potential to cause further strains. In that light, the Federal Reserve's policy strategy is aimed at providing adequate insurance to help mitigate the risk of more-severe macroeconomic outcomes.

Third, because we recognize that financial and economic conditions can change quickly, the Federal Reserve is prepared to act *flexibly* in adjusting the federal funds rate in response to incoming information. Because longer-run inflation expectations appear to have remained reasonably well anchored, in my view, the easing of the stance of policy in response to deteriorating financial conditions seems unlikely to have an adverse impact on the outlook for inflation. Although I expect that inflation expectations will remain solidly anchored, we cannot be complacent that this will always continue to be the case. Therefore, careful monitoring of the incoming data on inflation and inflation expectations will continue to be necessary, especially given the potential risks to price stability that are associated with the rapid increase in energy prices and the depreciation of the dollar. Similarly, while the current strains in financial markets are likely to persist for some time, there have been instances when financial markets have turned around quickly, and we must be prepared for such a possibility in this instance.

Conclusion

In recent months, the Federal Reserve has faced a more difficult policy environment as a result of disruptions to the financial markets. We have attempted to address the resulting challenges by using four tools. First, we have conducted open market operations to increase the supply of reserves and

keep demands for increased liquidity from causing sharp increases in interest rates. Second, we have provided liquidity through the discount window by lowering the spread between the discount rate and the federal funds rate. Third, we have developed a new source of liquidity--the Term Auction Facility--to provide a fixed amount of funds for a one-month term at a competitively determined interest rate. Finally, we have lowered the target federal funds rate in a timely, decisive, and flexible manner to help mitigate macroeconomic risk. Although financial disruptions present one of the most difficult challenges that central banks can face, I believe that these measures have been appropriate for achieving our macroeconomic objectives of promoting price stability and maximum sustainable employment.

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Footnotes

1. Further details about each of the Federal Reserve's policy tools may be found in chapter 3 of *The Federal Reserve System: Purposes & Functions* (Board of Governors, 2005). Return to text

2. I appreciate the comments and assistance of Andrew Levin and David Lopez-Salido. Return to text

3. Specifically, depository institutions hold balances at Federal Reserve Banks, and the federal funds rate is the overnight interest rate at which these balances are traded. See Mishkin (2007b) for further discussion of open market operations and other policy tools for keeping the federal funds rate close to its target. Return to text

4. The daily effective federal funds rate is a volume-weighted average of rates on trades arranged by major brokers. Return to text

5. Depository institutions that are not eligible for primary credit may apply for secondary credit to meet short-term liquidity needs or to resolve severe financial difficulties. Seasonal credit is extended to relatively small depository institutions that have recurring intra-year fluctuations in funding needs, such as banks in agricultural or seasonal resort communities. Return to text

6. Similar patterns are evident in the spread between the term federal funds rate and the OIS rate at these maturities. Return to text

7. The TAF was introduced as a temporary measure, but the Federal Reserve has left open the possibility that this facility could become permanent (Bernanke, 2008). Return to text

8. As part of a coordinated operation, the Bank of England and the Bank of Canada each conducted similar operations in their own currencies, while the European Central Bank and the Swiss National Bank extended credit in U.S. dollars amounting to $20 billion and $4 billion, respectively. These dollars were obtained from the Federal Reserve through currency swaps, that is, two-way lines of credit in which each central bank agrees to lend the other up to a fixed amount in its own currency. Return to text

9. Given the format of these auctions, no bank could be sure that it would win funds; moreover, the three-day lag between bidding and receipt of funds implied that any particular bank's submission of a bid would not be interpreted as a signal of immediate distress. Return to text

Chart 1: Federal funds rate

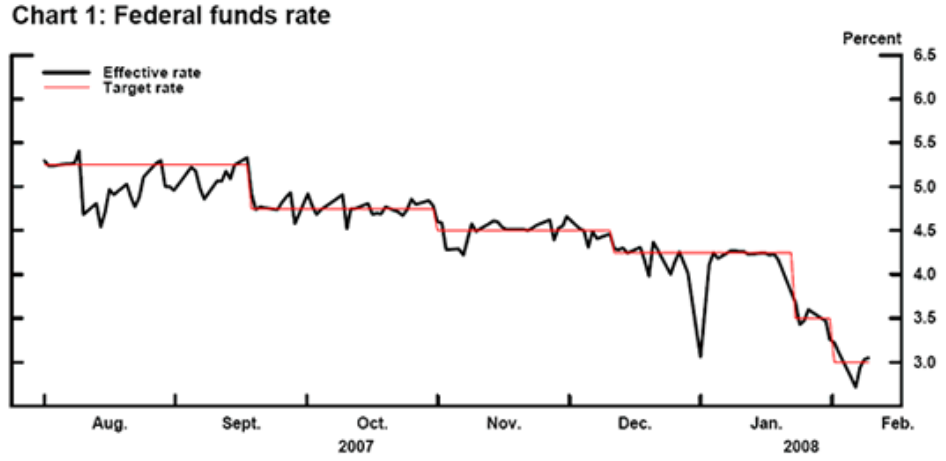
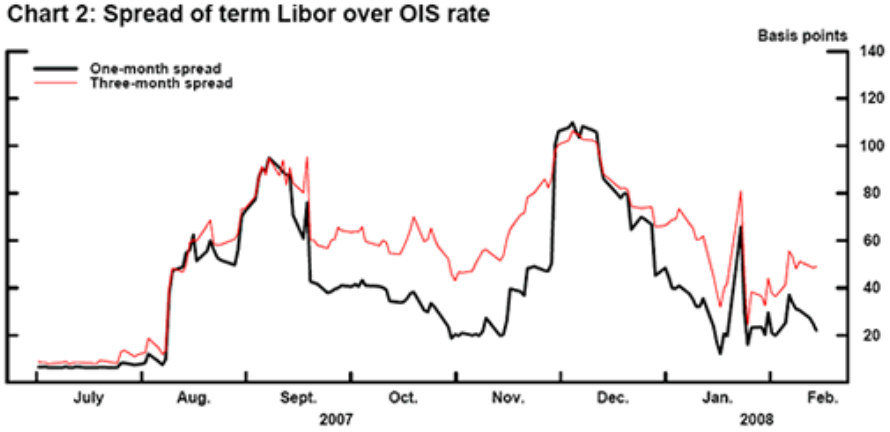


Chart 2: Spread of term Libor over OIS rate



Note: Libor = London interbank offered rate; OIS rate = overnight indexed swap rate.

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