Congressional Research Service
Informing the legislative debate since 1914

Financial Turmoil: Federal Reserve Policy Responses

Updated July 26, 2010

Congressional Research Service
https://crsreports.congress.gov
RL34427

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

The Federal Reserve (Fed) has been central in the policy response to the financial turmoil that 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. Since December 2008, it has allowed the federal funds rate to fall close to zero. As the crisis deepened, the Fed's focus shifted to providing liquidity directly to the financial system through new policy tools. Through new credit facilities, the Fed first expanded the scale of its lending to the banking system and then extended direct lending to non-bank financial firms. The latter marked the first time since the Great Depression that firms that are not banks or members of the Federal Reserve System have been allowed to borrow directly from the Fed. After the crisis worsened in September 2008, the Fed began providing credit directly to markets for commercial paper and asset-backed securities. All of these emergency facilities had expired by the end of June 2010, but central bank liquidity swap lines were reopened in May 2010 in response to the crisis in Greece. The Fed also provided emergency assistance to Bear Stearns, AIG, and Citigroup over the course of the crisis; the Fed still holds assets from and loans to AIG and assets from Bear Stearns.

These programs resulted in an increase in the Fed's balance sheet of $1.4 trillion at its peak in December 2008, staying relatively steady since then. The Fed's authority and capacity to lend is bound only by fears of the inflationary consequences, which have been partly offset by additional debt issuance by the Treasury. High inflation has not materialized yet because most of the liquidity created by the Fed is being held by banks as excess reserves, but after the economy stabilizes, the Fed may have to scale back its balance sheet rapidly to avoid it. Asset sales could be disruptive, but the Fed has argued that it can contain inflationary pressures through the payment of interest on bank reserves, which it was authorized by Congress to do in 2008.

The statutory authority for most of the Fed's recent actions is based on a clause in the Federal Reserve Act to be used in "unusual or exigent circumstances." All loans are backed by collateral that reduces the risk of losses. Any losses borne by the Fed from its loans or asset purchases would reduce the income it remits to the Treasury, making the effect on the federal budget similar to if the loans were made directly by Treasury. It is highly unlikely that losses would exceed its other income and capital, and require revenues to be transferred to the Fed from the Treasury. To date, the Fed's crisis activities have increased its net income.

Two policy issues raised by the Fed's actions are 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 stabilizing Bear Stearns, AIG, and Citigroup stemmed from the fear of systemic risk (that the financial system as a whole would cease to function) if they were allowed to fail. In other words, the firms were seen as "too big (or too interconnected) to fail." The Fed regulates member banks to mitigate the moral hazard that stems from access to government protections. Yet Bear Stearns and AIG were not under the Fed's regulatory oversight because they were not member banks.

Some Members of Congress have expressed concern that certain details of the Fed's lending activities are kept confidential. H.R. 4173 (P.L. 111-203) adds conditions to the Fed's emergency lending authority, removes most GAO audit restrictions, and requires disclosure of the identities of borrowers with a delay. It also changes the Fed's role in the financial regulatory system (see CRS Report R40877, *Financial Regulatory Reform: Systemic Risk and the Federal Reserve*).

Contents

Introduction 1
Traditional Tools 2
Open Market Operations and the Federal Funds Rate 3
Quantitative Easing 4
The Discount Window 4
New Tools 5
Term Auction Facility 5
Term Securities Lending Facility 7
What is a Primary Dealer? 7
Emergency Authority Under Section 13(3) of the Federal Reserve Act 9
Primary Dealer Credit Facility 9
Term Asset-Backed Securities Loan Facility 10
Intervention in the Commercial Paper Market 12
Mortgage-Backed Securities Purchase Program and Purchase of GSE Obligations 14
Swap Lines with Foreign Central Banks 15
Payment of Interest on Bank Reserves 16
Assistance to Individual Financial Institutions 17
The Fed's Role in the JPMorgan Chase Acquisition of Bear Stearns 18
Assistance to American International Group (AIG) 20
Initial Loan 20
Second Loan 21
Revision to Agreement on November 10, 2008 21
Revision to Agreement on March 2, 2009 23
Who Benefits From Assistance to AIG? 26
Legal Authority 26
Guarantee of Citigroup's Assets 26
Guarantee of Bank of America's Assets 27
Policy Issues 28
Cost to the Treasury 28
How Much Can the Fed's Balance Sheet Expand? Will the Fed Run Out of Money? 30
Sterilization of Lending Before September 2008 31
Quantitative Easing and Balance Sheet Growth Since September 2008 32
Future Concerns 34
Is the Fed Monetizing the Budget Deficit? 36
Limits on the Fed's Ability to Address Problems in the Financial Sector 37
Lender of Last Resort, Systemic Risk, and Moral Hazard 38
Oversight, Transparency, and Disclosure of Emergency Programs 41
Effects on the Allocation of Capital 44
Is the Economy Stuck in a Liquidity Trap? The Use of Quantitative Easing at Zero Interest Rates 45
Stagflation? 47
Concluding Thoughts 48

Tables

Table 1. Use of Funds Raised by Liquidation of Bear Stearns Assets 19
Table 2. Summary of Outstanding Assistance to AIG 25
Table 3. Estimated Subsidies and Earnings by Program 29
Table 4. Changes in the Fed's Balance Sheet from August 1, 2007, to Peak on December 17, 2008 31
Table 5. Federal Reserve Balance Sheet, June 30, 2010 34

Contacts

Author Information 50

Introduction

On August 9, 2007, liquidity abruptly dried up for many financial 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] The Federal Reserve (Fed) was drawn into the liquidity crunch from the start. On August 9, it injected unusually large quantities of reserves into the banking system to prevent the federal funds rate from exceeding its target. In a series of steps between September 2007 and December 2008, the Fed reduced the federal funds rate from 5.25% to a target range of 0% to 0.25%.

It has been observed that the most unusual aspect of the crisis is its persistence over time. Over that time, 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 greatly expanded its direct lending to the financial sector through 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.[2]

The Fed's decision to assist specific troubled financial institutions sparked controversy. In March 2008, the Fed helped the investment bank Bear Stearns avoid bankruptcy, even though Bear Stearns was not a member bank of the Federal Reserve system (because it was not a depository institution), and, therefore, not part of the regulatory regime that accompanies membership.[3] At the same time, it created two lending facilities for other non-bank primary dealers. In September, the investment bank Lehman Brothers filed for bankruptcy (it did not receive emergency government assistance), and the financial firm American International Group (AIG), which was also not a member bank, received a credit line from the Fed in order to meet its obligations. (Additional aid to AIG was extended on three subsequent occasions.) The Fed then began directly assisting the markets for commercial paper and asset-backed securities. More recently, the Fed and federal government has guaranteed losses on assets owned by Citigroup. This marked the first time in more than 70 years that the Fed had lent to non-members, and it did so using emergency statutory authority (Section 13(3) of the Federal Reserve Act).[4] The Dodd-Frank Wall Street Reform and Consumer Protection Act (H.R. 4173) adds conditions to the Fed's emergency lending authority. H.R. 4173 was signed into law on July 21, 2010, as P.L. 111-203.[5]

In September 2008, the housing government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac were taken into conservatorship by the government. On November 25, 2008, the Fed announced that it would make large-scale purchases of the direct obligations and mortgage-backed securities (MBS) issued by the housing GSEs.

---

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

[2] Current amounts of Fed lending outstanding can be found at Federal Reserve, "Factors Affecting Reserve Balances of Depository Institutions," statistical release H.4.1, updated weekly.

[3] 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 (one of which is the New York Fed).

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

[5] For an overview, see CRS Report R41350, *The Dodd-Frank Wall Street Reform and Consumer Protection Act: Issues and Summary*, coordinated by Baird Webel.

As financial conditions have improved in 2009, the Fed's focus, in turn, has shifted from stabilizing financial markets to stabilizing the housing market. As fewer financial firms have accessed Fed lending facilities, direct assistance has been replaced on the Fed's balance sheet by purchases of debt and MBS issued by the housing GSEs. This has kept relatively constant the overall amount of liquidity the Fed has provided to the economy. The Fed purchased about $175 billion of GSE debt and $1.25 trillion of MBS by the spring of 2010. Most emergency facilities were allowed to expire in February 2010, but the central bank liquidity swap lines were reopened in May 2010 to provide dollar liquidity to foreign countries needed as a result of the economic crisis in Greece.

One of the original purposes of the Federal Reserve Act, enacted in 1913, was to prevent the 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. Because this authority is delegated from Congress, 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, the Fed's actions in the crisis have raised fundamental questions about the Fed's proper role, and what role Congress should play in assessing those issues. S. 896, which was signed into law on May 20, 2009 (P.L. 111-22), allows Government Accountability Office (GAO) audits of a limited subset of Fed emergency activities. H.R. 4173 removes most GAO audit restrictions, calls for a GAO audit of emergency actions, and requires disclosure of the identities of borrowers with a delay.[6]

H.R. 4173 also made comprehensive changes to the financial regulatory system. The Fed's role in prudential regulation, consumer protection regulation, payment system regulation, and systemic risk regulation was modified by this legislation. CRS Report R40877, *Financial Regulatory Reform: Systemic Risk and the Federal Reserve*, analyzes the effects of this legislation on the Fed's role in the regulatory system.

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 price stability and maximum employment. Besides the conduct of monetary policy, the Federal Reserve has a number of other duties: it regulates financial institutions and consumer financial products, 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 to prevent financial panics. The next two sections explain the Fed's traditional tools, open market operations and discount window lending, and summarize its recent use of those tools.

[6] Proposals for GAO to audit the Fed are discussed below in the section entitled "Oversight, Transparency, and Disclosure of Emergency Programs".

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 to alter the reserves of the banking system.[7] 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.[8] 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, in what 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 value of the dollar, all else equal. A depreciated 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.

The Fed's actions with regards to open market operations have taken two forms in the crisis. First, a loss of liquidity in the interbank lending market has forced the Fed to inject unusually large volumes of reserves into the market on several occasions since August 2007. These actions have been necessary to maintain the availability of reserves at the existing federal funds target.

Second, the Fed has reduced the federal funds target on numerous occasions over the course of the crisis. 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 percentage points. From September 2007 to March 2008, the Fed lowered the target at each regularly scheduled meeting, by an increment larger than 0.25 percentage points at most of these meetings. It also lowered the target by 0.75 percentage points at an unscheduled meeting on January 21, 2008. Although financial conditions had not returned to normal, the Fed kept the federal funds rate steady from April 30, 2008, until October 9, 2008, when it again reduced the federal funds rate, this time by 0.5 percentage points, to 1.5%. Unusually, this rate reduction was coordinated

[7] 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 to keep the federal funds rate near its target, repurchase agreements give the Fed more flexibility to make these adjustments.

[8] For more information, see CRS Report RL30354, *Monetary Policy and the Federal Reserve: Current Policy and Conditions*, by Marc Labonte. For information on the federal funds market during the crisis, see Gara Afonso, Anna Kovner, and Antoinette Schoar, *Stressed, Not Frozen: The Federal Funds Market in the Financial Crisis*, Federal Reserve Bank of New York, Staff Report no. 437, March 2010.

with several foreign central banks. On December 16, 2008, the Fed established a target range of 0% to 0.25% for the federal funds rate.

Quantitative Easing

Even before December 2008, the Fed began supplying the federal funds market with a greater quantity of bank reserves than needed to reach the federal funds target, a policy that has been described as "quantitative easing."[9] Because the Fed has only one tool, it cannot meet more than one target at once. As long as the Fed was willing to create liquidity on demand, the federal funds rate was unlikely to meet its target. Therefore, after the Fed began focusing on meeting the financial sector's liquidity needs in September, the federal funds rate began undershooting the Fed's target on a regular basis.[10] In December 2008, the Fed began providing so much liquidity that the interest rate target often fell close to zero. The target range of 0% to 0.25% set in December can be seen as an acknowledgment by the Fed that targeting interest rates had been subordinated to the goal of providing ample liquidity to the financial system for the time being. Initially, quantitative easing was implemented through direct lending, but even after that liquidity was no longer sought by financial firms through the Fed's lending facilities, quantitative easing was continued through large purchases of Treasury securities, Agency securities, and Agency mortgage-backed securities in an attempt to continue stimulating the economy.[11] According to one estimate, the Fed purchased 22% of the entire available stock of these assets.[12]

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.[13] Discount window lending dates back to the early days of the Fed, and was 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; loans and asset-backed securities are the most frequently posted collateral. Although not all collateral has a credit rating, those that are rated typically have the highest rating.[14] 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 discouraged banks from borrowing at the discount window on a routine basis, believing that banks should be able to meet their normal reserve needs through the market. In 2003, the Fed made that policy explicit in its pricing by changing the

---

[9] For more information, see the section below, "Is the Economy Stuck in a Liquidity Trap? The Use of Quantitative Easing at Zero Interest Rates."

[10] This occurred because financial firms were meeting their liquidity needs directly from the Fed, there was no longer adequate demand to borrow reserves in the private federal funds market, and the federal funds rate fell close to zero.

[11] For these purposes, the Fed defines Fannie Mae, Freddie Mac, the Federal Home Loan Banks, and Ginnie Mae as Agencies. For more information, see the section below entitled "Mortgage-Backed Securities Purchase Program and Purchase of GSE Obligations".

[12] Joseph Gagnon et al., *Large-Scale Asset Purchases by the Federal Reserve*, Federal Reserve Bank of New York, Staff Reports 441, March 2010.

[13] For more background, see James Clouse, "Recent Developments in Discount Window Policy," *Federal Reserve Bulletin*, November 1994, p. 965.

[14] Current data on the number of borrowers, loan concentration among borrowers, types of collateral posted, credit rating of collateral posted, and size of loans as a share of posted collateral for the Term Auction Facility and discount window can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

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 a typical year. Thus, the discount window has played a secondary role in policymaking to open market operations.

On August 17, 2007, the Fed began reducing the discount rate—about a month before it first reduced the federal funds rate. Since then, the discount rate has been lowered several times, typically at the same time as the federal funds rate. Over that period, the Fed has reduced the spread between the federal funds rate and the discount rate, but kept the spread positive. When the federal funds rate was allowed to fall to zero beginning in December 2008, the discount rate was set at 0.5%. From 1959 to 2007, discount window lending outstanding never surpassed $8 billion, and was usually well below $1 billion. Discount window lending (in the primary credit category) increased from a daily average of $45 million outstanding in July 2007 to $1,345 million in September 2007. Lending continued to increase to more than $10 billion outstanding per day from May 2008, and peaked at $111 billion in October 2008, but was superseded in economic significance by the creation of the "Term Auction Facility" in December 2007. Discount window lending fell steadily throughout 2009, and by mid-2010, it had returned to pre-crisis levels.

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 2007 has led the Fed to develop several new tools to fill perceived gaps between open market operations and the discount window.[15]

Traditionally, the lender of last resort function has focused on the banking system, and the Fed's relationship with the banking system, encompassing costs and privileges, is prescribed in detail by the Federal Reserve Act. Many of the new facilities are aimed at other parts of the financial system, however, and the Federal Reserve Act is largely silent on the Fed's authority outside the banking system.[16] One exception is the broad emergency authority under Section 13(3) of the Federal Reserve Act, which the Fed has frequently invoked since the financial crisis began.

Term Auction Facility

A stigma is thought to be attached to borrowing from the discount window. In good times, discount window lending has traditionally been discouraged on the grounds that banks should meet their reserve requirements through the marketplace (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 meant that although the Fed encourages discount window borrowing so that banks can avoid liquidity problems, at first banks were hesitant to turn to the Fed because of fears that doing so would

[15] The Fed has centralized information on the purpose, terms, and conditions of the facilities described in this section at the following Fed website at http://www.federalreserve.gov/monetarypolicy/bst.htm.

[16] The Fed made about 7,500 loans to non-banks each year under Section 13B of the Federal Reserve Act until that section of the act was repealed in 1959.

spark a crisis of confidence. To overcome these problems, the Fed created the supplementary Term Auction Facility (TAF) in December 2007.[17]

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 make available to banks, 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, and hundreds have accessed it or the discount window at a time since its inception. Auctions through the TAF have been held twice a month beginning in December 2007. The amounts auctioned have greatly exceeded discount window lending, which averages in the hundreds of millions of dollars outstanding daily in normal times and more than $10 billion outstanding since May 2008. The TAF initially auctioned up to $20 billion every two weeks, but this amount was increased on several occasions to as much as $150 billion (and currently up to $125 billion) every two weeks. Loans outstanding under the facility peaked at $493 billion in March 2009, and have fallen steadily since.[18] Like discount window lending, TAF loans must be fully collateralized with the same qualifying collateral. Loans and asset-backed securities are the most frequently posted collateral. Although not all collateral has a credit rating, those that are rated typically have the highest rating. 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. Most borrowers borrow much less than the posted collateral.[19]

Loans mature in 28 days—far longer than overnight loans in the federal funds market or the typical discount window loan. (In July 2008, the Fed began making some TAF loans that matured in 84 days.) 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 2007. In subsequent periods of market stress, such as September 2008, the divergence reemerged. The evidence on the effectiveness of the TAF in reducing this divergence is mixed.[20]

The TAF program was announced as a temporary program (with no fixed expiration date) 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

[17] For more information, see Olivier Armantier et al., "The Federal Reserve's Term Auction Facility," Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, vol. 14, no. 5, July 2008; Charles Carlstrom and Sarah Wakefield, "The Funds Rate, Liquidity, and the Term Auction Facility," Federal Reserve Bank of Cleveland, *Economic Trends*, December 14, 2007.

[18] The dates, terms, and amounts of future TAF auctions can be accessed at http://www.federalreserve.gov/monetarypolicy/tafschedule.htm.

[19] Current data on the number of borrowers, loan concentration among borrowers, types of collateral posted, credit rating of collateral posted, and size of loans as a share of posted collateral for the TAF and discount window can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

[20] See James McAndrews et al., *The Effect of the Term Auction Facility on the London Inter-bank Offered Rate*, Federal Reserve Bank of New York, Staff Report no. 335, July 2008; John Taylor and John Williams, *A Black Swan in the Money Market*, Federal Reserve Bank of San Francisco, Working Paper 2008-04, April 2008; Asani Sarkar and Jeffrey Shrader, *Financial Amplification Mechanisms and the Federal Reserve's Supply of Liquidity During the Financial Crisis*, Federal Reserve Bank of New York, Staff Reports 431, February 2010.

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. The Fed has not held a TAF auction since March 2010.

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 because it does not involve cash, but can affect the liquidity premium of the securities traded. Because 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). Because open market operations are very large, the Fed needs large counterparties to these transactions. 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 (TSLF) using emergency authority under Section 13(3) of the Federal Reserve Act. Under this program, up to $75 billion (previously up to $200 billion) of Treasury securities could be lent for 28 days instead of overnight. Loans could be collateralized with private-label MBS with an AAA/Aaa rating, agency commercial mortgage-backed securities, and agency collateralized mortgage obligations.21 On September 14, 2008, the Fed expanded acceptable collateral to include all investment-grade debt securities. Given the recent drop in MBS and other asset prices, this made the new lending program considerably more risky than the old one. But the scope for losses is 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. In addition, most of the collateral that has been posted received a high rating from a credit rating agency.22 The first auction on March 27 involved $75 billion of securities. In August 2008, the program was expanded to allow the primary dealers to purchase up to $50 billion of options (with prices set by auction) to swap for Treasuries through the TSLF. The TSLF was announced as a temporary facility. In July 2009, the Fed announced that primary dealers could also swap their assets for the Fed's Agency debt securities. Securities lent through all programs peaked at $260

[21] As of June 2009, Treasury securities, Agency securities, and Agency-guaranteed mortgage-backed securities were no longer accepted as collateral for the TSLF because the Fed deemed these assets to no longer be illiquid. Few of these assets were posted as collateral when the Fed discontinued their use.

[22] Current data on the number of borrowers, concentration of loans among borrowers, types of collateral, and credit rating of collateral can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

billion on October 1, 2008. Since August 2009, no securities have been borrowed through this facility. The facility expired at the end of January 2010.

By allowing the primary dealers to temporarily swap illiquid assets for highly liquid assets such as 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.[23] According to research from the New York Fed, the spreads between repos backed by GSE debt and MBS and repos backed by Treasuries fell from over 1 percentage point before the first TSLF auction to less than 0.2 percentage points by April 2008.[24] 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. As will be discussed below, the Fed would take much larger steps to aid Bear Stearns later the same week.

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

[24] Michael Fleming, Warren Hrung, and Frank Keane, "The Term Securities Lending Facility," Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, vol. 15, no. 2 (February 2009). See also Michael Fleming, Warren Hrung, and Frank Keane, *Repo Market Effects of the Term Securities Lending Facility*, Federal Reserve Bank of New York, Staff Reports 426, January 2010. The failure of Bear Stearns set off a period of market turbulence; the decline in spreads cited in these studies may have been driven by the abatement of this turbulence.

Emergency Authority Under Section 13(3) of the Federal Reserve Act

The Fed has limited authority to assist non-member banks under the Federal Reserve Act. One exception where such authority is granted is under paragraph 3 of Section 13 of the Federal Reserve Act, and the Fed has used it to authorize many of its actions during the crisis. Prior to July 2010, it read,

> 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 ... secured to the satisfaction of the Federal Reserve Bank. 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.

It is noteworthy that this text allows emergencies to be identified by the Board of Governors and places few limits on what type of institution can receive financial assistance from the Fed or what form that assistance can take. The fact that the authority is justified only by unusual and exigent circumstances suggests that decisions made under 13(3), such as the creation of lending facilities, could not be made permanent under existing authority. Nevertheless, expiration dates were pushed back more than once for some new facilities. In 1991, Section 13(3) was amended to expand the collateral that the Fed could accept to back its lending; this was widely seen as making it easier for the Fed to lend to non-bank financial firms in an emergency. As will be discussed below, on a few occasions in 2008, Section 13(3) has been invoked to lend to an entity that the Fed created so that the entity could purchase private securities.

According to Hackley (1973), only 123 loans to businesses were made using 13(3) authority from 1932 to 1936. Until Bear Stearns, the authority had not been used for non-banks since. (The authority was superseded by Section 13b authority to lend to non-banks; Section 13b was revoked in 1958.) It has been invoked numerous times in 2008, including to authorize the Primary Dealer Credit Facility, the Fed's role in the Bear Stearns merger, and the Fed's extension of credit to AIG. Financial crises can spread quickly, and Section 13(3) makes a prompt response possible. But recent events have demonstrated that it vests the Fed with the ability to make large, wide-ranging financial commitments without congressional approval. It has voluntarily sought and received Treasury approval in each instance, however.

Section 13(3) was amended in October 2008. P.L. 110-343 requires the Fed to report to the House Financial Services Committee and the Senate Banking, Housing, and Urban Affairs Committee on its justification for exercising Section 13(3), the terms of the assistance provided, and regular updates on the status of the loan.

H.R. 4173 requires the Fed to establish policies for lending under 13(3) that ensure that lending programs are broadly available for the purpose of providing liquidity to the financial system, and not used to assist specific firms or failing firms, and that emergency loans are sufficiently secured to protect taxpayers from losses. It also forbids "a program or facility that is structured to remove assets from the balance sheet of a single and specific company." It requires the Fed to seek approval from the Treasury Secretary before establishing a 13(3) program or facility.

For more information, see David Fettig, "The History of a Powerful Paragraph," Federal Reserve Bank of Minneapolis, *The Region*, June 2008; Howard Hackley, *Lending Functions of the Federal Reserve Banks: A History*, May 1973; Walker Todd, "FDICIA's Emergency Liquidity Provisions," *Federal Reserve Bank of Cleveland Review*, Third Quarter 1993, p. 16.

Primary Dealer Credit Facility

On March 16—a day too late to help Bear Stearns—the Fed announced the creation of the Primary Dealer Credit Facility (PDCF), a new direct lending program for primary dealers very similar to the discount window program for depository institutions. Loans are made through the PDCF on an overnight basis at the discount rate, limiting their riskiness. Acceptable collateral initially included Treasuries, government agency debt, and investment grade corporate, mortgage-backed, asset-backed, and municipal securities. On September 14, 2008, the Fed expanded acceptable collateral to include certain classes of equities. Many of the classes of eligible 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. The facility was subsequently extended, but allowed to expire at the end of January 2010.

Borrowing from the facility has been sporadic, with average daily borrowing outstanding above $10 billion in the first three months, and falling to zero in August 2008. Much of this initial borrowing was done by Bear Stearns, before its merger with J.P. Morgan Chase had been completed.[25] Loans outstanding through the PDCF peaked at $148 billion during the week of October 1, 2008. Since May 2009, outstanding loans through the PDCF have been zero, because of improvement in the financial system and because the largest investment banks converted into or were acquired by bank holding companies in late 2008, making them eligible to access other Fed lending facilities.

Although the program shares some characteristics with the discount window, the fact that the program was authorized under paragraph 3 of Section 13 of the Federal Reserve Act 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 Fed credit—come with the costs of regulation to ensure that banks do not take excessive risks. Although the primary dealers are subject to certain capital requirements, they are not necessarily part of the banking system, and do not fall under the same "safety and soundness" regulatory structure as banks.

Term Asset-Backed Securities Loan Facility

In November 2008, the Fed created the Term Asset-Backed Securities Loan Facility (TALF) in response to problems in the market for asset-backed securities (ABS). According to the Fed, "new issuance of ABS declined precipitously in September and came to a halt in October. At the same time, interest rate spreads on AAA-rated tranches of ABS soared to levels well outside the range of historical experience, reflecting unusually high risk premiums."[26]

Data support the Fed's view: issuance of non-mortgage asset backed securities fell from more than $175 billion per quarter from 2005 through the second quarter of 2007 to $5 billion in the fourth quarter of 2008, according to the Securities Industry and Financial Markets Association (SIFMA). The Fed fears that if lenders cannot securitize these types of loans, less credit will be extended to consumers, and eventually households will be forced to reduce consumption spending, which would exacerbate the economic downturn.

The TALF is intended to stimulate the issuance of new securities backed by pools of the following assets:

- auto loans or leases, including motorcycles, recreational vehicles (including boats), and commercial, rental, and government fleets;
- credit cards, consumer and corporate;
- student loans, private and government guaranteed;
- SBA-guaranteed small business loans;

[25] For more information, see Tobias Adrian, Christopher Burke, and James McAndrews, *The Federal Reserve's Primary Dealer Credit Facility*, Federal Reserve Bank of New York, Current Issues in Economics and Finance, vol. 15, no. 4, New York, NY, August 2009.

[26] Board of Governors of the Federal Reserve System, press release, November 25, 2008.

- business equipment loans, including retail and leases;
- floorplan loans for inventories, including auto dealers;
- mortgage servicing advances;
- commercial mortgages; and
- insurance premium finance loans.

In May 2009, the Fed began accepting legacy commercial mortgage-backed securities (CMBSs). The Fed announced that the TALF may later be expanded to other classes of ABS. In March 2009, the Treasury announced that TALF may be expanded in the future to include private-label residential MBS, and collateralized debt and loan obligations. To date, most TALF loans have been backed by auto, credit card, and student loans.[27]

Rather than purchase ABS directly, the Fed will make non-recourse loans to any private U.S. company or subsidiary with a relationship with a primary dealer to purchase recently issued ABS receiving the highest credit rating, using the ABS as collateral. The minimum loan size will be $10 million. If the ABS lose value, the losses will be borne by the Fed and the Treasury (through the TARP program) instead of by the borrower—an unusual feature for a Fed lending facility. The Fed will lend less than the current value of the collateral, so the Fed would not bear losses on the loan until losses exceed the value of the "haircut" (different ABS receive different haircuts). The loans will have a term of up to three years for most types of assets (and up to five years for some types of assets), but can be renewed. Interest rates will be set at a markup over different maturities of LIBOR or the federal funds rate, depending on the type of loan and underlying collateral.

If the loans are not repaid, the Treasury will bear the first $20 billion in total losses on the underlying collateral, and the Fed will bear any additional losses. Treasury will receive interest in return for bearing this risk. The Treasury's losses will be financed through the Troubled Asset Relief Program (TARP), authorized by P.L. 110-343. In addition, TARP has already loaned the TALF program $100 million to finance initial administrative costs. It was originally proposed that ABS issuers would be subject to TARP's executive compensation restrictions. Subsequently, in a letter to the Special Inspector General for TARP, the General Counsel of the Treasury reasoned that the Fed, not the TALF loan recipients nor the ABS issuers, is the recipient of TARP funds, and so executive compensation restrictions do not apply to TALF.[28]

TALF has some similarities to TARP as it was originally envisioned, with the primary differences being that the Fed is lending to purchase rather than directly purchasing assets, and the assets backing the loans are mostly newly or recently issued as opposed to "troubled" existing assets. Because the Treasury's funds will finance loan losses rather than asset purchases, the $20 billion will support a much larger volume of assets than would be possible through direct purchase via TARP.

In March 2009, Treasury announced a new Public-Private Partnership Investment Program (PPIP) within TARP.[29] Under this program, private investors will receive matching capital from TARP to purchase up to $500 billion to $1 trillion of legacy loans and securities. These legacy securities are defined as existing ABS backed by mortgages and other assets. Treasury has announced that

[27] Current data on the types of loans and names of issuers whose ABS have been used for collateral can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

[28] Special Inspector General for TARP, *Quarterly Report to Congress*, Washington, DC, April 29, 2009, p. 227.

[29] For more information, see CRS Report RL34730, *Troubled Asset Relief Program: Legislation and Treasury Implementation*, by Baird Webel and Edward V. Murphy.

private partners will be able to use loans from TALF (and other sources) to finance the purchase of these legacy securities. In May 2009, the Fed began accepting legacy commercial mortgage-backed securities (CMBSs) as the first class of legacy securities eligible for TALF. PPIP has also turned out to be much smaller than envisioned—as of May 2010, Treasury had pledged a maximum of $30 billion for PPIP-Securities.

The Fed originally announced TALF as a $200 billion program, and Treasury expressed the desire to see it increased to $1 trillion. As it turns out, TALF lending grew slowly after inception, and peaked at $48 billion on March 17, 2010. The low lending totals seem less indicative of the unpopularity of TALF, and more indicative of the continued depressed state of the private securitization market. According to data from SIFMA, non-mortgage ABS issuance rose to $52 billion per quarter in the first two full quarters that TALF was in operation, but fell to $32 billion per quarter in the next two quarters—a far cry from issuance of more than $175 billion per quarter before the crisis. Nevertheless, a review of the program by the Federal Reserve Bank of Dallas argues that TALF should be credited with a decline in ABS spreads against Treasury bonds and a rise in ABS issuance.[30] The facility expired at the end of June 2010 for loans against newly issued CMBS and March 2010 for loans against other assets.

Intervention in the Commercial Paper Market

Many large firms routinely issue commercial paper, which is short-term debt purchased directly by investors that matures in less than 270 days, with an average maturity of 30 days. There are three broad categories of commercial paper issuers: financial firms, non-financial firms, and pass-through entities that issue paper backed by assets. The commercial paper issued directly by firms tends not to be backed by collateral, as these firms are viewed as large and creditworthy and the paper matures quickly.[31]

Individual investors are major purchasers of commercial paper through money market mutual funds and money market accounts. The Securities and Exchange Commission regulates the holdings of money market mutual funds, limiting their holdings to highly rated, short-term debt; thus, investors widely perceived money market mutual funds as safe and low risk. On September 16, 2008, a money market mutual fund called the Reserve Fund "broke the buck," meaning that the value of its shares had fallen below face value. This occurred because of losses it had taken on short-term debt issued by Lehman Brothers, which filed for bankruptcy on September 15. Money market investors had perceived "breaking the buck" to be highly unlikely, and its occurrence set off a run on money market funds, as investors simultaneously attempted to withdraw an estimated $250 billion of their investments—even from funds without exposure to Lehman.[32] This run greatly decreased the demand for new commercial paper. Firms rely on the ability to issue new debt to roll over maturing debt to meet their liquidity needs.

Fearing that disruption in the commercial paper markets could make overall problems in financial markets more severe, the Fed announced on September 19 that it would create the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF). This facility would

[30] Kenneth Robinson, *TALF: Jump-Starting the Securitization Markets*, Federal Reserve Bank of Dallas Economic Letter, vol. 4, no. 6, August 2009.

[31] For more information, see Richard Anderson and Charles Gascon, "The Commercial Paper Market, the Fed, and the 2007-2009 Financial Crisis," *Federal Reserve Bank of St. Louis Review*, vol. 91, no. 6 (November/December 2009), p. 589.

[32] Figure cited in Chairman Ben Bernanke, "Financial Reform to Address Systemic Risk," speech at the Council on Foreign Relations, March 10, 2009.

make non-recourse loans to banks to purchase asset-backed commercial paper. Because the loans were non-recourse, the banks would have no further liability to repay any losses on the commercial paper collateralizing the loan. On October 1, 2008, daily loans outstanding peaked at $152 billion. The AMLF would soon be superseded in importance by the creation of the Commercial Paper Funding Facility, and lending fell to zero in October 2009.[33] The temporary facility was authorized under Section 13(3) of the Federal Reserve Act, and was subsequently extended until the end of January 2010.

Although the creation of the AMLF and the Treasury's temporary guarantee of money market mutual fund deposits had eased conditions in the commercial paper market, the market remained strained. For example, commercial paper outstanding fell from more than $2 trillion outstanding in August 2007 to $1.8 trillion on September 7, 2008, to $1.6 trillion on October 1, 2008. The yield on 30-day, AA-rated asset-backed commercial paper rose from 2.7% on September 8, 2008, to 5.5% on October 7, 2008.

Because of the importance of commercial paper for meeting firms' liquidity needs, the Fed decided to take stronger action to ensure that the market was not disrupted. On October 7, it announced the creation of the Commercial Paper Funding Facility (CPFF), a special purpose vehicle (SPV) that would borrow from the Fed to purchase all types of three-month, highly rated U.S. commercial paper, secured and unsecured, from issuers.[34] The Fed argued that the assurance that firms will be able to roll over commercial paper at the CPFF will encourage private investors to buy commercial paper again. The interest rate charged by the CPFF was set at the three month overnight index swap plus 1 percentage point for secured corporate debt, 2 percentage points for unsecured corporate debt, and 3 percentage points for asset-backed paper. The CPFF can buy as much commercial paper from any individual issuer as that issuer had outstanding in the year to date. Any losses borne by the CPFF would ultimately be borne by the Fed. The Fed has hired the private company PIMCO to manage the SPV's assets. The facility is authorized under Section 13(3) of the Federal Reserve Act, and was subsequently extended until the end of January 2010.

At its peak in January 2009, the CPFF held $351 billion of commercial paper, and has fallen steadily since. Goldman Sachs reports that conditions in commercial paper markets improved significantly after the creation of the CPFF (although they remained worse than before the crisis), and in January 2009, the CPFF was holding far more commercial paper than the total that had been issued since its inception.[35]

The CPFF is notable on several grounds. First, it is the first Fed standing facility in modern times with an ongoing commitment to purchase assets, as opposed to lending against assets. Technically, the Fed is lending against the assets of the SPV, but the SPV was created by the Fed and is controlled by the Fed.[36] Second, in the case of non-financial commercial paper, it is the

[33] Current data on the number of borrowers and credit rating of collateral can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

[34] Current data on the number of borrowers, loan concentration among borrowers, types of borrowers, and credit rating of the commercial paper can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.* See also, Tobias Adrian, Karin Kimbrough, and Dina Marchioni, "The Federal Reserve's Commercial Paper Funding Facility," Federal Reserve Bank of New York, *Economic Policy Review,* forthcoming.

[35] Andrew Tilton, "Fed Nursing the Money Markets Back to Health," Goldman Sachs U.S. Daily newsletter, January 8, 2009.

[36] The arrangement is similar to the Fed's creation of Maiden Lane limited liability corporations to purchase Bear Stearns' and AIG's assets (discussed below), but those involved one-time purchases.

first time in 50 years that the Fed is providing financial assistance to non-financial firms.[37] (In practice, the Fed has bought very little commercial paper issued by non-financial firms. [38]) Third, in the case of commercial paper that is not asset backed, it is unusual for the Fed (through the SPV) to purchase uncollateralized debt. Indeed, the Federal Reserve Act would seem to rule out the direct purchase of uncollateralized debt.

On October 21, 2008, the Fed announced the creation of the Money Market Investor Funding Facility (MMIFF), and pledged to lend it up to $540 billion. The MMIFF will lend to private sector SPVs that invest in commercial paper issued by highly rated financial institutions. Each SPV will be owned by a group of financial firms and can only purchase commercial paper issued by that group. These SPVs can purchase commercial paper from money market mutual funds and similar entities facing redemption requests to help avoid runs such as the run on the Reserve Fund. The facility expired at the end of October 2009 without ever being used. The Fed's director of the Division of Monetary Affairs reported that money market funds were unwilling to use it because "investors would recognize that leverage would ... intensify their incentive to run."[39]

Mortgage-Backed Securities Purchase Program and Purchase of GSE Obligations

In July 2008, the stock prices of Fannie Mae and Freddie Mac, the housing GSEs, came under increasing pressure, leading to fears that they would be unable to roll over debt and become illiquid. On July 13, 2008, the Fed authorized lending to the housing GSEs, but this authority was not used at that point. On September 7, 2008, Treasury placed the two housing GSEs into conservatorship.[40] On September 19, 2008, the Fed announced that it would purchase debt obligations of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks through open market operations.[41]

On November 25, 2008, the Fed announced it would purchase up to $100 billion of direct obligations (e.g., bonds) issued by these institutions and up to $500 billion of MBS guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae, a government agency. GSE obligations will be purchased through auctions and MBS will be purchased on the Fed's behalf by private investment managers. Adjustable rate MBS, collateralized mortgage obligations (CMOs), real estate mortgage investment conduits (REMICs), and mortgage derivatives would not be eligible for purchase under the program. Assets purchased under these programs will be held passively and long-term. On March 18, 2009 the Fed announced an increase in the purchase commitment of up

[37] See David Fettig, "Lender of More Than Last Resort," Federal Reserve Bank of Minneapolis, *The Region*, December 2002.

[38] Although much of the commercial paper bought by the CPFF was issued by financial firms, most financial firms experiencing any disruption to their liquidity needs in the commercial paper market were already eligible to borrow directly from the Fed on a collateralized basis.

[39] Brian Madigan, "Bagehot's Dictum in Practice," Speech at the Federal Reserve Bank of Kansas City's Annual Economic Symposium, August 21, 2009.

[40] See CRS Report RS22950, *Fannie Mae and Freddie Mac in Conservatorship*, by Mark Jickling.

[41] In the years before the crisis, the Fed had no GSE holdings, but the Fed had purchased GSE assets in the past. According to a New York Fed report, "Agency purchases were introduced in 1971 in order to 'widen the base for System open market operations and to add breadth to the market for agency securities.' New purchases were stopped in 1981, although some maturing funds from agency holdings were reinvested in newly issued agency securities. Beginning in 1997, all holdings of agency securities were allowed to mature without replacement. The last agency holding acquired under these programs matured in December 2003." Joseph Gagnon et al., *Large-Scale Asset Purchases by the Federal Reserve*, Federal Reserve Bank of New York, Staff Reports 441, March 2010.

to $1.25 trillion in MBS and $200 billion of GSE obligations. In September 2009, the Fed announced that it would complete these purchases by the end of the first quarter of 2010. In November 2009, the Fed announced that it would purchase only $175 billion of Agency debt securities due to limited availability.

The Fed argued that these programs would "reduce the cost and increase the availability of credit for the purchase of houses."[42] Support to mortgage markets through these programs can be seen as indirect and selective, however. The Fed is not providing or purchasing mortgages directly, nor is it purchasing newly issued MBS. By purchasing existing MBS from the secondary market, the price should rise, and that may induce more MBS to be issued. If more MBS are issued, then the increased availability of credit to mortgage markets would be expected to cause mortgage rates to fall. Further, the Fed is accepting MBS issued by GSEs but not by private firms, even though the GSEs have issued more MBS in 2008 than before the crisis started, while private-label issuance has dried up almost entirely, according to data from the Securities Industry and Financial Markets Association. Further, overall mortgage rates have been low during the crisis, but access has been limited to highly qualified lenders. Increasing the demand for GSE-issued MBS and GSE debt would be expected to primarily reduce already low mortgage rates, and increase borrower access only indirectly, at best. Mortgage rates fell noticeably after the Fed announced that the programs had begun, although the amounts of securities purchased by the Fed at that point were small. Subsequently, mortgage rates rose despite the Fed's purchases, presumably because of the economy's improvement. One concern is that mortgage rates could rise after the Fed's purchases are complete, and the housing market will not have recovered by then.

These programs did not require the use of Section 13(3) emergency authority. Transactions involving agency debt are authorized under Section 13(13) and 14b of the Federal Reserve Act. The Fed's programs are similar to two Treasury programs, the GSE MBS Purchase Program and the GSE Credit Facility, already in place. Since the Treasury programs were authorized to provide the GSEs with unlimited financial assistance through the end of 2009, it is not clear why the Fed felt that the Treasury programs needed to be supplemented.[43]

Swap Lines with Foreign Central Banks

In December 2007, the Fed announced the creation of temporary reciprocal currency agreements, known as swap lines, with the European Central Bank and the Swiss central bank.[44] These agreements let the Fed swap dollars for euros or Swiss francs for a fixed period of time. Since September 2008, the Fed has extended similar swap lines to central banks in several other countries. To date, most of the swaps outstanding have been with the European Central Bank and Bank of Japan.[45] In October 2008, it made the swap lines with certain countries unlimited in size. Interest is paid to the Fed on a swap outstanding at the rate the foreign central bank charges to its dollar borrowers. The temporary swaps are repaid at the exchange rate at the time of the original swap, meaning that there is no downside risk for the Fed if the dollar appreciates in the meantime (although the Fed also does not enjoy upside gain if the dollar depreciates). The swap lines are currently authorized through the end of January 2010. Except in the unlikely event that the

[42] Federal Reserve, press release, November 25, 2008.

[43] For more information on the Treasury programs, see CRS Report RS22950, *Fannie Mae and Freddie Mac in Conservatorship*, by Mark Jickling.

[44] For more information, see Linda Goldberg, Craig Kennedy, and Jason Miu, *Central Bank Dollar Swap Lines and Overseas Dollar Funding Costs*, Federal Reserve Bank of New York, Staff Reports No. 429, Feb. 2010.

[45] Current data on swaps outstanding by central bank can be found in the Fed's *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

borrowing country's currency becomes unconvertible in foreign exchange markets, there is no credit risk involved for the Fed. Swaps outstanding peaked at $583 billion in December 2008, and have fallen steadily since.

The swap lines are intended to provide liquidity to banks in non-domestic denominations. For example, many European banks have borrowed in dollars to finance dollar-denominated transactions, such as the purchase of U.S. assets. Normally, foreign banks could finance their dollar-denominated borrowing through the private inter-bank lending market. As banks have become reluctant to lend to each other through this market, central banks at home and abroad have taken a much larger role in providing banks with liquidity directly. But normally banks can only borrow from their home central bank, and central banks can only provide liquidity in their own currency. The swap lines allow foreign central banks to provide needed liquidity in dollars. As such, the swap lines directly benefit foreign borrowers who need access to dollars. But the swap lines indirectly benefit the United States by promoting the use of the dollar as the "reserve" currency, which results in more seigniorage (earnings from currency) for the United States, as well as intangible benefits. Initially, the swap lines were designed to allow foreign central banks to acquire U.S. dollars. In April 2009, the swap lines were modified so that the Fed could access foreign currency to provide to its banks as well; to date, the Fed has not accessed foreign currency through these lines.

The swap lines were ended in February 2010, but reopened with five countries in May 2010 in response to the crisis in Greece.[46] To date, their use in 2010 was much more limited than in 2008 to 2009.

Payment of Interest on Bank Reserves

Banks hold some assets in the form of cash reserves stored in their vaults or in accounts at the Fed to meet daily cash-flow needs and required ratios imposed by the Fed. At times before the federal funds target was reduced to zero in December 2008, the Fed faced conflicting goals—it sought to ensure that banks have enough reserves to remain liquid, but it also sought to maintain its target for the federal funds rate to meet its economic goals. The federal funds rate is the market rate in the private market where a bank with excess reserves lends them overnight to other banks. At times, ensuring that all banks have adequate reserves has resulted in an overall level of reserves in the market that has pushed the federal funds rate below its target. In other words, the only way for the Fed to make sure that each bank has enough reserves has been to oversupply the banking system as a whole with liquidity at the given federal funds target.

To avoid this problem, Congress authorized the Fed to pay interest on bank reserves in the Emergency Economic Stabilization Act of 2008 (H.R. 1424/P.L. 110-343).[47] By setting an interest rate on bank reserves close to the federal funds rate, the Fed would in effect place a floor on the rate. In theory, the federal funds rate would not fall below the interest rate on reserves because banks would rather hold excess reserves to earn interest than lend them out to other banks at a lower interest rate.[48] Paying interest on reserves may also encourage banks to hold more reserves

[46] For more information, see CRS Report R41167, *Greece's Debt Crisis: Overview, Policy Responses, and Implications*, coordinated by Rebecca M. Nelson.

[47] This authority was originally allowed beginning in 2011 in the Financial Services Regulatory Relief Act of 2006 (P.L. 109-351). The Emergency Economic Stabilization Act of 2008 granted immediate authority.

[48] See Todd Keister et al., "Divorcing Money From Monetary Policy, Federal Reserve Bank of New York, *Economic Policy Review*, September 2008.

overall, which may somewhat reduce the likelihood that banks will have liquidity problems in the future.

Paying interest on reserves does not encourage banks to increase overall lending to firms and households, however, because it increases the attractiveness of holding reserves. Thus, it is not a policy that stimulates the economy, at least in any direct sense; on the contrary, it prevents the increase in liquidity to banks from stimulating the economy by preventing the federal funds rate from falling.

The interest rate on excess reserves was initially set at 0.75 percentage points less than the federal funds rate. In the short term, paying interest on reserves did not succeed in placing a floor under the federal funds target. Immediately after the Fed began paying interest, the federal funds rate was still falling below the target, and some days was even below the interest rate on reserves. In response, the Fed subsequently reduced the spread between the interest rate on reserves and the federal funds rate, but the actual federal funds rate continued to fall below the target rate.[49] When the Fed reduced the federal funds rate target to a range of 0% to 0.25% in December 2008, it set the interest rate paid on reserves to 0.25%, the high end of the target range. At that point, paying interest on reserves could no longer place a floor under the federal funds rate, the stated rationale for its authorization.

P.L. 110-343 gave the Fed permanent authority to pay interest on reserves. Once financial conditions return to normal, the liquidity benefits from paying interest will be less important (since banks will again be able to meet reserve needs through the federal funds market), and the primary remaining benefit would be a reduction in the volatility of the federal funds rate. The Fed previously intervened in the federal funds market on a daily basis to keep the market rate close to the target, sometimes unsuccessfully. The volatility partly resulted from banks devoting resources to activities that minimize reserves, such as "sweep accounts."

Paying interest on reserves reduces the Fed's profits, and thus reduces its remittances to the Treasury, thereby increasing the budget deficit, all else equal. It can be viewed as a transfer from the federal government to the banks, although in the long run, competition makes it likely that the banks will pass on the benefit to depositors in the form of higher interest paid on deposits. From Congress's perspective, the benefit of a less volatile target rate and less resources spent minimizing reserves would have to be weighed against the lost federal revenue, over time. The decision to pay interest on required, as well as excess, reserves also increases the cost of the policy without any additional benefit to liquidity or reduced volatility (because banks must keep required reserves even if no incentive is offered).

The growth in the Fed's balance sheet has raised concerns about the future implications for inflation. The Fed has argued that paying interest on reserves can help prevent its balance sheet growth from becoming inflationary.[50] It approved "term deposits" of up to six months for bank reserves in April 2010. The interest rate paid by term deposits will be determined by auction.

Assistance to Individual Financial Institutions

Over the course of the year, several financial firms that were deemed "too big to fail" received financial assistance from the Fed in the form of loans, troubled asset purchases, and asset

[49] One theory as to why the interest rate paid on bank reserves did not act as an effective floor on the federal funds rate is because the GSEs participate in the federal funds market but are not paid interest on their reserves at the Fed.

[50] See the section below entitled "Future Concerns."

guarantees. This assistance went beyond its traditional role of acting as a lender of last resort by providing loans to illiquid but solvent firms.[51] In a joint announcement in March 2009, the Treasury and Fed stated a desire in the long run to transfer assets acquired by the Fed (via the Maiden Lane LLCs) from Bear Stearns and the American International Group (AIG) to the Treasury, but to date have not taken any steps to do so.[52] H.R. 4173 alters Section 13(3) authority in an attempt to prevent assistance to individual firms in the future.

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

The investment bank Bear Stearns came under severe liquidity pressures in early March 2008, in what many observers have coined a non-bank run.[53] On Friday, March 14, 2008, JPMorgan Chase announced that, in conjunction with the Federal Reserve, it had agreed to provide secured funding to Bear Stearns, as necessary. Through its discount window, the Fed agreed to provide $13 billion of back-to-back financing to Bear Stearns via JPMorgan Chase. It was a non-recourse loan, meaning that the Fed had no general claim against JPMorgan 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. This loan was superseded by the events of March 16, and the loan was repaid in full on March 17, 2008.

On Sunday, March 16, after negotiations between the two companies, the Fed and the Treasury, JPMorgan Chase agreed to acquire Bear Stearns. The Fed agreed to purchase up to $30 billion of Bear Stearns' assets through Maiden Lane I, a new Limited Liability Corporation (LLC) based in Delaware that it created and controls. After the merger was completed, the loan was finalized on June 26, 2008. Two loans were made to the LLC: the Fed lent the LLC $28.82 billion, and JPMorgan Chase made a subordinate loan to the LLC worth $1.15 billion, based on assets initially valued at $29.97 billion.[54] The Fed's loan will be made at an interest rate set equal to the discount rate (2.5% when the terms were announced, but fluctuating over time) for a term of 10 years, renewable by the Fed.[55] JPMorgan Chase's loan will have an interest rate 4.5 percentage points above the discount rate.

Using the proceeds from that loan, the LLC purchased assets from Bear Stearns worth $29.97 billion at marked to market prices by Bear Stearns on March 14, 2008. On its website, the New

[51] This section discusses the special assistance that the troubled firms received from the Fed. The same firms may also have subsequently accessed Fed resources through its normal lending facilities. All lending through facilities is confidential, so knowledge of such activity is limited to self-reporting by the firms. For example, the CEO of JPMorgan Chase testified to Congress that Bear Stearns had borrowed an additional $25 billion from the Fed. (Source: Kara Scannell and Sudeep Reddy, "Officials Say They Sought to Avoid Bear Bailout," *Wall Street Journal*, April 4, 2008, p. A1.) Similarly, AIG announced that it had accessed the Commercial Paper Funding Facility. (Source: "U.S. Treasury, Federal Reserve and AIG Establish Comprehensive Solution for AIG," AIG press release, November 10, 2008.)

[52] Federal Reserve and U.S. Treasury Department, "The Role of the Federal Reserve in Preserving Financial and Monetary Stability," joint press release, March 23, 2009.

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

[54] Federal Reserve Bank of New York, "New York Fed Completes Financing Arrangement Related to JPMorgan Chase's Acquisition of Bear Stearns," press release, June 26, 2008. A subordinate loan is one where the principal and interest are not repaid until after the primary loan is repaid. The originally announced terms of the loans were for up to $29 billion from the New York Fed and $1 billion from JPMorgan Chase. After more thoroughly reviewing the assets the LLC would receive, the Fed changed the terms of the loan.

[55] Federal Reserve Bank of New York, "Summary of Terms and Conditions Regarding the JPMorgan Chase Facility," press release, March 24, 2008. Many of the details of the loan, including the size, were not announced on March 16.

York Fed gives information on the current fair market value of the assets by type of asset, credit rating of the assets, and geographical location of the underlying assets. At the end of 2008, 44% of the portfolio consisted of agency collateralized mortgage obligations (CMOs), 6% was non-agency CMOs, 18% was commercial loans, 3% was residential loans, 8% was swap contracts, 7% was TBA commitments, and 8% was cash or cash equivalents. More than half of the non-agency CMOs had a credit rating of AAA; about one-fifth had a junk rating. (Agency CMOs are guaranteed by the GSE that issued them, and the Treasury has pledged to maintain the GSE's solvency.)

The CEO of JPMorgan Chase testified that JPMorgan Chase "kept the riskier and more complex securities in the Bear Stearns portfolio.... We did not cherry pick the assets in the collateral pool (for the LLC)."[56] These assets are owned by the LLC, which will eventually liquidate them to pay back the principal and interest owed to the Fed and JPMorgan Chase. The LLC's assets (purchased from Bear Stearns) are the collateral backing the loans from the Fed and JPMorgan Chase. A private company, BlackRock Financial Management, has been hired to manage the portfolio. Neither Bear Stearns nor JPMorgan Chase owes the Fed any principal or interest, nor are they liable if the LLC is unable to pay back the money the Fed lent it. The New York Fed explained that the LLC was created to "ease administration of the portfolio and will remove constraints on the money manager that might arise from retaining the assets on the books of Bear Stearns."[57] JPMorgan Chase and Bear Stearns did not receive the $28.82 billion from the LLC until the merger was completed.[58]

It was announced that the Fed is planning to begin liquidating the assets after two years. The assets will be sold off gradually, "to minimize disruption to financial markets and maximize recovery value."[59] As the assets are liquidated, interest will continue to accrue on the remaining amount of the loan outstanding. Thus, in order for the principal and interest to be paid off, the assets will need to appreciate enough or generate enough income so that the rate of return on the assets exceeds the weighted interest rate on the loans (plus the operating costs of the LLC). **Table 1** shows how the funds raised through the liquidation will be used. Any difference between the proceeds and the amount of the loans is profit or loss for the Fed, not JPMorgan Chase. Because JPMorgan Chase's $1.15 billion loan was subordinate to the Fed's $28.82 billion loan, if there are losses on the total assets, the first $1.15 billion of losses will be borne, in effect, by JPMorgan Chase, however. The interest on the loan will be repaid out of the asset sales, not by JPMorgan Chase. At the end of 2009, the value of the assets had already been written down by over $3.5 billion, exceeding the maximum losses borne by JPMorgan Chase.[60]

Table 1. Use of Funds Raised by Liquidation of Bear Stearns Assets

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

[56] Jamie Dimon, *Testimony Before the Senate Committee on Banking, Housing, and Urban Affairs*, April 3, 2008.

[57] Federal Reserve Bank of New York, "Summary of Terms and Conditions Regarding the JPMorgan Chase Facility," press release, March 24, 2008.

[58] Timothy Geithner, "Testimony Before the Senate Committee for Banking, Housing and Urban Affairs," April 3, 2008, p. 17.

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

[60] Federal Reserve, *Factors Affecting Reserve Balances of Depository Institutions*, press release H.4.1, September 11, 2008. Information on the portfolio will be updated quarterly and announced through this press release.

Payments from the liquidation will be made in the following order:
(3) interest due to the Federal Reserve on the $29 billion loan
(4) $1 billion principal owed to JPMorgan Chase
(5) interest due to JPMorgan 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.

The CEO of JPMorgan Chase testified that "we could not and would not have assumed the substantial risks of acquiring Bear Stearns without the $30 billion facility provided by the Fed" (emphasis in original).[61] The primary risk was presumably that the value of mortgage-related assets would continue to decline. Had the transaction been crafted as a typical discount window loan directly to JPMorgan Chase, JPMorgan Chase would have been required to pay back the principal and interest, and it (rather than the Fed) would have borne the full risk of any depreciation in value of Bear Stearns' assets.

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 his testimony, Timothy Geithner, New York Fed president at the time, stated that the Fed did not have authority to acquire an equity interest in Bear Stearns or JPMorgan Chase.[62] Yet the LLC controlled by the Fed acquired assets from Bear Stearns, and the profits or losses from that acquisition will ultimately accrue to the Fed. It is unclear why the Fed decided to create and lend to a LLC to complete the transaction, rather than engaging in the transaction directly. Although the Fed did not buy Bear Stearns' assets directly, there are certainly important policy questions raised by the Fed's creation and financing of an LLC in order to buy Bear Stearns' assets. Typically, the Fed lends money to institutions and receives collateral in return to reduce the risk of suffering a loss. When the loan is repaid, the collateral is returned to the institution. In this case, the Fed made a loan, but to a LLC they created and controlled, not to a financial institution. From the perspective of JPMorgan Chase or Bear Stearns, the transaction was a sale (to the LLC), not a loan, regardless of whether the Fed or the LLC was the principal.

Assistance to American International Group (AIG)[63]

Initial Loan

On September 16, 2008, the Fed announced, after consultation with the Treasury Department, that it would lend up to $85 billion to the financial institution American International Group. AIG had experienced a significant decline in its stock price and was facing immediate demands for $14 billion to $15 billion in collateral payments due to recent downgrades by credit rating agencies,

[61] Jamie Dimon, *Testimony Before the Senate Committee on Banking, Housing, and Urban Affairs*, April 3, 2008.

[62] Timothy Geithner, "Testimony Before the Senate Committee for Banking, Housing and Urban Affairs," April 3, 2008, p. 13.

[63] This section was prepared with Baird Webel, specialist in Financial Economics. For more information, see CRS Report R40438, *Federal Government Assistance for American International Group (AIG)*, by Baird Webel.

according to press reports.[64] The Fed and Treasury feared that AIG was also "too big to fail" because of the potential for widespread disruption to financial markets that would result.

The Fed announced that AIG could borrow up to $85 billion from the Fed over the next two years. On September 18, the Fed announced that it had initially lent $28 billion to AIG.[65] The interest rate on the funds drawn is 8.5 percentage points above the London Interbank Offered Rate (LIBOR), a rate that banks charge to lend to each other. A lower interest rate is charged on any funds that it is does not draw from the facility. In return, the government agreed to receive warrants that, if exercised, would give the government a 79.9% ownership stake in AIG. The Fed named three independent trustees to oversee the firm for the duration of the loan.

The lending facility is backed by the assets of AIG's non-regulated subsidiaries (but not the assets of its insurance company). In other words, the Fed can seize AIG's assets if the firm fails to honor the terms of the loan. This reduces the risk that the Fed (and ultimately, taxpayers) will suffer a loss. The risk still remains that if AIG turned out to be insolvent, its assets would be insufficient to cover the amount it had borrowed from the Fed. Since AIG has been identified as too big to fail, it is unclear how its assets could be seized in the event of non-payment without precipitating failure.

Second Loan

On October 8, 2008, the Fed announced that it was expanding its assistance to AIG and swapping cash for up to $37.8 billion of AIG's investment-grade, fixed-income securities. These securities, belonging to AIG's insurance subsidiaries, had been previously lent out and unavailable as collateral at the time of the original agreement. It has been reported that as AIG's loans matured, AIG realized losses on investments it had made with the collateral and some counterparties stopped participating in the lending program.[66] As a result, AIG needed liquidity from the Fed to cover these losses and counterparty withdrawals.

Although this assistance resembles a typical collateralized loan (the Fed receives assets as collateral, and the borrower receives cash), the Fed characterized the agreement as a loan of securities from AIG to the Fed in exchange for cash collateral. It appears the arrangement was structured this way because New York insurance law prevents AIG from using the securities as collateral in a loan.[67]

Revision to Agreement on November 10, 2008

On November 10, 2008, the Federal Reserve and the U.S. Treasury announced a restructuring of the federal intervention to support AIG. As evidenced by the additional borrowing after the September 16 loan, AIG had continued to see cash flow out of the company, particularly to post collateral for the credit default swaps that were arguably the primary cause of the financial problems in the company. The revised agreement points to the tension between making the terms of the assistance undesirable enough to deter other firms from seeking government assistance in the future, compared to making the terms of assistance so punitive that it exacerbates the financial problems of the recipient firm. It also points to the fact that once a firm has been identified as too

[64] See, for example, "U.S. to Take Over AIG in $85 Billion Bailout; Central Banks Inject Cash as Credit Dries Up," *Wall Street Journal*, September 17, 2008, pp. A1-A6.

[65] Federal Reserve, "Factors Affecting Reserve Balances," press release H.4.1, September 18, 2008.

[66] Liam Pleven et al., "AIG Bailout Hit By New Cash Woes," *Wall Street Journal*, October 9, 2008, p. A1.

[67] N.Y. Ins. Law, Sec. 1410.

big to fail, government assistance to the firm can become open-ended, as the original amounts offered were quickly revised upward.

The November 10 restructuring eased the payment terms for AIG and had three primary parts: (1) a $40 billion direct capital injection, (2) restructuring of the $85 billion loan, and (3) a $52.5 billion purchase of troubled assets.

Loan Restructuring

The initial $85 billion loan facility from the Federal Reserve was reduced to $60 billion, for a time period extended to five years, and the financial terms are eased considerably. Specifically, the interest rate on the amount outstanding is reduced by 5.5 percentage points (to Libor plus 3%) and the fee on undrawn funds is reduced by 7.75 percentage points (to 0.75%).

Purchase of Troubled Assets

While P.L. 110-343 provided for the government purchase of troubled assets, the purchases related to AIG are being done by LLCs created and controlled by the Federal Reserve. This structure is similar to that created by the Federal Reserve to facilitate the purchase of Bear Stearns by JPMorgan Chase in March 2008. There are two LLCs set up for AIG—one for residential mortgage-backed securities (RMBS) and one for collateralized debt obligations (CDO).

The agreement called for the RMBS LLC (Maiden Lane II) to be lent up to $22.5 billion by the Federal Reserve and $1 billion from AIG to purchase RMBS from AIG's securities lending portfolio. The AIG loan is subordinated and AIG will bear the first $1 billion in losses should there be future losses on these securities. AIG and the Federal Reserve will "share" in any future gains, with five-sixths of future profits accruing to the Fed and one-sixth accruing to AIG. As of March 2009, the assets had lost nearly $3 billion in value, more than AIG's total loss exposure. The previous $37.8 billion loan securities lending loan facility is to be repaid and terminated with the proceeds from this LLC plus additional AIG funds if necessary. At the end of 2008, about half of the RMBS purchased were backed by subprime mortgages, and about one quarter were backed by Alt-A mortgages. Thirteen percent of the portfolio's holdings had a credit rating of AAA and 65% had a junk rating. At the end of 2009, the Maiden Lane II assets had lost $1.1 billion in value, slightly exceeding the AIG's maximum loss sharing.

The agreement called for the CDO LLC (Maiden Lane III) to be lent up to $30 billion from the Federal Reserve and $5 billion from AIG to purchase CDOs on which AIG has written credit default swaps. The $5 billion loan from AIG is subordinated and AIG will bear the first $5 billion in future losses on these securities. As of March 2009, the assets had lost nearly $8.5 billion in value, more than AIG's total loss exposure. AIG and the Federal Reserve will "share" in any future gains, with five-sixths of future profits accruing to the Fed and one-sixth accruing to AIG. The Federal Reserve also indicates that the credit default swaps will be unwound at the same time that the CDOs are purchased. Many credit default swaps, however, are purchased by entities not holding the underlying CDOs; it is unclear how, or if, such credit default swaps written by AIG will be addressed. At the end of March 2009, 16% of the portfolio's holdings had a credit rating of AAA, and 72% had a junk rating. At the end of 2009, the Maiden Lane III assets had lost $0.9 billion in value, resulting in no losses to date for the Fed.

Direct Capital Injection

Through the TARP, the Treasury purchased $40 billion in preferred shares of AIG. In addition to $40 billion in preferred shares, the Treasury also receives warrants for common shares equal to

2% of the outstanding AIG shares. AIG was the first announced non-bank to receive TARP funds. The $40 billion in preferred AIG shares now held by the Treasury are slated to pay a 10% dividend per annum, accrued quarterly.[68] Participation in TARP triggers restrictions on executive pay as required by Congress, including a restriction on "golden parachutes" and a requirement for clawbacks on previously provided bonuses in the case of accounting irregularities. According to the November 10, 2008, AIG filings with the Securities and Exchange Commission, the amount of shares held in trust for the benefit of the U.S. Treasury will be reduced by the shares and warrants purchased under TARP, so the total equity interest currently held by the U.S. government equals 77.9% plus warrants to purchase another 2%. The warrants equal to 77.9% of AIG equity were exercised and transferred to the government on March 4, 2009.

Revision to Agreement on March 2, 2009

On March 2, 2009, the Treasury and Fed announced another revision of the financial assistance to AIG. On the same day, AIG announced a loss of more than $60 billion in the fourth quarter of 2008. In response to the poor results and ongoing financial turmoil, the ratings agencies were reportedly considering further downgrading AIG, which would most likely have resulted in further significant cash demands due to collateral calls.[69] According to the Treasury, AIG "continues to face significant challenges, driven by the rapid deterioration in certain financial markets in the last two months of the year and continued turbulence in the markets generally." The revised assistance is intended to "enhance the company's capital and liquidity in order to facilitate the orderly completion of the company's global divestiture program."[70]

The revised assistance includes the following:

- Exchange of the existing $40 billion in preferred shares purchased through the TARP program for preferred shares that "more closely resemble common equity," thus improving AIG's financial position. Dividends paid on these new shares will remain at 10%, but will be non-cumulative and only be paid as declared by AIG's board of directors. Should dividends not be paid for four consecutive quarters, the government has the right to appoint at least two new directors to the board.
- Commitment of up to $30 billion in additional preferred share purchases from TARP. As of October 2009, AIG had issued $3.2 billion of these shares.[71]
- Reduction of interest rate on the existing Fed loan facility by removing the current floor of 3.5% over the LIBOR portion of the rate. The rate will now simply be three month LIBOR plus 3%, which is approximately 4.25%.
- Limit on Fed revolving credit facility will be reduced from $60 billion to $25 billion.
- Up to $33.5 billion of the approximately $38 billion outstanding on the Fed credit facility will be repaid by asset transfers from AIG to the Fed. Specifically, (1) $8.5 billion in ongoing life insurance cash flows will be securitized by AIG and transferred to the Fed; and (2) $25 billion in preferred interests in two of AIG's

[68] Full details of the preferred shares can be found on the Treasury website at http://ustreas.gov/press/releases/reports/111008aigtermsheet.pdf.

[69] See, for example, "A.I.G. Reports Loss of $61.7 Billion as U.S. Gives More Aid," *New York Times*, March 2, 2009, p. A1.

[70] U.S. Treasury, "U.S. Treasury and Federal Reserve Board Announce Participation in AIG Restructuring Plan," Press Release dated March 2, 2009.

[71] U.S. Department of Treasury, *Troubled Asset Relief Program Monthly 105(a) Report to Congress*, November 10, 2009.

large life insurance subsidiaries will be issued to the Fed. The transfer of the preferred interest in the life insurance subsidiaries was finalized in December 2009. This effectively transfers a majority stake in these companies to the Fed, but the companies will still be managed by AIG.

Assistance through the end of 2009 is summarized in **Table 2**. In addition to the new assistance, AIG announced that it was forming a new holding company to include its primary property/casualty insurance subsidiaries. Since the first assistance in September 2008, AIG has sought to sell subsidiaries, including those whose equity has been transferred to the Fed, to repay the loans and reduce its holdings to a core property/casualty business. Such sales have been difficult during the ongoing financial turmoil. By effectively transferring the two life insurance subsidiaries to the Fed and gathering property casualty subsidiaries in a new holding company, AIG is arguably progressing toward this goal.

CBO estimates that most of the expected government losses from assistance to AIG will accrue to TARP, in part because those claims are junior to the Fed's. In addition, CBO did not expect losses from the Maiden Lane asset purchases at the time of purchase because the Fed reported the assets were bought at current market value. It is unclear why it was necessary for the Fed to acquire the assets if they could have been sold at the same price in the private market, however.

Table 2. Summary of Outstanding Assistance to AIG

Federal Government					Terms and Conditions			
Program	**Outstanding Amount End of CY2009**	**Outstanding Amount at Peak**	**Total Income CY2009**	**Expected Gain(+) /Loss(-)**	**Dividend/ Interest Rate**	**Warrants/ Equity Interests**	**Subsequent Conversion**	**Expiration Date**
Federal Reserve Loan to AIG	$22.2 billion loan	$87.3 billion loan (Oct. 29, 2008)	$4.0 billion	-$2 billion (CBO)	3 month LIBOR+3%[a]	warrants for 79.9% (later reduced to 77.9%) of common shares	Reduced balance by $25 billion in exchange for equity in life insurance subsidiaries; $989 million provision for loan restructuring	September 2013
TARP Preferred Share Purchase	$45.3 billion preferred shares	$45.3 billion preferred shares	$0	-$36 billion (CBO); -$45.2 billion (Treasury)	10% (dividends paid at AIG's discretion)	warrants for 2% of common shares	$1.6 billion balance outstanding[b]	Preferred Shares outstanding until repaid. No new contracts/ modifications to program after Oct. 3, 2010.
Fed Loan for Troubled Asset Purchases	$34.5 billion in loans to purchase assets	$43.9 billion loans to purchase assets (Dec. 31, 2008)	$769 million	$0	LIBOR+1%[a]	none	n/a	Securities held long-term.
Commercial Paper Funding Facility	$0	$16.7 billion (Dec 31, 2008)	n/a	$0	overnight index swap (OIS) rate+1%; OIS+3%	none	n/a	February 2010

Source: December 2009 TARP 105(a) Report; Federal Reserve, Monthly Report on Credit and Liquidity Programs and the Balance Sheet, January 2009; Congressional Budget Office, *The Budgetary Impact of Subsidy Costs of the Federal Reserve's Actions During the Financial Crisis*, May 2010; Congressional Budget Office, *Report on the Troubled Asset Relief Program*, March 2010; U.S. Treasury, *Summary Tables of Trouble Asset Relief Program (TARP) Investments as of March 31, 2010*.

a. LIBOR = London Inter-bank Offered Rate.

b. In return for conversion of shares paying a mandatory dividend to shares paying an optional dividend, AIG took on an obligation of $1.6 billion due to the outstanding dividend balance.

Who Benefits From Assistance to AIG?

While billions of dollars in government assistance have gone to AIG, in many cases, it can be argued that AIG has essentially acted as an intermediary for this assistance. In short order after drawing on government assistance, substantial funds have flowed out of AIG to entities on the other side of AIG's financial transactions, such as securities lending or credit default swaps. If AIG had been allowed to fail and had entered bankruptcy, as was the case with Lehman Brothers, then these counterparties in many cases would have been treated as unsecured creditors and seen their claims reduced.

Seen from this view, the true beneficiaries of the billions in federal assistance that have flowed to AIG has not been AIG itself, but these counterparties. On March 15, 2009, AIG released information detailing the counterparties to many of its transactions.[72] The released information detailed $52.0 billion of direct support to AIG that went to AIGFP related transactions, $29.6 billion in Maiden Lane III CDS-related transactions, and $43.7 billion in payments to securities lending counterparties.

Legal Authority

All Fed assistance to AIG is authorized under Section 13(3) of the Federal Reserve Act, the same emergency authorization used for Bear Stearns. This authorization was needed because the Fed cannot normally lend to a financial firm that is neither primarily a depository institution (although it owns a small thrift) nor a primary dealer.

Guarantee of Citigroup's Assets

Similar to Bear Stearns and AIG, Citigroup faced a sudden drop in its stock price in late 2008. Its stock price fell from $23 per share on October 1, 2008, to $3.77 on November 21, 2008, amidst investor concern about its losses. Stepping in before a potential run began, the Federal Reserve and federal government announced on November 23 that they would purchase an additional $20 billion of Citigroup preferred shares through TARP and guarantee a pool of up to $306 billion of Citigroup's assets. (The assets were valued at $301 billion when the agreement was finalized on January 16, 2009.) Citigroup announced that the assets guaranteed include mortgages, consumer loans, corporate loans, asset backed securities, and unfunded lending commitments.[73] The guarantee was to be in place for 10 years for residential assets and five years for non-residential assets. Citigroup would exclusively bear up to the first $29 billion of losses on the pool. Any additional losses would be split between Citigroup and the government, with Citigroup bearing 10% of the losses and the government bearing 90%. The first $5 billion of any government losses would be borne by the Treasury using TARP funds; the next $10 billion would be borne by the FDIC; any further losses would be borne by the Fed through a non-recourse loan. Citigroup will pay the federal government a fee for the guarantee in the form of $7 billion in preferred stock with an 8% dividend rate and warrants to purchase common stock that were worth $2.7 billion at the time of the agreement. The assets will remain on Citigroup's balance sheet, and Citigroup will receive the income stream generated by the assets and any future capital gains.

In December 2009, Citigroup and the Treasury reached an agreement to repay the outstanding $20 billion in preferred securities and to cancel the asset guarantee. As part of this agreement,

[72] See http://www.aig.com/aigweb/internet/en/files/CounterpartyAttachments031809_tcm385-155645.pdf.

[73] Citigroup, "Citigroup and U.S. Government Reach Definitive Agreement on Loss Sharing Program," press release, January 16, 2009.

Citigroup paid a termination fee of $50 million and Treasury agreed to cancel $1.8 billion worth of the trust preferred securities originally paid as a fee for the guarantee. While the asset guarantee was in place, no losses were claimed and no federal funds paid out.

In the cases of Bear Stearns and AIG, management was replaced and shareholders equity was diluted to limit moral hazard problems associated with receiving government assistance.[74] Similar steps were not taken in the case of Citigroup.

Guarantee of Bank of America's Assets

On January 16, 2009, the federal government and the Federal Reserve announced that that they would purchase an additional $20 billion of Bank of America preferred shares through TARP and guarantee a pool of up to $37 billion of Bank of America's assets and derivatives with maximum potential future losses of up to $81 billion. The guarantee would remain in place for 10 years for residential mortgage-related assets and five years for all other assets. Bank of America will bear up to the first $10 billion of losses on the assets, with any subsequent losses split 90% by the government and 10% by Bank of America. The government's share of the next $10 billion of losses will be borne jointly by the FDIC and the Treasury, and any further losses will be borne by the Fed. It was announced that the assets being guaranteed were largely acquired during Bank of America's acquisition of Merrill Lynch. Bank of America will pay the federal government a fee for the guarantee in the form of $4 billion in preferred stock with an 8% dividend rate and warrants to purchase common stock worth $2.4 billion at the time of the agreement. As part of the agreement, Bank of America was prohibited from paying dividends on common stock for three years.

The assets will remain on Bank of America's balance sheet, and Bank of America will receive the income stream generated by the assets and any future capital gains. Bank of America can further limit its cost and the benefit to the government by opting out of the guarantee early at its discretion.

In the cases of Bear Stearns and AIG, management was replaced and shareholders equity was diluted to limit moral hazard problems associated with receiving government assistance.[75] Similar steps were not taken in the case of Bank of America. On the other hand, the government has tried to encourage healthy financial firms to merge with troubled firms, and it may have felt that harsh terms on an agreement to guarantee assets that were in part acquired from Bank of America's takeover of Merrill Lynch would have discouraged future mergers. It has been reported that the asset guarantees to Bank of America were motivated by a desire to prevent them from withdrawing from their uncompleted merger agreement with Merrill Lynch.[76]

The agreement to guarantee Bank of America's assets was never finalized, and on September 22, 2009, it was announced that Bank of America would pay $425 million to exit the agreement. Although Bank of America never formally received government protection of its assets, an exit fee could be justified on the grounds that Bank of America benefited from the implicit support that the negotiations provided.

[74] For a full discussion, see the section below entitled "Lender of Last Resort, Systemic Risk, and Moral Hazard."

[75] For a full discussion, see the section below entitled "Lender of Last Resort, Systemic Risk, and Moral Hazard."

[76] See, for example, Deborah Solomon, "Bailout Man Turns the Screws," *Wall Street Journal*, April 7, 2009, p. A1.

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 and the new programs detailed above) and the private assets it buys directly or holds through LLCs (e.g., for AIG and the Bear Stearns takeover). It earns profits on its assets that are largely remitted to the Treasury. Its loans and asset purchases are financed by increasing its liabilities (Federal Reserve notes), and the financing does not necessarily result in any inherent cost for 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.[77] Even if the loans are not repaid, most are fully collateralized (usually over-collateralized), so the Fed would not suffer losses unless the collateral had lost value. In addition, most of its loans are made with recourse, which means that borrowers are still liable if the collateral loses value.

The Fed had net income of $38.8 billion and remitted $34.9 billion to the Treasury in 2008. Net income increased to $52.4 billion and remittances to the Treasury rose to $47.4 billion in 2009. In the past, most of the Fed's net income has derived from the interest on its Treasury securities holdings, not its loans. By the end of 2008, its loans and private assets holdings were much larger than its Treasury holdings (see **Table 4**). The earnings and any losses the Fed took on its loans would increase or reduce its net income, respectively. If loan losses caused an overall net loss, the Fed's capital (the excess of its assets compared with its liabilities) would be reduced. The Fed had capital equal to about $52 billion at end of 2009, half of which was paid-in capital of member banks and the other half of which was surplus. The Fed has not had an annual net operating loss since 1915. However, the Fed's balance sheet became more risky in 2008, due to the shift in composition of its assets from U.S. Treasuries to direct loans and private securities and due to the increase in its liabilities relative to its capital. For example, at the end of 2008, the Fed's capital would be depleted if its realized net losses were equal in value to 1.9% of its holdings of financial assets (U.S. Treasuries, loans, and other private securities).

Thus, any potential losses on loans to the Fed would not involve taxpayer dollars flowing to the Fed unless the losses exceeded the sum of its other earnings and its capital and the Treasury decided it did not want the Fed to operate as technically insolvent. However, even if the losses did not result in insolvency, any losses could result in a smaller remittance of earnings to the Treasury than would have occurred had the Fed not made the loans. Therefore, the ultimate cost to the government is the same whether loans to the financial sector are made through the Fed or the Treasury. The Fed has reported to Congress that it does not expect there to be losses on any of the actions it has undertaken under its emergency authorities (including the Maiden Lane LLCs, two of which had unrealized capital losses at the end of 2009), but it has not provided details as to how it reached that conclusion. Some analysts are concerned that a future increase in interest rates could result in losses on the Fed's asset holdings, but these losses would be realized only if the Fed were forced to sell those assets.[78]

[77] 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.

[78] See, for example, Peter Stella, *The Federal Reserve System Balance Sheet: What Happened and Why It Matters*, International Monetary Fund, Working Paper 09/120, May 2009.

To date, all of the Fed's lending programs have earned income for the Fed, except for Maiden Lanes I and II, whose assets have accrued unrealized capital losses.[79] In 2009, the Fed's loan programs earned $5.5 billion, the Maiden Lane assets had fallen in value by a combined $2.3 billion, and the Fed's other assets had earned $48.8 billion, as seen in **Table 3**. (The Maiden Lane losses will not be realized until the assets are sold, and the Fed has stated that it intends to hold the assets long term.) In the aggregate, the Fed earned higher profits and increased its remittances to the Treasury.

Table 3. Estimated Subsidies and Earnings by Program

(billions of dollars)

Program/Transaction	Estimated Subsidy at Inception	2009 Earnings	2009 Capital Gains or Losses
Treasury Securities	0	22.9	0
GSE Debt/MBS	0	22.5	0.9
Central Bank Liquidity Swaps	Negative subsidy	2.2	0
Discount Window	0	0.2	n/a
Term Auction Facility	0	0.8	n/a
Primary Dealer Credit Facility	0	<0.1	n/a
TALF	13	0.4	n/a
Commercial Paper	4	4.3	4.7
Loan to AIG	2	4.0	n/a
Maiden Lane I (Bear Stearns)	0	1.3	-2.2
Maiden Lane II (AIG)	0	0.4	-0.1
Maiden Lane III (AIG)	0	0.3	0
Citigroup asset guarantee	2	0.3	n/a
Bank of America asset guarantee	1	0.1	n/a
Total	21	52.1[a]	n/a

Source: Estimated subsidies from Congressional Budget Office, *The Budgetary Impact and Subsidy Costs of the Federal Reserve's Actions During the Financial* Crisis, May 2010. Earnings from Federal Reserve, *Monthly Report on Credit and Liquidity Programs and the Balance Sheet*, Tables 27-29, April 2010.

Notes: Maiden Lane capital gains or losses are those attributable to Fed, not overall. For Maiden Lanes, interest on loans from Fed are added back to earnings when Federal Reserve System's balance sheet is consolidated. CBO subsidies were calculated based on economic conditions and projections of program use at the time of inception. Negative subsidy for central bank liquidity swaps means that the Fed, according to CBO, offered the swaps on less favorable terms than foreign central banks could have received in the marketplace.

a. Net income.

The Fed could generate positive income from its programs but still operate those programs at a subsidy to the recipients. Subsidies would occur when the interest rates charged for loans or prices paid for assets are not high enough to fully compensate for the risks borne by the Fed in undertaking those transactions. In other words, the subsidy is equal to the difference between the price or interest rate the Fed received and what could have been received if the transaction had

[79] Current data on the income earned and change in asset value by Fed facility can be found in the Fed's *Monthly Report on Credit and Liquidity Programs and the Balance Sheet.*

been made privately. CBO has estimated subsidies for each of the Fed's emergency programs, presented in **Table 3**.[80] In evaluating the program, that subsidy would need to be compared with the benefits to the broader economy from the program, which CBO does not attempt to do. CBO estimated that lending programs with high collateral requirements and done on a recourse basis (Term Auction Facility, repurchase agreements, central bank currency swaps, Primary Dealer Credit Facility, Term Securities Lending Facility) generated no subsidies. CBO also concluded that all asset purchases involved no subsidy, either because the purchases were made in the open market (e.g., purchases of Treasury and GSE-related securities) or because the Fed reported that purchases were made at market value (e.g., the Maiden Lane assets). The assumption that Maiden Lane assets were bought at prevailing market prices can be questioned because the rationale for the Fed's purchase was that these assets could not be sold in private markets at the time. CBO finds subsidies for loan facilities without recourse (the two commercial paper facilities and TALF) and for special assistance to systemically significant firms (AIG, Citigroup, and Bank of America). In total, CBO estimates that the Fed's emergency actions were done at a subsidy of $21 billion. This estimate would likely be smaller if re-estimated today, based on current information. For example, CBO finds a subsidy of $13 billion for TALF because TALF was expected to make loans of $200 billion; in reality, loans peaked at $48 billion. CBO also estimates subsidies on the asset guarantees to Citigroup and Bank of America, although those programs were ended with payments to the government and no payouts by the government.

Although the Fed has taken steps to minimize the risk that recent activities will result in losses, Members of Congress have raised the question of whether taxpayers should be exposed to additional fiscal risks without congressional approval, particularly because some of the Fed's actions have similarities to those authorized under TARP. H.R. 4173 requires the Fed to issue policies and procedures for emergency lending that, among other things,

- ensure that "the security for emergency loans is sufficient to protect taxpayers from losses" by assigning a lendable value to collateral that is "consistent with sound risk management practices;"[81] and
- prohibit lending to borrowers that are insolvent or establishing a lending program or facility for the purpose of helping a single and specific company to avoid bankruptcy.

How Much Can the Fed's Balance Sheet Expand? Will the Fed Run Out of Money?

As a result of the Fed's new facilities and activities, its balance sheet has increased significantly, from $874 billion on August 1, 2007, a date shortly before the financial system first experienced turmoil, to $2,312 billion at its peak on December 17, 2008, an increase of 165%. **Table 4** shows the increase in the balance sheet by category over that period. Since the size of the balance sheet peaked in December 2008, the overall size of the balance sheet has remained relatively steady, but there have been large changes in the composition of the balance sheet. For example, there has

[80] Congressional Budget Office, *The Budgetary Impact and Subsidy Costs of the Federal Reserve's Actions During the Financial* Crisis, May 2010. CBO generally estimates the rate or price needed to fully compensate for risk based on what rate or price would be charged in private markets; this became difficult to estimate during the financial crisis because private markets stopped functioning smoothly. CBO estimated the subsidy of each crisis program based on market conditions at the time the programs were started. Since market conditions have improved considerably since then, ex-post profits are not a sign that there was no subsidy; rates or prices had to reflect the risk that conditions might get much worse at the time the transaction was made.

[81] Previously, Section 13(3) required that the loan be "secured to the satisfaction of the Federal Reserve bank."

been a significant increase in the Fed's holdings of mortgage backed securities and GSE debt, and a significant decrease in lending to primary dealers, holdings of commercial paper, and swaps with central banks. The Fed also began lending through the TALF in March 2009.

Table 4. Changes in the Fed's Balance Sheet from August 1, 2007, to Peak on December 17, 2008

(billions of dollars)

Assets		Liabilities and Capital	
Treasury Securities[a]	-$340	Federal Reserve Notes	+$64
MBS/GSE Debt	+$18[b]	Bank Reserves at Fed	+$785
Lending to Banks	+$538	Treasury Cash Deposits at Fed	+$475
Lending to Primary Dealers	+$47[b]	Other	+$103
Lending to/Assets Purchased for AIG	+$82[b]		
Lending for/Purchase of Commercial Paper	+$346[b]		
Assets Purchased from Bear Stearns	+$27[b]		
Swaps with Foreign Central Banks	+$572[b]	**Total Liabilities**	**+$1,427**
Other	+$148	**Capital**	**+$11**
Total Assets	**+$1,438**	**Total Liabilities and Capital**	**+$1,438**

Source: CRS calculations based on Federal Reserve Board of Governors, "Factors Affecting Reserve Balances," Data Release H.4.1, Tables 1 and 7, various dates.

Notes: GSE = government sponsored enterprise, MBS = mortgage-backed securities, ABS = asset backed securities, AIG = American International Group. See text for details.

a. Includes +$176 billion of Treasury securities temporarily swapped for private securities with Primary Dealers.

b. Item equaled zero in August 2007.

When the Fed makes loans or purchases assets, the asset side of its balance sheet expands; this must be matched by an increase in its liabilities. As direct loans from the Fed multiplied, some observers questioned at what point the Fed's lending power will be exhausted. The Fed cannot "run out of money" to buy assets and extend loans because it controls its liabilities, the monetary base (federal reserve notes and bank reserves), through which it expands or contracts the amount of money outstanding. There are no statutory limits on the size of the money supply or currency outstanding and, thus, how much it can loan; the ultimate constraint on the Fed's willingness to expand the monetary base in order to expand its activities comes from the part of its congressional mandate requiring stable prices (i.e., a low and stable rate of price inflation). If the Fed allows the money supply to grow too rapidly, then price inflation will become uncomfortably high (discussed in the section below on "Stagflation?").

Sterilization of Lending Before September 2008

Earlier in the financial crisis, the Fed was concerned about inflation rising. For example, in the 12 months ending in August 2008, inflation (as measured by the consumer price index) had risen to 5.4%—significantly higher than the Fed's self-identified "comfort zone." To address that concern, the Fed initially sought to keep its balance sheet from growing in order to offset the effects of its activities on the money supply. One way to keep its balance sheet from growing would be by reducing its other assets. For example, it could "sterilize" its new loans or asset purchases through contractionary open market operations, namely, the sale of Treasury securities.

In practice, before September 2008, the Fed kept the monetary base relatively constant by selling enough Treasury securities to offset the additional loans it made. (When the Fed sells Treasury securities, it removes the money it receives in the sale from circulation.) Thus, as loans outstanding rose, the Fed's holdings of Treasury securities initially declined, by $340 billion through December 17, 2008. In September 2007, 88% of its assets were Treasury securities held outright and less than 1% were loans to the financial system. On December 17, 2008, 28% of its assets were Treasury securities, 32% were loans, 17% were private securities (mostly commercial paper), and 25% were currency swaps with foreign central banks.

If sterilization through the sale of Treasury securities had continued, the Fed would eventually have held too few Treasury securities to be able to conduct open market operations.[82] As seen in **Table 4**, the overall increase in the Fed's balance sheet at its peak was $1.4 trillion, more than the Treasury securities it held before the crisis started ($816 billion) or in September 2008 ($475 billion).

The Treasury announced the Supplementary Financing Program on September 17, 2008 as an alternative method for the Fed to increase its assistance to the financial sector without increasing the amount of money in circulation.[83] Under this program, the Treasury has temporarily auctioned more new securities than it needs to finance government operations and deposited the proceeds at the Fed. (The increase in the money supply does not affect inflation because the money received by the Treasury is held at the Fed and not allowed to circulate in the economy.) Ultimately, the program will not affect the Treasury's fiscal position, however, because it will increase the profits of the Fed, which are then remitted to the Treasury. By December 17, 2008, the Treasury had borrowed and increased its deposits at the Fed by $475 billion. From January to September 2009, Treasury deposits were between $200 billion and $300 billion, and were no longer large enough to offset the growth in the asset side of the Fed's balance sheet. Congress authorized this borrowing only indirectly by raising the statutory debt limit, in P.L. 110-343 and other subsequent legislation. In late 2009, Treasury withdrew its supplementary deposits at the Fed in order to finance government spending as the debt approached the statutory limit. Once the debt limit was increased, the Treasury increased its deposits back to around $200 billion.

The fact that the Fed has been "sterilizing" the stimulative effects of its loans on the money supply (entirely until September 2008, and partially after then) limits the effects of those loans on financial conditions. In essence, the Fed has two methods for providing the financial system with liquidity—open market operations or direct loans. The Fed increased the role of direct loans to directly meet individual financial institutions' liquidity needs. But the Fed was offsetting the effects of the direct loans on the money supply to meet its goals for inflation. Thus, the loans did not provide additional overall monetary stimulus to the economy when sterilized. Since the Fed was sterilizing the loans because of its concerns with inflation, the utility of sterilization was fundamentally a question of whether the Fed had achieved the proper balance between stabilizing the financial sector and providing price stability, two topics that are discussed below.

Quantitative Easing and Balance Sheet Growth Since September 2008

As commodity prices fell later in 2008, the inflation rate also fell. The Fed became less concerned about inflation rising, and more concerned about the further deterioration in financial and

[82] It should be noted that a portfolio of Treasury securities is only needed to tighten monetary policy. Expansionary monetary policy involves the purchase of Treasury securities.

[83] The program also supplies more Treasuries to investors when there is excess demand because of a "flight to quality." The Treasuries issued under the program are indistinguishable to investors from regularly-issued securities.

economic conditions. After September 2008, the Fed further increased its direct assistance to the financial system, but no longer fully sterilized those activities. As a result, the Fed's balance sheet and the monetary base have expanded rapidly, as demonstrated in **Table 4**. The monetary base doubled from August to December 2008—an unprecedented rise.[84] Because this increase went beyond what was needed to target the federal funds rate, it has been referred to as "quantitative easing." Normally, this would trigger a rapid increase in inflation. The main force preventing such an increase is the rapid increase in excess bank reserves held at the Fed during that period. Bank reserves increased from $44 billion in August 2008 to $802 billion on December 17, 2008, as banks preferred to hold the additional reserves created by the Fed's actions in order to shore up their balance sheets to avoid runs.

In normal financial conditions, banks would lend out money they received from the Fed, and through a process referred to by economists as the "money multiplier," a $1 increase in the monetary base would lead to a much larger increase in the overall money supply. But if banks hold the money received from the Fed in bank reserves instead of lending it out, the money multiplier process will not occur, so the growth in the overall money supply will be smaller. Data from the Fed show that almost all of the increase in reserves has been through excess reserves, rather than required reserves, which is consistent with banks holding most of the increase in reserves instead of lending them out. Thus, the large increase in the monetary base since September 2008 has not been matched by a corresponding increase in the overall money supply.

Initially, the balance sheet grew because of high private demand for borrowing from the Fed, and asset purchases were not needed. But between the weeks of December 17, 2008, and March 25, 2009, the Fed's direct lending to the financial sector decreased from a weekly average of $976 billion to $848 billion. The pattern of decline was steady over that period, and presumably stemmed from the fact that as financial conditions improved, there was less financial sector demand for Fed lending. With declining loan balances, the balance sheet would have shrunk, unless other assets were added to offset the fall in direct lending.

On March 18, 2009, the Fed announced a commitment to purchase $300 billion of Treasury securities, $200 billion of Agency debt (later revised to $175 billion), and $1.25 trillion of Agency mortgage-backed securities. Since then, direct lending has continued to gradually decline, while the Fed's holdings of Treasury and Agency securities have steadily increased, as seen in **Table 5**. The Fed's planned purchases of Treasury securities were completed by the fall of 2009 and planned Agency purchases were completed by the spring of 2010. By April 2010, direct lending outside of TALF and AIG was modest. Because other assets on the Fed's balance sheet (most notably, liquidity swaps with foreign central banks) have also declined over that period, the net result of these purchases has been to keep the overall size of the balance sheet relatively constant. Thus, the Fed's asset purchases have prevented liquidity from being removed from the financial system as Fed lending fell.[85] But since the fall in lending was spurred by less demand among financial institutions, critics question if the level of liquidity needed in the crisis is still needed today.

[84] By comparison, the monetary base rose 2% over the four previous months.

[85] Another stated rationale for these purchases is to push down interest rates throughout the economy. It is difficult to assess whether the program has succeeded in this goal since many other factors also influence interest rates. For example, interest rates on these securities have generally trended upward since the Fed's purchases began, presumably because economic conditions have improved.

Table 5. Federal Reserve Balance Sheet, June 30, 2010

(billions of dollars)

Assets		Liabilities and Capital	
Treasury Securities[a]	777	Federal Reserve Notes	904
MBS/GSE Debt[a]	1,283	Bank Reserves at Fed	973
Lending to Banks	1	Treasury Cash Deposits at Fed	288
Lending to Primary Dealers	0	Other	113
Lending to/Assets Purchased for AIG	90		
Lending for/Purchase of Commercial Paper	0		
Lending for/Purchase of ABS (TALF)	43		
Assets Purchased from Bear Stearns	28		
Swaps with Foreign Central Banks	1	**Total Liabilities**	**2,278**
Other	111	**Capital**	**56**
Total Assets	**2,334**	**Total Liabilities and Capital**	**2,334**

Source: CRS calculations based on Federal Reserve Board of Governors, "Factors Affecting Reserve Balances," Data Release H.4.1, Tables 1 and 7, July 1, 2010.

Notes: GSE = government sponsored enterprise, MBS = mortgage-backed securities, ABS = asset backed securities, AIG = American International Group, TALF = Term Asset-Backed Securities Lending Facility. Amounts may not add due to rounding. See text for details.

a. Includes a $14 billion of securities temporarily swapped for private securities with Primary Dealers.

Purchases of Treasury securities could also stimulate the economy if private interest rates fall in response; a similar effect could occur with purchases of MBS, although those purchases should also more directly stimulate residential investment by reducing mortgage rates. Whether these purchases were more stimulative than the direct lending they replaced depends on their relative effects on financial conditions and interest rates.

Future Concerns

Once the financial outlook improves, banks may decide to use their reserve holdings to rapidly increase their lending. At that point, if the Fed found itself fighting inflationary pressures, it would have to find a way to prevent banks from lending those reserves in order to prevent a rapid increase in the money supply.[86] The most straightforward method to achieve this would be to withdraw those reserves from the banking system, which would require the Fed to reduce both its assets and liabilities through asset sales. Some of the Fed's outstanding assets can be sold relatively quickly in theory, although there could be political resistance in reality. By April 2010, the Fed's balance sheet consisted predominantly of securities that could be sold in secondary markets. But the Fed has pledged to hold these assets long term. Given the Fed's concerns about the fragility of housing markets, it is not clear how these holdings could be reduced quickly if the Fed became concerned about rising inflation. (About $100 billion to $200 billion per year could be reduced by not replacing maturing assets, according to Chairman Bernanke.[87])

[86] The Fed's views on the issues outlined in this section can be read in Ben Bernanke, "The Fed's Exit Strategy," *Wall Street Journal*, July 21, 2009, p. A15. See also Claudio Borio and Piti Disyatat, *Unconventional Monetary Policies: An Appraisal*," Bank for International Settlements, Working Paper 292, Nov. 2009.

[87] Chairman Ben Bernanke, "The Federal Reserve's Balance Sheet: An Update," Speech at the Federal Reserve Board

Another option would be to give banks incentives not to lend out reserves by raising the interest rate that the Fed pays on reserves, although it remains to be seen how interest-sensitive bank reserves are.[88] To better prevent these reserves from being lent out if necessary, the Fed began offering "term deposits" with a one to six month maturity for bank reserves. The interest rate on these term deposits would be set through auction; banks would presumably be willing to bid for term deposits only if the interest rate exceeded the rate paid by the Fed on normal reserves.

The Fed could also attempt to reduce liquidity by lending its assets out through "reverse repos." This would change the composition of liabilities on the Fed's balance sheet, replacing Federal Reserve notes or bank reserves with reverse repos. It is unlikely that reverse repos operations could be large enough to remove most of the new liquidity, however.[89]

Cash balances held at the Fed through the Treasury Supplemental Financing Program could also be used to tie up liquidity, but the size of this program is constrained by the statutory debt limit (since Treasury needs to borrow to acquire cash), and would be insufficient to significantly reduce liquidity without a large increase in the debt limit.

With an eye to the potential long-run inflationary effects of the growth in the Fed's balance sheet, the Fed and Treasury announced in March 2009 that they would seek "legislative action to provide additional tools the Federal Reserve can use to sterilize the effects of its lending or securities purchases on the supply of bank reserves." Many analysts interpreted this statement to express the desire for the Fed to gain authority to issue its own bonds. Returning to the balance sheet in **Table 4**, the Fed must match an increase in assets with an increase in liabilities. The only liability it can currently issue are federal reserve notes that increase the monetary base. If the Fed were granted new authority to issue bonds, they could then expand their liabilities without increasing the monetary base and increasing inflationary pressures.[90] Then, there would no longer be any statutory limit or check on the Fed's ability to directly allocate credit, provided it met the broad guidelines of Section 13(3). To date, legislation to allow the Fed to do so has not been considered.

With a federal funds rate of zero, unsterilized purchases of long-term assets could help further stimulate the economy by adding needed liquidity to the financial system reducing long-term interest rates (flattening the yield curve). But once the Fed decides to start raising rates, economic theory casts some doubt on the economic usefulness of maintaining a large balance sheet, but sterilizing its effects on the economy by paying interest on reserves, reverse repos, the Treasury Supplemental Program, or issuing Fed bonds. The large balance sheet has no positive effect on liquidity if it is offset by any of these actions that drain liquidity from the economy. And if

---

Conference on Key Developments in Monetary Policy, October 8, 2009.

[88] One paper looks at international experience with paying interest on bank reserves to answer this question. There is very limited experience with raising short-term interest rates while maintaining excess reserve balances, however. Japan in the 1990s is the best-known case of quantitative easing, and it removed excess balances before raising rates. The authors found that Norway had successfully raised rates while maintaining excess reserves from 2005 to 2008, although they did reduce reserves by half during that period. David Bowman, Etienne Gagnon, Mike Leahy, "Interest on Excess Reserves as a Monetary Policy Instrument: The Experience of Foreign Central Banks," Federal Reserve Board, *International Finance Discussion Paper 996*, March 2010.

[89] The size of reverse repo operations are limited to the amount of securities held by the Fed available to lend and private investors' willingness to borrow them. In recent years, reverse repos outstanding have not exceeded $108 billion. Goldman Sachs reports that Fed officials have indicated that they do not believe private investors could absorb more than $100 billion in reverse repos. Ed McKelvey, "Fed Lays Groundwork to Offset Another Increase in Excess Reserves," *U.S. Daily Newsletter*, September 24, 2009.

[90] Economically, this would have the same effect as the Treasury Supplemental Financing Program, which has been unavailable since September 2009 because the federal debt has been too close to the statutory limit.

investors have rational expectations, it is not clear how a large balance sheet could flatten the yield curve in the face of sterilization since the long end of the yield curve should be determined primarily by expectations of future interest rates, and sterilized purchases of assets in the present should not change those expectations, all else equal. Previous experience suggests that sterilized attempts to flatten the yield curve have failed to stimulate the economy. For example, a study by Ben Bernanke (before he was Fed Chairman) and other economists concluded that a similar policy in the 1960s called "Operation Twist" is "widely viewed today as having been a failure."[91]

Is the Fed Monetizing the Budget Deficit?

Some commentators have interpreted the Fed's decision to make large scale purchases of Treasury securities as a signal that the Fed intends to "monetize the federal deficit," which is projected this fiscal year to reach its highest share of GDP since World War II. Monetizing the deficit occurs when the budget deficit is financed by money creation rather than by selling bonds to private investors. Hyperinflation in foreign countries has consistently resulted from governments' decisions to monetize large deficits.

According to this definition, the deficit has not been monetized. Section 14 of the Federal Reserve Act legally forbids the Fed from buying newly issued securities directly from the Treasury, and all Treasury securities purchased by the Fed to date have been purchased on the secondary market, from private investors.[92] Moreover, the size of the Fed's purchases of Treasury securities thus far is small relative to the overall deficit, which was $1.4 trillion in 2009. The Fed has announced and completed purchases of $300 billion thus far, although that amount can be altered at its discretion.

Nonetheless, the effect of the Fed's purchase of Treasury securities on the federal budget is similar regardless of whether the Fed buys the securities on the secondary market or directly from Treasury. When the Fed holds Treasury securities, Treasury must pay interest to the Fed, just as it would pay interest to a private investor. These interest payments, after expenses, become profits to the Fed. The Fed, in turn, remits about 95% of its profits to the Treasury, where they are added to general revenues.[93] In essence, the Fed has made an interest-free loan to the Treasury, because almost all of the interest paid by Treasury to the Fed is subsequently sent back to Treasury.

The Fed could increase its profits and remittances to Treasury by printing more money to purchase more Treasury bonds (or any other asset). The Fed's profits are the incidental side effect of its open market operations in pursuit of its statutory mandate (to keep prices stable and unemployment low). If the Fed chose instead to buy assets with a goal of increasing its profits and remittances, it would be unlikely to meet its statutory mandate.

[91] Ben Bernanke, Vincent Reinhart, and Brian Sack, "Monetary Policy Alternatives at the Zero Bound," Federal Reserve Board of Governors, *Finance and Economics Discussion Series 2004-48*, 2004, p. 28.

[92] Until 1978, the Treasury had limited authority to "draw" from the Fed to finance its deficits, and used that authority sparingly. U.S. Congress, House Committee on Banking, Finance, and Urban Affairs, Domestic Monetary Policy, *Extending the Treasury-Federal Reserve Draw Authority*, committee print, 95th Cong., 2nd sess., April 5, 1978, 26-179 (Washington: GPO, 1978).

[93] The net addition to general revenues is reduced by the extra interest the Treasury must pay on debt it issued in order to deposit cash at the Fed.

Limits on the Fed's Ability to Address Problems in the Financial Sector

The Fed's actions since 2007 have been primarily focused on restoring liquidity to the financial system—lending to financial firms to convert their illiquid assets into cash or U.S. Treasury securities. But as financial conditions deteriorated in spite of increasing Fed intervention, it became apparent that the problems facing financial firms were not exclusively related to liquidity.

The crux of the firms' problem in the fall of 2008 stemmed from the large losses on some of their assets, particularly mortgage-related assets.[94] This caused a number of problems for the firms related to *capital adequacy*, which is the difference between the value of their assets and the value of their liabilities. First, losses and write-downs associated with those assets have reduced the firms' existing capital. Second, in the current environment, investors and creditors are demanding that firms hold more capital relative to assets than before so that firms can better withstand any future losses.

Third, at the peak of the crisis, firms were unable to raise enough new capital. Firms can raise new capital through retained earnings, which had been greatly reduced for many firms by the poor performance of their assets, or by issuing new capital (equity) and selling it to new investors. But during the crisis, investors were reluctant to inject new capital into struggling firms. Part of the explanation for this is that losses made the firms less profitable. But another part of the reason was that investors feared that there would be further losses in the future that would reduce the value of their investment, and perhaps even cause the firm to become insolvent. Uncertainty about future losses was partly caused by the opacity surrounding the assets that have been declining in value, which makes it hard for investors to determine which assets remain overvalued and which are undervalued. The result for companies such as Bear Stearns, Lehman Brothers, AIG, Washington Mutual, and Wachovia was a downward spiral in their stock price, which had two self-reinforcing characteristics. First, there was little demand for existing stock since its worth would either have been diluted by new capital (raised privately or through government intervention) or lost in insolvency. Second, new capital could not be attracted because the fall in stock value had left the market capitalization of the firms so low. If a firm's capital is completely depleted, there is no longer a buffer between its assets and liabilities, and it becomes insolvent. In 2009, financial firms were again able to issue capital to private investors, and many did so successfully.

Many large financial firms, including the firms that have failed, are heavily dependent on short-term borrowing to meet their current obligations. As financial conditions worsened, some of the firms that had the problems described above had problems accessing short-term borrowing markets that in normal conditions could be taken for granted. In an atmosphere where creditors cannot perceive which firms have insufficient capital, they become unwilling to lend for even short intervals. This is the essence of the *liquidity* problem—although the firms' assets may exceed their liabilities, without access to short-term borrowing, the firm cannot meet its current obligations because it cannot convert its assets into cash quickly enough (at least not if it wishes to avoid "fire sale" prices).

The Fed has always been the "lender of last resort" in order for banks to avoid liquidity problems during financial turmoil. To borrow from the Fed, a financial firm must post collateral. In essence, this allows the firm to temporarily convert its illiquid assets into cash, enabling the firm to meet its short-term obligations without sacrificing its assets. The Fed has always lent to commercial

[94] For more information, see CRS Report RS22963, *Financial Market Intervention*, by Edward V. Murphy and Baird Webel.

banks (depository institutions) through the discount window. As discussed above, it has extended liquidity to non-bank financial firms since 2008 through new lending facilities.

Borrowing from the Fed increases liquidity but it does not change a firm's capital buffer since it now has a liability outstanding to the Fed. So borrowing from the Fed cannot solve the problems of undercapitalization that some firms faced. Indeed, the Fed will generally not lend to firms that are not creditworthy because it wants to provide liquidity only to firms that are solvent, and thus able to repay.[95]

H.R. 1424, which was signed into law on October 3, 2008 (P.L. 110-343), created the Troubled Asset Relief Program. The Treasury initially used TARP funds to address the capital adequacy problem directly by providing $250 billion in capital to banks directly through preferred share purchases by TARP.[96]

Some have asked whether there is any way the Fed could have addressed the financial firms' capital adequacy problems. All of the Fed's standing lending facilities involve collateralized lending, and as discussed above, any program involving collateralized lending would not change a firm's capital position. According to one legal analysis, there is no express statutory authority for the Fed to purchase corporate bonds, mortgages, or equity.[97] But the Fed's assistance through the three Maiden Lane LLCs it has created has some similarities to TARP. In the case of Bear Stearns, the Fed created a limited liability corporation called Maiden Lane I, and lent Maiden Lane $28.82 billion. Maiden Lane I used the proceeds of that loan and another loan from JPMorgan Chase to purchase mortgage-related assets from Bear Stearns. (A similar arrangement with AIG led to the creation of Maiden Lane II and Maiden Lane III.) Thus, although the Fed created and controlled the Maiden Lanes, the assets were purchased and held by the Maiden Lanes, not the Fed. The Fed plans to hold the Maiden Lane assets until markets recover, and then sell the assets to repay its loans. The Maiden Lanes were created under the Fed's Section 13(3) emergency authority.[98] H.R. 4173 forbids "a program or facility that is structured to remove assets from the balance sheet of a single and specific company."

The Fed was presumably granted broad emergency powers under Section 13(3) so that it had the flexibility to deal with unforeseen circumstances. Nonetheless, too broad of a reading of its powers could provoke displeasure in Congress or legal challenges. Creating TARP within the Treasury through legislation rather than the Fed through emergency powers avoided the argument of whether such a program extended beyond the Fed's intended role.

Lender of Last Resort, Systemic Risk, and Moral Hazard

Since its early days, one of the Fed's main roles has been to act as a lender of last resort to the banking system when private sources of credit become unavailable. It does so by lending through the discount window and its new lending facilities. The lender of last resort function can be seen from the perspective of an individual institution or the financial system as a whole. From the

[95] In addition, the Fed faces some statutory limitations on lending to undercapitalized banks under normal circumstances. See, for example, Section 10B of the Federal Reserve Act.

[96] For more information, see CRS Report RL34730, *Troubled Asset Relief Program: Legislation and Treasury Implementation*, by Baird Webel and Edward V. Murphy.

[97] David Small and James Clouse, *The Scope of Monetary Policy Actions Authorized under the Federal Reserve Act*, Federal Reserve, FEDS Working Paper no. 2004-40, July 2004, p. 29.

[98] The Fed also created the Term Asset Backed Liquidity Facility (TALF) to lend to private investors to purchase illiquid assets of the same types that TARP was originally intended to purchase. TALF is also aimed at improving liquidity, and does not affect the capital adequacy problem directly, however.

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 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.[99] Fed lending is not meant to help insolvent institutions, with one exception explained below.

Access to Fed lending facilities 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. 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 Fed lending facilities 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.[100] For example, failure could lead to systemic instability through "contagion" effects where the losses to creditors and counterparties imposed by the bankruptcy system drove those creditors and counterparties into insolvency. 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 classification 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.)[101]

As the cases of Bear Stearns, Fannie Mae and Freddie Mac, and AIG illustrate, 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. Nevertheless, all received direct or indirect assistance from the Fed. This highlights the shift in financial activity from a bank-dominated financial system at the time of the Fed's creation to a system whose health now depends on many types of institutions. The Fed was set up to be a lender of last resort to only the banking system. In the current crisis, it has been able to extend its lender of last resort functions to non-bank financial institutions only because of its Section 13(3) emergency powers. A policy issue going forward is whether the extension of these functions should be made permanent, and if so, what types of regulatory safeguards should accompany it. Because Section 13(3) of the Federal Reserve Act is intended for responding to unanticipated

[99] In this context, it is interesting to note that the Bear Stearns failure has been described as a non-bank run, meaning Bear Stearns was undermined 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.

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

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

emergencies, it grants authority that is broader and more open-ended than the Fed's normal authority.

It is possible that part of the reason these institutions failed is because they took on excessive risks in the belief that they were too big to fail. Although that theory can be debated, it is clearer that the precedent of the Fed's role in the Bear Stearns acquisition may strengthen 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 so, it could be argued that the Bear Stearns episode may have increased moral hazard going forward. The government's decision not to intervene to prevent the failure of the investment bank Lehman Brothers in September 2008, but to subsequently assist AIG, Citigroup, and Bank of America may have created further market uncertainty regarding which institutions the government views as too big to fail. Lehman Brothers was larger than Bear Stearns and involved in similar business activities. Others have argued that the failure of Lehman Brothers set off a wave of unrest in money markets (see above), interbank lending markets, and the market for credit default swaps that would make the government unlikely to allow any large institution to fail in the future.[102]

The government assistance to Bear Stearns, Fannie Mae and Freddie Mac, and AIG all include clauses that significantly reduced the value of existing shareholder equity. This was partly justified in terms of reducing moral hazard—investors would be reluctant to buy equity in too big to fail companies that were taking excessive risks if the government demanded a reduction in existing shareholder value. But government assistance in all of these cases made creditors and other counterparties whole. In these cases, the moral hazard problem manifests itself in a willingness of creditors to lend to, and counterparties to transact with, a firm they know to be taking excessive risks, thereby potentially allowing the firm to take more risks. More recent government assistance to Citigroup and Bank of America was provided without similar measures to replace management or dilute shareholders. (Warrants to purchase some common stock were issued but have not yet been exercised.) Market participants may view this decision as a signal that the government is no longer placing emphasis on avoiding moral hazard.

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.[103] This point applies to future regulatory changes as well. An attempt to increase regulation on 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, Lehman Brothers, and AIG were 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

[102] Chairman Bernanke argued that the Fed did not have the authority to assist Lehman Brothers because Lehman Brothers could not offer the Fed adequate collateral for a loan of the size needed, which according to Bernanke, would have been much larger than the assistance for Bear Stearns. See Ben Bernanke, "Current Economic and Financial Conditions," speech at the National Association for Business Economic Annual Meeting, October 7, 2008.

[103] This problem in relation to investment banking has to some degree been overtaken by events, as none of the five largest investment banks still exist in their original form. Lehman Brothers has entered bankruptcy, Bear Stearns and Merrill Lynch have merged with commercial banks, and Goldman Sachs and Morgan Stanley have reorganized as bank holding companies that are regulated by the Fed.

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.

Going forward, policymakers must determine whether new regulation is needed to limit moral hazard because 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 were desired.

The financial crisis has led to the passage of comprehensive regulatory reform in the House and Senate that address the "too big to fail" problem and the Fed's role as a regulator and lender of last resort. CRS Report R40877, *Financial Regulatory Reform: Systemic Risk and the Federal Reserve*, analyzes the effects of this legislation on the Fed and the "too big to fail" issue.

Oversight, Transparency, and Disclosure of Emergency Programs

Because profits and losses borne by the Fed ultimately get passed on to taxpayers (see "Cost to the Treasury"), some Members of Congress have argued that more information about the Fed's emergency activities should be made available to the public. The Fed has not been subject to many of the oversight and reporting requirements applied to the TARP, although the amount of direct assistance outstanding from the Fed at its peak exceeded the authorized size of TARP.

Nonetheless, the Fed has publicly released a significant amount of information on its emergency actions. The Fed's financial statements are published weekly and audited by private sector auditors, with the results published in the Fed's annual report. The Fed has provided detailed information to the public on the general terms and eligibility of its borrowers and collateral by class for each crisis-response program.[104] It has also provided a rationale for why each crisis program has been created, and an explanation of the goals the program is meant to accomplish. The Emergency Economic Stabilization Act (P.L. 110-343) requires the Fed to report to the House Financial Services Committee and the Senate Banking, Housing, and Urban Affairs Committee on its justification for exercising Section 13(3), the terms of the assistance provided, and regular updates on the status of the loan. Beginning in June 2009, the Fed began releasing a monthly report that listed the number of and concentration among borrowers by type, the value and credit-worthiness of collateral held by type, and the interest income earned for each of its facilities.[105] Contracts with private vendors to purchase or manage assets are also posted on the New York Fed's website.

But the Fed has kept confidential the identity of the borrowers from its facilities, the collateral posted in specific transactions, the terms of specific transactions, and the results of specific transactions (i.e., whether they resulted in profits or losses).[106] As historical precedent, the Fed has had a longstanding policy of keeping the identity of banks that borrow from its discount window confidential. Those calling for more disclosure note that the new Fed programs place the Fed in a more expansive role and are potentially riskier than the discount window, and, unlike the discount window, were not explicitly endorsed by legislation (many were authorized under its emergency authority).

[104] All of the information outlined in this paragraph can be accessed at the Fed's website at http://www.federalreserve.gov/monetarypolicy/bst.htm.

[105] Federal Reserve Board of Governors, *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet*.

[106] A federal judge ruled on August 25, 2009, that the Fed must turn information over to Bloomberg newsgroup on its emergency lending activities. The court case is Bloomberg LP v. Board of Governors of the Federal Reserve System, U.S. District Court, Southern District of New York (Manhattan), No. 08-9595.

The Fed has argued that allowing the public to know which firms are accessing its facilities could undermine investor confidence in the institutions receiving aid because of a perception that recipients were weak or unsound. A loss of investor confidence could potentially lead to destabilizing runs on the institution's deposits, debt, or equity. If institutions feared that this would occur, the Fed argues, then the institutions would be wary of participating in the Fed's programs, which, in the aggregate, would retard economic recovery. A historical example supporting the Fed's argument would be the Reconstruction Finance Corporation (RFC) in the Great Depression. When the RFC publicized to which banks it had given loans, those banks typically experienced depositor runs.[107] A more recent example provides mixed evidence—disclosure of TARP fund recipients. At first, TARP funds were widely disbursed, and recipients included all the major banks. At that point, there was no perceived stigma to TARP participation. More recently, many banks have repaid TARP shares at the first opportunity, and remaining participants have expressed concern that if they did not repay soon, investors would perceive them as weak. Arguments about investor confidence are arguably less compelling when applied to publicly disclosing collateral held by the Fed.

There are several different approaches to expanding disclosure or oversight:

- Congress could remove the Government Accountability Office's (GAO's) restrictions on conducting investigations of the Fed for Congress. While GAO has had longstanding authority to audit the Fed's non-monetary policy functions,[108] the Federal Banking Agency Audit Act of 1978 (31 USC 714(b)) restricts GAO from auditing certain Fed activities: (1) transactions with foreign central banks or governments; (2) "deliberations, decisions, or actions on monetary matters, including discount window operations, reserves of member banks, securities credit, interest on deposits, and open market operations;" and (3) "transactions made under the direction of the Federal Open Market Committee."[109] While the act does not specifically mention activities taken under the Fed's emergency authority, those activities have been interpreted as falling under the restrictions. Also included in the Federal Banking Audit Act of 1978 are restrictions on GAO disclosure of confidential information about the financial firms subject to the Fed's policies. Thus, if audit restrictions were removed but these disclosure restrictions remained in place, GAO audits would not necessarily accomplish some policymakers' goal of disclosing the identities of borrowers from Fed lending facilities. S. 896, which was signed into law on May 20, 2009 (P.L. 111-22), allows GAO audits of "any action taken by the Board under ... Section 13(3) of the Federal Reserve Act with respect to a single and specific partnership or corporation." This would allow GAO audits of the Maiden Lane facilities and the asset guarantees of Citigroup and Bank of America, but would maintain audit restrictions on non-emergency activities and broadly-accessed emergency lending facilities, such as the Primary Dealer Credit Facility or the commercial paper facilities. In performing the audit under S. 896, GAO must maintain the confidentiality of the private documents it accesses, but cannot withhold any information requested by Members of Congress on the committees of jurisdiction. H.R. 4173 allows GAO to audit emergency actions, discount window lending, and open market operations for operational integrity, accounting

[107] James Butkiewicz, "The Reconstruction Finance Corporation, the Gold Standard, and the Banking Panic of 1933," *Southern Economic Journal*, vol. 66, no. 2, October 1999, p. 271.

[108] A list of current GAO audits of the Fed can be found in the Fed's Annual Report.

[109] See U.S. General Accounting Office, *Federal Reserve System Audits*, GAO/T-GGD-94-44, October 27, 1993.

financial reporting, internal controls, collateral policies, favoritism, and third-party contracting policies. With the exception of the Maiden Lane facilities, GAO would be prohibited from releasing confidential information to Congress or the public about the transactions until the information was released by the Fed. H.R. 4173 also requires a GAO audit, according to the criteria listed above, of all lending between December 2007 and the date of enactment. It also requires a separate GAO audit to determine whether the selection of Federal Reserve regional bank presidents meets the criteria under Section 4 of the Federal Reserve Act, whether there are actual or potential conflicts of interest created by member banks choosing Fed regional bank directors, to examine the role regional banks played in the Fed's response to the crisis, and to propose reforms to regional bank governance.

- Congress could require the Fed to disclose more information on the identities of borrowers, the collateral accepted, or the terms and results of transactions. Congress requires the Fed to make some general policy reports, but does not typically require the Fed to disclose this type of specific information. Indeed, much of the information about monetary policy that the Fed currently makes public is done so on a voluntarily basis. H.R. 4173 requires the Fed to disclose the identities of borrowers and terms of borrowing to the committees of jurisdiction within seven days of a loan and allows for the information to be kept confidential if desired. It requires that the identities of borrowers and terms of borrowing be released to the public with up to a two year delay for the discount window and a one year delay after a facility has been terminated for other lending. It requires that the identities of counterparties and terms of sale be released to the public with up to a two year delay for open market operations. It requires that the identities of borrowers and borrowing terms be released to the public by December 1, 2010, for actions taken during the financial crisis.
- Congress could create specific oversight boards or committees that focus on the Federal Reserve. Currently, regular congressional oversight of the Fed is done at a general level through semi-annual hearings with the House Financial Services Committee and the Senate Banking, Housing, and Urban Affairs Committee, as well as ad hoc hearings on more focused topics. There is no routine, specific oversight of the Fed's crisis-response actions, and no group with monetary policy expertise tasked with evaluating the Fed's actions for Congress.

Greater disclosure and outside evaluation could potentially help Congress perform its oversight duties more effectively. The main argument against increasing Fed oversight would be that it could be perceived to reduce the Fed's operational independence from Congress. Chairman Bernanke has argued that "The general repeal of (the audit) exemption would serve only to increase the perceived influence of Congress on monetary policy decisions, which would undermine the confidence the public and the markets have in the Fed."[110] Most economists believe that the Fed's independence to carry out day-to-day decisions about monetary policy without congressional input strengthens the Fed's credibility in the eyes of the private sector that it will follow policies that maximize price and economic stability. Greater credibility is perceived to strengthen the effectiveness of monetary policy on the economy. This independence is seen as

[110] Chairman Ben Bernanke, "Don't Strip the Fed of Supervisory Power," *Valley News*, December 1, 2009, p. A6. See also Federal Reserve Vice Chairman Donald Kohn, "Federal Reserve Independence," Testimony before the Subcommittee on Domestic Monetary Policy and Technology, House Financial Services Committee, July 9, 2009.

consistent with the democratic process because the Fed's mandate to pursue price and economic stability has been given to it by Congress, and choosing the interest rate policies best able to achieve these goals is viewed as relatively technocratic and non-political in nature.[111] The Fed's unprecedented response to the financial crisis moves it into new policy areas involving decisions that are arguably more political in nature, such as deciding which financial actors should be eligible to access Fed credit. While few policymakers argue for total independence or total disclosure and oversight, the policy challenge is to strike the right balance between the two. In February 2010 testimony, Chairman Bernanke has also advocated striking such a balance:

> we understand that the unusual nature of (the emergency credit and liquidity) facilities creates a special obligation to assure the Congress and the public of the integrity of their operation. Accordingly, we would welcome a review by the GAO of the Federal Reserve's management of all facilities created under emergency authorities. In particular, we would support legislation authorizing the GAO to audit the operational integrity, collateral policies, use of third-party contractors, accounting, financial reporting, and internal controls of these special credit and liquidity facilities…. We are also prepared to support legislation that would require the release of the identities of the firms that participated in each special facility after an appropriate delay. It is important that the release occur after a lag that is sufficiently long that investors will not view an institution's use of one of the facilities as a possible indication of ongoing financial problems, thereby undermining market confidence in the institution or discouraging use of any future facility that might become necessary to protect the U.S. economy.[112]

Effects on the Allocation of Capital

In normal conditions, the Fed primarily influences economic conditions through the purchase and sale of U.S. Treasury securities on the secondary market. This enables the Fed to influence overall economic conditions without favoring any particular financial firm or asset, thus minimizing its effect on the market allocation of capital.

As the Fed has shifted to an increasing reliance on more direct intervention in the financial system since 2008, its actions have had growing consequences for the allocation of private capital. Its actions can affect the allocation of capital by favoring certain classes or types of assets over others or by favoring certain financial firms or types of firms over others.

As discussed above, assisting Bear Stearns and AIG after their mistakes may encourage inefficiently high risk taking by other firms that are deemed "too big to fail." Punitive conditions attached to the assistance mitigate but do not eliminate these effects.[113] Allowing primary dealers to temporarily swap their illiquid assets for Treasuries protects those who invested poorly. The Fed has attempted to push down yields on certain assets that it feels have become inefficiently high (e.g., through the Term Asset Backed Securities Lending Facility), but it may be that at the height of the boom yields on these assets had become inefficiently low because investors underestimated their riskiness. The Fed's efforts could eventually reintroduce inefficient underpricing of risk. By purchasing commercial paper, the Fed has increased the relative demand for those assets, which confers an advantage to those firms that can access that market, which are generally large and have high credit ratings. Likewise, the Fed is purchasing GSE obligations and

[111] See CRS Report RL31056, *Economics of Federal Reserve Independence*, by Marc Labonte.

[112] Chairman Ben S. Bernanke, Semiannual Monetary Policy Report to the Congress, Before the Committee on Financial Services, U.S. House of Representatives, Washington, DC, February 24, 2010.

[113] For example, the decision to make creditors whole in the case of Bear Stearns and AIG reduces incentives for creditors to curb lending to other institutions deemed "too big to fail."

GSE-guaranteed MBS, but not similar securities issued by private firms. This increases the GSEs' funding advantage over private competitors.[114]

In a time when liquidity is scarce, access to Fed borrowing confers an advantage on banks and primary dealers over other types of institutions. It may also arguably retard the process of weeding out bad institutions, since reputation is needed to access private liquidity, but not Fed liquidity. On the other hand, during a panic both good and bad firms can be shut out of credit markets. Liquidity has positive externalities that means it would be underprovided by the private sector if it were not provided by the government. When financial markets are not functioning, credit allocation is an incidental but unavoidable side effect of liquidity provision. But some of the Fed's efforts, such as paying interest on bank reserves or possibly seeking to issue its own bonds, could be interpreted as signaling that the Fed intends to go beyond allocating credit for the sole purpose of providing liquidity because these initiatives allow the Fed to extend more credit than is needed for liquidity purposes.

The Fed's short-term goal is to avoid the downward spiral in conditions that could lead to a panic, causing serious disruptions to the credit intermediation process for all firms, prudent or otherwise. But in the long run, once financial stability has been restored, these distortions to the market allocation of capital could result in economic inefficiencies. There is also a risk that the Fed's activities could "crowd out" private lenders and investors in specific markets, such as the markets for bank reserves, private-label MBS, and commercial paper, leading to less robust private markets. This risk seems greater since the Fed has suggested methods to keep its balance sheet large (such as paying interest on bank reserves or issuing "Fed bonds") even after the economy has returned to normal. As demand for Fed lending facilities has fallen as financial conditions have improved, the Fed has already decided to purchase more GSE debt and MBS, rather than scale back its balance sheet. Even if some of the Fed's current programs are allowed to expire, if investors believed that they would be revived during the next downturn, capital allocation and incentives would remain altered.

Is the Economy Stuck in a Liquidity Trap? The Use of Quantitative Easing at Zero Interest Rates

Although monetary policy is credited with having contributed to an unusual degree of economic stability since at least the mid-1980s, some economists argue that it has been rendered ineffective by the current outlook. The argument is 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 reluctant to extend credit. Following September 2008, banks greatly increased their holdings of excess reserves, which could potentially be a troubling sign that banks currently prefer extremely safe, liquid assets over lending. Further, the Fed has already reduced the federal funds rate to near zero, and cannot reduce it further. By some measures, the recession was deep enough that zero interest rates are not stimulative enough to move the economy back to full employment quickly.[115]

---

[114] Some would argue that the GSE's funding advantage primarily stems from government conservatorship, and the effect of Fed's purchases are ancillary.

[115] For example, economist Glenn Rudebusch estimates that interest rates would need to reach -5% in 2009. Glenn Rudebusch, "The Fed's Monetary Policy Response to the Current Crisis," Federal Reserve Bank of San Francisco, *FRBSF Economic Letter*, no. 2009-17, May 22, 2009. See also John Williams, "Heeding Daedalus: Optimal Inflation

A scenario where monetary stimulus has no effect on the economy 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 cited as an example. Interest rates were lowered to almost zero in Japan, and the economy still did not recover quickly.[116]

There are some problems with this line of reasoning at present. First, liquidity traps are most likely to occur when overall prices of goods and services are falling (called *deflation*). 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. Although prices fell at the end of 2008, they have been rising modestly since.[117] Inflation would not be expected to be steady were the economy in a liquidity trap. Second, monetary policy always suffers lags between a reduction in interest rates and corresponding increases in economic activity.

Most importantly, it would be wrong to conclude that the Fed has had no further policy options available to stimulate the economy since December 2008, when the Fed reduced the federal funds rate target to a range of 0% to 0.25%. At this point, the potential for further stimulus via traditional monetary policy channels had been exhausted, since the federal funds rate cannot be reduced below zero. But in a 2004 study, Ben Bernanke (a Fed governor at the time) and co-authors laid out policy options for how the Fed could further stimulate the economy once interest rates reached zero. In that study, the authors note that "nothing prevents the central bank from adding liquidity to the system beyond what is needed to achieve a policy rate of zero, a policy that is known as quantitative easing."[118] By that definition, the Fed has engaged in "quantitative easing" since September 2008—instead of adjusting the monetary base to meet the interest rate target, the Fed has adjusted the monetary base to meet the financial sector's liquidity needs.[119] But many different levels of Fed direct lending (and of the corresponding monetary base) are compatible with a zero federal funds rate. Once the federal funds rate hits zero, there is nothing stopping the Fed from further increases in lending that would have further expansionary effects on the economy. It could also engage in quantitative easing without direct lending by purchasing securities. From March 2009 to March 2010, the Fed purchased about $300 billion of longer-term Treasury securities, $1.25 trillion in MBS, and $175 billion of GSE obligations. Fed Vice Chairman Donald Kohn, while acknowledging great uncertainties, estimated that quantitative

and the Zero Lower Bound," *Brookings Papers on Economic Activity*, September 2009.

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

[117] Asset prices have fallen, but they are not included in standard measures of inflation, which measures the prices of goods and services.

[118] Ben Bernanke, Vincent Reinhart, and Brian Sack, "Monetary Policy Alternatives at the Zero Bound: An Empirical Analysis," Federal Reserve Board, *Finance and Economic Discussion Series 2004-48*, 2004, p. 17. Other options for stimulus at zero short-term interest rates include buying longer-term assets to push down longer-term interest rates.

[119] Chairman Bernanke referred to the Fed's policies in 2008 as credit easing, rather than quantitative easing. He identifies quantitative easing as a policy where the central bank sets a growth rate for the monetary base and provides liquidity to achieve that growth rate. Under what he calls credit easing, the Fed has allowed the growth in the monetary base to be determined by the financial sector's demand for liquidity. He notes that both policies result in the growth of the central bank's balance sheet and the monetary base. See Chairman Ben S. Bernanke, *Speech at the Stamp Lecture*, London School of Economics, London, England, January 13, 2009.

easing could increase nominal GDP by as much as $1 trillion over the next several years relative to a baseline forecast.[120]

The large increase in excess bank reserves casts doubt on the effectiveness of quantitative easing. Since the Fed has increased its balance sheet, excess reserves have averaged between $643 billion and $1,162 billion per month, compared with less than $2 billion before August 2007. The Fed can supply banks with unlimited liquidity, but if banks hold that liquidity at the Fed, the added liquidity will not stimulate economic activity.[121]

Even so, the Fed's actions may help bring down other interest rates in the economy, but this will be stimulative only if interest-sensitive spending is responsive to lower interest rates. This would occur through a flattening of the yield curve (i.e., pushing down long interest rates relative to short rates). Some economists argue that reductions in long-term rates are more stimulative than equivalent reductions in short-term rates.[122] But past experience with the efficacy of this method is mixed. Research by the New York Fed concludes that the recent purchases were effective in lowering interest rates based on the immediate response of rates to official announcements about the purchases, although this research could be questioned on the grounds that the rate reductions must be long-lasting to be stimulative, and for some of the maturities in question, interest rates over the entire period rose, on balance. Interpreting the overall effect on interest rates during the life of the asset purchase program is clouded by the fact that other changes in economic conditions also influence interest rates. The authors also use time-series evidence to estimate that the purchase program reduced the yield on ten-year securities relative to short-term securities by 0.38 to 0.82 percentage points. This evidence may suffer from omitted variable bias, however—namely, the change in the risk-premium associated with MBS over the period in question, given the uncertainty prior to the purchase program caused by GSE conservatorship and the financial crisis. Another study by outside economists found small effects of the Fed's MBS purchases on interest rates after adjusting for prepayment and default risk, with the effect mainly occurring at the time the program was announced—before purchases had begun.[123]

Although a liquidity trap cannot be ruled out, it is premature to conclude the economy is stuck in one at this point in time. Liquidity traps are a threat when monetary policy has been kept too tight, but the Fed has eased monetary policy aggressively since the crisis began.

Stagflation?

Other critics have argued that the Fed has created the opposite problem of a liquidity trap—rising inflation due to excessive liquidity. They argue that the economy will enter a period of stagflation, where falling or negative economic growth is accompanied by high or rising inflation.[124]

---

[120] Donald Kohn, "Interactions Between Monetary and Fiscal Policy in the Current Situation," speech at Princeton University, Princeton, NJ, May 23, 2009.

[121] The Fed has argued that large excess reserves should not be seen as a sign that its policies have lost their effectiveness. See, for example, Todd Keister and James McAndrews, "Why Are Banks Holding So Many Excess Reserves?" *Federal Reserve Bank of New York Staff Reports*, no. 380, July 2009.

[122] Glenn Rudebusch, *The Fed's Exit Strategy for Monetary Policy*, Federal Reserve Bank of San Francisco, Economic Letter 2010-18, June 2010.

[123] Johannes Stroebel and John Taylor, "Estimated Impact of the Fed's Mortgage-Backed Securities Purchase Program," National Bureau of Economic Research, working paper 15626, Dec. 2009.

[124] See CRS Report RL34428, *Understanding Stagflation and the Risk of Its Recurrence*, by Brian W. Cashell and Marc Labonte.

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 into their price and wage demands. Further driving up inflationary expectations, critics believe that individuals will observe the large increase in the budget deficit and monetary base and conclude that the government will inflate its way out of the crisis. Couple those higher inflation expectations with rising commodity prices, 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.[125]

Data suggest that the fear of stagflation is premature—inflation remains relatively low at present. There is a consensus among economists that in the long run inflation is primarily a monetary phenomenon, and if the Fed's recent monetary stance were maintained for too long, it would not be consistent with stable inflation. But in the near term, a large amount of unemployment and excess capacity has removed most inflationary pressure. This can be seen in the example of Japan, where the Bank of Japan allowed the monetary base to increase by more than 10% per year after 2001, without inflation ever reaching high levels because of economic sluggishness. Furthermore, commodity prices fell in the second half of 2008, leading to a brief period of falling prices. Since then, inflation has been stable.

Ironically, if the Fed's actions succeed in reviving the economy, then the probability that its actions would boost inflation would increase. Under normal conditions, the doubling of the monetary base between August and December 2008 would have led to a sharp increase in inflation, but this did not occur because of the even greater increase in bank reserves held at the Fed that led to only a moderate increase in broader measures of the money supply. If banks responded to improved economic conditions by lending out the reserves they are now holding, the money supply and inflation would rise rapidly. The key to maintaining a stable inflation rate is finding the proper balance between the disinflationary pressures of the slowdown and the inflationary pressures of quantitative easing. 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 economic recovery is stubbed out. Removing all of the liquidity is complicated by the fact that the Fed has created some of it by buying assets it has pledged to hold long term. Given the uncertainty facing policymakers at present, finding the proper balance is extremely difficult.[126]

Concluding Thoughts

While turmoil plagues financial markets periodically, the current episode is notable for its breadth, depth, and persistence. It is difficult to make the case that the Fed has not responded to the current turmoil with alacrity and creativity. The slow financial and economic recovery is not necessarily a sign that the Fed's policy decisions have been wrongheaded—the Fed has provided

[125] Rudebusch presents evidence that the growth in the Fed's balance sheet has had no effect on inflation expectations. Glenn Rudebusch, *The Fed's Exit Strategy for Monetary Policy*, Federal Reserve Bank of San Francisco, Economic Letter 2010-18, June 2010.

[126] For more information, see CRS Report RL34562, *Slow Growth or Inflation? The Federal Reserve's Dilemma*, by Brian W. Cashell and Marc Labonte.

the financial sector with unprecedented liquidity, but it cannot force institutions to use that liquidity to expand their lending or investing.

The Fed's 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, the assistance to AIG, Citigroup, and Bank of America, the creation of the Primary Dealer Credit Facility (a sort of discount window for a group of non-member banks), and its intervention in the commercial paper market involved emergency authorities that had not been used in more than 70 years. This authority was needed because the actions involved financial institutions that were not member banks of the Federal Reserve System (i.e., depository institutions). But because the authority is broad and open-ended, the Fed's actions under this authority are subject to few legal parameters. The authority allows lending to non-member banks, but some of the loans in the Bear Stearns and AIG agreements were to LLCs that the Fed created and controls, and have been used to purchase Bear Stearns' and AIG's assets. These actions raise an important issue—if financial institutions can receive some of the benefits of Fed protection, in some cases 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 results from Fed and FDIC protections? H.R. 4173 attempts to limit future emergency lending to broadly available, collateralized facilities to avoid assistance to failing firms.

Some policymakers have questioned whether an institution largely independent from the elected branches of government should be able to (indirectly) place significant taxpayer funds at risk by providing the financial sector with hundreds of billions of dollars of assistance through use of its emergency powers. This raises the policy issue of how to balance the needs for congressional transparency and oversight against the economic benefits of Fed independence. H.R. 4173 removes most GAO audit restrictions and requires disclosure of the identities of borrowers with a delay. Furthermore, without congressional input, hundreds of billions of dollars of borrowing by the Treasury (through the Treasury Supplementary Financing Program) has allowed the Fed to increase its lending capacity without detrimental effects on inflation.

But as long as there is no government program to systematically manage financial difficulties at too big to fail institutions, the Fed is the only institution that can step in quickly enough to cope with problems on a case-by-case basis. While some had believed TARP provided the type of systemic approach that would allow the Fed to return to a more traditional role, the Fed's subsequent creation of lending facilities to support the commercial paper market, mortgage market, and asset-backed securities market suggests that TARP cannot cover all unforeseen contingencies. Furthermore, TARP is scheduled to expire in October 2010 and is limited in size, although Fed and TARP money have been coupled in order for TARP to have an impact beyond the $700 billion authorized by Congress.

The Fed's actions have resulted in an unprecedented expansion in its balance sheet and the portion of the money supply it controls. Normally, this would be highly inflationary, but inflation has remained low because of the financial crisis. As the economy improves, the Fed will need to contain this monetary expansion to prevent inflation from rising, but not so fast that it causes the financial system to destabilize again. The increase in the balance sheet could have already been automatically reversed by the decline in the Fed's direct lending, but the Fed has chosen to offset it through large-scale purchases of assets to maintain a high level of liquidity in the economy. The Fed views paying interest on bank reserves (authorized by P.L. 110-343) as an effective way to prevent inflation from rising.

Author Information

Marc Labonte
Specialist in Macroeconomic Policy

Disclaimer

This document was prepared by the Congressional Research Service (CRS). CRS serves as nonpartisan shared staff to congressional committees and Members of Congress. It operates solely at the behest of and under the direction of Congress. Information in a CRS Report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to Members of Congress in connection with CRS's institutional role. CRS Reports, as a work of the United States Government, are not subject to copyright protection in the United States. Any CRS Report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS Report may include copyrighted images or material from a third party, you may need to obtain the permission of the copyright holder if you wish to copy or otherwise use copyrighted material.