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Financial Turmoil: Federal Reserve Policy Responses

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Marc Labonte
Specialist in Macroeconomic Policy
Government and Finance Division

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Summary

The Federal Reserve (Fed) has been intimately involved in the current financial turmoil since it began in August 2007. It has sharply increased reserves to the banking system through open market operations and lowered the federal funds rate and discount rate on several occasions. As the turmoil has progressed without signs of subsiding, the Fed has introduced new policy tools to try to restore calm.

In December 2007, it began to auction off reserves to member banks through the newly created Term Auction Facility (TAF). Equivalent in economic effect to the discount window, the TAF allows the Fed to control how much direct lending was undertaken and removes the stigma attached to the discount window that may have made member banks reluctant to access it. In March 2008, it created the Term Securities Lending Facility (TSLF) to expand its Treasury securities lending program. Under the new program, it allowed the primary dealers (financial institutions who are counterparties to the Fed in its open market operations) to temporarily swap their less liquid assets for Treasury securities. Later, it created the Primary Dealer Credit Facility (PDCF), which allowed it to temporarily lend to primary dealers directly. Unlike the TAF or TSLF, the PDCF is a major departure from past policy, for it is the first time that financial institutions that are not members of the Federal Reserve System (i.e., depository institutions) have been allowed to borrow directly from the Fed on a routine basis.

On March 16, 2008, JP Morgan Chase agreed to acquire Bear Stearns. As part of the agreement, the Fed announced a $29 billion loan to JP Morgan Chase collateralized by $30 billion of Bear Stearns assets. Although called a loan, the Fed plans to liquidate the assets in order to pay off the principal and interest. In the event that the proceeds from the asset sales exceed $30 billion and the outstanding interest, the Fed will keep the profits. In the event that the loan principal and interest exceed the funds raised by the liquidation, the first $1 billion of losses would be borne by JP Morgan Chase, and any subsequent losses would be borne by the Fed. The statutory authority for the loan was based on a clause of the Federal Reserve Act to be used in "unusual or exigent circumstances" that had not been invoked in more than 70 years.

Loans through all programs are fully collateralized. Any losses borne by the Fed from the JP Morgan Chase loan or any of the new programs would reduce the profits it remits to the Treasury. It is highly unlikely that losses would exceed its profits and capital, and require revenues to be transferred from the Treasury.

The primary policy issues raised by the Fed's response to financial turmoil are the issues of systemic risk and moral hazard. Moral hazard refers to the phenomenon where actors take on more risk because they are protected. The Fed's involvement in JP Morgan Chase's acquisition of Bear Stearns stemmed from the fear of systemic risk (that the financial system as a whole would cease to function) if Bear Stearns was allowed to fail. In other words, Bear Stearns was arguably seen as "too big (or too interconnected) to fail." The Fed's regulatory structure is intended to mitigate the moral hazard that stems from access to government protections. Yet Bear Stearns was not under the Fed's regulatory structure because it was not a member bank.

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Introduction

On August 9, 2007, liquidity abruptly dried up for many firms and securities markets. Suddenly some firms were able to borrow and investors were able to sell certain securities only at prohibitive rates and prices, if at all. The "liquidity crunch" was most extreme for firms and securities with links to subprime mortgages, but it also spread rapidly into seemingly unrelated areas.[1] Some have observed that the most unusual aspect of the current turmoil is its persistence over several months.

The Federal Reserve (Fed) was drawn into the liquidity crunch from the start. On August 9, it injected extremely large reserves into the banking system (compared to normal) to prevent the federal funds rate from exceeding its target. As financial turmoil has persisted in the intervening months, the Fed has aggressively reduced the federal funds rate and the discount rate in an attempt to calm the waters. When this proved not to be enough, the Fed developed several new lending programs, some of which can be seen as adaptations of traditional tools and others which can be seen as more fundamental departures from the status quo. Most controversially, the Fed was involved in the "bailout" of the investment bank Bear Stearns, which was not a depository institution, meaning it was not a member of the Federal Reserve system and, therefore, not part of the regulatory regime that accompanies membership.[2] Lending to non-members requires emergency statutory authority that has not been used in more than 70 years.[3]

One of the original purposes of the Federal Reserve Act, enacted in 1913, was to prevent recurrence of financial panics. To that end, the Fed has been given broad authority over monetary policy and the payments system, including the issuance of federal reserve notes as the national currency. As with any statutory delegations of authority, the Fed's actions are subject to Congressional oversight. Although the Fed has broad authority to independently execute monetary policy on a day-to-day basis, questions have arisen as to whether the unusual events of recent months raise

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[1] For more information see CRS Report RL34182, *Financial Crisis? The Liquidity Crunch of August 2007*, by Darryl Getter et al.

[2] Many of the loans and new programs described below are operated through the Federal Reserve Bank of New York, under the authorization of the Board of Governors. This report uses the term Federal Reserve, and does not distinguish between actions taken by the Board and actions taken by the Federal Reserve Bank of New York. The Federal Reserve System is composed of the Board of Governors and twelve regional banks.

[3] Federal Reserve Bank of New York, "The Discount Window," *Fedpoint*, August 2007.

fundamental issues about the Fed's role, and what role Congress should play in assessing those issues. This report reviews the Fed's actions since August 2007 and analyzes the policy issues raised by those actions.

Traditional Tools

The Fed, the nation's central bank, was established in 1913 by the Federal Reserve Act (38 Stat. 251). Today, its primary duty is the execution of monetary policy through open market operations to fulfill its mandate to promote stable economic growth and low and stable price inflation. Besides the conduct of monetary policy, the Federal Reserve has a number of other duties: it regulates financial institutions, issues paper currency, clears checks, collects economic data, and carries out economic research. Prominent in the current debate is one particular responsibility: to act as a lender of last resort to the financial system when capital cannot be raised in private markets in order to prevent financial panics. The next two sections explain the Fed's traditional tools, open market operations and discount window lending, and summarizes its recent use of those tools.

Open Market Operations and the Federal Funds Rate

Open market operations are carried out through the purchase and sale of U.S. Treasury securities in the secondary market in order to alter the reserves of the banking system.[4] By altering bank reserves, the Fed can influence short-term interest rates, and hence overall credit conditions. The Fed's target for open market operations is the federal funds rate, the rate at which banks lend to one another on an overnight basis. The federal funds rate is market determined, meaning the rate fluctuates as supply and demand for bank reserves change. The Fed announces a target for the federal funds rate and pushes the market rate toward the target by altering the supply of reserves in the market through the purchase and sale of Treasury securities.[5] More reserves increase the liquidity in the banking system and, in theory, should make banks more willing to lend, spreading greater liquidity throughout the financial system.

When the Fed wants to stimulate economic activity, it lowers the federal funds target, which is referred to as expansionary policy. Lower interest rates stimulate economic activity by stimulating interest-sensitive spending, which includes physical capital investment (e.g., plant and equipment) by firms, residential investment (housing construction), and consumer durable spending (e.g, automobiles and appliances) by households. Lower rates would also be expected to lead to a lower

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[4] Some of the Fed's purchase and sale of Treasury securities are made outright, but most are made through repurchase agreements, which can be thought of as short-term transactions that are automatically reversed at the end of a predetermined period, typically lasting a few days. Since the Fed must constantly adjust the amount of bank reserves available in order to keep the federal funds rate near its target, repurchase agreements give the Fed more flexibility to make these adjustments.

[5] For more information, see CRS Report RL30354, *Monetary Policy and the Federal Reserve: Current Policy and Conditions*, by Marc Labonte and Gail Makinen.

value of the dollar, all else equal. A lower dollar would stimulate exports and the output of U.S. import-competing firms. To reduce spending in the economy (called contractionary policy), the Fed raises interest rates, and the process works in reverse.

Central banks across the world, including Europe, Japan, and the United States acted quickly to restore liquidity to the financial system following August 9. On a normal day, the Fed might need to buy or sell a couple billion dollars of Treasury securities in order to keep the federal funds rate within a few one-hundredths of a percent of its target. Suddenly on August 9, the federal funds rate approached 6%, and the Fed was forced to purchase $24 billion of Treasury securities in order to add enough liquidity to bring the federal funds rate back down to its target of 5.25%. On August 10, the Fed needed to purchase an additional $38 billion to keep the rate at its target, and issued a statement that began, "The Federal Reserve is providing liquidity to facilitate the orderly functioning of financial markets." The European Central Bank provided 156 billion euros ($215 billion) of liquidity to markets on August 9 and 10. Normalcy soon returned to the federal funds market, although other parts of the financial system remained illiquid. The Fed took similar actions on March 7, 2008, when it announced that it would be injecting up to $100 billion in liquidity for at least 28 days through open market operations.

How should the Fed's actions of August 9-10 and March 7 be characterized? The Fed's actions cannot be classified as a policy change since it left the federal funds target rate unchanged — in the former case for over a month.[6] Nor can it be considered unusual that the Fed bought Treasury securities to keep the federal funds rate at its target — the Fed does this on a daily basis. What was unusual about the incidents was the magnitude of liquidity the Fed needed to add to keep the rate near its target.

On September 18, 2007, the Fed reduced the federal funds target rate by 0.5 percentage points to 4.75%, stating that the change was "intended to forestall some of the adverse effects on the broader economy that might otherwise arise from the disruptions in financial markets..." Since then, the Fed has aggressively lowered interest rates several times. The Fed decides whether to change its target for the federal funds rate at meetings scheduled every six weeks. In normal conditions, the Fed would typically leave the target unchanged or change it by 0.25%. From September to March, the Fed lowered the target at each regularly scheduled meeting, by an increment larger than 0.25% at most of these meetings. It also lowered the target by 0.75% at an unscheduled meeting on January 21, 2008.

The Discount Window

The Fed can also provide liquidity to member banks (depository institutions that are members of the Federal Reserve system) directly through discount window lending.[7] Discount window lending dates back to the early days of the Fed, and was

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[6] Although no change in the targeted rate was announced, the Fed allowed the actual federal funds rate to fall below 5% on most days over the next month.

[7] For more background, see James Clouse, "Recent Developments in Discount Window (continued...)

originally the Fed's main policy tool. (The Fed's main policy tool shifted from the discount window to open market operations several decades ago.) Loans made at the discount window are backed by collateral in excess of the loan value. A wide array of assets can be used as collateral, but they must generally have a high credit rating. Most discount window lending is done on an overnight basis. Unlike the federal funds rate, the Fed sets the discount rate directly through fiat.

During normal market conditions, the Fed has discouraged banks from borrowing at the discount window on a routine basis, believing that banks should be able to meet their reserve needs through the market. In 2003, the Fed made that policy explicit in its pricing by changing the discount rate from 0.5 percentage points below to 1 percentage point above the federal funds rate. A majority of member banks do not access the discount window in any given year. Since the beginning of the financial turmoil, the Fed has reduced the spread between the federal funds rate and the discount rate, although it has kept the spread positive.

On August 17, 2007, the Fed took further actions to restore calm to financial markets when it reduced the discount rate from 6.25% to 5.75%. Since then, the discount rate has been lowered several times, typically at the same time as the federal funds rate. Discount window lending (in the primary credit category) increased from a weekly average of $45 million in July 2007 to $701 million in August to $1,345 million in September. Although expanded discount window lending has been an important source of liquidity during the financial turmoil, it is dwarfed by open market operations. Discount window lending involves millions of dollars whereas open market operations involve billions of dollars on a daily basis.

New Tools

The Fed's traditional tools are aimed at the commercial banking system, but current financial turmoil has occurred outside of the banking system as well. The inability of traditional tools to calm financial markets since August has led the Fed to develop several new tools to fill perceived gaps between open market operations and the discount window.

Term Auction Facility

A stigma is thought to be attached to discount window lending. In good times, discount window lending has traditionally been discouraged on the grounds that banks should meet their reserve requirements through the marketplace (through the federal funds market) rather than the Fed. Borrowing from the Fed was therefore seen as a sign of weakness, as it implied that market participants were unwilling to lend to the bank because of fears of insolvency. In the current turmoil, this perception of weakness could be particularly damaging since a bank could be undermined by a run based on unfounded, but self-fulfilling fears. Ironically, this means that although the Fed encourages discount window borrowing so that banks

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[7] (...continued)
Policy," *Federal Reserve Bulletin*, November 1994, p. 965.

can avoid liquidity problems, banks are hesitant to turn to the Fed because of fears that doing so would spark a crisis of confidence. As a result, the Fed found the discount window a relatively ineffective way to deal with liquidity problems in the current turmoil. It created the supplementary Term Auction Facility (TAF) in response.[8]

Discount window lending is initiated at the behest of the requesting institution — the Fed has no control over how many requests for loans it receives. The TAF allows the Fed to determine the amount of reserves it wishes to lend out, based on market conditions. The auction process determines the rate at which those funds will be lent, with all bidders receiving the lowest winning bid rate. The winning bid may not be lower than the prevailing federal funds rate. Determining the rate by bid provides the Fed with additional information on how much demand for reserves exists.

Any depository institution eligible for discount window lending can participate in the TAF. Auctions through the TAF have been held twice a month beginning in December 2007. The amounts auctioned — initially $20 billion but later increased — have greatly exceeded discount window lending, which averages in the hundreds of millions of dollars a month, whereas the TAF averages in the tens of billions. Like discount window lending, TAF loans must be fully collateralized with the same qualifying collateral. As with discount window lending, the Fed faces the risk that the value of collateral would fall below the loan amount in the event that the loan was not repaid. For that reason, the amount lent diminishes as the quality of the collateral diminishes.

Loans mature in 28 days — far longer than loans in the federal funds market or the typical discount window loan. Another motivation for the TAF may have been an attempt to reduce the unusually large divergence that had emerged between the federal funds rate and interbank lending rates for longer maturities. This divergence, which can be seen as a sign of how much liquidity had deteriorated in spite of the Fed's previous efforts, became much smaller after December.

The TAF program was announced as a temporary program that could be made permanent after assessment. Given that the discount rate is set higher than the federal funds rate to discourage its use in normal market conditions, it is unclear what role a permanent TAF would fill, unless the funds auctioned were minimal in normal market conditions. A permanent TAF would seem to run counter to the philosophy governing the discount window that financial institutions, if possible, should rely on the private sector to meet their short-term reserve needs during normal market conditions.

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[8] Charles Carlstrom and Sarah Wakefield, "The Funds Rate, Liquidity, and the Term Auction Facility," Federal Reserve Bank of Cleveland, *Economic Trends*, December 14, 2007.

Term Securities Lending Facility

For many years, the Fed has allowed primary dealers (see box for definition) to swap Treasuries of different maturities or attributes with the Fed on an overnight basis through a program called the System Open Market Account Securities Lending Program to help meet the dealers' liquidity needs. (While all Treasury securities are backed by the full faith and credit of the federal government, some securities are more liquid than others, mainly because of differences in availability.) Securities lending has no effect on general interest rates or the money supply since it does not involve cash, but can affect the liquidity premium of the securities traded. Since the loans were overnight and collateralized with other Treasury securities, there was very little risk for the Fed.

What is a Primary Dealer? Primary dealers are about 20 large financial institutions who are the counterparties with which the Fed undertakes open market operations (buying and selling of Treasury securities). In order to be a primary dealer, an institution must, among other things, meet relevant Basel or SEC capital requirements and maintain a good trading relationship with the Fed.

On March 11, 2008, the Fed set up a more expansive securities lending program for the primary dealers called the Term Securities Lending Facility. Under this program, up to $200 billion of Treasury securities could be lent for 28 days instead of overnight, and could be collateralized with U.S. Treasuries, government "agency" debt (including debt issued by Fannie Mae and Freddie Mac), mortgage-backed securities (MBS) issued by government agencies or private labels with an AAA/Aaa rating, agency commercial mortgage backed securities, and agency collateralized mortgage obligations. Given the recent drop in MBS prices, this made the new lending program considerably more risky than the old one. But the scope for losses are limited by the fact that the loans are fully collateralized with a "haircut" (i.e., less money is loaned than the value of the collateral), and if the collateral loses value before the loan is due, the Fed can call for substitute collateral. The first auction on March 27 involved $75 billion of securities.

By allowing the primary dealers to temporarily swap illiquid assets such as MBS for highly liquid Treasuries, "[t]he TSLF is intended to promote liquidity in the financing markets for Treasury and other collateral and thus to foster the functioning of financial markets more generally," according to the Fed.[9] Given the timing of the announcement — less than a week before the failure of one of its primary dealers, Bear Stearns — critics have alleged that the program was created, in effect, in an attempt to rescue Bear Stearns from its liquidity problems. But it should be noted that the new program did not involve Bear Stearns' most illiquid and devalued assets that investors and counterparties (individuals or firms who had entered into transactions with Bear Stearns) were most concerned about. As will be discussed below, the Fed would take much larger steps to aid Bear Stearns later the same week.

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[9] Board of Governors of the Federal Reserve System, press release, March 11, 2008.

Primary Dealer Credit Facility

On March 16, the Fed announced a direct lending program for primary dealers very similar to the discount window program for depository institutions — a day too late to help Bear Stearns. Loans will be made on an overnight basis at the discount rate, limiting their riskiness. Acceptable collateral includes Treasuries, government agency debt, and investment grade corporate, mortgage-backed, asset-backed, and municipal securities. Many of these classes of assets can and have fluctuated significantly in value. Fees will be charged to frequent users.

The program was announced as lasting six months, or longer if events warrant. The program is authorized under paragraph 3 of Section 13 of the Federal Reserve Act, which allows lending to non-banks under "exigent and unusual circumstances," which suggests it could not be made permanent under existing authorization.

Although the program shares some characteristics with the discount window and the Term Securities Lending Facility, the fact that the program was authorized under paragraph 3 of Section 13 suggests that there is a fundamental difference between this program and the Fed's normal operations. The Fed is referred to as the nation's central bank because it is at the center of the banking system — providing reserves and credit, and acting as a regulator, clearinghouse, and lender of last resort to the banking system. The privileges for banks that come from belonging to the Federal Reserve system — access to credit — come with the costs of regulation to ensure that banks with access to Fed credit do not take excessive risks. Although the primary dealers are subject to capital requirements, they are not necessarily part of the banking system, and do not fall under the same regulatory structure as the banks.

The Fed's Role in the JP Morgan Chase Acquisition of Bear Stearns

Bear Stearns came under severe liquidity pressures in early March, in what many observers have coined a non-bank run.[10] On Friday, March 14, JP Morgan Chase announced that, in conjunction with the Federal Reserve, it had agreed to provide secured funding to Bear Stearns, as necessary, for an initial period of up to 28 days. Through its discount window, the Fed agreed to provide back-to-back financing to Bear Stearns via JP Morgan Chase. It was a non-recourse loan, meaning that the Fed had no general claim against JP Morgan Chase in the event that the loan was not repaid and the outstanding balance exceeded the value of the collateral. Bear Stearns could not access the discount window directly because, at that point, only member banks could borrow directly from the Fed. The amount of the loan was not disclosed. This loan was superseded by the events of March 16, and the loan was repaid in full on March 17.

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[10] For more information, see CRS Report RL34420, *Bear Stearns: Crisis and 'Rescue' for a Major Provider of Mortgage-Related Products*, by Gary Shorter.

On Sunday, March 16, JP Morgan Chase agreed to acquire Bear Stearns. In a press release explaining the merger, the firms announced that "[t]he Fed has agreed to fund up to $30 billion of Bear Stearns' less liquid assets," $20 billion of which were mortgage backed securities. JP Morgan Chase received a $29 billion non-recourse loan from the Fed at the discount rate (currently 2.5%, but fluctuating over time) for a term of 10 years, renewable by the Fed.[11] In return, the Fed will receive collateral in the form of assets worth $30 billion at marked to market prices by Bear Stearns on March 14 after a haircut, as described by the Fed.[12]

Unlike a traditional loan, the Fed may begin to liquidate the assets immediately, before the term of the loan has ended. It was announced that the Fed is planning to begin to liquidate the assets after two years through a newly established limited liability corporation. The assets will be sold off gradually, "to minimize disruption to financial markets and maximize recovery value," by BlackRock Financial Management, a professional investment manager.[13] As the assets are liquidated, JP Morgan Chase will continue to accrue interest on the remaining amount of the loan outstanding. **Table 1** shows how the funds raised through the liquidation will be used. Any difference between the proceeds and the amount of the loan made to JP Morgan Chase is profit or loss for the Fed, not JP Morgan Chase. Because the Fed lent JP Morgan Chase $1 billion less than the collateral they put up, if there are losses, the first $1 billion of losses will be borne, in effect, by JP Morgan Chase, however.[14] The interest on the loan owed by JP Morgan Chase will be repaid out of the asset sales, not by JP Morgan Chase directly. With no apparent intention by either party for JP Morgan Chase to regain its collateral by repaying the loan, the agreement has some characteristics more in common with an asset sale than a loan.

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[11] Federal Reserve Bank of New York, "Summary of Terms and Conditions Regarding the JP Morgan Chase Facility," press release, March 24, 2008. Many of the details of the loan, including the size ($29 billion), were not announced on March 16.

[12] Telephone conversations with the Federal Reserve Congressional Liaison Office on March 20-24.

[13] Federal Reserve Bank of New York, "Statement on Financing Arrangement of JP Morgan Chase's Acquisition of Bear Stearns," press release, March 24, 2008.

[14] Technically, two loans were issued with the backing of Bear Stearns' assets: a $29 billion loan from the Fed to JP Morgan Chase, and a $1 billion subordinated loan from JP Morgan Chase to itself. The difference between the loan amount and the collateral amount is secured by a subordinated note to JP Morgan Chase that will be paid back, with interest at an interest rate 4.50 percentage points above the discount rate, after all of the Fed's principal and interest is paid back.

Table 1. Use of Funds Raised by Liquidation of Collateral from Loan to JP Morgan Chase

Payments from the liquidation will be made in the following order:
(1) operating expenses of the limited liability corporation
(2) $29 billion principal owed to the Federal Reserve
(3) interest due to the Federal Reserve on the $29 billion loan
(4) $1 billion principal owed to JP Morgan Chase
(5) interest due to JP Morgan Chase on $1 billion subordinated note
(6) non-operating expenses of the limited liability corporation
(7) remaining funds accrue to Federal Reserve

Source: Federal Reserve Bank of New York.

Note: Each category must be fully paid before proceeding to the next category.

There has not been an official explanation as to why JP Morgan Chase was unwilling to include these assets in their merger deal. There are at least two plausible reasons why. First, given the significant downward trend in MBS recently, JP Morgan Chase could have believed that the assets were worth (at present or a future date) significantly less than the current market value of $30 billion. Including the assets in the deal could have made it unacceptably risky for JP Morgan Chase. Second, Bear Stearns' problems stemmed from not enough liquidity to meet current obligations. JP Morgan Chase assumed those obligations as part of the merger. Given the fall-off in turnover in MBS markets in recent months, it may have felt that it could not liquidate Bear Stearns' assets quickly enough to meet its liquidity needs. The $30 billion from the Fed may have given JP Morgan Chase enough liquidity to make the merger feasible.

The Fed's statutory authority for its role in both Bear Stearns transactions comes from paragraph 3 of Section 13 of the Federal Reserve Act:

> In unusual and exigent circumstances, the Board of Governors of the Federal Reserve System, by the affirmative vote of not less than five members, may authorize any Federal reserve bank...to discount for any individual, partnership, or corporation, notes, drafts, and bills of exchange.... Provided, that before discounting any such note, draft, or bill exchange...the Federal reserve bank shall obtain evidence that such individual, partnership, or corporation is unable to secure adequate credit accommodations from other banking institutions...

According to the New York Federal Reserve, this authority had not been used in about 70 years prior to the Bear Stearns incident.[15]

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[15] Federal Reserve Bank of New York, "The Discount Window," *Fedpoint,* August 2007.

The statutory authority for the March 16 loan to JP Morgan Chase also derives from Section 10B of the Federal Reserve Act, which authorizes the Fed's discount window lending. Some of the terms of the March 16 loan, such as the length of the loan, are different from typical discount window lending.

Policy Issues

Cost to the Treasury

Unlike all other institutions, currency (Federal Reserve notes) is the Fed's primary liability. Along with its holdings of Treasury securities, its assets are the loans it makes (through the discount window, the new programs detailed above, and for the Bear Stearns takeover). Making loans increases its assets and liabilities, and does not inherently impose any cost to the Treasury. Indeed, if the loans are repaid, they would increase the profits of the Fed, which in turn would increase the Fed's remittances to the Treasury.[16] Even if the loans are not repaid, they are fully collateralized (in some cases, overcollateralized), so the Fed would not suffer losses unless the collateral had lost value. In addition, some of the loans discussed above are made with recourse, which means that the firms are liable if the collateral loses value.

The Fed had net income of $34.2 billion and remitted $29.1 billion to the Treasury in 2006. Most of the Fed's net income derives from the interest on its Treasury securities holdings, not its loans. If the loans were not repaid in full and the collateral lost value, it would reduce the net income of the Fed, and therefore its remittances to the Treasury. If loan losses caused an overall net loss, the Fed's capital (the excess of its assets compared to its liabilities) would be reduced. The Fed had capital of $30.6 billion at end of 2006. The Fed has not had an annual net operating loss since 1915.

Thus, any potential losses on loans to the Fed would not involve taxpayer dollars unless the losses exceeded the sum of its other earnings and its capital. However, smaller losses could result in a smaller remittance of earnings to the Treasury than would have occurred had the Fed not made the loans.

Lender of Last Resort, Systemic Risk, and Moral Hazard

The lender of last resort function can be seen from the perspective of an individual institution or the financial system as a whole.[17] From the perspective of the individual institution, discount window lending is meant to provide funds to institutions that are illiquid (cannot meet current obligations out of current cash flow) but still solvent (assets exceed liabilities) when they cannot access funds from the

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[16] Assuming that the interest rate on the loans exceeded the rate of return on the Treasuries that the Fed would have purchased if the loans had not occurred.

[17] For more information, see CRS Report RS21986, *Federal Reserve: Lender of Last Resort Functions*, by Marc Labonte.

private market. Discount window lending was unable to end bank runs, however — bank runs did not cease until the creation of federal deposit insurance. The experience of the Great Depression suggested that bank runs placed intolerably high costs on the financial system as a whole, as they led to widespread bank failures.[18] Discount window lending is not meant to help insolvent institutions, with one exception explained below. Access to discount window lending and deposit insurance creates *moral hazard* for financial institutions — they can take on more risk than the market would otherwise permit because of the government safety net. In order to limit moral hazard, institutions with depository insurance and access to the discount window are subject to a safety and soundness regulatory regime that includes capital requirements, reserve requirements, bank examinations, and so on.

The exception to the rule that insolvent institutions cannot access the discount window is when the institution is deemed "too big to fail." Institutions that are too big to fail are ones that are deemed to be big enough that their failure could create *systemic risk*, the risk that the financial system as a whole would cease to function smoothly.[19] A systemic risk episode could impose heavy costs on the overall economy, as the bank panics of the Great Depression demonstrated. Although too big to fail institutions are not offered explicit guarantees, it can be argued that they have implicit guarantees since the government would not be willing to allow a systemic risk episode. This accentuates the moral hazard problem described above. There is no official governmental reckoning of which financial institutions are too big to fail, presumably since maintaining uncertainty over which institutions are too big to fail could help reduce the moral hazard problem. But the lack of official designation arguably creates a vacuum in terms of policy preparedness. (Making the problem more complex, as one report described the situation, "Officials grimly concluded that while Bear Stearns isn't too big to fail, it was too interconnected to be allowed to fail in just one day." It is unclear how to judge which institutions are too interconnected to fail.)[20]

As the Bear Stearns episode illustrates, some of the modern-day financial institutions that are too big to fail are not depository institutions that fall under the strict regulatory umbrella that accompanies membership in the Federal Reserve system. It is possible that part of the reason Bear Stearns failed is because it took on excessive risks in the belief that it was too big to fail. Although that theory cannot be proven at this time, it is clearer that the precedent of the Fed's role in the Bear Stearns acquisition may enhance the perception of other institutions and investors that any financial firm, regardless of whether it is a depository institution, will be bailed out in the future if it is too big to fail, or merely too interconnected to fail. If

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[18] In this context, it is interesting to note that the Bear Stearns failure has been described as a non-bank run, meaning it was undone because it was shunned by its counterparties and investors, analogous to a bank being shunned by its depositors. The defining characteristic of a run is that the fear of failure becomes self-fulfilling since it deprives an institution of the resources it needs to avoid failure.

[19] For more information, see CRS Report RL34412, *Averting Financial Crisis*, by Mark Jickling.

[20] Greg Ip, "Central Bank Offers Loans to Brokers, Cuts Key Rate," *Wall Street Journal*, March 17, 2008, p. A1.

so, it could be argued that the Bear Stearns episode may have increased moral hazard going forward.

Some critics have argued that even the Fed's rate cuts last fall, before there were signs of an economy-wide slowdown, fostered moral hazard because they signaled to investors that any sudden drop in asset prices will be offset by monetary expansion. While generalized intervention may improve overall financial market conditions, it does not target specific depressed assets. Therefore, any moral hazard created by general monetary policy is indirect at best — after all, certain asset prices have continued to decline despite the Fed's recent policy easing. While the Fed's recent actions may cumulatively give the appearance of "bailing out" the financial system, its ultimate goal is economic stability, which it believes that financial turmoil would undermine. Given the lags between monetary changes and their effect on the economy, the Fed must respond to financial turmoil before it feeds through to the overall economy if it wants to minimize the turmoil's economic effects.

Going forward, policymakers must determine whether new regulation is needed to limit moral hazard since there may be no credible way to maintain a policy that prohibits the rescue of future institutions that are too big to fail even if such a policy was desired. The alternative is the status quo, which could be described as allowing systemic risk episodes to break out, and counting on the Fed to step in after the fact and flood the market with liquidity to restore order. The current situation raises three broad points about systemic risk. First, risk is at the foundation of all financial intermediation. Policymakers may wish to curb excessive risk taking when it leads to systemic risk, but too little financial risk would also be counterproductive for the economy. (Indeed, some would argue that part of the underlying problem for the financial system as a whole at present is that investors are currently too risk averse.) Second, many analysts have argued that part of the reason that so much financial intermediation has left the commercial banking system is to avoid the costs of regulation. This point applies to future regulatory changes as well. An attempt to increase regulation on investment banks could lead more business to move to hedge funds, for example. Third, financial markets have become significantly more complex and fast-moving in recent years. Many of the financial instruments with which Bear Stearns was involved did not exist until recently. For regulation to be effective in this environment, it faces the challenge of trying to keep up with innovation. If used prudently, many of these innovations can reduce risk for individual investors. Yet the Bear Stearns example implies that innovation may also lead to more interconnectivity, which increases systemic risk.

Liquidity Trap?

Some economists have argued that the Fed's recent string of newly created programs points to an increasing desperation on its part to "right the ship." Although monetary policy has successfully contributed to an unusual degree of economic stability since at least the mid-1980s, they argue that it has been rendered ineffective by the current scenario. They argue that lower interest rates will not boost spending because the economy is stuck in a credit crunch in which financial institutions are unwilling to lend to creditworthy borrowers because of balance sheet concerns. Borrower demand may increase in response to lower rates, but as long as institutions are trying to rebuild their balance sheets, they will remain unwilling to extend credit.

This problem is sometimes referred to as a "liquidity trap." Liquidity traps are rare in modern times, but the decade of economic stagnation suffered by Japan in the 1990s after the bursting of its financial bubble is often cited as the prime example. Interest rates were lowered to almost zero in Japan, and the economy still did not recover quickly.[21]

There are some problems with this line of reasoning at present. First, liquidity traps are seen as an extreme form of recession, but while the U.S. economy had slowed (as of early 2008), it had not yet officially entered a recession and had not experienced even one quarter of economic contraction. Second, liquidity traps are most likely to occur when overall prices of goods and services are falling (called *deflation*). The Fed cannot reduce the federal funds rate below zero. When prices are falling, real interest rates are higher than nominal interest rates, so it is more likely that a very low nominal interest rate would still be too high in real terms to stimulate economic activity. But inflation has been rising, not falling, recently.[22] Inflation would not be expected to rise persistently if the economy were in a liquidity trap. Third, there is a more benign, well-documented explanation for why the Fed's expansionary policy has not yet stimulated economic activity — monetary policy always suffers lags between a reduction in interest rates and corresponding increase in economic activity. While a liquidity trap cannot be ruled out, it is premature to conclude the economy is stuck in one at this point in time.

Stagflation?

Some observers believe the U.S. economy is in a liquidity trap, whereas other critics have argued that the Fed has created the opposite problem — rising inflation due to excessive liquidity. They argue that the economy has entered a period of stagflation, where falling or negative economic growth is accompanied by high or rising inflation.

Typically, one would expect an economic slowdown to be accompanied by a decline in the inflation rate. Excess capacity in the capital stock and rising unemployment would force firms and workers to lower their prices and wage demands, respectively. But critics believe the economy is in a situation where a modest but persistent increase in inflation in recent years has led individuals to come to expect higher inflation, and factor that expectation in to their price and wage demands. Couple those higher inflation expectations with rising commodity prices and the recent unusual large liquidity injections by the Fed, and critics argue that inflation will rise even if the economy slows. They point to the experience of the 1970s, when inflationary expectations became so ingrained that inflation continued to rise despite a fairly deep recession, as a potential parallel to the current situation.

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[21] While the term liquidity trap was often applied to Japan, it is theoretically defined as a situation where household demand for money becomes infinite, so changes in the money supply do not affect interest rates. Under this strict definition, it is not clear that Japan, or any other economy, has experienced a liquidity trap.

[22] Asset prices have been falling lately, but they are not included in standard measures of inflation, which measures the prices of goods and services.

Data suggest that the fear of stagflation is premature — both unemployment and inflation remain relatively low at present. It is true that in the long run inflation is a monetary phenomenon, and if the Fed's recent actions were made permanent, they would not be consistent with stable inflation. But in the near term, if unemployment and excess capacity rose, that would be expected to take much of the pressure off of the inflation rate. Ironically, if the Fed's actions succeed in reviving the economy, then the probability that its actions would boost inflation would increase. The key to maintaining a stable inflation rate is finding the proper balance between the deflationary pressures of the slowdown and the inflationary pressures of expansionary monetary policy and rising commodity prices. The large amounts of liquidity that the Fed has added to the system must be removed soon enough that inflation does not rise, but not so soon that a nascent financial recovery is stubbed out. Given the uncertainty facing policymakers at present, finding the proper balance is extremely difficult.

Concluding Thoughts

Although turmoil plagues financial markets periodically, the current episode is notable for its breadth and persistence. It is difficult to make the case that the Fed has not responded to the current turmoil with alacrity and creativity. But its response has raised statutory issues that Congress may wish to consider in its oversight capacity. Namely, the Fed's role in the Bear Stearns acquisition and the creation of the Primary Dealer Credit Facility (a sort of discount window for a group of non-member banks) involved emergency authorities that had not been used in more than 70 years. This authority was needed because both actions involved financial institutions that were not member banks (i.e., depository institutions). The authority allows lending to non-member banks, but the agreement with JP Morgan Chase has some characteristics more in common with an asset sale than a loan. These actions raise an important issue — if financial institutions can receive some of the benefits of Fed protection, perhaps because they are "too big to fail," should they also be subject to the costs that member banks bear in terms of safety and soundness regulations, imposed to limit the moral hazard that inevitably results from Fed and FDIC (Federal Deposit Insurance Corporation) protections? If so, should the too big to fail label be made explicit so that regulators can better manage systemic risks?