Congressional CBO Budget Office
Summary

The Budgetary Impact and Subsidy Costs of the Federal Reserve's Actions During the Financial Crisis

The financial system plays a vital role in the U.S. economy. It channels funds from savers to businesses, households, and governments that need money to finance investments and other expenditures, and it provides services that are essential for commercial and financial transactions. When the financial system is functioning smoothly, investors trade securities in liquid markets that provide reliable signals about the values of assets, and loans are readily available to creditworthy borrowers.[1] As the nation's central bank, the Federal Reserve System plays an important role in maintaining the stability and liquidity of the financial system through its conduct of monetary policy and its authority as a supervisor and regulator of banking institutions.

Over the past several years, the nation has experienced its most severe financial crisis since the Great Depression of the 1930s. Unexpected losses on subprime mortgages (loans made to borrowers with poorer-than-average credit) as well as heightened uncertainty about how exposed some financial institutions might be to additional losses led to a sharp decline in the liquidity of some markets and the availability of credit. The contraction in lending became more severe as the turmoil spread beyond the subprime mortgage market, several large financial institutions failed, and the economy weakened. Net lending by the private financial sector fell from more than $3.0 trillion in 2007 to annual rates of about $1.4 trillion in the fourth quarter of 2008 and -$1.8 trillion in the first quarter of 2009.[2]

In response to that contraction, the Federal Reserve undertook a series of extraordinary actions to stabilize financial markets and institutions. It continued to use its traditional monetary policy tools, but in addition, it created a variety of targeted credit programs to help restore liquidity and confidence to the financial sector. Its actions included:

- Expanding lending to depository institutions—that is, to financial institutions, such as commercial banks and savings and loan associations, whose liabilities largely consist of checking and savings accounts and other deposits;
- Creating new lending programs, or "facilities," for nondepository financial institutions and other participants in the financial markets;
- Purchasing mortgage-related securities and medium- and long-term securities of the U.S. Treasury in the open market to put downward pressure on medium- and long-term interest rates in the mortgage and debt markets; and

1. When the market for a financial asset is liquid, the asset can be readily and inexpensively converted to cash at a price that will not be very different from the price of the previous transaction. (Financial assets are claims that entitle the owner to receive a payment or a series of payments from an entity to which the owner has provided funds. They include bank accounts, retirement accounts, stocks and bonds, and various kinds of securities.) When markets become illiquid, large quantities of the asset cannot be sold (or bought) without at least temporarily depressing (or raising) the asset's price. The Federal Reserve can increase liquidity in a market—essentially make it easier to convert assets to cash—by standing ready to buy securities or to lend against them as collateral.

2. Net lending is negative when the amount of repayments and losses on all types of lending exceeds the amount of new lending.

- Extending support to financial institutions whose failures policymakers believed could lead to a systemic collapse of financial markets and institutions.

In effect, the Federal Reserve assumed some of the credit-providing functions that participants in the financial markets were unable or unwilling to perform. In doing so, it also assumed significantly more risk of incurring losses than it normally takes on in its operations.

The Federal Reserve's activities during the crisis have had a striking impact on the amount and types of assets that it holds (see Summary Figure 1). In July 2007, before the financial crisis began, the Federal Reserve held about $900 billion in assets; U.S. Treasury securities accounted for about $790 billion of that amount. The central bank had acquired those securities during its normal operations in conducting monetary policy—the process of influencing the level of short-term interest rates and consequently the pace of U.S. economic activity. By the end of 2008, the value of the Federal Reserve's assets had grown to about $2,275 billion; of that amount, loans and other support extended to financial institutions made up $1,686 billion. At the end of 2009, when the turmoil in the financial markets had subsided, the total value of the central bank's assets remained essentially where it was at the end of 2008. The amount of direct loans and other support to financial institutions, though still quite high by historical standards, had fallen markedly by the end of 2009, to about $280 billion, but holdings of mortgage-related securities had risen, to just over $1,000 billion.

The Federal Reserve's activities during the crisis have also led to a marked shift in the composition of the central bank's liabilities (see Summary Figure 2). Before the crisis, the major liability on the Federal Reserve's balance sheet was the amount of currency (Federal Reserve notes) in circulation—about $814 billion as of July 2007. At the end of 2009, the amount of reserves that banks held with the Federal Reserve was the central bank's largest liability. Such reserves have grown from about $6 billion at the end of July 2007 to more than $1,022 billion at the end of 2009; those reserves greatly exceed the amount that banks are required to hold.[3] In effect, the Federal Reserve financed its activities during the crisis primarily by creating bank reserves rather than by issuing more currency or increasing its other liabilities.[4]

The amount and composition of the central bank's assets and liabilities are major determinants of the Federal Reserve's impact on the federal budget. That impact is measured by the central bank's cash remittances to the Treasury, which are recorded as revenues in the budget. (The amount that is remitted is based on the Federal Reserve System's income from all of its various activities minus the costs of generating that income, dividend payments to banks that are members of the Federal Reserve System, and changes in the amount of the surplus that it holds on its books.) For fiscal years 2000 through 2008, annual remittances by the Federal Reserve ranged between $19 billion and $34 billion.

The Congressional Budget Office (CBO) projects that the Federal Reserve's actions to stabilize the financial system will boost its remittances to the Treasury during the next several years. That increase reflects the Federal Reserve's larger portfolio of assets, most of which are likely to earn a great deal more than the amount the system must pay in interest on reserves and its other liabilities. CBO projects that remittances will grow from about $34 billion in fiscal year 2009 to more than $70 billion in fiscal years 2010 and 2011.[5]

Projections of the Federal Reserve's remittances to the Treasury over the next few years, however, are more uncertain than projections made in the past. The system's asset holdings are now riskier, exposing the central bank to a considerably greater possibility of losses than its usual holdings of Treasury securities do. Moreover, the risk

3. A depository institution's reserve requirement is based on the type and amount of its deposits. Historically, most banks have held small amounts of excess reserves because reserves did not earn interest. However, the Emergency Economic Stabilization Act of 2008 (Division A of Public Law 110-343) authorized the Federal Reserve, as of October 1, 2008, to begin paying interest on reserves.

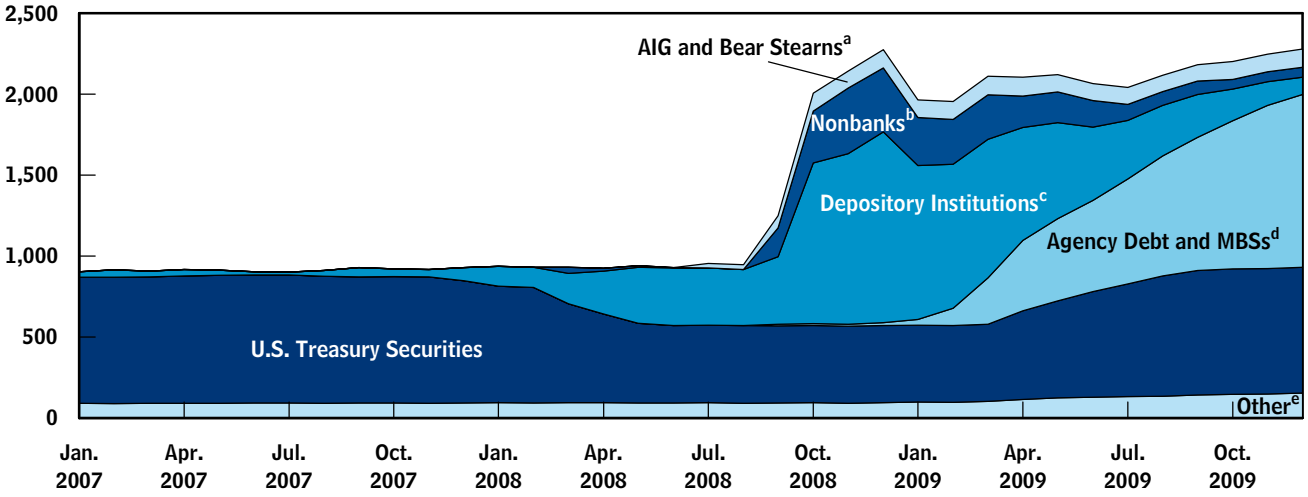
4. When the Federal Reserve makes a loan to a bank, for example, it credits the reserve balances of the bank by the amount of the loan, thereby increasing both its assets (its lending to banks) and its liabilities (reserve balances held at the Federal Reserve) by the same amount. For more information on the relationship between the Federal Reserve's activities during the financial crisis and bank reserves, see Todd Keister and James J. McAndrews, "Why Are Banks Holding So Many Excess Reserves?" *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, vol. 15, no. 8 (December 2009), available at www.newyorkfed.org/research/current_issues/ci15-8.pdf.

5. Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2011* (March 2010).

Summary Figure 1.

Assets of the Federal Reserve Banks, January 2007 to December 2009

(Billions of dollars)



Source: Congressional Budget Office based on data from the Federal Reserve.

Note: Data are as of the last Wednesday of each month. The last data point is December 30, 2009.

a. For the American International Group (AIG), the total consists of the outstanding balance on the line of credit, the assets of Maiden Lane II and Maiden Lane III, and the Federal Reserve's equity holdings in AIA Aurora Limited Liability Company (LLC) and ALICO Holdings LLC. For Bear Stearns, the total covers the assets of the initial Maiden Lane company.

b. Consists of loans made by the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset-Backed Securities Loan Facility.

c. Comprises loans through the discount window, the assets of the Term Auction Facility, central bank liquidity swaps, and repurchase agreements.

d. Agency debt consists of securities of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. Agency mortgage-backed securities (MBSs) are securities guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae.

e. Comprises gold stock, special drawing rights, Treasury currency outstanding, "float," and other assets.

of losses from default associated with the amounts of the remittances is asymmetric. The chances are great that the Federal Reserve will remit slightly more than the amounts CBO expects. But there is also a small chance that it will remit much less—or even nothing—if serious problems reemerge in the financial markets or the economy greatly weakens again.

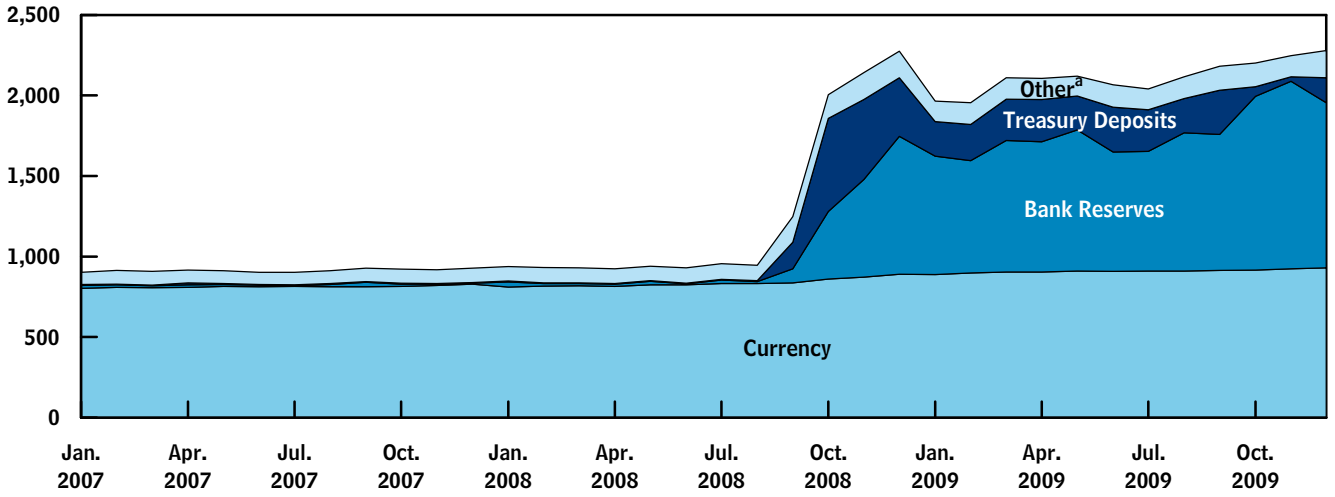
Measuring the impact of the Federal Reserve System's actions by the magnitude of its cash remittances to the Treasury fails to account for the cost of the risks to taxpayers from those actions. When the Federal Reserve invests in a risky security, it increases its expected net earnings because the return it anticipates on that security exceeds the interest rate it pays on the debt used to fund the purchase. If the Federal Reserve purchases the security at a fair market price, equivalent to what private investors would have paid, then the purchase creates no economic gain or loss for taxpayers; the price compensates the central bank for the risk it has assumed. By contrast, if the Federal Reserve purchases a risky security for more than the amount that private investors would have paid, it gives a subsidy to the seller of the security, creating an economic loss, or cost, for taxpayers.

The economic cost of the Federal Reserve System's actions to stabilize the financial markets—which incorporates the risks to taxpayers—can be estimated using "fair-value" subsidies. Fair value in many instances corresponds to market value; it is defined as the price that

Summary Figure 2.

Liabilities of the Federal Reserve Banks, January 2007 to December 2009

(Billions of dollars)



Source: Congressional Budget Office based on data from the Federal Reserve.

Note: Data are as of the last Wednesday of each month. The last data point is December 30, 2009.

a. Comprises reverse repurchase agreements, Treasury cash holdings, deposits other than those of the U.S. Treasury, and other Federal Reserve liabilities and capital.

would be received by selling an asset in an orderly transaction between market participants on a designated measurement date.[6] Subsidies estimated on a fair-value basis provide a more comprehensive measure of cost than do estimates made on a cash basis: They take into account the discounted value of all future cash flows associated with a credit obligation, and they include the cost of bearing risk.[7] CBO and the Administration's Office of Management and Budget (OMB) use a conceptually similar subsidy measure, as specified by the Emergency Economic Stabilization Act of 2008, to estimate the budgetary cost of the Troubled Asset Relief Program, or TARP.[8] (CBO calls such subsidies "fair value" in part to distinguish them from subsidies calculated through the method specified by the Federal Credit Reform Act of 1990 and used by CBO and OMB to estimate the budgetary cost of federal credit programs.)[9]

In CBO's estimation, the fair-value subsidies conferred by the Federal Reserve System's actions to stabilize the financial markets totaled about $21 billion (see Summary Table 1 for details). The subsidies are estimated as of the date of inception of the main programs that the central bank put in place—when the major economic commitments occurred—and they incorporate CBO's projections of all future cash flows over the life of those facilities, the uncertainty surrounding the flows, and the

6. As such, a fair value reflects the presence of a risk premium, which is the additional rate of return that investors require to bear market risk—the risk that losses will be greatest during times of economic stress. See Financial Accounting Standards Board, *Statement of Financial Accounting Standards No. 157, Fair Value Measurements* (September 2006), p. 2.

7. The discounted value of a future stream of promised cash flows is the amount they are worth today—their present value. The discounted value is calculated by applying a "discount rate" to future cash flows that accounts for the time value of money and for the risk of the cash flows.

8. The measure is described in Congressional Budget Office, *The Troubled Asset Relief Program: Report on Transactions Through December 31, 2008* (January 2009).

9. For the Federal Credit Reform Act of 1990, see title XIII, section 13201, of the Omnibus Budget Reconciliation Act of 1990; 2 U.S.C. 661, 104 Stat. 1388-610. The law specifies that in calculating those subsidy costs, interest rates on Treasury securities with similar maturities be used as discount rates (to determine the present value of the expected cash flows associated with a loan or loan guarantee). Because Treasury securities are considered to have little chance of default, their interest rates do not include a charge for the cost of default risk.

expected rate of return that investors would have required for taking on the same obligations. The gains or losses that will ultimately be realized from the Federal Reserve's activities will almost certainly deviate from CBO's estimates of the fair-value subsidies those actions provided. Such forward-looking estimates are based on averages over many possible future outcomes, whereas realized gains or losses reflect a particular outcome.

In total, the fair-value subsidies that CBO has estimated are modest when compared, for instance, with CBO's estimate of the $189 billion subsidy provided by the TARP at its inception—even though most of the central bank's facilities were introduced near the height of the crisis, when the price of risk was substantial and the probability of default was elevated.[10] The subsidies' relatively small magnitude reflects the fact that the Federal Reserve's potential for losses was limited in most instances by requirements for borrowers to provide collateral, by guarantees from the Treasury under the TARP and from the Federal Deposit Insurance Corporation, or by various restrictions on the programs. Furthermore, some of the assistance that the Federal Reserve provided involved no subsidies because the transactions were conducted on a fair-value basis or at prices determined in competitive auctions—meaning that the central bank was fully compensated for the risks it assumed.

CBO's estimates of the economic subsidies that the Federal Reserve has provided are highly uncertain. The estimates necessarily rely on judgments about the probability that the crisis would have deepened or abated, about the sums that might be borrowed and their associated interest rates at such times, and about the severity of losses. Uncertainty also surrounds the discount rates used in CBO's calculations, but that effect is mitigated by the short time over which most of the facilities were scheduled to operate. Indeed, most programs have already been ended.

It bears emphasizing that CBO's fair-value estimates address the costs but not the benefits of the Federal Reserve's actions. In CBO's judgment, if the Federal Reserve had not strategically provided credit and enhanced liquidity, the financial crisis probably would have been deeper and more protracted and the damages to the rest of the economy more severe. Measuring the benefits of the Federal Reserve's interventions in avoiding those worse outcomes is much more difficult than estimating the subsidy costs of the interventions, and CBO has not attempted to do so. It is likely, though, that the benefits of the Federal Reserve's actions to stabilize the financial system exceeded the relatively small costs reported here for fair-value subsidies.

10. CBO's estimates of the fair-value subsidies provided by the TARP at or near the inception date of that program are described in Congressional Budget Office, *The Troubled Asset Relief Program: Report on Transactions Through December 31, 2008*. By design, some activities pursued under the TARP involved a much greater assumption of risk by the government and the purchase of some assets at prices that were significantly above their fair values. CBO now estimates that the TARP will cost $109 billion.

Summary Table 1.

Fair-Value Subsidies Arising from the Federal Reserve's Actions During the Financial Crisis

Program/Activity	Inception Date	Subsidy at Inception[a] (Billions of dollars)
Lending to Depository Institutions		
Term Auction Facility	December 12, 2007	0
Repurchase agreements	Ongoing	0
Reciprocal currency arrangements	December 12, 2007	n.a.
Lending to Nondepository Financial Institutions and Other Market Participants		
Primary Dealer Credit Facility	March 17, 2008	0
Term Securities Lending Facility	March 27, 2008	0
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility	September 22, 2008	2
Money Market Investor Funding Facility	October 21, 2008	0
Commercial Paper Funding Facility	October 27, 2008	2
Term Asset-Backed Securities Loan Facility	March 3, 2009	13
Direct Purchases of Securities	Ongoing	0
Support for Systemically Important Financial Institutions[b]		
Maiden Lane LLC	March 14, 2008	0
Maiden Lane II LLC	October 31, 2008	0
Maiden Lane III LLC	October 31, 2008	0
AIG revolving credit facility	September 16, 2008	2
Citigroup	November 23, 2008	2
Bank of America	January 16, 2009	1
Total		**21**

Source: Congressional Budget Office.

Notes: Subsidies estimated on a fair-value basis, unlike estimates made on a cash basis, take into account the discounted value of all future cash flows associated with a credit obligation and include noncash costs, such as that for bearing risk.

n.a. = not applicable; LLC = limited liability company; AIG = American International Group.

a. Numbers in the column do not add to the total because of rounding.

b. The Maiden Lane LLC was established in conjunction with the sale of the investment bank Bear Stearns to JPMorgan Chase & Company. Maiden Lanes II and III were established to provide support to AIG.