

FEDERAL RESERVE BANK OF NEW YORK

current issues

IN ECONOMICS AND FINANCE

Volume 15, Number 2 • February 2009 • www.newyorkfed.org/research/current_issues

The Term Securities Lending Facility: Origin, Design, and Effects

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The Federal Reserve launched the Term Securities Lending Facility (TSLF) in 2008 to promote liquidity in the funding markets and improve the operation of the broader financial markets. The facility increases the ability of dealers to obtain cash in the private market by enabling them to pledge securities temporarily as collateral for Treasuries, which are relatively easy to finance. The TSLF thus reduces the need for dealers to sell assets into illiquid markets as well as lessens the likelihood of a loss of confidence among lenders.

To address unprecedented liquidity pressures in funding markets, in March 2008 the Federal Reserve introduced the Term Securities Lending Facility (TSLF).

This auction facility allows primary dealers—institutions with a trading relationship with the Federal Reserve Bank of New York—to bid a fee to borrow over time up to \$200 billion in Treasury securities from the Fed for a term of twenty-eight days, with the dealers agreeing to provide other securities as collateral. They can then use the borrowed Treasuries, which are relatively easy to finance, as collateral to obtain cash in the private market.

The TSLF was established on a temporary basis under the Federal Reserve's emergency lending powers. It is one of several new liquidity facilities, including the Term Auction Facility (TAF) and the Primary Dealer Credit Facility (PDCF), that are designed to stabilize turbulent funding markets.¹ The TSLF in particular is intended to ease liquidity pressures in the secured, or collateralized, funding markets relied on by dealers. By increasing the ability of dealers to finance positions, the facility reduces their need to sell assets into illiquid markets and decreases the likelihood of a loss of confidence among lenders.

This edition of *Current Issues* offers a detailed look at the Term Securities Lending Facility. We begin by discussing the importance of secured funding markets. We review the market conditions that led to the introduction of the TSLF, the features that distinguish it from other liquidity facilities, and the structure and operation of the facility. In addition, our study examines the first ten auctions, conducted in spring 2008, for early evidence of the program's use and effectiveness.

The Secured Funding Markets

In the secured funding markets, participants borrow and lend funds backed by collateral. The most common type of secured funding transaction is a repurchase agreement, or repo: a sale of securities coupled with an agreement to repurchase the same securities on a later date, typically at a higher price. The lender of funds has

¹ Armantier, Krieger, and McAndrews (2008) and Adrian and McAndrews (2008) offer detailed descriptions of the TAF and the PDCF, respectively.

possession of the borrower's securities over the term of the loan and can sell them if the borrower defaults on its obligation.

In a *general collateral repo*, the lender of funds accepts any of a range of securities as collateral. The class of acceptable collateral might be limited to Treasury securities or it might include other types, such as agency debt securities. The lender in this type of repo is concerned primarily with earning interest on the loan and having possession of assets that can be sold quickly with minimal transaction costs in the event of borrower default.

Repos play a crucial role in the efficient allocation of capital in financial markets. They are widely used by dealers to finance their market-making, risk management, and speculative activities. The transactions also provide a safe and low-cost way for mutual funds, depository institutions, and other market participants to lend surplus funds. As of March 4, 2008—a week before the TSLF was introduced—primary dealers were using repos to finance \$4.5 trillion in fixed-income securities.²

Repos are also frequently used by the Fed in its open market operations.³ Open market operations affect the supply of reserve balances in the banking system and thus influence short-term interest rates. If the Fed wants to add reserves on a temporary basis, for example, it can purchase securities from dealers while agree-

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ing to resell them on a later date. Most repos are arranged with a one-day term, but longer term transactions, commonly seven or fourteen days, are also conducted. The Fed accepts Treasury securities, agency debt securities, and agency mortgage-backed securities (MBS) as collateral in its repos.

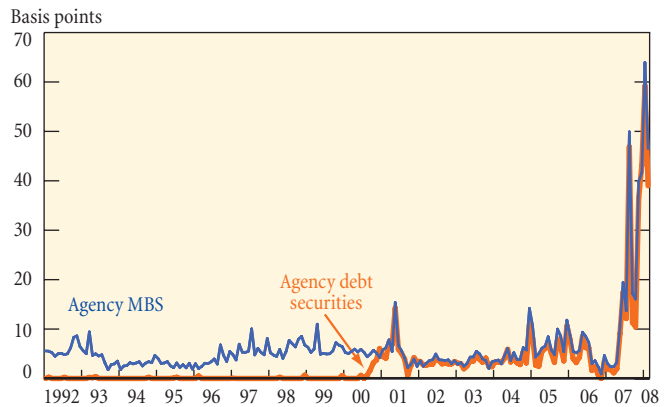
An important feature of repos is the “haircut” imposed by the lender of funds. The haircut is the percentage difference between the market value of the pledged collateral and the amount of funds loaned. A haircut of 5 percent, for example, implies that a dealer can borrow \$95 for each \$100 of pledged collateral. Haircuts further protect lenders of funds against the risk of

² Dealer financing data are reported on the New York Fed's website, <<http://www.newyorkfed.org/markets/primarydealers.html>>. Adrian and Fleming (2005) discuss dealer financing and the financing data in detail.

³ For descriptions of the Fed's open market operations, see Edwards (1997); “Fedpoint: Open Market Operations,” <<http://www.newyorkfed.org/aboutthefed/fedpoint/fed32.html>>; and “Domestic Open Market Operations during 2008,” <<http://www.newyorkfed.org/markets/omo/omo2008.pdf>>.

Chart 1

Financing Spreads, January 1992–February 2008



Source: Authors' calculations, based on data from Bloomberg L.P.

Note: The chart plots monthly averages of the daily spreads between overnight agency and agency mortgage-backed security (MBS) repo rates and the overnight Treasury general collateral repo rate.

borrower default. The size of a haircut reflects the credit risk of the borrower and the riskiness of the pledged collateral.

Introduction of the TSLF

The private funding markets—where dealers usually finance their positions—were severely impaired in early 2008. Lenders of funds, worried about the value of collateral as well as the credit risk of counterparties, became increasingly concerned about losses on repurchase agreements. They responded by increasing haircuts—reducing the amount they were willing to lend for a given amount of collateral—and by halting lending against certain types of collateral altogether.⁴

Lenders also responded by demanding greater compensation—in the form of higher relative interest rates—for accepting riskier collateral (Chart 1). For example, from 1992 to 2006, the overnight financing spreads between agency debt securities and Treasury securities and between agency MBS and Treasury securities averaged 2 and 5 basis points, respectively. That is, a dealer pledging agency debt securities or agency MBS as collateral typically paid only slightly more interest to borrow funds than did a dealer pledging Treasury securities. Over the first two months of 2008, these spreads soared to an average of 49 and 55 basis points, respectively.

These types of disruptions to the ability to finance positions in the repo market compel dealers to seek alternative funding

⁴ See, for example, “Repo Market Funding,” *Financial Times*, March 11, 2008, and “Another Source of Quick Cash Dries Up—Firms Rethink Reliance on ‘Repo’ Financing as Conditions Tighten,” *Wall Street Journal*, March 17, 2008.

Table 1

New Federal Reserve Liquidity Facilities

As of May 31, 2008

	Term Discount Window Program	Term Auction Facility	Single-Tranche Open Market Operations Program	Term Securities Lending Facility	Primary Dealer Credit Facility
Announcement date	August 17, 2007	December 12, 2007	March 7, 2008	March 11, 2008	March 16, 2008
Eligible borrowers	Depository institutions	Depository institutions	Primary dealers	Primary dealers	Primary dealers
Facility type	Standing	Auction	Auction	Auction	Standing
Operation frequency	As requested	Every other week	Typically weekly	Weekly	As requested
Type of borrowing	Funds	Funds	Funds	U.S. Treasury securities	Funds
Collateral eligible to be pledged	Discount window collateral	Discount window collateral	U.S. Treasury securities, agency debt securities, agency mortgage-backed securities	U.S. Treasury securities, agency debt securities, agency mortgage-backed securities, investment-grade debt securities	Tri-party repo system collateral
Reserves impact?	Yes	Yes	Yes	No	Yes

Source: Federal Reserve Bank of New York, <http://www.newyorkfed.org/markets/Forms_of_Fed_Lending.pdf>.

sources or to liquidate positions. However, a dealer may be unable to borrow elsewhere, and market illiquidity may make sales of securities impractical. In such a scenario, a dealer might have to file for bankruptcy. It was widely reported that the inability of Bear Stearns to access the repo market was an important factor in its near-collapse and its purchase by J.P. Morgan Chase.⁵

In this environment of funding market stress, the Federal Reserve introduced the TSLF “to promote liquidity in the financing markets for Treasury and other collateral and thus to foster

The TSLF [Term Securities Lending Facility] . . . increases the ability of dealers to obtain financing, especially those dealers relying on the repo market to finance less liquid collateral.

the functioning of financial markets more generally.⁶ The facility allows primary dealers over time to borrow up to \$200 billion in Treasury securities for a term of twenty-eight days by pledging as collateral other securities, including agency debt securities and MBS. Collateral that otherwise may be difficult to finance can thus be exchanged temporarily for Treasury collateral, which is easier to finance. The Treasury securities are allocated to dealers by auction.

⁵ See, for example, “The Bear Stearns Fallout: With Street Watching, ‘Repo’ Trading Is Light—Market That Turned on Bear Stearns Remains Cautious,” *Wall Street Journal*, March 18, 2008, and “TSLF Auction Could Be the Light at the End of the Tunnel,” *Financial Times*, March 27, 2008.

⁶ See <<http://www.federalreserve.gov/newsevents/press/monetary/20080311a.htm>>.

The TSLF thereby increases the ability of dealers to obtain financing, especially those dealers relying on the repo market to finance less liquid collateral. By decreasing the need for dealers to sell assets into illiquid markets, the facility potentially improves the liquidity of those markets. In addition, funding pressures on dealers and the likelihood of a loss of confidence among lenders are reduced.

The facility could also be expected to improve the operation of financing markets directly. Use of the TSLF increases the supply of Treasury collateral in the market and reduces the supply of less liquid collateral. The changes in supply should reduce the private market costs of financing less liquid collateral relative to Treasury collateral. Moreover, by enabling dealers to finance less liquid collateral, the TSLF should increase dealer willingness to make markets for their customers in the less liquid collateral.

How the TSLF Compares with Other Liquidity Facilities

The Term Securities Lending Facility differs from the Fed’s other new liquidity facilities in a variety of ways (Table 1).⁷ Most notably, the TSLF is available to primary dealers and thus addresses conditions in the secured funding markets relied on by the dealers. In contrast, the Fed’s new Term Discount Window Program and Term Auction Facility, like its long-standing discount window facility, are available only to depository institutions and therefore address conditions in the unsecured funding markets relied on by these institutions.

⁷ We limit our discussion to facilities in place as of May 2008. The TSLF Options Program, announced in July 2008, expands the amount of Treasury collateral available under the TSLF; additional facilities, announced later in 2008, are intended to provide liquidity to money market mutual funds, money market investors, and issuers of commercial paper and asset-backed securities.

The TSLF is closely related to the Primary Dealer Credit Facility, which is also available to primary dealers. A key difference, however, is that the PDCF is a standing facility whereas the TSLF is an auction facility. As a standing facility, the PDCF offers the advantage of availability on a continuous, as-needed basis. It also accepts a broader class of securities as collateral.

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An auction facility, however, may be more attractive to dealers. An ongoing obstacle to the effectiveness of the Fed's discount window, a standing facility, is bank reluctance to use the window because of a perceived stigma. The stigma arises from the concern that adverse inferences will be drawn about a bank's creditworthiness if its borrowing were to become known. An auction facility may overcome this stigma because it allows dealers to approach the Fed collectively rather than individually and because borrowing rates are set at auction and not at a premium by the Fed.⁸

The TSLF is also closely related to the Single-Tranche Open Market Operations Program, another Federal Reserve auction facility available to primary dealers. Through this program, the Fed conducts twenty-eight-day repos in which dealers obtain cash by delivering as collateral any type of securities eligible as collateral in conventional open market operations. The longer term of these operations, relative to conventional open market operations, is intended to address liquidity pressures in the term funding markets—where funding occurs for periods longer than a day.

The TSLF differs from the single-tranche program—and from all of the other new facilities—in that it has no impact on the supply of bank reserves. The facility does not affect reserves because it involves the exchange of securities for securities. Other

facilities affect reserves because they entail the exchange of securities or other collateral for cash. Even when these other facilities are used by dealers rather than depository institutions, reserves are affected because the dealers must add or withdraw cash from their clearing bank accounts as a result of the operations.

Because the TSLF has no impact on bank reserves, the facility does not directly affect the Fed's implementation of interest rate policy. That is, the Fed need not add or drain funds to maintain bank reserves at their desired level.⁹ This "reserve-neutrality" feature makes the TSLF unusually flexible in terms of size; indeed, the facility is ultimately constrained only by the overall quantity of the Fed's holdings of general Treasury collateral. In particular, the program can be scaled up or down in size quickly, as evidenced by the initial operation size of \$75 billion.

The reserve-neutrality feature also eliminates the need for offsetting operations if an auction subscription is below the offered amount. As a result, the Fed does not have to make frequent adjustments to auction offering sizes and the TSLF can function much like a standing facility in meeting dealer borrowing needs. Fluctuations in facility use, in either direction, do not necessitate other actions by the Fed's Trading Desk, such as security purchases, sales, or redemptions.

In contrast, facilities with an impact on reserves typically require offsetting operations. The amount outstanding through such facilities must be changed gradually, given the Fed's desire to minimize market disruption from official operations. The Single-Tranche Open Market Operations Program thus began with an operation size of \$15 billion in early March 2008 and

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built to \$75 billion outstanding by the end of April. The Term Auction Facility began with an operation size of \$20 billion in December 2007 and reached \$80 billion outstanding in mid-March 2008 and \$150 billion by the end of May.

⁸ The TAF is thought to have largely overcome the stigma problem for these reasons (see, for example, Federal Reserve Chairman Ben Bernanke's May 13, 2008, speech on "Liquidity Provision by the Federal Reserve," <<http://www.federalreserve.gov/newsevents/speech/bernanke20080513.htm>>). While the stigma has historically described bank reluctance to borrow from the discount window, press reports suggest that a similar stigma may explain the lack of PDCF borrowing by primary dealers ("Fed Watch: In Vexing Trend, Primary Dealers Shun Fed Liquidity," Dow Jones Newswires, September 12, 2008).

⁹ The TSLF does *indirectly* affect the implementation of interest rate policy by putting an encumbrance on the securities loaned to dealers. That is, the securities are temporarily unavailable for other purposes. The Fed's payment of interest on reserve balances starting in October 2008 ameliorates the effects of operations with an impact on reserves, but it does not, except under certain conditions, eliminate the effects.

The TSLF also differs from the single-tranche program in its imposition of a minimum fee. The fee is set at a level somewhat higher than the cost of borrowing Treasury securities against program-eligible collateral in the private market under normal circumstances. As a result, the facility is intended to appeal to dealers only when the market is not operating normally. The TSLF is thus designed to be self-liquidating as market conditions improve.¹⁰ Furthermore, some TSLF auctions allow a broader set of securities to be pledged as collateral, a point we discuss below.

While the TSLF is similar in some respects to the Fed's existing securities lending facility, the two differ in important ways. The existing facility lends securities on an overnight basis, whereas the TSLF lends on a term basis. More importantly, the existing facility offers to lend *specific* Treasury securities against general Treasury collateral as a means of promoting the smooth clearing of particular Treasuries.¹¹ By contrast, the TSLF offers to lend *general* Treasury collateral against pledges of other fixed-income collateral as a means of promoting the liquidity of the general financing markets in Treasury and non-Treasury securities.

How TSLF Auctions Work

The TSLF is structured to allocate Treasury collateral via auction. The day before each auction, the Fed announces the par value of the offering amount, the particular "basket" of Treasury securities it is willing to lend, and the collateral eligible for delivery against

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the Treasuries. "Schedule 1" collateral is all collateral eligible in the Fed's open market operations—that is, Treasury securities, agency debt securities, and agency mortgage-backed securities.

¹⁰ Federal Reserve Governor Donald L. Kohn discussed this issue in a May 29, 2008, speech on "Money Markets and Financial Stability," <<http://www.federalreserve.gov/newsevents/speech/kohn20080529a.htm>>.

¹¹ *Specific* or *special* Treasury collateral markets allow securities borrowers to obtain particular Treasury securities from securities lenders to meet delivery obligations. Lipson, Keane, and Sabel (1989), Duffie (1996), Keane (1996), and Jordan and Jordan (1997) assess these markets; Fleming and Garbade (2007) analyze the Fed's existing securities lending facility.

"Schedule 2" collateral is Schedule 1 collateral plus other investment-grade debt securities.¹²

Auctions are usually held at 2 p.m. ET and are open for thirty minutes. Dealers may submit up to two bids. The minimum bid size is \$10 million, each bid cannot exceed 20 percent of the offering amount, and each dealer can be awarded no more than 20 percent of the offering amount. The auctions are single-priced,

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so that accepted dealer bids are awarded at the same rate, which is the lowest rate at which bids are accepted (also called the stop-out rate). The minimum fee for Schedule 1 and Schedule 2 auctions is 10 and 25 basis points per year, respectively.

A dealer's bid rate represents the rate it is willing to pay to borrow a basket of Treasury general collateral against other pledged collateral. The bid rate may therefore be considered roughly equivalent to the spread between the financing rate for the pledged collateral and the Treasury general collateral financing rate over the term of a loan.

Shortly after the auction closes, the Fed informs dealers of their awards and posts summary results to the New York Fed's website. Loans settle on the business day following the auction. Treasury collateral is allocated to dealers on a pro rata basis—for example, a dealer awarded 10 percent of the offering amount receives a 10 percent share of each Treasury security offered. The Fed reserves the right to substitute loaned general collateral each day to avoid providing collateral that may trade with scarcity value in the repo market.¹³

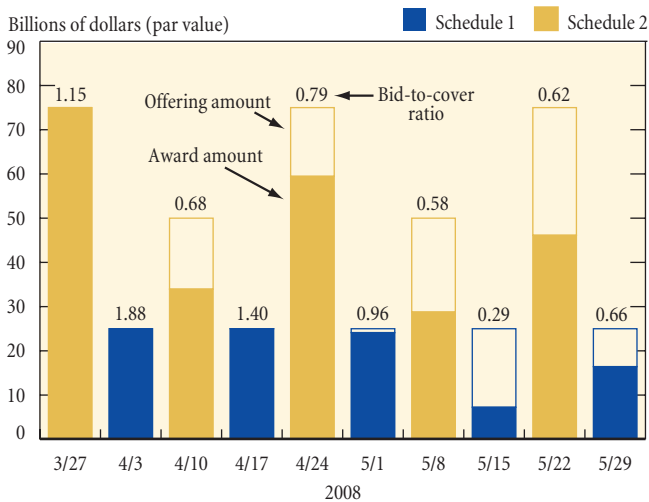
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¹² Schedule 2 collateral originally included Schedule 1 collateral plus AAA/Aaa-rated non-agency residential MBS, commercial MBS, and agency collateralized mortgage obligations (CMOs). Schedule 2 collateral was expanded to include AAA/Aaa-rated asset-backed securities starting with the May 8, 2008, auction and all investment-grade debt securities starting with the September 17, 2008, auction.

¹³ The Fed selects securities for the collateral basket that are not trading with scarcity value in the repo market; however, repo market scarcity can change over the term of a loan, resulting in a substitution. Such a substitution occurred on April 9, 2008.

Chart 2

Term Securities Lending Facility Amounts and Bid-to-Cover Ratios, by Auction Date



Source: Federal Reserve Bank of New York, <http://www.newyorkfed.org/markets/tslf/termseclending_Historical.cfm>.

with a market value greater than the market value of the Treasury securities being borrowed. Moreover, the appropriate market value of eligible collateral must be posted on a daily basis. Dealers may therefore have to make collateral substitutions over the term of a loan if the pledged collateral deteriorates in value or falls out of the eligible collateral pool.

The First Ten TSLF Auctions

On March 27, 2008, the Fed held its first TSLF auction, making \$75 billion in Treasury securities available against Schedule 2 collateral (Chart 2). Dealers submitted bids totaling \$86.1 billion,

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for a bid-to-cover ratio of 1.15.¹⁴ The \$75 billion offering amount was awarded at a stop-out rate of 33 basis points, 8 basis points above the 25 basis point minimum fee.

¹⁴ The bid-to-cover ratio is the total amount bid in an auction divided by the total amount allocated.

The high level of dealer participation in the first auction, as measured by the \$86 billion in propositions, was itself a positive sign. The strong initial use of the TSLF suggests that stigma was not a significant obstacle for the program. The facility was therefore able to lend Treasury collateral actively against non-Treasury collateral as a means of promoting financing market liquidity.

In the second TSLF auction, on April 3, the Fed made \$25 billion in Treasury securities available against Schedule 1 collateral. Dealers submitted bids totaling \$46.0 billion, for a bid-to-cover ratio of 1.88. They were awarded the \$25 billion offering amount at a stop-out rate of 16 basis points, 6 basis points above the 10 basis point minimum fee. This was the last auction to “stop out” above the minimum fee until the fourteenth auction, on June 26.

The third TSLF auction, on April 10, was the first to stop out at the minimum fee as well as the first to be undersubscribed. The Fed made \$50 billion in Treasury securities available against

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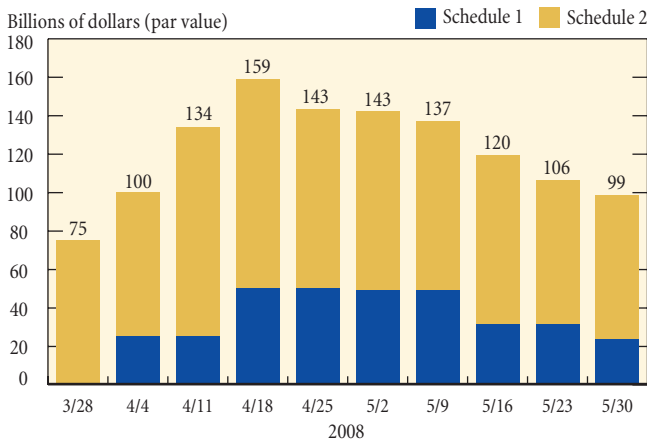
Schedule 2 collateral, but dealers submitted propositions for only \$34 billion. All \$34 billion in propositions was accepted at the minimum fee of 25 basis points.

It is important to note that undersubscriptions in TSLF auctions may indicate that market functioning has improved and that the program is operating as intended. An undersubscription may suggest that the Fed has set the minimum fee high enough to induce dealers to revert to the private market to finance program-eligible collateral. (Recall that an appropriately set minimum fee motivates dealers to borrow from the Fed when market conditions are impaired, while dissuading them when conditions are liquid.)

On April 17, the Fed, in the fourth TSLF auction, made \$25 billion in Treasury securities available against Schedule 1 collateral. Dealers submitted bids of \$35.1 billion and were awarded the \$25 billion offering amount at the 10 basis point minimum fee. This was the last auction to be fully subscribed until the twelfth auction, on June 12.

Chart 3

Term Securities Lending Facility Amounts Outstanding, by Settlement Date



Source: Authors' calculations, based on data from the Federal Reserve Bank of New York.

In the fifth through tenth auctions, collateral schedules continued to alternate between Schedule 1 and Schedule 2, and each auction was undersubscribed and stopped out at the minimum fee. Moreover, submission amounts declined with successive rollovers—a sign of reduced borrowing demand. For example, only \$59.5 billion was submitted in the fifth auction, when \$75 billion was maturing from the first auction, and only \$46.1 billion was submitted in the ninth auction, when \$59.5 billion was maturing from the fifth.

A consequence of weekly auctions and monthly loan maturities was a ramp-up in outstanding TSLF loan amounts over the first four auctions (Chart 3). Declining submission amounts at subsequent rollovers produced a pattern whereby TSLF amounts outstanding trended lower after the fourth auction. Despite the decline, \$98.6 billion was still outstanding under the program at the end of May 2008.

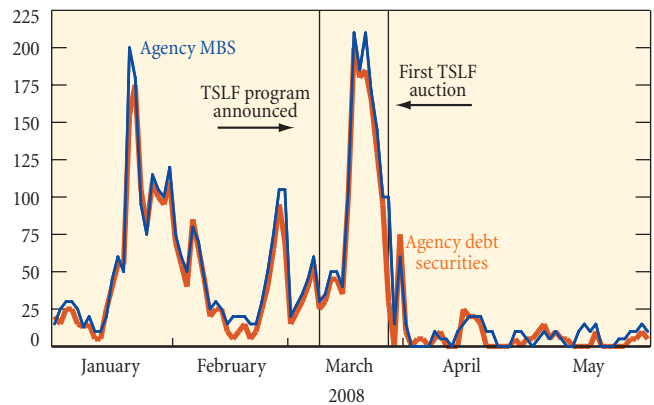
TSLF Effects on Financing Costs

The TSLF was introduced to promote liquidity in the financing markets for Treasury securities and other collateral. The program's effectiveness is difficult to analyze, owing to its broad objectives, the scarcity of detailed financing data, and the wide variety of factors influencing financing markets, including the existence of other liquidity facilities.

As we noted earlier, one way to assess the program's effectiveness is to evaluate dealer willingness to use the facility when market conditions are strained as well as dealer inclination to revert to private market borrowing when market conditions stabilize. Another way is to track the financing spreads between Treasury collateral and non-Treasury collateral. At a minimum,

Chart 4

Financing Spreads and the Term Securities Lending Facility



Source: Authors' calculations, based on data from Bloomberg L.P.

Note: The chart plots spreads between overnight agency and agency mortgage-backed security (MBS) repo rates and the overnight Treasury general collateral repo rate.

the spreads are symptomatic of relative liquidity conditions in financing markets. Moreover, a well-functioning liquidity facility could be expected to narrow spreads—either directly, by striking a better balance between supply and demand in the collateral markets—or indirectly, by improving market sentiment and reducing financing uncertainty.

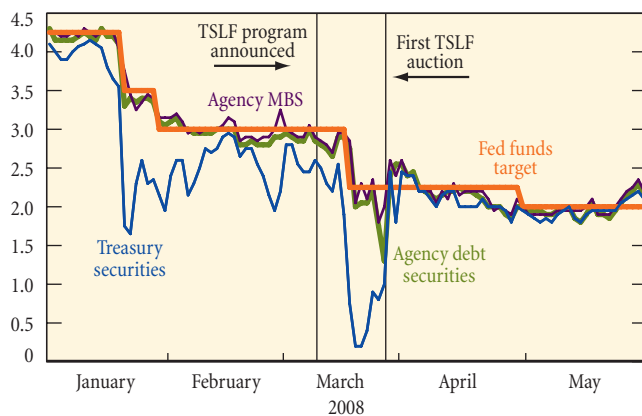
In fact, financing spreads narrowed considerably after the first TSLF auction, on March 27, 2008 (Chart 4). Just prior to the auction, the spread between overnight agency MBS repos and Treasury repos was 100 basis points. By April and May, it ranged between 0 and 20 basis points. Spreads in the less liquid term market exhibited similar patterns.

Interestingly, while spreads narrowed after the first TSLF auction, they actually widened in the days between the program announcement on March 11 and the first auction. Spreads were as wide as 210 basis points in mid-March. The widening suggests that the announcement itself did not result in improved market functioning, but that the actual operation of the program was

Financing spreads narrowed considerably after the first TSLF auction, on March 27, 2008.

necessary to foster improved conditions. This finding is not surprising because prices in overnight financing markets on any given day depend on the floating supply of collateral in the markets on that day.

Chart 5

Financing Rates and the Term Securities Lending Facility

Source: Bloomberg L.P.

Note: The chart plots overnight Treasury, agency, and agency mortgage-backed security (MBS) repo rates along with the fed funds target rate.

The narrowing of financing spreads after the first auction is attributable largely to increases in Treasury financing rates, as opposed to decreases in agency or agency MBS financing rates (Chart 5). This outcome partly reflects unusually low Treasury financing rates before the first auction, rather than unusually high agency or agency MBS financing rates. In fact, agency and agency MBS financing rates were themselves unusually low just before the first auction.¹⁵

The larger change in Treasury financing rates may also reflect the design of the TSLF—the facility always offers Treasury collateral, but the securities that dealers pledge against that collateral can vary. The Treasury collateral offered by the Fed is unambiguously expected to put upward pressure on Treasury

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financing rates by increasing the supply of general Treasury collateral in the market. In contrast, the effect on agency and agency MBS financing rates is likely contingent on the collateral eligible for a given auction.

¹⁵ Overnight repo rates for Treasury, agency, and agency MBS collateral are usually close to (that is, within 10 basis points of) the fed funds target rate, but they were 125, 95, and 25 basis points, respectively, less than the rate right before the first auction.

In Schedule 1 operations, dealers can pledge agency debt and/or agency MBS as collateral, reducing the supply of such collateral in the market and thereby putting downward pressure on one or both of those financing rates. In Schedule 2 operations, however, dealers can pledge other eligible securities as collateral. In such cases, the effects on agency and agency MBS financing spreads are ambiguous, depending on whether the market views agency and agency MBS collateral as closer substitutes for Treasury collateral or for the other eligible collateral.

In any case, it is worth noting that the increase in Treasury financing rates was a favorable development in and of itself. An unusually low Treasury general collateral rate puts downward pressure on financing rates for individual Treasury securities, raising the likelihood of settlement fails (see Fleming and Garbade [2004, 2005]). Indeed, the impetus for the original securities

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lending program in 1969 was concern that settlement fails might impair the Fed's ability to implement monetary policy (Fleming and Garbade 2007).

TSLF Effects on Settlement Days

The narrowing of financing spreads after the TSLF's introduction suggests that the facility contributed to improved market conditions. To establish this relationship more conclusively, we analyze changes in market conditions around individual TSLF auctions. In particular, we examine changes in financing rates on TSLF settlement days. As we observed earlier, prices in overnight financing markets on any given day depend on the supply of collateral in the markets on that day, so any effects of the TSLF could be expected to materialize on settlement days.

The first TSLF auction was associated with a striking increase in Treasury financing rates (Table 2). Subsequent auctions appear to have had relatively minor effects, with no clear relationship observed between net auction sizes and changes in Treasury financing rates. After the second auction, for example, the overnight Treasury financing rate actually *declined* 20 basis points, despite the addition to the market, through the facility, of \$25 billion in Treasury collateral.

What might explain the disparate effects of the various TSLF auctions? One factor was likely the size of the auctions—the first one added much more Treasury collateral to the market than any

Table 2

Change in Financing Rates around Term Securities Lending Facility Auctions

Settlement Date (2008)	Collateral Schedule	Net Auction Size (Billions of Dollars Par Value)	Change in Overnight Repo Rate (Basis Points)		
			Treasury Securities	Agency Debt Securities	Agency Mortgage-Backed Securities
March 28	2	75.0	145	110	60
April 4	1	25.0	-20	-20	-20
April 11	2	34.0	5	5	-10
April 18	1	25.0	0	-5	0
April 25	2	-15.5	-5	-10	-5
May 2	1	-0.9	-5	0	0
May 9	2	-5.2	5	5	0
May 16	1	-17.8	5	15	10
May 23	2	-13.3	10	10	10
May 30	1	-7.7	-10	-15	-15

Source: Authors' calculations, based on data from Bloomberg L.P. and the Federal Reserve Bank of New York.

Note: Net auction size is defined as the amount accepted at the previous day's auction less the amount maturing from the auction four weeks earlier.

of the others. Perhaps more important, however, was the sharp increase in Treasury financing rates after the first auction. Once the overnight Treasury repo rate (a secured rate) had risen to a level close to the fed funds rate (an unsecured rate), there was little room for the rate to move higher, regardless of further increases in supply.

Agency and agency MBS financing rates also rose sharply with the first auction. The first auction allowed for Schedule 2 collateral, including non-agency residential MBS, commercial MBS, and agency CMOs. The effects on agency and agency MBS

Evidence from TSLF settlement days reinforces the observation that the narrowing of financing spreads during spring 2008 was associated with the introduction of the facility and with the first auction in particular.

financing rates suggest that dealers pledged this other collateral to the Fed through the TSLF, viewing agency and agency MBS collateral as more similar to Treasury collateral. That is, the increase in agency and agency MBS financing rates attributable to the

additional Treasury collateral supplied to the market more than offset any decrease in these financing rates associated with the reduction in other collateral.

Similar to changes in Treasury financing rates, changes in agency and agency MBS financing rates after subsequent auctions were more modest. Moreover, even if one focuses just on Schedule 1 operations, for which the expected effects are less ambiguous, agency and agency MBS financing rates sometimes moved in the expected direction and sometimes moved in the opposite direction.

Overall, evidence from TSLF settlement days reinforces the observation that the narrowing of financing spreads during spring 2008 was associated with the introduction of the facility and with the first auction in particular. In addition, much of the narrowing seemed to come from an increase in Treasury financing rates relative to the fed funds rate, as opposed to a reduction in financing rates on non-Treasury collateral.

Conclusion

The Federal Reserve introduced the Term Securities Lending Facility to improve the liquidity of funding markets. Although the facility shares this goal with other Fed liquidity programs, it differs from them in important ways. For one, the TSLF lends Treasury collateral—rather than cash—against other collateral. The facility thus contributes to an enhanced financing environment for dealers by more effectively balancing supply and demand in the markets for Treasury as well as non-Treasury collateral. Early evidence, in the form of lower financing spreads between these two types of collateral, suggests that the facility is effective in improving market liquidity.

In addition, because of the collateral-for-collateral nature of the TSLF, the auctions conducted through the facility have no impact on bank reserves and hence no effect on the implementation of interest rate policy. As a result, the facility can be quickly scaled up and down in size. Indeed, much of the initial success of the TSLF can be attributed to the first auction, which drew a large amount of participation.

The TSLF's auction format also appears to have mitigated the stigma typically associated with standing lending facilities: dealers seem more inclined to use this program. Finally, the auction format's minimum fee has evidently succeeded in reducing the quantity of loans demanded when funding pressures are less severe.

The authors acknowledge James Clouse, Joshua Frost, Charles Jones, Karin Kimbrough, and Deborah Perelmuter for helpful comments and Michal Lementowski for excellent research assistance.

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Current Issues in Economics and Finance is published by the Research and Statistics Group of the Federal Reserve Bank of New York. Linda Goldberg and Charles Steindel are the editors.

Editorial Staff: Valerie LaPorte, Mike De Mott, Michelle Bailer, Karen Carter

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