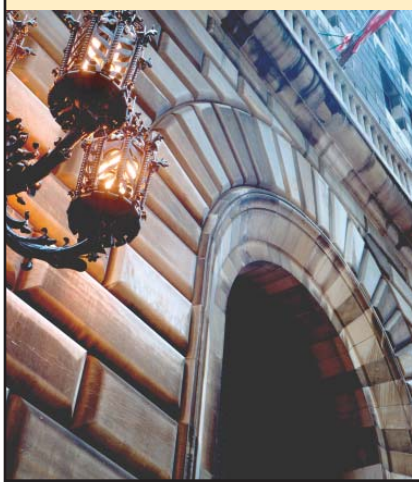
FEDERAL RESERVE BANK OF NEW YORK
current issues
IN ECONOMICS AND FINANCE
Volume 15, Number 4 • August 2009 • www.newyorkfed.org/research/current_issues



The Federal Reserve's Primary Dealer Credit Facility

Tobias Adrian, Christopher R. Burke, and James J. McAndrews

As liquidity conditions in the "repo market"—the market where broker-dealers obtain financing for their securities—deteriorated following the near-bankruptcy of Bear Stearns in March 2008, the Federal Reserve took the step of creating a special facility to provide overnight loans to dealers that have a trading relationship with the Federal Reserve Bank of New York. Six months later, in the wake of new strains in the repo market, the Fed expanded the facility by broadening the types of collateral accepted for loans. Both initiatives were designed to help restore the orderly functioning of the market and to prevent the spillover of distress to other financial firms.

On March 16, 2008, at the height of the Bear Stearns crisis, the Federal Reserve Board granted the Federal Reserve Bank of New York the authority to establish the Primary Dealer Credit Facility (PDCF). The facility allows primary dealers—banks and securities broker-dealers that trade U.S. government and other securities with market participants and the Federal Reserve Bank of New York—to borrow from the New York Fed on a collateralized basis in times of market stress.[1] By extension, this provision of credit is designed to ease liquidity pressures in the broader "repo market," the secured funding market where primary dealers and others normally obtain much of the financing for their securities holdings. In the days leading up to the Fed's action, access to repo financing had narrowed sharply, and the Fed recognized the need to provide dealers with an alternate source of funds.

This edition of *Current Issues* offers an overview of the Primary Dealer Credit Facility. We consider the events that led to the creation of the facility—chiefly, the 2008 Bear Stearns turmoil and the liquidity strains that developed in the overnight repo market—and the reasons for the expansion of the facility in September 2008.[2] In addition, we discuss the economics of the facility in relation to the Federal Reserve's role as lender of last resort. Also considered are issues relating to the supervision of financial institutions and the risk of moral hazard that have been raised following the launch of the PDCF.[3]

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[1] A list of dealers can be found at <http://www.newyorkfed.org/markets/pridealers_current.html>.

[2] Extensions of transitional credit, announced by the Board of Governors on September 24, 2008, will not be covered in this article. See <http://www.federalreserve.gov/newsevents/press/bcreg/20080921a.htm>.

[3] Moral hazard describes the inducement to engage in riskier behavior when safeguards such as insurance are in place.

The Role of Repos and the Repo Market

Primary dealers rely heavily on the repo market—the market for repurchase agreements—to finance their portfolios of securities. While hedge funds and other investors also fund positions in the repo market, the primary dealers stand out as the market's largest group of borrowers.

In a repo transaction, the holder of a security obtains funds by selling that security to another financial market participant under an agreement to repurchase the security at a fixed price on a predetermined future date. In essence, the seller is borrowing funds against the security, typically as a means of financing the original purchase of the security. The buyer—often a pension fund, money market mutual fund, or bank—is making a collateralized investment, and the trade terms are structured to compensate the buyer for use of its funds.

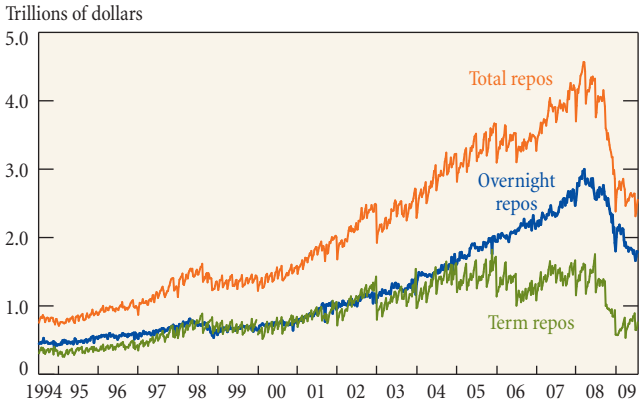
Repos constitute a major source of short-term financing for broker-dealers, representing 38 percent of their liabilities at the end of 2007; by contrast, repos represented less than 10 percent of commercial banks' liabilities while deposits claimed a sizable 59 percent.[4] The assets most commonly used in repo financings are Treasury securities, private mortgage-backed securities, agency securities, and corporate securities, though many other types of less liquid collateral have come to be financed in the repo market.

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At its height in March 2008, primary dealers' repo financing—including both overnight and longer term loans—reached more than $4.5 trillion (Chart 1). In the months that followed, as dealers and others reduced the size of their balance sheets by selling assets, the market contracted dramatically, with financing declining 44 percent to less than $2.5 trillion in July 2009.[5]

Chart 1

Primary Dealers' Outstanding Repos
July 6, 1994 – July 22, 2009



Source: Federal Reserve Bank of New York.

Risk and Liquidity in the Repo Market

To understand how conditions deteriorated in the repo market in the weeks leading up to the creation of the PDCF, we need to know more about the relationship between repo contracts, risk, and liquidity. Most repos are organized as *triparty* contracts in which the borrower posts collateral at a clearing bank and receives cash from the lender.[6] The clearing bank assesses the value of the collateral and applies a "haircut"—the percentage difference between the market value of the collateral and the amount that a lender can borrow.[7] For example, with a haircut of 3 percent, a dealer can borrow $97 on collateral valued at $100. The size of the haircut reflects the collateral's riskiness—for example, a corporate security is typically riskier than a Treasury bill and will thus have a higher haircut—as well as the credit risk of the borrower as assessed by the clearing bank.[8]

In the two weeks prior to the creation of the PDCF on March 16, 2008, liquidity conditions in the repo market grew very strained. Lenders were concerned about both the creditworthiness of borrowers and the riskiness of the collateral pledged—particularly mortgage-backed securities. With lenders worrying that they could lose money on the securities they held as collateral, haircuts increased—doubling for some agency mortgage securities and increasing significantly even for borrowers with high credit ratings and on relatively safe collateral such as Treasury securities.[9]

[4] These percentages are calculated by the authors, using Federal Reserve Statistical Release Z.1, *Flow of Funds Accounts of the United States*, as of fourth-quarter 2007.

[5] The sale of assets is often associated with a decline in leverage: As the total size of assets shrinks, equity is constant; thus, leverage—the ratio of total assets to equity—declines. For this reason, asset sales are often called "deleveraging."

[6] Fleming and Garbade (2003) discuss the GCF Repo®, a common form of triparty repo contract in the interdealer market. See Adrian and Fleming (2005) for an overview of the role of repos and other collateralized borrowing agreements for primary dealers.

[7] The "margin," a related concept, is calculated as the haircut multiplied by the price of the collateral.

[8] The Primary Dealer Credit Facility operates as a triparty repo contract between the primary dealer as borrower, the clearing bank as manager of pricing and margins, and the Federal Reserve Bank of New York as lender. See Boxes 1 and 3.

[9] See "Sense of Crisis Haunts Trading Floors," *Financial Times*, March 7, 2008; "Hedge Funds Squeezed as Lenders Get Tougher," *Wall Street Journal*, March 7, 2008; and "Repo Market Funding," *Financial Times*, March 11, 2008.

Such a rapid jump in haircuts will compel dealers to turn to other sources—primarily the unsecured funding markets such as the Eurodollar market—to obtain funding for their inventories of securities. If a dealer cannot borrow in these alternative markets and does not have capital available to help fund its inventories, it may be forced to sell its securities holdings; if such sales cannot be made because markets are illiquid, the dealer—unable to repay its creditors—will have little choice but to file for bankruptcy. By most accounts, Bear Stearns faced just such a problem on the evening of March 13, 2008, and would have been forced to file for bankruptcy on March 14 if the Federal Reserve had not extended credit through J.P. Morgan Chase.[10]

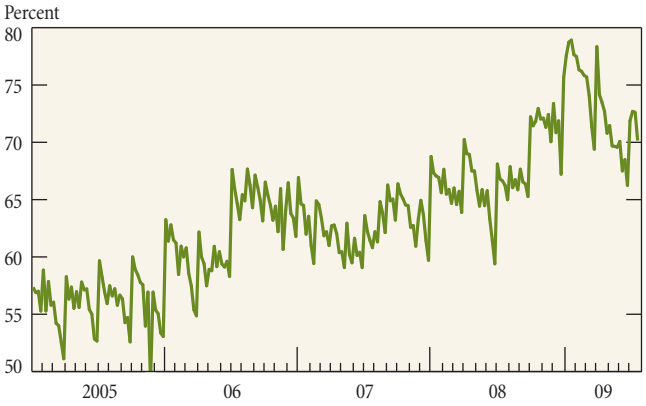
While this action averted the failure of Bear Stearns, the firm's difficulties were symptomatic of broader problems in the repo market, and it was apparent that further action would be needed to limit the disruptions to the market. There was concern that higher haircuts would force large numbers of dealers to close out their repo transactions and sell off the securities. A rapid sell-off would cause the prices of the securities to plummet, prompting lenders in the repo market to reassess the risk of holding these securities as collateral and to impose even higher haircuts or to refuse certain types of collateral altogether. Thus, the sequence would repeat itself, with further sell-offs of securities producing additional declines in the price of the securities held.[11] A similar cycle of downward spiraling prices and increasing risk premia had occurred before in financial markets, and particularly in the repo market, in the crisis of 1998 and the associated failure of the highly leveraged hedge fund Long-Term Capital Management (LTCM).[12] As lender of last resort, the Federal Reserve had a strong interest in preventing the recurrence of such events.[13]

What made the situation even riskier in 2008 than in earlier disruptions was the rapid growth in the use of overnight repos. . . . A second factor that made conditions . . . precarious was the resort to less liquid collateral in repo agreements.

Chart 2

Overnight Repos as a Percentage of Total Primary Dealer Repo Financing

January 5, 2005 – July 22, 2009



Sources: Federal Reserve Bank of New York; authors' calculations.

What made the situation even riskier in 2008 than in earlier disruptions was the rapid growth in the use of overnight repos (Chart 2). The composition of repo debt began to shift toward overnight loans during the financial market boom of 2004-07 and continued during the 2007-08 financial market crisis. Thus, while the share of overnight repos in total primary dealer repo funding fluctuated in a tight range around 50 percent between 1998 and 2004, it rose to 75 percent in 2008. In dollar terms, overnight repos grew from less than $450 billion in July 1994 to a peak near $3 trillion in March 2008 (Chart 1), right after the creation of the PDCF.

This movement toward shorter term financing meant that a greater portion of the primary dealers' funding was rolled over each day—a risky development in a market subject to the "repo run" dynamics described above. With loans coming due so quickly, dealers had to scramble to raise the capital necessary to pay back their creditors. And lenders had frequent opportunities to tighten credit standards and to impose larger haircuts on loans.

A second factor that made conditions in 2008 particularly precarious was the resort to less liquid collateral in repo agreements (Chart 3). Originally focused on the highest quality

[10] See Bernanke (2008).

[11] The connections between repo haircuts, repo volume, dealer leverage, and asset prices have been explored in a number of studies. Adrian and Shin (2008c) analyze the empirical implications of variations in leverage on equilibrium asset prices and risk premia. In other work, these authors provide a microeconomic foundation for setting haircuts as a function of risk (Adrian and Shin 2008a) and examine the relationship of these issues to monetary policy (Adrian and Shin 2008b, 2008d). Kambhu (2006) estimates the economic significance of repo markets—specifically, how a negative shock to repo volume causes spreads to diverge from fundamental values. See also the accounts of the 2008-09 crisis by Ashcraft and Schuermann (2008) and Brunnermeier (2009). Brunnermeier and Pedersen (2009), Morris and Shin (2004), and Gromb and Vayanos (2002) provide theoretical frameworks.

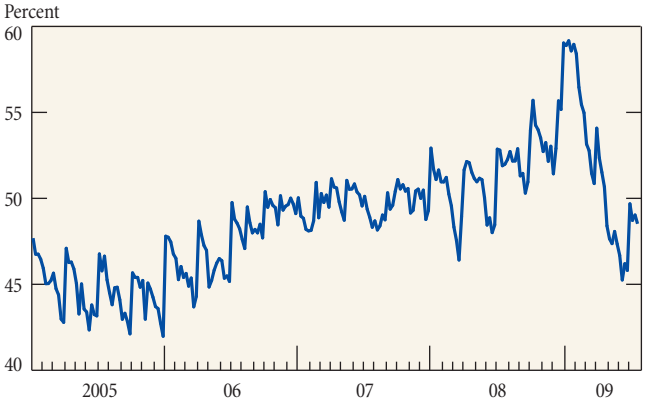
[12] See Edwards (1999) for an account of the 1998 crisis.

[13] Mishkin (2007) observes that "Although the main interests of the Federal Reserve are macroeconomic in nature, well-functioning financial markets are ancillary to good economic performance. Conversely, financial instability can compromise economic growth and price stability. Because of this intimate connection with economic performance, the Federal Reserve has a clear interest in promoting the stability of financial markets."

Chart 3

Prevalence of Less Liquid Collateral in Primary Dealers' Repo Transactions

January 5, 2005 – July 22, 2009



Sources: Federal Reserve Bank of New York; authors' calculations.

Notes: The chart reports repo transactions secured by less liquid collateral as a percentage of repo transactions secured by liquid collateral. Less liquid collateral includes corporate securities and mortgage-backed and other asset-backed securities.

collateral—Treasury and agency debt—repo transactions by 2008 were making use of below-investment-grade corporate debt and equities and even whole loans and trust receipts. This shift toward less liquid collateral increased the risks attending a crisis in the market since, in the event of a crisis, selling off these securities would likely take time and occur at a significant loss.

The Creation of the Primary Dealer Credit Facility

To inject liquidity into the market and prevent the spillover of distress from Bear Stearns to other financial institutions, the Federal Reserve announced the creation of the Primary Dealer Credit Facility on Sunday, March 16, 2008.[14] The facility was designed to alleviate the funding pressure on primary dealers in uncertain market conditions by providing a backstop facility that made overnight loans available against a fairly wide range of collateral (see Box 1 for a description of the facility and the terms of the loans). More broadly, it was intended to help the repo market to continue functioning efficiently during an adverse liquidity spiral, when credit risk was rising and lending against many types of securities had stalled. In practice, the PDCF allows dealers time to arrange other financing for their assets—for example, by raising equity—or to sell assets at a pace that would not overwhelm the markets and drive securities prices down.

In many respects, the Primary Dealer Credit Facility is analogous to the Federal Reserve's discount window, a backstop source of liquidity for depository institutions during market disruptions (see Box 1). Before the creation of the PDCF, primary dealers had no access to a lender-of-last-resort credit facility. Yet in modern financial crises, dealers are the institutions most likely to experience liquidity shortages (see Box 2). Primary dealers hold long-term assets, such as Treasury securities and mortgage-backed securities, and fund those assets in short-term markets.

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While maturity transformation has become a central feature of the dealers' funding and investment strategies, such strategies are very vulnerable to the risk that short-term funders may decide to pull out of the arrangement.

Expansion of the Primary Dealer Credit Facility

On September 14, 2008, deepening strains in the repo market prompted the Federal Reserve to make an important change in the design of the PDCF. Lehman Brothers, a major participant in the triparty repo market, was reported to be "only days away" from bankruptcy—and there was strong concern that the firm's collapse would put other financial institutions at risk.[15] Citing "potential market vulnerabilities in the wake of an unwinding of a major financial institution," the Federal Reserve acted to expand use of the PDCF by broadening the types of collateral acceptable for PDCF loans.[16] Originally, collateral eligible for pledge under the facility included collateral eligible in the Federal Reserve's open market operations, as well as investment-grade corporate securities, municipal securities, mortgage-backed securities, and asset-backed securities.[17] Collateral that was not priced by the clearing banks was not eligible for pledge under the PDCF. With the Fed's action, all the kinds of collateral then in use in

[14] One week earlier, on March 11, 2008, the Federal Reserve implemented another facility, the Term Securities Lending Facility (TSLF), through which it auctions to primary dealers loans of Treasury securities against riskier collateral for twenty-eight days (see Fleming, Hrung, and Keane [2009]). The TSLF is available to primary dealers only periodically (generally weekly) for term loans while the PDCF is available daily for overnight loans. For a discussion of the role of the Federal Reserve's various lending facilities, see Annex 1 of the testimony of Federal Reserve Bank of New York President Timothy F. Geithner before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, April 3, 2008 (<http://www.newyorkfed.org/markets/Understanding_Fed_Lending.html>).

[15] See Vikas Bajaj, "A Wall Street Goliath Teeters Amid Fears of a Widening Crisis," *New York Times*, late edition, September 14, 2008.

[16] For the full text of the announcement by the Board of Governors of the Federal Reserve System, see <http://www.federalreserve.gov/newsevents/press/monetary/20080914a.htm>.

[17] Some mortgage-backed securities are not eligible for pledge in open market operations.

BOX 1

Operation of the Primary Dealer Credit Facility

The PDCF program is based on the triparty repo legal and operational infrastructure that the Federal Reserve uses to conduct its repo operations. (See Box 3 for a discussion of triparty repo agreements.) To access the PDCF, primary dealers[a] communicate a demand for overnight funding to their clearing banks, typically by 5 p.m. ET on business days. The clearing bank verifies that a sufficient amount of eligible collateral has been pledged to the loan by the primary dealer and notifies the Federal Reserve Bank of New York accordingly. Once the New York Fed receives notice that a sufficient amount of margin-adjusted eligible collateral has been assigned to its account, it transfers the amount of the loan to the clearing bank for credit to the primary dealer.

The pledged collateral is valued by the clearing banks using vendor pricing services. Loans are limited to the amount of margin-adjusted eligible collateral pledged by the dealer and assigned to the New York Fed's account at the clearing bank. While loans under the PDCF are collateralized, they are loans made under recourse; thus, the primary dealer is responsible for repayment even if the collateral loses value overnight.

PDCF loans made to primary dealers increase the total supply of reserves in the banking system, in the same way that discount window loans do. When the Federal Reserve's Open Market Trading Desk was targeting a non-zero federal funds rate, the reserve impact of PDCF loans was offset using a number of tools, including, but not necessarily limited to, reverse repurchase agreements, outright sales or redemptions of Treasury securities, a reduction in the size of conventional repo transactions, and use of the authority to pay interest on reserves. However, when the FOMC reduced the target fed funds rate to a range from zero to 25 basis points, there was no longer any need to offset or "sterilize" these loans.

As it does for loans made to depository institutions through the discount window, the Federal Reserve makes information on PDCF borrowing available each Thursday, generally at 4:30 p.m. ET, through its Statistical Release H.4.1, "Factors Affecting Reserve Balances of Depository Institutions and Condition Statement of Federal Reserve Banks." The H.4.1 release reports the total amount of PDCF credit outstanding at the close of business on the previous business day as well as the average daily amount of credit outstanding for each week.

The legal authority to establish the PDCF is based on Section 13(3) of the Federal Reserve Act of 1913. Section 13(3), passed in 1932, allows the Federal Reserve to provide credit to individuals, partnerships, or corporations on an emergency basis. The central bank applied it to primary dealers for the purpose of establishing the PDCF.[b]

[a] The primary dealer system was established by the New York Fed in 1960 with eighteen dealers. In 1988, the number of dealers peaked at forty-six; between the mid-1990s and 2007, it dropped to eighteen. The key reason for the decline has been industry consolidation, as government securities trading firms merge or refocus their core businesses. See <http://www.newyorkfed.org/markets/primarydealers.html>.

[b] Only 123 loans were made under the provisions of Section 13(3) from 1932 to 1936, and thereafter no such borrowing took place until the creation of the PDCF (see Todd [1993, p. 18]).

BOX 2

"Modern" Financial Crises

In the nineteenth and early twentieth centuries, financial sector shocks principally manifested themselves as bank runs, in which depositors rushed to withdraw their funds from banks perceived to be troubled. Modern financial crises—exemplified by the turmoil in the repo market in 2008—take a very different form, one that reflects the transformation of the financial system in recent decades.

What has changed? First, financial intermediation is increasingly conducted outside of traditional depository institutions. Commercial bank assets as a share of total financial intermediary assets have shrunk, particularly following the wave of financial market deregulation in the 1980s. In addition, securities brokers and dealers, hedge funds, and mutual funds have grown in importance. Assets of securities brokers and dealers represented less than 3 percent of U.S. commercial bank assets in 1980; by 2007, that share had risen to nearly 30 percent.[a] Over the same period, hedge fund capital has increased from less than 1 percent of commercial bank capital to the point where it is estimated to exceed bank capital.

Second, the change in financial system "players" has been accompanied by a shift toward the use of tradable assets in financial intermediation, on both the asset and the liability side of institutional balance sheets. While traditional commercial banks hold nontradable bank loans on the asset side of their balance sheets and nontradable deposits on the liability side, dealers hold tradable securities on the asset side and collateralized short-term financing instruments such as repos on the liability side.

The increased prominence of tradable assets in the financial system relative to nontradable instruments has created the potential for more widespread and sudden illiquidity in the repo and other funding markets. Because dealers must mark-to-market the values of these assets and liabilities—that is, calculate their value based on current market rates or prices—on a daily basis, any changes will immediately affect the dealers' net worth. Thus, when market prices are in sharp decline, dealers will book losses and be compelled to close out their positions to pay off their debts. As the forced sales of assets drive prices still lower, lenders will increasingly seek higher risk premia on the collateral they accept, or refuse to lend altogether—actions that can impede or halt the functioning of the market. This interaction of asset price declines and funding liquidity constraints essentially defines the modern "run." It has been at the heart of two major financial breakdowns in recent years—the failure of Long-Term Capital Management in 1998 and the current financial crisis.

[a] Federal Reserve Statistical Release Z.1, *Flow of Funds Accounts of the United States*.

BOX 3

Triparty Repo Mechanics

As the name implies, a triparty repo transaction involves three parties: a cash lender (the investor), a borrower that will provide collateral against the loan, and a triparty clearing bank. The triparty clearing bank provides cash and collateral custody accounts for parties to the repo deal and collateral management services. These services include ensuring that pledged collateral meets the cash lenders' requirements, pricing collateral, ensuring collateral sufficiency, and moving cash and collateral between the parties' accounts.

Both the investor and the borrower must have accounts at the clearing bank, and all three parties are bound by legal documentation called the triparty repo agreement. In the United States, there are two triparty clearing banks: the Bank of New York and J.P. Morgan Chase. One of the operational benefits of triparty repos is that, regardless of the term of the loan, the clearing bank unwinds the transaction each morning, returning the cash to the investor's account and the collateral to the borrower's account. Then at the end of the day, the borrower pledges qualifying collateral back to the deal, which once priced, determined as eligible, and deemed sufficient to meet the terms of the deal by the clearing bank, is moved to the investor's account while the cash is placed in the borrower's account. In this way, no specific collateral is committed for more than overnight. This arrangement allows borrowers to pledge whatever eligible collateral they have on hand each day, thus enabling them to manage their securities portfolios more effectively.

An important implication of this daily unwinding, however, is that the counterparty risk for the investor shifts from its repo counterparty to the triparty clearing bank, and the clearing bank becomes exposed to the borrower. Overnight, the cash investor has the borrower's collateral in its account and the borrower has the cash. If the borrower defaults overnight—say, by filing for bankruptcy—the lender has the collateral in its account and thus is covered and the clearing bank is not affected.[a] Once the collateral and cash are returned in the morning, however, the clearing bank, which has extended credit to the borrower to finance the original collateral purchase, becomes exposed to the borrower. Consequently, the clearing bank needs to determine each morning if it is comfortable accepting the exposure to the borrower that the reversal of the transaction will create.

[a] As a likely counterparty to the defaulting borrower in other transactions, the triparty clearing bank will in all probability be directly affected by the borrower's filing for bankruptcy.

triparty repo—including non-investment-grade securities and equities—became eligible for pledge in the PDCF.

Although the potential failure of a major repo market participant was the immediate impetus for the Fed's decision to expand the collateral eligible for pledge in the PDCF, the Fed was also responding to more general concerns about the structure of the triparty repo system—specifically, the exposure incurred by the clearing banks to a possible default by borrowers in the market. In "term," or multiple-day, triparty repo transactions, the clearing bank "unwinds" the transaction each morning, returning the

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funds borrowed to the lender's account and the collateral (that is, the securities lent) to the borrower's account. While this practice is intended to give borrowers the flexibility to substitute different collateral,[18] it means that the clearing bank must extend credit to the borrower until the parties reinstate their commitments at the end of the day.

In September 2008, the risk that Lehman Brothers' clearing bank took each morning in unwinding the firm's triparty repo transactions (and thus extending credit to Lehman) was growing.

Although the potential failure of a major repo market participant was the immediate impetus for the Fed's decision to expand the collateral eligible for pledge in the PDCF, the Fed was also responding to more general concerns about the structure of the triparty repo system.

(See Box 3 for a description of the mechanics of triparty repo.) At the time, outstanding triparty repos totaled $2.5 trillion; if either of the clearing banks had chosen *not* to unwind the firm's repo transactions in the morning, the firm's counterparties—including pension funds and money market mutual funds with thousands of individual cash investors—would be left holding collateral that they would be forced to sell quickly. Such an outcome would further depress asset prices and potentially cause additional disruption to the financial system.

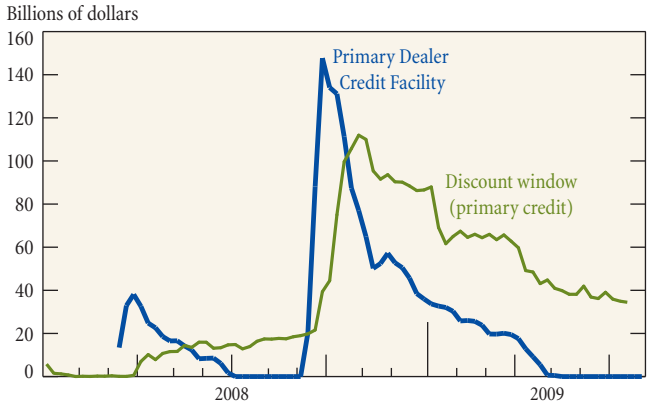
By expanding the collateral acceptable to the PDCF program to all triparty collateral, the Fed provided a means for the dealers

[18] For example, borrowers might wish to substitute different collateral if an opportunity arises to sell the pledged securities at a favorable price.

Chart 4

Discount Window and Primary Dealer Credit Facility Usage

January 1, 2008 – July 15, 2009



Source: Federal Reserve Statistical Release H.4.1, "Factors Affecting Reserve Balances of Depository Institutions and Condition Statement of Federal Reserve Banks."

Chart 5

Credit Default Swap Spreads

January 1, 2008 – July 20, 2009



Source: Datastream.

to obtain funds against any collateral they had in triparty repo transactions. So dealers that were unable to find financing for their collateral in private markets could turn to the Fed. Moreover, the Fed's readiness to lend would in turn reassure the clearing bank that the dealer would be able to fulfill the terms of the repo agreement. Thus, the clearing bank would be more likely to proceed with the reversal of the transaction.

Use of the Facility

How have the primary dealers responded to the creation of the PDCF? Primary dealers have borrowed actively through the PDCF at various points in time. Initially, much of the borrowing was by Bear Stearns.[19] Funds lent through the facility first peaked at close to $40 billion in April 2008, then declined steadily over the following months as strains on dealers' balance sheets abated, conditions in the financing markets improved, and the backstop pricing of the PDCF became less attractive (Chart 4). Use of the facility fell significantly after the conclusion of the financing arrangements associated with J.P. Morgan Chase's acquisition of Bear Stearns in late June[20] and stopped altogether in mid-July 2008.

Both PDCF and discount window usage exploded following the Fed's move to expand PDCF-eligible collateral on September 14 and the bankruptcy of Lehman Brothers Holdings on September 15 (Chart 4). In the wake of Lehman Brothers' failure, other primary dealers experienced severe difficulties obtaining funding in the capital markets as lenders imposed higher haircuts on repos and became more selective in the type of securities they would accept as collateral. In that environment, borrowing through the PDCF soared to $59.7 billion on Wednesday, September 17, from no activity during the previous week. In this instance, the PDCF fulfilled one of the purposes for which it was intended: to be available in the event that a failure of a primary dealer led to severe funding disruptions for the surviving dealers. PDCF borrowing reached more than $140 billion in October 2008, while discount window borrowing rose above $100 billion.

Both PDCF and discount window usage exploded following the Fed's move to expand PDCF-eligible collateral on September 14 and the bankruptcy of Lehman Brothers Holdings on September 15.

Thereafter, conditions in the funding markets improved, and dealers could once again find less expensive financing in the market than with the Fed. As a consequence, PDCF usage declined, reaching zero in mid-May 2009.

As for the effectiveness of the PDCF in improving the functioning of the repo and other funding markets, one important indicator is the change in the credit default swap spreads of the firms that had access to the facility (Chart 5). Credit default swap spreads are a measure of the credit risk inherent in lending to firms; significantly, these spreads fell for primary dealers for roughly three months following the creation of the PDCF.

[19] See "Turmoil in U.S. Credit Markets: Examining the Recent Actions of Federal Financial Regulators," U.S. Senate Committee on Banking, Housing, and Urban Affairs, April 3, 2008 (<http://banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=ec013d8f-fe1e-4fb6-a514-ab93be32ad38>).

[20] See the Federal Reserve Bank of New York press release of June 26, 2008, for a description of the transaction (<http://www.newyorkfed.org/newsevents/news/markets/2008/ma080626.html>).

Funding and Pricing Issues

Several features of the Primary Dealer Credit Facility are designed to ensure that it serves as a backstop, rather than a principal, source of funding for primary dealers and that its terms do not confer a subsidy on users. First, the Fed extends credit through the facility at the discount rate, which it sets in excess of the target federal funds rate (currently 25 basis points above the top end of the policy target range). Under normal conditions, the discount rate exceeds the overnight repo rate for most eligible securities, with the result that the PDCF would not be an especially attractive means of financing an inventory of securities. Second, the Fed provides guidance on the use of the PDCF, counseling primary dealers to seek financing first in the private markets and to turn to the PDCF only as a fallback. Third, the facility is subject to an escalating usage fee. The fee is imposed on borrowers that draw on the facility on more than forty-five business days; it rises after each additional forty-five days of use. Given these features, the PDCF is unlikely to displace private investors to become a major source of funding for the primary dealers.

In addition, the Fed has given the PDCF other features that protect the central bank against losses in the event of a primary dealer default. Most notably, PDCF loans are overcollateralized—that is, the Fed applies a haircut, albeit one that is lower than those applied by private lenders in crisis times. In calculating haircuts on PDCF-eligible collateral, the Federal Reserve faces a trade-off: on the one hand, lower haircuts leave the Fed more vulnerable to credit risk; on the other hand, they help to restore liquidity to the repo market by enabling dealers to borrow more for a particular amount of collateral. For a given PDCF interest rate, a haircut lower than those imposed by private lenders could provide dealers with arbitrage opportunities, but it will also help dealers to roll over their loans and maintain their portfolios. The Fed periodically reviews all its haircut practices to ensure that they reflect current risk and pricing developments.

Several features of the Primary Dealer Credit Facility are designed to ensure that it serves as a backstop, rather than a principal, source of funding for primary dealers and that its terms do not confer a subsidy on users.

Moral Hazard Issues

Concerns have been raised that the PDCF, by offering primary dealers a liquidity backstop, encourages risky behavior. In this view, the facility effectively invites primary dealers to delay raising equity because they can instead borrow from the Federal Reserve. These "moral hazard" issues are similar to those that arise in the context of emergency lending to banks.

The countervailing view, however, is that the PDCF functions to protect prudently managed institutions from the damaging consequences of the risks taken by highly leveraged firms. In the period following the Bear Stearns crisis and again after the collapse of Lehman Brothers, the liquidity provided by the PDCF helped reduce the spillover of distress to more conservatively managed firms by enabling these firms to maintain their securities inventories and to fulfill their obligations to creditors and clients.[21]

The countervailing view [to concerns about moral hazard] is that the PDCF functions to protect prudently managed institutions from the damaging consequences of the risks taken by highly leveraged firms.

Regulatory Issues

To the extent that backstop lending facilities like the PDCF might create conditions conducive to moral hazard, it is important to have regulation in place that helps enforce the prudent management of funding positions. Currently, the supervision of primary dealers is shared by the Securities and Exchange Commission (SEC) and the Federal Reserve.[22] All securities broker-dealers are regulated by the SEC, while a subset of this group—those dealers that are part of commercial bank holding companies—are also supervised by the Federal Reserve. The latter group includes dealers that have merged with, or been acquired by, bank holding companies as well as dealers that have transformed themselves into bank holding companies.[23]

Since March 2008, four primary dealers that, as standalone investment banks, had been supervised exclusively by the SEC have

[21] See the remarks of Jeremy Stein, delivered at the Second Princeton–New York Fed Liquidity Conference, December 13, 2007 (<http://newyorkfed.org/research/conference/2007/liquidity/Stein_Panel.pdf>).

[22] After the introduction of the PDCF, the Fed worked in conjunction with the SEC to monitor closely the funding strategies and resources of the primary dealers. On July 7, 2008, the two agencies announced the signing of a memorandum of understanding that "formalizes . . . recent cooperation on matters including banking and investment banking capital and liquidity following the Board's emergency opening of credit facilities to primary dealers."

[23] After the Gramm-Leach-Bliley Act was passed in 1999, some commercial bank holding companies, including Citigroup and Bank of America, acquired dealers. (Even before the passage of the act, however, some bank holding companies owned relatively small broker-dealer firms.) In 2002, primary dealer J.P. Morgan merged with Chase Manhattan Bank.

come under the regulatory authority of the Federal Reserve as well. Bear Stearns and Merrill Lynch merged with bank holding companies—J.P. Morgan Chase and Bank of America, respectively—while Goldman Sachs and Morgan Stanley transformed themselves into bank holding companies.

These changes raise the question whether securities broker-dealers should generally be part of bank holding companies. In that event, the Federal Reserve would be in a position to require these firms to hold appropriate levels of capital and liquid assets to offset their exposures. If the Primary Dealer Credit Facility were to be extended or made permanent, the Fed's ability to regulate all of the firms that borrow from the facility would likely reduce the risk of moral hazard.[24]

These changes raise the question whether securities broker-dealers should generally be part of bank holding companies. In that event, the Federal Reserve would be in a position to require these firms to hold appropriate levels of capital and liquid assets to offset their exposures.

Conclusion

The Federal Reserve introduced the Primary Dealer Credit Facility in March 2008 to protect the repo market and other U.S. funding markets from disruption following the near-bankruptcy of Bear Stearns. Six months later, in the wake of new strains in the repo market, the Fed enhanced the facility by broadening the types of collateral acceptable for PDCF loans. The facility proved to be a critical recourse for primary dealers at the time of the Lehman Brothers bankruptcy. As a source of emergency credit, the PDCF is parallel to the Federal Reserve's discount window for banks, but it specifically addresses the needs of the institutions most at risk in modern financial crises.

The PDCF has the potential to benefit trading in the repo market beyond the direct injection of funding. The very existence of the facility is a source of reassurance to primary dealers and their customers. Moreover, the PDCF can strengthen investors' confidence that broker-dealers will return funds borrowed under a repo promptly at maturity, because the dealers can borrow from the Federal Reserve when they—or their clients—are unable to fund their securities holdings in other ways.

To be sure, concerns have been raised that access to this type of backstop funding source could discourage dealers from managing their funding positions carefully. Yet the risk of such perverse incentives is offset by the protections the PDCF affords more prudent firms against the market stresses created by their highly leveraged counterparts.

Finally, the possibility of moral hazard raises the question whether broker-dealers should be required to be subsidiaries of bank holding companies—a change that would bring them under the Fed's regulatory authority. A PDCF in which the Federal Reserve lent only to firms that it supervised would almost certainly be less vulnerable to moral hazard.

The authors are grateful to Markus Brunnermeier, Hyun Song Shin, and John Taylor for valuable comments.

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[24] The proposal for financial regulatory reform put forward by the White House in June 2009 calls for a more consolidated approach to the supervision of financial institutions. It recommends the creation of a Tier 1 financial holding company classification. Tier 1 companies—whether bank holding companies or other forms of financial holding companies—would be supervised on a consolidated basis. Constraints imposed by the Gramm-Leach-Bliley Act on the Federal Reserve's ability to require reports from, examine, or apply prudential requirements or more stringent activity restrictions on the functionally regulated or depository institution subsidiaries of financial holding companies would be removed. The reform proposal also suggests that the Federal Reserve Board should have the authority and accountability for consolidated supervision and regulation of Tier 1 financial holding companies. See <http://www.financialstability.gov/docs/regs/FinalReport_web.pdf>.

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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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Volume 15, Number 4 ✦ August 2009 ✦ www.newyorkfed.org/research/current_issues

The Federal Reserve's Primary Dealer Credit Facility

Tobias Adrian, Christopher R. Burke, and James J. McAndrews

As liquidity conditions in the "repo market"—the market where broker-dealers obtain financing for their securities—deteriorated following the near-bankruptcy of Bear Stearns in March 2008, the Federal Reserve took the step of creating a special facility to provide overnight loans to dealers that have a trading relationship with the Federal Reserve Bank of New York. Six months later, in the wake of new strains in the repo market, the Fed expanded the facility by broadening the types of collateral accepted for loans. Both initiatives were designed to help restore the orderly functioning of the market and to prevent the spillover of distress to other financial firms.

