The Repo Market is Changing (and What Is a Repo, Anyway?)

The market for repurchase agreements has repeatedly adapted to changing circumstances

BY JOHN MULLIN

On March 17, amid the market turbulence caused by the coronavirus pandemic, the Fed reintroduced its Primary Dealer Credit Facility, or PDCF. The Fed had first created the facility during the 2007-2008 financial crisis to alleviate severe strains in the “repo” market. While mostly invisible to the public at large, the repo market plays an important role in the transmission of monetary policy. It is also a critical source of financing for nonbank financial firms, including securities brokerage houses and real estate investment trusts that specialize in mortgages. (See table.) At the end of 2019, financial firms relied on the repo markets for over $4 trillion in borrowed funds to support their activities. The renewed PDCF is designed to make loans to primary dealers of U.S. Treasury securities, who are positioned to channel liquidity to repo markets in what policymakers expect to be a difficult economic environment.

The repo market had shown signs of strain even before the onset of the pandemic — but these difficulties appear to have been rather technical in nature and unrelated to fears of imminent recession. On Sept. 17, 2019, repo market interest rates spiked dramatically higher. This precipitated a great deal of concern and discussion among market participants and policymakers. Initial explanations for the rate spike focused on U.S. Treasury financing operations in the aftermath of a period in which the Fed had substantially contracted the reserves of the banking system. But the discussion soon gravitated toward the roles played by some of the major policy changes that had been implemented in response to the financial crisis. These included changes in the Fed’s monetary policy operating framework and changes in bank regulatory and supervisory policies, especially in the area of bank liquidity management.

Taking a long-term perspective, it is hardly surprising that the functioning of repo markets changed in response to the financial crisis. Throughout the post-World War II period, repo markets have repeatedly adapted to changing circumstances.

A Market Evolves

At a very basic level, a repurchase agreement is a loan secured by collateral. Collateralized loans are nothing new, of course. They go back at least as far as ancient Greece and take a variety of different forms — two everyday examples include real estate loans secured by property and loans on cars subject to repossession. The contractual conventions and market structures associated with collateralized loans vary depending on the type of collateral, and they evolve over time in response to changing market conditions. This is particularly true for the repo market — where today’s market arrangements are different in many important respects from those that existed in the immediate aftermath of World War II.

The U.S. repo market greatly increased in size and importance as inflation accelerated in the late 1970s and early 1980s. This rapid growth was spurred by a process that is referred to by economists as “disintermediation.” As short-term interest rates increased during the period in response to increased inflation, banks could not respond by increasing the deposit rates they offered to their customers because checking deposit rates were capped by the Fed’s longstanding Regulation Q. A growing disconnect between capped bank rates and increasing market rates created an incentive for institutions and individuals to bypass banks. Through this process of disintermediation, many institutions began to channel money directly to the repo market, while other institutions and individuals invested in money market mutual funds, which in turn channeled money to the repo market.

As the repo market grew in the early 1980s, a series of bankruptcies highlighted a number of legal and structural problems that needed to be sorted out. Prior to this period, there had been a great deal of ambiguity about the legal status of repo transactions. Most notably, there was a widespread presumption that repos were unlike other collateralized loans in one crucial respect: They were thought by many to be exempt from the bankruptcy code’s automatic stay provision. This was a technical assumption that made a big difference because an exemption from the automatic stay provision would imply that repo collateral would not become tied up in bankruptcy proceedings of indeterminate length and that repo lenders would be able to sell the collateral immediately in the event of a default.

Yet prior to the 1980s, this assumption had never been put to a definitive test. It took a default episode and an act of Congress to resolve the ambiguity. When a small broker-dealer named Lombard-Wall filed for bankruptcy in August 1982, the court overseeing the case declared that the firm’s repo liabilities would be treated as collateralized loans and therefore would not be exempt from automatic stay provisions. The court issued a temporary restraining
order prohibiting the firm’s repo creditors from selling
the collateral backing the firm’s repos. This caused a
great deal of anxiety among private market participants
and regulators alike, who were concerned that the court’s
rulings might discourage repo lending and substantially
damage the availability of credit on the repo market, par-
ticularly during periods of heightened financial market
uncertainty. In 1984, following a vigorous lobbying cam-
paign by Wall Street firms that was joined by Fed Chair
Paul Volcker, Congress enacted legislation that exempted
repos on Treasuries (and other select securities) from the
automatic stay provision of the bankruptcy code.

A further series of defaults in the 1980s encouraged
another major structural change in repo markets — the
ascendance of the tri-party repo market. It turned out
that, for repo lenders, it was one thing to have the legal
right to sell collateral in the event of a default, but it was
quite another to have access to the collateral in order to
be able to sell it. For example, after Lion Capital Group
filed for bankruptcy in 1984, repo creditors ended up
recovering only about three-quarters of the value of their
loans because the collateral available to back the loans
ultimately proved to be insufficient. What was needed
was a mechanism to ensure that the collateral backing
repo loans would be fully available to creditors in the
event of default.

The tri-party repo market — which had been pioneered
by Salomon Brothers in the late 1970s — provided just
such a mechanism. In the tri-party market, repo collateral
is earmarked and held in custody by an agent bank. Repo
lenders are protected because they can access and sell col-
lateral in the event of a borrower’s default; repo borrowers
are protected because they can secure access to the collat-
eral that they have pledged once they repay their loan. The
tri-party repo market grew rapidly from the 1980s onward
and ultimately accounted for the majority of repo market
activity for large government securities dealers.

The Financial Crisis
Repo markets played a prominent role in the 2004-2007
real estate boom and the ensuing financial crisis. In just
four years, between December 2003 and December 2007,
the asset-to-equity ratio of U.S. broker-dealers ballooned
from 24:1 to 35:1. And this balance sheet expansion relied
heavily on repo borrowing.

Lehman Brothers, in particular, relied heavily on the
tri-party repo market to finance its securities inventory,
which ended up being dangerously concentrated with
illiquid mortgage-backed securities. By mid-2007, mar-
ket participants had become concerned about Lehman’s
leverage as well as the quality of its asset holdings, and the
firm’s management embarked on a campaign to reduce the
firm’s leverage. But Lehman found itself with a dilemma.
It was loath to raise equity capital, because firm manage-
ment thought that would send a bad signal to the markets.
But it found that reducing leverage through asset sales
was just as problematic, because it could not sell assets
without booking losses — and the recognition of those
losses would seriously undermine the collateral value of
the firm’s remaining assets, which it relied on for repo
market financing.

Although Lehman continued to present itself as solvent
in its quarterly financial reports, market observers became
increasingly skeptical. In addition to questionable asset
valuation methods, it was later discovered that the firm
had misrepresented its leverage by improperly pushing
certain repo liabilities off its balance sheet at the end 2007
and in early 2008. After Bear Stearns was shuttered in
March 2008, market participants became even more con-
cerned about a run on Lehman Brothers. The firm finally
declared bankruptcy in September 2008 — an event that
seriously strained financial markets.

The runs on Bear Stearns and Lehman highlighted
the risk that highly leveraged firms face from collateral
“fire sales” — the risk that the forced liquidation of asset

<table>
<thead>
<tr>
<th>Nonbank Financial Firms are Big Repo Borrowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top categories of net borrowers and lenders (in billions of dollars)</td>
</tr>
<tr>
<td>Net Borrowers:</td>
</tr>
<tr>
<td>Mortgage Real Estate Investment Trusts (M-REITs)</td>
</tr>
<tr>
<td>Securities Broker-Dealers</td>
</tr>
<tr>
<td>Foreign Banking Offices in the U.S.</td>
</tr>
<tr>
<td>Net Lenders:</td>
</tr>
<tr>
<td>Money Market Mutual Funds</td>
</tr>
<tr>
<td>U.S.-Chartered Banks</td>
</tr>
<tr>
<td>State and Local Governments</td>
</tr>
</tbody>
</table>

NOTE: Figures are as of December 2019. SOURCE: Federal Reserve Board Flow of Funds Statistics via FRB website.
holdings can dramatically depress the market prices for collateral and thereby set off a vicious cycle that culminates in a run. This risk is greatest when a firm’s assets are risky, opaque, and therefore illiquid — a description that fit much of the two firms’ holdings of mortgage-backed securities.

The tendency toward a vicious cycle appears to have been amplified in the tri-party repo market by lenders’ behavior in the face of declining and uncertain collateral valuations. Several studies have examined the discounts — known as “haircuts” — that tri-party repo lenders applied to reported collateral valuations as the crisis unfolded. A well-known 2010 study by Adam Copeland, Antoine Martin, and Michael Walker of the New York Fed found that lenders in the tri-party repo market generally did not increase collateral haircuts in response to increased counterparty risk during the financial crisis. Rather, lenders were more inclined to require higher-quality collateral or deny lending altogether. This behavior likely contributed to the precipitousness of the Bear Stearns and Lehman collapses.

A great deal of risk was rooted in the tri-party market’s structure. The U.S. tri-party repo market was dominated by two clearing banks, BNY Mellon and JPMorgan Chase. According to regular practice, all tri-party repo contracts (even multiday contracts) would be unwound on a daily basis — meaning that collateral would be shifted back to a borrower’s securities account at its clearing bank and cash would be shifted back into the lender’s cash account at the same clearing bank. This had the advantage of giving borrowers maximum flexibility to use their collateral intraday, but it had the disadvantage of regularly leaving clearing banks with huge intraday exposures to repo borrowers. It was not uncommon for a single broker-dealer to owe its main clearing bank more than $100 billion intraday.

This feature of the tri-party repo added an additional layer of complexity to a risky game. In the midst of the crisis, repo lenders not only had to be wary of other repo creditors quickly exiting the market and leaving them “holding the bag,” they also had to be wary of clearing banks deciding not to execute the daily unwind, which could leave repo lenders similarly exposed.

“Repo lenders are not interested in taking possession of collateral, and if they think they are going to be left holding it, they will say ‘No, I won’t lend to you,’” says Richmond Fed economist Huberto Ennis, who has studied strategic behavior in the tri-party repo market. “And if they think that the clearing bank is not going to unwind the next morning, they are going to be happy holding onto their cash and losing one night’s interest.”

Post-Crisis Reforms
The Task Force on Tri-Party Repo Infrastructure, which was formed to explore the market’s problems, urged a number of changes to lower risk. In accord with task force recommendations, the clearing banks discontinued the daily unwind for nonmaturing loans. In addition, they substantially reduced their extension of intraday credit.

The crisis also led to major changes in monetary policy that fundamentally affected the functioning of repo markets. “The Fed’s old system had been to target the federal funds rate by doing small, but regular, repo lending operations to adjust the supply of bank reserves,” says William English of Yale University. “But this wasn’t going to work anymore under quantitative easing. What ended up working, at least at first, was paying banks a set rate of interest on their reserves.”

Before the financial crisis, the Fed had seldom borrowed funds in the repo market by engaging in what are called “reverse repos.” But this changed in 2014 after the Fed’s acceleration of quantitative easing caused short-term interest rates to decline below the rate the Fed paid banks on their reserves. At that point, the Fed created the Overnight Reverse Repurchase Agreement Facility to stand ready to borrow funds from certain firms, including mutual funds, at a set rate. This helped the Fed reestablish a floor for market rates. Under this new system of interest rate targeting, which combined paying interest on bank reserves with the reverse repo facility, the Fed largely refrained from repo market lending — that is, until September 2019.

The financial crisis also gave rise to changes in bank regulation and supervision. Perhaps the most consequential changes for repo markets pertained to supervisory guidance and the use of stress tests.

Rate Spikes of Sept. 17, 2019
Prior to September 2019, it had become quite unusual for the benchmark interest rate for repos, known as the Secured Overnight Financing Rate (SOFR), to vary widely from the rate that the Fed paid banks on their excess reserves (IOER). During the year prior to Sept. 17, 2019, the SOFR-IOER spread had become somewhat more volatile as the Fed had continued to reverse its quantitative easing program and reduce the supply of banking system reserves. But the spread had exceeded 0.25 percentage points only five times during the period and had never exceeded 0.75 percentage points. (See chart.)

Thus, it came as a shock to market participants when, on Sept. 17, the SOFR benchmark repo rate spiked to 5.25 percent even though IOER stood at only 2.1 percent.

Initial accounts of the repo rate spike focused on the closely proximate occurrence of a Treasury securities auction and a due date for quarterly corporate tax payments. Both of these events involved large payments from the private sector to the U.S. Treasury’s general account at the Fed. Such transactions, if not offset by Fed open market operations or discount window lending, reduce banking system reserves at the Fed and thus tend to reduce the banking system’s supply of funds to the repo market. The Treasury auction had the further effect of increasing the demand for funds in the repo market by securities dealers looking to finance Treasury securities purchases.
Banks’ conservative approach to reserve management appears to have been reflected in their internal stress tests, which they use to make contingency plans for periods of market stress and illiquidity. Fed Vice Chair Randal Quarles has suggested that banks’ internal stress tests may have played a role in the rate spike by creating too great a preference for central bank reserves over other high-quality liquid assets, including Treasuries.

More Changes?
There has been no shortage of policy proposals to avoid a repeat of the Sept. 17 rate spike. A prominent proposal has been the creation of a “standing repo facility.” This program would have the Fed actively capping the repo rate by standing ready to lend at a specified target rate — presumably equal to, or close to, the federal funds target. The Fed is also looking at alternative ways to enhance repo market liquidity, such as encouraging banks to more fully incorporate discount window access into their internal stress tests.

As a practical matter, the Fed has been actively lending in the repo market since Sept. 17 — after a nearly 10-year hiatus — and has more recently promoted market liquidity by activating a number of credit programs, including the PDCF.

The repo market has rarely sat still for long. After having undergone a major legal and structural transformation in the 1980s, its functioning was fundamentally altered by the 2008-2009 financial crisis. Faced with the current crisis, it appears poised for further change.

Readings