



# Investment Bank Welfare?

**The Implicit Bank Subsidies in the Primary Dealer Credit Facility (PDCF) and the Term Securities Lending Facility (TSLF)  
Created by the Federal Reserve Board**

---

Dean Baker and Matt Sherman

March 2009

# Contents

Executive Summary .....	1
Introduction .....	3
Calculating the Subsidies in the PDCF and the TSLF .....	7
Implications of Subsidies Under Fed Loan Programs .....	11
Conclusion .....	12
Appendix .....	13

## About the Authors

Dean Baker is an economist and co-director of the Center for Economic and Policy Research, in Washington, D.C. Matt Sherman is a research assistant at the Center for Economic and Policy Research.

## Executive Summary

The dispersion of \$700 billion in loans by the Treasury through the Troubled Asset Relief Program (TARP) has been the subject of intense political debate. There has been considerable anger over what many people view as taxpayer subsidies to banks that bear partial responsibility for the housing bubble and the current recession.

Remarkably there has been much less public attention on the far larger amount of money that has been distributed through special loan facilities created by the Federal Reserve Board over the last year. As of late February, the Fed had just over \$1 trillion in loans outstanding through these ten facilities, plus the money lent to AIG. This sum is more than 40 percent larger than the amount that has been lent by the Treasury through the TARP.

The Fed provides no information on the amount of the loans or the collateral provided by specific borrowers, making it impossible to determine the extent to which companies are using the facility or the extent to which they are being effectively subsidized by getting loans at below market interest rates.

While most of the facilities cover hundreds or even thousands of institutions, the two facilities created to support primary dealers and investment banks, the Primary Credit Dealer Facility (PDCF) and the Term Securities Lending Facility (TSLF), have only 16 eligible institutions, which makes it possible to get a rough approximation of the size of the implicit subsidies associated with lending through these two facilities.

This paper calculates the approximate subsidy each company received through these facilities, using the assumption that each institution borrowed from the Fed in proportion to its assets, and that the market interest rate available to these institutions would have been the interest rate charged on AA asset-backed commercial paper of the same duration as the loans from the Fed.

Under these assumptions, the total subsidy on loans made through the PDCF through late February was \$154 million. The largest beneficiaries, based on these calculations, were BNP Paribas Securities at \$18 million, HSBC Securities at \$17 million, and UBS Securities at \$16 million.

Through the TSLF, these assumptions show a total subsidy of \$1,092 million. By the calculation described above, BNP Paribas Securities received an implicit subsidy of \$122 million, HSBC Securities received a subsidy of \$115 million, UBS Securities had a subsidy of \$111 million, and Citigroup Global Markets got a \$107 million subsidy.

While these sums seem small compared to the hundreds of billions lent through the TARP, it is important to remember that these figures in principle refer to actual subsidies, not the loans that are made available through the TARP. Many of the loans offered through the TARP did involve a substantial subsidy component, but most of these loans will be repaid to the Treasury.<sup>1</sup>

The actual subsidies for some of the banks were almost certainly far larger since some banks surely borrowed an amount that was disproportionate to their assets. Also, the most heavy users of these

---

<sup>1</sup> See Congressional Oversight Panel, "February Oversight Report: Valuing Treasury's Acquisitions," available at <http://cop.senate.gov/documents/cop-020609-report.pdf>.

facilities were likely the ones that faced the most difficulty borrowing in private markets, so the actual subsidy received by some of these institutions can easily be several times larger than the number implied by these calculations.

Beyond this limited group of institutions, there is a public interest in knowing which institutions are effectively being subsidized through the Fed's lending facilities more generally. While the Fed's lending may be serving a public purpose by sustaining otherwise solvent corporations through a liquidity crisis, the public may still want to know which institutions benefited from its largesse and to what extent. This information would be necessary if Congress were to impose some quid pro quo for receiving money from the Fed, comparable to what has been attempted with lending through the TARP.

At this point, the corporations that borrow through the Fed's facilities get access to loans at below market interest rates with no conditions whatsoever. The public should at least be aware that it is lending a substantial amount of money through this route.

## Introduction

In order to counteract the impact on solvency and liquidity of the banking sector's housing-related losses, the Federal Reserve Board has created a variety of new loan facilities. These facilities make credit available to commercial banks, investment banks, and even non-financial corporations on more advantageous terms than are available in the private market.

The ostensible purpose of these loan facilities is to maintain liquidity in the financial system and the larger economy. While this is an important public goal, these facilities also have an implicit subsidy component. The Fed is allowing a selected group of financial and non-financial institutions to effectively get loans at below market interest rates from the government.

Allowing these institutions access to subsidized loans is distinct from the Fed's normal lending through the discount window. That lending is made exclusively to banks that are members of the Federal Reserve System. They are obligated to keep reserves with the Fed, which until recently paid no interest. In addition, these banks must open their accounts to the Fed for regular scrutiny in a way that is not true of the beneficiaries of the Fed's new loan facilities.

In other words, there was a quid pro quo whereby the commercial banks that were members of the Federal Reserve System had to surrender some control (and interest) in exchange for access to below market loans through the discount window. In addition, the Fed makes public its loans through the discount window so analysts can determine the extent to which banks are taking advantage of this privilege in their assessment of a bank's health.

By contrast, the beneficiaries of the Fed's new loan facilities are not being required to give up anything in return. They don't have to keep reserves with the Fed. Nor are they subject to the same disclosure requirements as the commercial banks that are part of the Fed system. And their borrowing through the various Fed facilities is not disclosed to the public.

Given the depths of the economic crisis, the creation of these special loan facilities may still be desirable policy. Certainly there is a public interest in minimizing disruptions to the financial system and ensuring that otherwise solvent companies have sufficient access to credit to meet their payroll and pay other bills.

However, it is also important to recognize the subsidy elements that are implicit in the Fed's lending facilities. All businesses recognize that under some circumstances they could face liquidity problems, even if their basic business model is sound. Many otherwise profitable businesses have failed because they could not arrange financing to get them through what otherwise would have been temporary problems. Others take costly steps to protect themselves against this risk, such as keeping large cash reserves or arranging substantial lines of credit.

In short, liquidity is not free and when the Fed opts to make liquidity available to a select group of financial and non-financial institutions it is effectively giving these institutions a subsidy at the expense of the public at large. There are always other potential uses for the money loaned by the Fed. For example, the Fed could offer every household in the country \$10,000 in credit card debt at below market interest rates. Instead of going this route, the Fed has chosen to lend through the various facilities established over the last year.

As of February 25, 2009, the Fed had a total of \$1 trillion in loans outstanding through its various facilities as shown in **Table 1**.

**TABLE 1**  
**Special Lending Facilities of the Federal Reserve Board**

<b>Name</b>	<b>Beneficiaries</b>	<b>Outstanding Loan Volume (millions)</b>
Primary Dealer Credit Facility (PDCF)	Primary dealers	\$25,618
Term Securities Lending Facility (TSLF)	Primary dealers	\$112,170
Term Securities Lending Facility Options Program (TOP)	Primary dealers	\$49,999
Term Auction Facility (TAF)	Primary credit-eligible depository institutions	\$447,563
Asset-Backed Commercial Paper Money Market Fund Liquidity Facility (AMLF)	Depository institutions, bank holding companies, U.S. branches and agencies of foreign banks	\$11,382
Commercial Paper Funding Facility (CPFF)	Eligible commercial paper issuers	\$246,233
Money Market Investing Funding Facility (MMIFF)	Eligible Money Market Mutual Funds	\$0
Term Asset-Backed Securities Loan Facility (TALF)	All U.S. persons that own eligible collateral	\$0
Portfolio Holdings of Maiden Lane LLC	-	\$72,242
Credit Extended to American International Group, Inc.	-	\$38,046
<b>TOTAL</b>		<b>\$1,003,253</b>

Source: Board of Governors of the Federal Reserve System.

TSLF auction results available at [http://www.newyorkfed.org/markets/tslf/termseclending\\_Historical.cfm](http://www.newyorkfed.org/markets/tslf/termseclending_Historical.cfm)

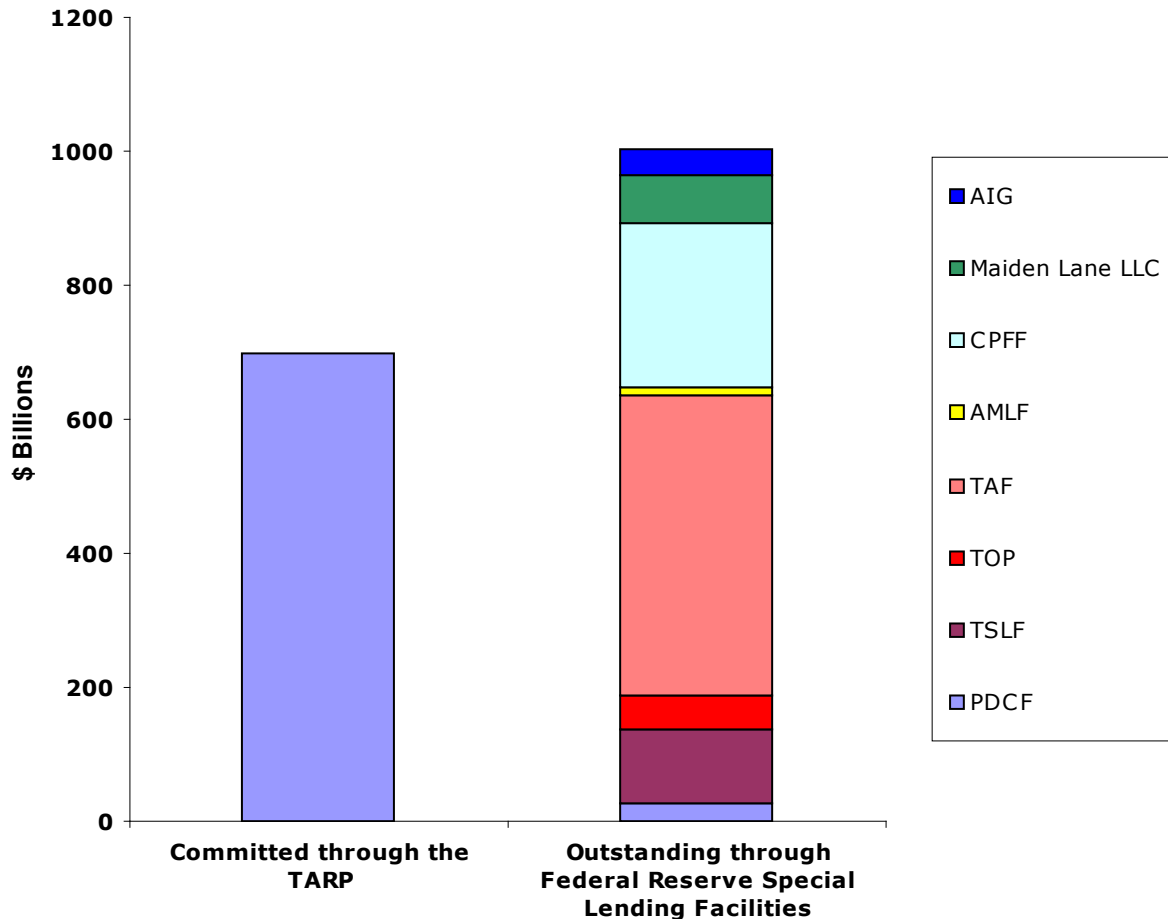
TOP auction results available at [http://www.newyorkfed.org/markets/top/topseclending\\_Historical.cfm](http://www.newyorkfed.org/markets/top/topseclending_Historical.cfm)

Balance outstanding for TAF, PDCF, AMLF, TALF, and the AIG credit extension available through Federal Reserve's balance sheet at <http://www.federalreserve.gov/releases/h41/hist/h41hist6.pdf>

Portfolio holdings of CPFF, MMIFF, and Maiden Lane LLC available through Federal Reserve's balance sheet at <http://www.federalreserve.gov/releases/h41/hist/h41hist5.pdf>

With \$1 trillion outstanding, the Federal Reserve's lending activity is more than 40 percent larger than the \$700 billion in lending authorized through the TARP, as shown in **Figure 1**. This lending is likely to expand in the near future as several of these facilities get better established to support more lending.

**FIGURE 1**  
Comparing Federal Reserve Lending to the Troubled Asset Relief Program (TARP)



The largest special lending facility created by the Fed has been the Term Auction Facility (TAF) which allows depository institutions that are members of the Federal Reserve System to borrow money for periods of either 28 or 84 days, with funds awarded through an auction mechanism. Unlike the discount window, borrowing through the TAF is not made public, nor are the assets accepted as collateral disclosed. As of late February 2009, this facility, which was created in the summer of 2007, accounted for approximately half of the outstanding loans through special Fed facilities, at \$447.6 billion.

The second largest facility is the commercial paper funding facility (CPFF). This facility was set up in October of 2008 to enhance liquidity in the commercial paper market by buying commercial paper

issued by corporations, including non-financial corporations. As of late February, the Fed had almost \$246.2 billion outstanding through the CPFF. Together, the TAF and the CPFF accounted for more than three quarters of the outstanding loans from the special Fed facilities.

The next three largest lending facilities were designed to support primary dealers and investment banks. The Term Securities Lending Facility (TSLF) offers loans of 28 days through an auction process. The Primary Dealer Credit Facility (PDCF) offers overnight loans. And the Term Securities Option Lending Program (TOP) auctions options for the right to borrow under the TSLF. As of late February, the Fed had \$112.2 billion, \$25.6 billion, and \$50.0 billion in loans outstanding under these three programs, respectively.

The Fed also designed a facility to support money market funds, the Asset-Backed Commercial Paper Money Market Fund Liquidity Facility (AMLF), which has \$11.4 billion in loans outstanding. There are also two newer facilities that had yet to start making loans as of this date, the Money Market Investing Funding Facility (MMIFF), which is designed to provide liquidity to money market mutual funds, and the Term Asset-Backed Securities Loan Facility (TALF) that is intended to support the market for various types of asset-backed securities.

In addition to the special facilities, the Fed has also issued loans to AIG through the Maiden Lane facilities. It also has guaranteed against losses on hundreds of billions of dollars of assets held by J.P. Morgan, Citigroup, and Bank of America.

While the Fed releases aggregate data on the amount loaned through these facilities, it provides no information on how much individual banks or non-financial corporations have borrowed. It also does not disclose collateral for loans, which raises the possibility that the Fed did not get adequate capital in some instances, exposing it to greater risk and effectively implying a greater subsidy for the borrower. This lack of disclosure makes it impossible to directly determine the extent to which any specific company has benefited from the Fed's actions. However, at least in the case of the two loan facilities for investment banks and primary dealers, the Primary Credit Dealer Facility (PDCF) and the Term Securities Lending Facility (TSLF), the relatively small number of eligible institutions makes it possible to get a rough approximation of the size of the implicit subsidies associated with these two facilities.<sup>2</sup> The next section describes this calculation.

---

<sup>2</sup> The TOP is not included in these calculations because it auctions options, not loans. This further complicates any effort to impute subsidies to eligible firms.



## Calculating the Subsidies in the PDCF and the TSLF

There are only 16 institutions that are eligible to borrow in the Primary Dealer Credit Facility (PDCF) and the Term Securities Lending Facility (TSLF). (The number of eligible institutions has decreased in the past year from 20 to 16.) The relatively small number makes it possible to produce calculations of what banks may have actually received in subsidy through these two mechanisms over the last year. As a first approximation, our calculations assumed that each bank borrowed from the Fed in proportion to its assets.

In reality, there are large differences between these institutions in both their structure and their financial situation. (One of the institutions, Lehman Brothers, went bankrupt during this period.) However, the assumption that companies borrowed from these loan facilities in proportion to their assets can still provide a basis for a first approximation of the sort of subsidy that they received.

The second step is to compare the interest rates paid by the banks with the interest rate that they would have paid in the private market. In the case of the PDCF, which provides overnight credit, the comparison interest rate is the interest rate for 1-day AA asset-backed commercial paper. For the TSLF, which provides loans of 28 days, the comparison is with 30-day AA asset-backed commercial paper.

The appropriateness of using the interest rate on AA asset-backed securities as a reference rate will also vary depending on the institution. For those in solid financial shape, this rate will likely be somewhat higher than what they would have to pay in the private market. On the other hand, those whose finances are more suspect may have difficulty borrowing at this interest rate. However, the rate is still useful as a first approximation of the interest rate that these institutions would be forced to pay if they had to borrow in private financial markets instead of from the Fed.

**Table 2** shows the borrowing that each institution carried through under the PDCF and the implicit subsidy under the assumptions discussed above. There were periods in which the interest rate paid on money borrowed through the PDCF was higher than the rate on 1-day AA asset-backed commercial paper. In these cases, the calculation assumes no subsidy. In reality, it is reasonable to assume that the institutions that actually borrowed through the PDCF likely would have faced higher borrowing costs in the private market, otherwise they would have opted to borrow in private markets instead of using the Fed's facility. However, without knowing how much each institution actually borrowed, it is not possible to determine the gap that actually existed between the costs they would have faced borrowing in the private sector and what they paid to borrow through the PDCF.

**TABLE 2**  
**Primary Dealer Credit Facility: Borrowing and Implicit Subsidy (March 17, 2008 through February 25, 2009)**

<b>Primary Dealer</b>	<b>Total Assets (millions)</b>	<b>Assumed Participation (millions)</b>	<b>Implied Subsidy (millions)</b>
BNP Paribas Securities Corp.	\$2,494,680	\$136,366	\$18
Banc of America Securities LLC	\$1,715,746	\$93,788	\$12
Barclays Capital Inc.	\$1,227,361	\$67,091	\$9
Bear Sterns	\$395,000	\$0	\$0
Cantor Fitzgerald & Co.	\$1,377,629	\$75,305	\$10
Citigroup Global Markets Inc.	\$2,187,631	\$119,582	\$16
Countrywide Financial	\$211,730	\$1,627	\$0
Credit Suisse Securities (USA) LLC	\$1,360,680	\$74,379	\$10
Daiwa Securities America Inc.	\$29,338	\$1,604	\$0
Deutsche Bank Securities LLC	\$2,020,349	\$110,438	\$15
Dresdner Kleinwort Securities LLC	\$1,445,010	\$11,105	\$1
Goldman, Sachs & Co.	\$1,119,796	\$61,211	\$8
Greenwich Capital Markets, Inc.	\$144,866	\$7,919	\$1
HSBC Securities (USA) Inc.	\$2,354,266	\$128,691	\$17
J.P. Morgan Securities Inc.	\$1,562,147	\$85,391	\$11
Lehman Brothers	\$691,063	\$5,311	\$1
Merrill Lynch Government Securities Inc.	\$1,020,050	\$7,839	\$1
Mizuho Securities USA Inc.	\$22,921	\$1,253	\$0
Morgan Stanley & Co. Incorporated	\$1,045,409	\$57,145	\$8
UBS Securities LLC	\$2,272,768	\$124,236	\$16
<b>TOTAL</b>	<b>\$24,698,440</b>	<b>\$1,170,281</b>	<b>\$154</b>

Source: Board of Governors of the Federal Reserve System.

The calculations in Table 2 imply that relatively small subsidies were given through the PDCF. The gap between the interest rate on AA asset-backed 1-day commercial paper and the interest rate charged to investment banks or primary dealers under the PDCF was generally relatively small. If all banks could borrow on the private market at this rate, and each borrowed in proportion to its assets, then no bank or primary dealer received an implicit subsidy of more than \$18 million during this period.

Based on the calculations in Table 2, BNP Paribas Securities received the largest implicit subsidy of \$18 million from the PDCF. HSBC Securities received \$17 million and UBS Securities received \$16 million by this calculation.

Many of these institutions probably would have paid considerably more than the interest rate on AA asset-backed commercial to borrow in private markets during this period. Furthermore, several of these institutions' borrowings were disproportionate to their assets. It is likely that the institutions that faced the highest costs when borrowing in private markets also were the biggest users of the PDCF, since they would benefit most from turning to the Fed to borrow. For this reason, the implicit subsidy calculated as a total in Table 2 is almost certainly far smaller than the true subsidy the Fed gave to the investment banks and primary dealers through the PDCF.

**Table 3** shows the borrowing by each institution through the TSLF under the same set of assumptions. As noted before, the interest rate used for comparisons is the interest rate on 30-day AA asset-backed securities. This comparison likely understates the implicit subsidy for the reasons noted above – the institutions that relied most on the TSLF likely faced the highest private sector borrowing costs. In addition, the collateral provided by these institutions may also have been of questionable quality, making the loans more risky, since the Fed accepted asset-backed securities as collateral for these loans.<sup>3</sup>

**TABLE 3**  
**Term Securities Lending Facility: Borrowing and Implicit Subsidy (March 27, 2008 through February 25, 2009)**

<b>Primary Dealer</b>	<b>Total Assets (millions)</b>	<b>Assumed Participation (millions)</b>	<b>Implied Total Subsidy (millions)</b>
BNP Paribas Securities Corp.	\$2,494,680	\$94,203	\$122
Banc of America Securities LLC	\$1,715,746	\$64,790	\$84
Barclays Capital Inc.	\$1,227,361	\$46,347	\$60
Bear Sterns	\$395,000	\$0	\$0
Cantor Fitzgerald & Co.	\$1,377,629	\$52,022	\$67
Citigroup Global Markets Inc.	\$2,187,631	\$82,609	\$107
Countrywide Financial	\$211,730	\$3,258	\$4
Credit Suisse Securities (USA) LLC	\$1,360,680	\$51,382	\$67
Daiwa Securities America Inc.	\$29,338	\$1,108	\$1
Deutsche Bank Securities LLC	\$2,020,349	\$76,292	\$99
Dresdner Kleinwort Securities LLC	\$1,445,010	\$22,232	\$29
Goldman, Sachs & Co.	\$1,119,796	\$42,285	\$55
Greenwich Capital Markets, Inc.	\$144,866	\$5,470	\$7
HSBC Securities (USA) Inc.	\$2,354,266	\$88,901	\$115
J.P. Morgan Securities Inc.	\$1,562,147	\$58,989	\$77
Lehman Brothers	\$691,063	\$10,632	\$14
Merrill Lynch Government Securities Inc.	\$1,020,050	\$15,694	\$20
Mizuho Securities USA Inc.	\$22,921	\$866	\$1
Morgan Stanley & Co. Incorporated	\$1,045,409	\$39,476	\$51
UBS Securities LLC	\$2,272,768	\$85,824	\$111
<b>TOTAL</b>	<b>\$24,698,440</b>	<b>\$842,380</b>	<b>\$1,092</b>

Source: Board of Governors of the Federal Reserve System.

The implied subsidies under the TSLF are somewhat larger than under the PDCF, even though the sum borrowed under this facility is somewhat smaller. The reason for the difference is that the gap between the interest rate on AA asset-backed 30-day commercial paper and the interest rate charged under the TSLF was typically considerably larger than the gap with 1-day commercial paper and the interest rate charged through the PDCF.

Since the calculations assume that borrowing is proportional to assets, the biggest beneficiaries are the same as with the PDCF. The calculations in Table 3 show that BNP Paribas Securities received an implicit subsidy of \$122 million from the TSLF. HSBC Securities received a subsidy of \$115 million by this calculation, while UBS Securities had a subsidy of \$111 million. Citigroup Global

<sup>3</sup> It required that institutions post assets worth 110 percent of the value of their loans in these cases.

Markets also gets into the \$100 million subsidy group using this calculation. The total subsidy calculated for all the institutions under the TSLF is \$1,092 million.

As with the calculations of the subsidies in the PDCF, the calculations in Table 3 almost certainly substantially understate the true subsidy in the lending through the TSLF. The most troubled institutions may have been forced to pay interest rates that were far higher than the rate of AA asset-backed 30-day commercial paper to borrow in the private market during this period. These institutions are also the ones that would have been likely to make greatest use of the TSLF. An institution that was in serious danger of collapse may have borrowed an amount through the TSLF that was grossly disproportionate to its assets and received an implicit subsidy on each dollar borrowed that was far larger than indicated by the calculation in the table. For example, if an institution's share of the total funds borrowed was three times as large as its proportion of assets, and the interest rate spread was 50 percent larger than the spread using AA asset-backed commercial paper, then the implicit subsidy would be 4.5 times as large as the number calculated in Table 3. For some of the more troubled institutions eligible for this facility, it is plausible that the true subsidy under the TSLF could be in this range.

## Implications of Subsidies Under Fed Loan Programs

The calculations in the previous section dealt with just two of the ten special loan facilities established by the Fed in the last year. These calculations provide very general approximations of the sorts of subsidies that financial institutions may have received under these facilities. Without more information on actual borrowing, it is not possible to determine the extent to which any individual company may have benefited from this facility.

Of course, there is even less ability to assess the extent of any implicit subsidies under the Fed's other programs, where the number of firms with access is one or two orders of magnitude greater. However, it should provide cause for concern that, through these special loan facilities, the Fed is now able to provide substantial subsidies to the private sector by lending money at below market interest rates.

The amount of loans outstanding through the various Fed facilities as of late February was \$1 trillion, more than 40 percent more than the amount of lending that is taking place through the TARP. While the loans made available through TARP have received considerable public attention, the much larger volume of loans being distributed through the Fed's special facilities has gone virtually unnoticed by Congress and the media. At this point there is no reason to believe that the Fed has used this authority improperly, but in the absence of any public record of their lending practices, there is no real accountability.

Even assuming that the Fed has been treating all firms in the same way in providing access to these credit facilities, there are still other policy issues that should be considered. In effect, these facilities are providing a subsidy from the government to the firms that opt to use them. It might be appropriate to demand some concessions from these firms in exchange for this subsidy.

For example, there could be restrictions on executive compensation or annual dividend payouts at firms that borrow through the Fed's special facilities. If it is too onerous to apply such restrictions on all users of these facilities, then it may be appropriate to apply such restrictions only to a subset of heavy users of these facilities, as President Obama recently proposed with the Treasury's dispersion of money through its Troubled Asset Relief Program. (The appendix shows the compensation of the five highest paid executives for 2007 at some of the institutions that are eligible to receive loans through the PDCF and TSLF.)

It is understandable that taxpayers would object to the government effectively subsidizing the shareholders of specific companies and their executives. If large-scale subsidies are occurring through the Fed's lending facilities, then the public and Congress should be made aware of this fact.

## Conclusion

This paper produces a set of calculations for the subsidies implied by the Fed's lending through the PDCF and TSLF, two of the ten special lending facilities created by the Fed over the last year. The calculations in this paper are necessarily crude approximations of the actual subsidies, since the Fed does not provide information on the amount borrowed by each institution. Since the number of institutions that qualify for these two facilities are relatively small, it is possible to get some idea of the order of magnitude of the subsidies involved for individual institutions.

The calculations suggest that the subsidies for specific institutions may be quite substantial even in these two facilities. The full set of subsidies implied by the lending at ten facilities would be considerably larger. The benefit to the economy from providing liquidity through these facilities may mean that the implied subsidies from loans at below market rates are in the public interest. However, the public should be able to know the identity of the beneficiaries of these subsidies, and it may also want to demand some concessions in exchange for these subsidies.

# Appendix

**TABLE A**  
**Compensation for Five Highest-Paid Executives at Selected Institutions Participating in the PDCF and the TSLF**

Primary Dealer	Name of Executive	Title	Salary	Bonus	Other Compensation*	Total
Banc of America Securities, LLC	Kenneth D. Lewis	CEO/President	\$1,500,000	\$0	\$23,344,040	\$24,844,040
	Liam E. McGee	Divisional President	\$800,000	\$0	\$11,353,027	\$12,153,027
	Barbara J. Desoer	President, Divisional	\$800,000	\$0	\$9,732,513	\$10,532,513
	Amy W. Brinkley	Global Risk Executive	\$800,000	\$0	\$8,535,362	\$9,335,362
	Joe L. Price	CFO	\$800,000	\$0	\$5,686,717	\$6,486,717
Barclays Capital, Inc.	Robert E. Diamond	Divisional CEO/Subsidiary President	\$359,100	\$9,336,600	\$20,110	\$9,715,810
	Frederik Seegers	Executive Director/Other Corporate Officer	\$1,005,480	\$1,885,993	\$285,844	\$3,177,317
	John S. Varley	CEO/Director	\$140,049	\$2,046,870	\$231,081	\$2,418,000
	Christopher Lucas	Director/Other Corporate Officer	\$646,380	\$646,380	\$193,914	\$1,486,674
	Marcus Agius	Group Chairman of the Board	\$1,078,736	\$0	\$0	\$1,078,736
Cantor Fitzgerald	Howard W. Lutnick	Chairman and CEO	\$5,000,000	\$0	\$11,503,118	\$16,503,118
	Lee M. Amaitis	Director, CEO	\$3,473,260	\$255,735	\$935,735	\$4,664,730
	Shaun D. Lynn	President	\$1,505,469	\$1,538,942	\$671,493	\$3,715,904
	Stephen Merkel	Executive VP, General Counsel, Secretary	\$925,500	\$397,833	\$259,986	\$1,583,319
	Robert K. West	CFO, Principal Accounting Officer	\$318,667	\$200,000	\$4,113	\$522,780
Citigroup Global Markets, Inc.	Vikram S. Pandit	CEO, Director	\$250,000	\$0	\$323,813	\$573,813
	Gary L. Crittenden	CFO	\$403,410	\$14,030,000	\$4,936,096	\$19,369,506
	Stephen R. Volk	Vice Chairman	\$212,500	\$1,300,000	\$6,085,347	\$7,597,847
	Lewis B. Kaden	Vice Chairman	\$500,000	\$4,000,000	\$2,271,307	\$6,771,307
	Winfried F. Bischoff	Chairman of the Board	\$373,734	\$1,950,000	\$3,806,656	\$6,130,390
Deutsche Bank Securities, Inc.	Clemens A.H. Boersig	Chairman of the Board/Director/CEO	\$352,381	\$1,543,184	\$2,420,518	\$4,316,083
	Josef Ackermann	Chairman of the Board/Director	\$1,482,580	\$0	\$16,542,359	\$18,024,939
	Hermann-Josef Lamberti	COO/Director	\$1,031,360	\$0	\$6,284,432	\$7,315,792
	Hugo Baenziger	Chief Risk Officer/Director	\$1,031,360	\$0	\$6,211,455	\$7,242,815
	Karl-Gerhard Eick	Other Corporate Officer/Director	\$1,180,424	\$1,415,904	\$1,146,214	\$3,742,541
Goldman Sachs & Co.	Lloyd C. Blankfein	CEO/Chairman of the Board/Director	\$600,000	\$26,985,474	\$42,756,878	\$70,342,352
	Gary D. Cohn	President/COO/Director	\$600,000	\$26,585,474	\$45,325,883	\$72,511,357
	Jon Winkelried	President/COO/Director	\$600,000	\$26,585,474	\$44,269,952	\$71,455,426
	David A. Viniar	Executive VP/CFO/Other Corporate Officer	\$600,000	\$22,585,474	\$35,281,662	\$58,467,136
	Edward C. Frost	Executive VP/Chief Administrative Officer	\$600,000	\$17,185,474	\$31,273,108	\$49,058,582
J.P. Morgan Securities, Inc.	James Dimon	CEO/Chairman of the Board/President	\$1,000,000	\$14,500,000	\$12,297,275	\$27,797,275
	William T. Winters	Co-CEO of the Investment Bank	\$564,379	\$4,900,000	\$15,734,965	\$21,199,344
	Steven D. Black	Co-CEO of the Investment Bank	\$400,000	\$4,900,000	\$15,564,455	\$20,864,455
	James E. Staley	CEO, Divisional	\$400,000	\$8,800,000	\$7,547,564	\$16,747,564
	Michael J. Cavanagh	CFO	\$500,000	\$3,750,000	\$4,036,339	\$8,286,339
Morgan Stanley & Co., Inc.	John J. Mack	CEO/Chairman of the Board/Director	\$800,000	\$0	\$802,458	\$1,602,458
	Thomas Colm Kelleher	CFO/Executive VP	\$339,603	\$6,929,843	\$13,746,243	\$21,015,689
	Robert W. Scully	Other Corporate Officer	\$500,000	\$5,075,000	\$9,636,212	\$15,211,212
	Gary G. Lynch	Executive VP	\$300,000	\$6,308,375	\$5,291,589	\$11,899,964
	Thomas R. Nides	Executive VP/Chief Administrative Officer	\$300,000	\$3,936,260	\$2,096,888	\$6,333,148
<b>TOTAL</b>			<b>\$34,074,372</b>	<b>\$219,574,289</b>	<b>\$408,446,721</b>	<b>\$662,095,381</b>

Source: Forbes Magazine, Corporate Executives and Directors, available at <http://people.forbes.com/search>

\*This includes long-term incentive payouts, restricted stock awards, security underlying options, option awards, and all other forms of executive compensation.

## Explanation of Calculations

### Table 1 – Special Lending Facilities of the Federal Reserve

Figures for total amount outstanding at the PDCF, TAF, AMLF, and credit extended to American International Group, Inc. are made available through the Federal Reserve's balance sheet (at <http://www.federalreserve.gov/releases/h41/hist/h41hist6.pdf>). Portfolio holdings of the CPFF, MMIFF, and Maiden Lane LLC are also made available through the Fed's balance sheet (at <http://www.federalreserve.gov/releases/h41/hist/h41hist5.pdf>). For the TSLF, auction results within the last 28 days were summed together to determine the total amount of loans outstanding. As of February 25, 2009, the TALF had not begun to make loans.

### Table 2 – Primary Dealer Credit Facility

Loans through the Primary Dealer Credit Facility are charged with an interest rate equal to the Federal Reserve's primary credit rate (available at <http://www.federalreserve.gov/datadownload/Build.aspx?rel=H15>). In order to calculate an implied subsidy through this facility, the Fed's primary credit rate was compared with interest rates on overnight AA asset-backed commercial paper (available at <http://www.federalreserve.gov/releases/cp/>). If the difference was negative, the implied subsidy was assumed to be zero. If the difference was positive, it was divided by 52 to adjust for time period and then multiplied by the weekly averages listed by the Fed. Once these figures were calculated, they were attributed to the participating investment banks in proportion to their total listed assets as of 2007 (available through each firm's balance sheet). Firms that had become bankrupt or insolvent during some or all of the time period were assumed to have zero participation.

### Table 3 – Term Securities Lending Facility

Through the Term Securities Lending Facility Schedule II auctions, investment banks are able to swap any investment-grade debt securities, including mortgage-backed securities, in exchange for Treasury general collateral. Banks submit offers for the Treasury collateral, and the lowest accepted bid rate (the stop-out rate) becomes the interest rate charged to all accepted offers. To calculate an implied subsidy, the stop-out rate and the rates on 4-week Treasury bills were subtracted from the rates on 30-day AA asset-backed commercial paper. This rate was then divided by 12 to adjust for the maturity period of the transaction and then multiplied by the individual auction results listed by the Federal Reserve. Once the subsidy amounts were estimated, they were attributed to participating investment banks in the same manner as Table 2, in proportion to their total assets.