

A

CBO

REPORT

**The Troubled Asset Relief Program:
Report on Transactions Through
June 17, 2009**

June 2009



CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515



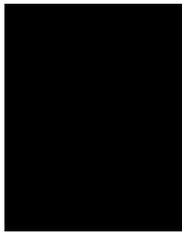
The Troubled Asset Relief Program: Report on Transactions Through June 17, 2009

June 2009

Originally released on June 25, 2009, this report was revised on June 29, 2009, to correct information in footnotes 6 and 14.

Note

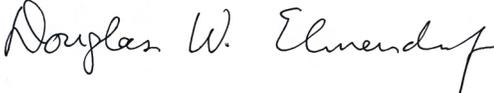
Numbers in the text and tables may not add up to totals because of rounding.



Preface

In October 2008, the Emergency Economic Stabilization Act of 2008 created the Troubled Asset Relief Program (TARP), which authorizes the Department of the Treasury to purchase or insure troubled assets as a way to promote stability in the financial markets. Section 202 of that law requires the Congressional Budget Office (CBO) to prepare a report on those transactions within 45 days of a report issued by the Office of Management and Budget (OMB) on the TARP's activities. This second statutory report from CBO on the TARP's transactions follows the report OMB submitted to the Congress on May 11, 2009.

Pinki Mishra of CBO's Budget Analysis Division prepared the report under the supervision of Peter Fontaine, Theresa Gullo, and Jeffrey Holland. Kim Kowalewski, Wendy Kiska, and Chad Chirico contributed significantly to the analysis. Kate Kelly edited the report, and Christine Bogusz proofread it. Maureen Costantino prepared the report for publication, Lenny Skutnik printed the report, Linda Schimmel handled the print distribution, and Simone Thomas prepared the electronic versions for CBO's Web site (www.cbo.gov).



Douglas W. Elmendorf
Director

June 2009



Contents

Transactions of the TARP	2
Capital Purchases and Repayments	2
Additional Support for Large Financial Institutions	3
Financial Assistance to Automobile Manufacturers and Related Businesses	4
Additional TARP Actions	4
Pending TARP Actions	4
Asset Guarantees	4
Additional Support for General Motors	5
Expansion of the Term Asset-Backed Securities Loan Facility	5
Public–Private Investment Partnership	5
Small Business Loan Guarantees	5
Cash Flows of the TARP	5
Changes from CBO’s March Estimates	5
Comparison of CBO’s and OMB’s Estimates of the Subsidy Rates of the TARP’s Transactions	7
Valuation of Warrants	7
Table	
1. Transactions of the TARP as of June 17, 2009	2
Box	
1. The Budgetary Treatment of Companies Owned by the Government	6



The Troubled Asset Relief Program: Report on Transactions Through June 17, 2009

In October 2008, the Emergency Economic Stabilization Act of 2008 (Division A of Public Law 110-343) established the Troubled Asset Relief Program (TARP) to enable the Department of the Treasury to promote stability in financial markets through the purchase and insurance of “troubled assets.”¹ Section 202 of that legislation requires the Office of Management and Budget (OMB) to submit semiannual reports on the costs of the Treasury’s purchases and guarantees of troubled assets.² The law also requires the Congressional Budget Office (CBO) to prepare an assessment of each OMB report within 45 days of its issuance. CBO’s assessment must discuss three elements:

- The costs of purchases and guarantees of troubled assets,

1. The law defines troubled assets as “(A) residential or commercial mortgages and any securities, obligations, or other instruments that are based on or related to such mortgages, that in each case was originated or issued on or before March 14, 2008, the purchase of which the Secretary determines promotes financial market stability; and (B) any other financial instrument that the Secretary, after consultation with the Chairman of the Board of Governors of the Federal Reserve System, determines the purchase of which is necessary to promote financial market stability, but only upon transmittal of such determination, in writing, to the appropriate committees of Congress.”
2. OMB’s first TARP report was submitted last December; see Office of Management and Budget, “OMB Report Under the Emergency Economic Stabilization Act, Section 202,” letter to the Honorable Nancy Pelosi (December 5, 2008), www.whitehouse.gov/omb/legislative/eesa_120508.pdf. The second report was released in May; see Office of Management and Budget, *Analytical Perspectives: Budget of the U.S. Government, Fiscal Year 2010* (May 11, 2009), www.whitehouse.gov/omb/budget/fy2010/assets/spec.pdf.

- The information and valuation methods used to calculate those costs, and
- The impact on the federal budget deficit and debt.

This second statutory report by CBO concerns the TARP’s transactions as of June 17, 2009.³ Those transactions included net disbursements, guarantee agreements, and loans totaling \$369 billion. Valuing the assets using procedures similar to those specified in the Federal Credit Reform Act, but adjusting for market risk as specified in the Emergency Economic Stabilization Act, CBO estimates that the subsidy cost of the transactions (broadly speaking, the difference between what the Treasury paid for the investments or lent to the businesses and the market value of those transactions, including repurchases of preferred stock) amounts to \$159 billion.

Currently, the Secretary of the Treasury has the authority to purchase and hold up to roughly \$699 billion in assets at one time.⁴ Of the \$329 billion in authority remaining under the program, \$142 billion has yet to be allocated to any existing or pending activity announced by the Treasury.

3. CBO reported in January on the first round of the TARP’s transactions; see Congressional Budget Office, *The Troubled Asset Relief Program: Report on Transactions Through December 31, 2008* (January 2009).
4. Authority for the TARP was originally set to a maximum of \$700 billion; however, that total was reduced by about \$1.3 billion in the Helping Families Save Their Homes Act of 2009 (P.L. 111-22).

Table 1.**Transactions of the TARP as of June 17, 2009**

	Number of Institutions	Amount (Billions of dollars)	Estimated Subsidy (Billions of dollars)	Subsidy Rate (Percent)
Capital Purchases Outstanding	591	129	24	18
Additional Assistance to Citigroup				
Targeted Investment Program	1	20	2	9
Asset guarantees	1	5	3	64
Subtotal, Citigroup	1	25	5	20
Additional Assistance to Bank of America ^a	1	20	2	11
Assistance to AIG ^b	1	70	35	50
Assistance to the Automobile Industry ^c	8	55	40	73
Term Asset-Backed Securities Loan Facility	n.a.	20	2	10
Foreclosure Mitigation Plan ^d	n.a.	50	50	100
Subtotal, committed or outstanding	n.a.	369	158	43
Capital Purchases Repaid ^e	32	70	1	2
Cumulative Total Activity	n.a.	439	159	36

Sources: Congressional Budget Office; Department of the Treasury.

Note: TARP = Troubled Asset Relief Program; AIG = American International Group; n.a. = not applicable.

- Such funding was provided through the Targeted Investment Program. As of mid-June 2009, the Department of the Treasury's plan to guarantee a pool of assets owned by Bank of America had not been made final.
- Includes \$40 billion in preferred stock purchased in November 2008 and a \$30 billion line of credit provided in April 2009.
- Entities that received assistance include General Motors, GMAC (formerly General Motors Acceptance Corporation), Chrysler, Chrysler Financial, and special-purpose entities for the reconstituted General Motors and Chrysler as well as for suppliers for the two automakers.
- The Treasury has not yet disbursed any of the \$15 billion allocated as of June 17, 2009, for foreclosure mitigation.
- This figure includes repurchases of preferred stock as of June 17, 2009. The calculations do not include the value of any past or future redemption of warrants. Market data used to calculate subsidies were as of May 29, 2009.

Transactions of the TARP

The TARP's transactions fall into four broad categories: capital purchases and repayments, additional support for large financial institutions, financial assistance to auto-makers and related businesses, and other actions.

Capital Purchases and Repayments

Through June 17, the Treasury had purchased \$199 billion in shares of preferred stock and warrants (for the future purchase of common stock) from 623 financial institutions. As of mid-June, about \$70 billion in preferred stock had been repurchased by the issuing institutions. CBO estimates that the average subsidy rate for the remaining stock held by the government (representing

investments totaling \$129 billion) is 18 percent (see Table 1).

Most of the funding for capital purchases was disbursed in the fourth quarter of calendar year 2008. Since the end of December, 410 additional institutions have received \$21 billion from the TARP, as compared with 213 institutions that received \$178 billion from October through December of last year. Most of the recent recipients have been small private or community-based institutions or S corporations (companies with small numbers of shareholders—typically fewer than 75).

The terms of the TARP's Capital Purchase Program (CPP) have not changed since the program's inception.

Each financial institution that receives funds must pay a dividend equal to 5 percent of the government's investment in that institution for the first five years and 9 percent thereafter. The shares never reach maturity (they are said to have "perpetual life"), and after three years, they are redeemable by the financial institutions that issued them.⁵ The shares of preferred stock are accompanied by warrants that allow the government to purchase common stock equal in cost to 15 percent of the amount invested in preferred stock. The government will pay an average of the price for the 20 trading days preceding the date of the government's investment. If a financial institution does not have shares of publicly traded common stock, the warrants can be used to acquire additional shares of preferred stock. Finally, participating financial institutions must agree to restrictions on the compensation of their executives, the dividends they pay to shareholders, and the amount of common stock they repurchase.

Some institutions have begun to repurchase the preferred stock and warrants that they had issued to the Treasury; nearly \$2 billion in preferred stock had been repurchased by 22 banks by the middle of June, and \$12 million had been received by the Treasury in exchange for warrants. In addition, on June 17, 10 major recipients of TARP funding—JPMorgan Chase, Goldman Sachs, Morgan Stanley, BB&T, U.S. Bancorp, American Express, Capital One Financial, Bank of New York Mellon, Northern Trust, and State Street—announced repayments totaling \$68 billion. The disposition of warrants issued by those 10 institutions has not yet been made final.

CBO estimates that the government has provided a subsidy of 2 percent on transactions (excluding any income from the redemption of warrants) for the 32 institutions that have repurchased preferred stock. That estimate incorporates the value of the risk that the government assumed by initially purchasing the assets at a time of instability in the financial markets and by accepting dividend yields below those that the companies would have had to pay to private investors. This subsidy rate differs substantially from that for the remaining CPP transactions because recently redeemed preferred stock was outstanding for an average of 7 months, whereas CBO assumes that the remaining preferred stock investments will be outstanding for 5 to 10 years.

5. A financial institution may redeem the shares within three years if it refinances the repayments through an equity offering; some institutions have already done so.

Additional Support for Large Financial Institutions

Three financial institutions have received additional support through the TARP. Citigroup and Bank of America each received initial funding of \$25 billion through the CPP. Subsequently, each bank received another \$20 billion through the Treasury's Targeted Investment Program (TIP). In addition, the Treasury has agreed to absorb up to \$5 billion in losses that could result from the federal guarantee of a pool of \$301 billion of Citigroup's assets (losses above that amount will be shared by the Federal Deposit Insurance Corporation [FDIC], the Federal Reserve, and Citigroup).⁶ The Treasury also has announced that it plans to guarantee a pool of Bank of America's assets, but that guarantee has not yet been implemented.⁷

American International Group (AIG) received initial support through programs established by the Federal Reserve Board; subsequent support came from the TARP. The Treasury purchased \$40 billion in preferred stock from AIG in November 2008 and in April 2009 created a \$30 billion line of credit, of which approximately \$1 billion had been disbursed as of mid-June.

CBO estimates subsidy costs of about \$2 billion each for the TIP investments in Citigroup and Bank of America and \$3 billion for the TARP guarantee of Citigroup's assets.⁸ (The total subsidy costs, including the CPP investments, of the Citigroup and Bank of America transactions come to about \$9 billion and \$10 billion, respectively.)

6. The Citigroup guarantee is structured so that Citigroup absorbs the first \$39.5 billion of losses from that portfolio and 10 percent of losses thereafter. Other than Citigroup's share of subsequent losses, the TARP and the FDIC will be responsible for the next \$5 billion and \$10 billion of losses, respectively, and the Federal Reserve must cover the remaining losses in the portfolio (up to \$220 billion); see Securities and Exchange Commission, "Master Agreement" (January 15, 2009), www.sec.gov/Archives/edgar/data/831001/000095010309000098/dp12291_ex1001.htm.
7. See Department of the Treasury, "Treasury, Federal Reserve and the FDIC Provide Assistance to Bank of America" (January 16, 2009), www.treasury.gov/press/releases/hp1356.htm; and "Summary of Terms" (January 15, 2009), www.treas.gov/press/releases/reports/011508bofatermsheet.pdf.
8. In contrast to the 5 percent dividend payments required by the CPP for the first five years, the TIP requires Citigroup and Bank of America to pay annual dividends of 8 percent. As with the CPP, the Treasury also received stock warrants as part of its TIP investments.

For AIG, the estimated subsidy rate is about 50 percent and the resulting subsidy cost would be about \$35 billion for the \$70 billion in commitments.

Financial Assistance to Automobile Manufacturers and Related Businesses

In the past few months, substantially expanded assistance has gone to U.S. automobile manufacturers and related businesses, which have now received a total of \$55 billion in TARP funds.

As of June 17, the Treasury had extended nearly \$21 billion in loans to General Motors (GM) and \$15.5 billion to Chrysler. It also provided assistance to the two financing arms formerly associated with those businesses: GMAC (formerly General Motors Acceptance Corporation) received \$12.5 billion in exchange for preferred stock, and Chrysler Financial received \$1.5 billion in exchange for debt obligations.⁹ (Thus, of the total \$55 billion, only the \$12.5 billion extended to GMAC took the form of preferred stock investments; the remainder consisted primarily of loans.) CBO has estimated a subsidy rate of 73 percent on those investments and loans, corresponding to a subsidy cost of close to \$37 billion. On June 1, 2009, GM entered bankruptcy proceedings, and it has received a pledge (not yet made final) for additional funds to facilitate that process.

In addition to the \$50 billion it provided to GM, Chrysler, and their financing arms, the Treasury has provided \$5 billion to assist suppliers to the automobile industry. In April, the Treasury lent \$3.5 billion to GM Supplier Receivables, a special-purpose entity created by General Motors, and \$1.5 billion to Chrysler Receivables, a special-purpose entity created by Chrysler. Those amounts represent the maximum available to each entity, and they will be disbursed to the suppliers as needed over time.¹⁰ Subsidy costs for those loans are about 71 percent

of face value, CBO estimates, corresponding to a cost of \$3.6 billion.

All told, CBO estimates that the subsidy cost of assistance provided to automobile manufacturers and related businesses totals \$40 billion (73 percent).

Additional TARP Actions

The Treasury has undertaken several other initiatives as part of the TARP. The first of two already under way is Making Home Affordable, a program to reduce home foreclosures. The second initiative supports the Term Asset-Backed Securities Loan Facility (TALF), which was created by the Federal Reserve.

The Treasury has committed \$50 billion in TARP funding for the Administration's foreclosure mitigation plan, under which the TARP will make direct payments to mortgage loan servicers to help homeowners refinance their loans. Because no repayments will be required from the servicers, the net cost of the program will be the full amount of the payments made by the government. The Treasury has determined the recipients of about \$15 billion of the total of \$50 billion, but as of mid-June, no money had yet been disbursed.

In November 2008, the Federal Reserve announced the creation of the TALF, which it hoped would revive securitization markets by providing financing to investors in highly rated asset-backed securities, such as new and recently originated auto loans, credit card loans, student loans, and business loans guaranteed by the Small Business Administration (SBA). The Treasury has made an initial pledge of \$20 billion in TARP funding to cover potential losses incurred under the TALF (further losses would be assumed by the Federal Reserve); CBO estimates that about \$2 billion of that funding will be used.

Pending TARP Actions

As of June 17, several additional programs had been announced but not yet implemented: asset guarantees for Bank of America, additional support to GM, expansion of the TALF, opening of the Treasury's Public-Private Investment Program (PPIP), and the purchase of securities backed by SBA loans. Such activities involve commitments of up to \$187.5 billion in future funding.

9. In late December 2008, GMAC won approval to become a bank holding company, thereby enabling it to qualify on its own for TARP assistance. Chrysler Financial also created a special-purpose entity to receive TARP funding.

10. See Department of the Treasury, Office of Financial Stability, Troubled Asset Relief Program, "Transactions Report for Period Ending May 27, 2009, Capital Purchase Program," www.financialstability.gov/docs/transaction-reports/transactions-report_052909.pdf.

Asset Guarantees

The Treasury has made an additional commitment in the form of an asset guarantee to Bank of America that has not yet been implemented. Specifically, the Treasury, the Federal Reserve, and the FDIC agreed in January 2009 to jointly guarantee up to \$118 billion of financial instruments; through the TARP, the Treasury will assume responsibility for up to \$7.5 billion of potential losses on those instruments.¹¹ CBO estimates a subsidy cost of \$2.6 billion for the TARP's portion of the guarantee.

Additional Support for General Motors

To assist GM as it proceeds through bankruptcy, the Treasury plans to make available another \$30 billion in financial assistance to the company. In exchange for that commitment (and the previous financial assistance that the Treasury has provided), the U.S. government will receive approximately \$8.8 billion in debt obligations and preferred stock in the new GM and approximately 60 percent of its equity. The extent of federal involvement with GM raises questions about how GM should be treated in the federal budget. Although the federal government will be the majority owner of the new GM, CBO believes that current circumstances do not support the inclusion of GM's activities on the federal budget (see Box 1).

Expansion of the Term Asset-Backed Securities Loan Facility

Since the TALF's creation in November 2008, the Treasury and the Federal Reserve have proposed several modifications to the program, such as adding commercial mortgage-backed securities to the list of financial instruments that investors in the program may purchase. Overall, those modifications could involve an additional \$35 billion in commitments through the TARP.

Public-Private Investment Partnership

Some details about the PPIP, a joint initiative of the Treasury, the Federal Reserve, and the FDIC, were released in

April 2009. As described in various statements, the PPIP will be seeded with \$100 billion in capital from the TARP. The program will use combined funding from private capital, the Federal Reserve, and the FDIC to generate up to \$1 trillion for the purchase of securities backed by residential and commercial mortgages (which the Treasury calls "legacy assets").¹²

Small Business Loan Guarantees

The Treasury has unveiled a plan to purchase \$15 billion in securities backed by SBA loans, packaged after July 1, 2008, in an effort to stimulate trading in secondary markets for small business loans.

Cash Flows of the TARP

As of June 17, the TARP had disbursed about \$330 billion in cash to financial institutions and other participants in the program. (The Treasury has set funds aside for future payments but has not yet disbursed any cash for some active programs, including the foreclosure mitigation plan and nearly all of the TALF). Partially offsetting those disbursements has been \$77 billion in cash inflows, resulting in net disbursements of \$253 billion. About \$70 billion of cash received by the Treasury has come from the repurchase of preferred stock, most of which is accounted for by the 10 banks that repurchased their stock on June 17. In addition, the program has received nearly \$6 billion in dividends so far. CBO is updating its estimates of future disbursements to and repayments by TARP recipients and will present a more detailed assessment as part of its next baseline report later this summer.

Changes from CBO's March Estimates

By CBO's estimates, actions taken through June 17, 2009, have an overall cost for the TARP of \$159 billion and a subsidy rate of 36 percent. That rate is lower than the 45 percent recorded in CBO's March baseline, which reflected actions undertaken by the Treasury as of

11. The guarantee is structured so that Bank of America absorbs the first \$10 billion of losses on this pool of financial instruments; the Treasury and the FDIC assume losses in excess of that amount, up to \$10 billion, with the Treasury assuming 75 percent of those potential losses and the FDIC the remaining 25 percent; terms of the agreement were filed in January 2009. See Securities and Exchange Commission, "Summary of Terms" (January 15, 2009), <http://idea.sec.gov/Archives/edgar/data/70858/000119312509009753/dex102.htm>.

12. Initial plans also called for a program to purchase whole loans, but the FDIC's recent statements indicate that the whole-loan portion of the program has been postponed. Institutional demand for the legacy assets program could be waning as a result of the increasing stabilization of financial markets; the future of the securities portion of the PPIP is uncertain.

Box 1.**The Budgetary Treatment of Companies Owned by the Government**

Investments made through the Troubled Asset Relief Program in General Motors (GM) and American International Group (AIG) have given the government a substantial ownership stake in those companies. The government currently owns nearly 80 percent of AIG and is likely to own about 60 percent of the reconstituted GM after it emerges from bankruptcy. In addition, if the planned conversion of preferred to common stock takes place, the government could own more than 30 percent of Citigroup. Such ownership by the government gives rise to questions about whether the companies' activities should be included in the federal budget.

Ownership is not the only relevant criterion for determining budgetary treatment, especially if the stake is meant to be temporary. In 1967, the President's Commission on Budget Concepts provided guidance for determining which activities should be included in the federal budget. Its report stated that the budget should include "transactions that are within the federal sector and not subject to the economic disciplines of the marketplace."¹ The commission indicated that various aspects of ownership and control should be considered in judging whether to include an activity in the budget. But, the commission acknowledged, "the boundaries of the federal establishment are sometimes difficult to draw," no single answer to the question is conclusive, and decisions about including an activity must account for many relevant considerations.

The conservatorship of Fannie Mae and Freddie Mac, government-sponsored enterprises that guarantee

mortgages and mortgage-backed securities, is somewhat analogous although not completely parallel. Even though both institutions were created by the federal government and had longstanding links with the government, before conservatorship, each was considered a private company owned by shareholders; now the government owns warrants for nearly 80 percent of the value of each institution. Moreover, both are currently subjected to a degree of control that sometimes places the government's policy objectives ahead of corporate financial goals. The Congressional Budget Office (CBO) has therefore concluded that their operations should be considered federal.

As a substantial shareholder, the government could exert significant control over the operations of GM, AIG, and Citigroup, but it is not clear that it will. For example, although the government owns most of AIG's stock, it does not directly control any seats on the company's board of directors and it is not actively determining company policy. GM's situation could evolve somewhat differently; news reports suggest that the federal government will appoint some members of the board and could take a more active part in setting company policy. However, the Administration has indicated that it does not plan to be an active participant in managing the carmaker's operations.

CBO does not currently believe that the full activities of GM, AIG, and Citigroup should be recorded as part of the federal budget. However, changes in the nature of the government's ownership or degree of control over those companies could provide sufficient basis for revisiting this issue and concluding that the financial transactions of one or more of those companies should be reflected in the budget.

1. See *Report of the President's Commission on Budget Concepts* (October 1967), p. 24.

February 27, 2009.¹³ The decrease in the subsidy costs assigned for existing programs reflects an improvement in market conditions and the earlier-than-expected repurchase of preferred stock, partly offset by higher subsidy costs for newer transactions.

The most notable decrease in subsidy rates stems from capital purchases. In CBO's March baseline the estimated subsidy rate for those transactions was 35 percent, a figure that has since fallen to 18 percent. Reductions of similar magnitude have been recorded for investments made through the TIP and for AIG. Furthermore, the repurchase of preferred stock before the five-year mark lowered the estimated subsidy rates for those transactions because they were outstanding only for a short time. In contrast, the addition of funding for the Administration's foreclosure mitigation plan, a 100 percent subsidy, raises the average subsidy rate for TARP activities.

Comparison of CBO's and OMB's Estimates of the Subsidy Rates of the TARP's Transactions

Consistent with the approach CBO used in its first TARP report, and as specified in law, this update values transactions and subsidy costs on a net-present-value basis adjusted for market risk. Broadly speaking, in its recent report OMB used a similar approach to value the TARP's investments. A direct comparison of CBO's and OMB's valuations is difficult because of the different periods and models used and the different methods of reporting. Nevertheless, the organizations have developed roughly similar estimates for some of the transactions that have already occurred. The variation between CBO's and OMB's estimates stems from several factors:

- CBO derived its market-based valuations from data available at the end of May 2009; OMB's cutoff date fell on April 1, 2009, and some transactions were valued using earlier data.

- OMB assumed \$25 billion in repayments during 2009; subsequent repayments have already exceeded that figure.
- CBO's assessment of the subsidy cost of investments made under the TIP in Citigroup and Bank of America, as well as those in AIG, is lower than that of OMB.
- CBO assumes that the subsidy for the TALF will amount to around 10 percent; OMB used a rate of 100 percent.

Valuation of Warrants

As outlined in the terms that govern capital purchases, the Treasury currently owns warrants to purchase common stock of publicly owned banks that have received TARP funds. Several financial institutions have expressed an interest in repurchasing their outstanding warrants; as of June 17, six small banks had actually done so and others (including the 10 large institutions that repurchased their preferred stock) are likely to do so soon. The valuation of warrants poses significant challenges because of the limited market for such securities.

The market value of outstanding warrants held by the Treasury is around \$6 billion, CBO estimates.¹⁴ Of the total, about \$1 billion is from warrants issued by the 10 banks that recently repaid their TARP funds. However, those calculations are sensitive to the assumptions used in CBO's models—particularly for treating the volatility of future stock prices (that is, how widely stock prices fluctuate over a given period).

Specifically, for the 10 banks, simply applying historical volatilities over the most recent 1-, 3-, 5-, and 10-year periods yields warrant valuations that range from \$0.7 billion to \$2.0 billion. If all 10 institutions issue common stock to the public in amounts that match the Treasury's initial investment, they will be able to cancel half of their outstanding warrants, and the value of those warrants would decline to between \$0.4 billion and \$1.0 billion.

13. CBO's estimate of the subsidy cost for the entire program, as incorporated into the March baseline, was \$356 billion. That estimate reflected CBO's assumption that the full \$700 billion available at the time would be used. Of the total subsidy cost, \$336 billion was recorded for fiscal year 2009 and \$20 billion was recorded for 2010. The subsidy rate associated with those estimates was 51 percent.

14. CBO uses a Black-Scholes options-pricing model to price TARP warrants that relies on observed stock prices, estimated dividend yields, and historical data on volatility compiled from weekly securities returns for a period of 10 years.

