

Out from the Shadows

The run on shadow banking and a framework for reform

BY RENEE COURTOIS HALTOM

One reason the recent financial crisis caught many regulators and economists off guard is that the problems arose in a sector of financial activity which existed largely outside of view. A narrative that's catching on in academic and policy circles is that much of the financial crisis was a garden-variety bank run, in which many depositors withdraw at once, rendering a bank insolvent. Only *this* run occurred in the “shadow” banking sector, which before the crisis many people didn't traditionally think of as banking and therefore didn't appreciate its susceptibility to runs.

That's because the primary actors were not commercial banks. The shadow banking system performs a role similar to traditional banks — credit intermediation, or connecting lenders and borrowers — except the lenders and borrowers are large businesses, broker-dealers, and institutional investors with millions or billions to invest and lend at a time. Also, like traditional banking, much of the credit intermediation in the shadow banking system takes the form of maturity transformation — issuing short-term, liquid liabilities against longer-term, less liquid assets.

The traditional banks patronized by households and businesses are backed by federal deposit insurance and have access to liquidity from the Fed. Both backstops help prevent bank runs and make the system relatively stable. Because government support may weaken market discipline, banks are also regulated, which supports that stability.

Shadow banking activities, on the other hand, faced no explicit government support and no safety and soundness regulation before the crisis. Runs on the system occurred in 2008 when “depositors” withdrew their funding from “banks.”

Because of the havoc that followed, the term “shadow banking” now has a generally negative connotation. Yet it remains a vital component of the financial system. The shadow banking system may have exceeded \$20 trillion in liabilities at its peak, possibly doubling that of the traditional, regulated banking system. Today it stands somewhere around \$15 trillion. Shadow banking is critical because it funds the traditional banking sector by purchasing loans from bank balance sheets. This allows banks to shed risk and extend additional credit. Without shadow banking, traditional banking likely would be much costlier for households and businesses.

And the system generally operates well — until there's a crisis. If the sector breaks down, it can constrict the flow of credit until it risks bringing the economy down with it. The recent financial crisis has led to a far greater understanding of the weaknesses posed by the system and the opportunities for making it more sound, but reform still has far to go.

Banking's Crawl to the Shadows

According to Yale University economist Gary Gorton, a leading researcher on the development and operation of the shadow banking system, banking's crawl to the shadows occurred over three or four decades as financial markets and regulators adjusted to accommodate an increasingly dynamic economy. This was marked by at least three trends.

The first change, according to Gorton, was that traditional banking became less profitable. Banks were restricted from paying interest on demand deposits. In the high interest rate environment of the late 1970s and 1980s, banks faced increasing competition from interest-bearing services offered by nonbanks such as money market mutual funds. Meanwhile, banks also were prohibited from exotic services such as insurance and securities underwriting. The bank charter grew less valuable relative to other types of financial business.

Banks found a way to finance themselves that was much more profitable than deposit taking and its associated costly regulatory requirements. They securitized the loans they made and sold them to eager investors, which shifted assets and associated risks off their balance sheets. Securitization was such a successful innovation that even nonbanks, like large corporations that issue credit cards or auto loans, used it.

The second change Gorton notes is the explosion of institutional investing, including pension funds, mutual funds, and insurance companies. “These guys are sitting on mountains of cash — that is, in the course of their business, everything is not invested 100 percent of the time,” Gorton says. Even nonfinancial corporations, the Microsofts and Boeings of the world, have large treasury departments that hold cash to pay bills and payrolls — so they can't tie it up in investments but need a safe, short-term place to hold it. “Essentially they need a checking account,” he says. But the prohibition of interest on demand deposits made the traditional banking sector a poor choice as a place to park those

large sums, and their balances would well exceed limits on deposit insurance, today set at \$250,000. This trend created a demand for safe, short-term investments.

And that led to a growing demand for collateral — the third change Gorton notes — to add safety to investments outside the insured and regulated banking sector. Collateral, or treasuries and high-grade bonds, acts like currency in the market for funds. Institutions are able to borrow large sums to fund operations because they set aside collateral that the lender takes ownership of in the event of default. Collateral makes shadow lending safe, in theory, much like deposit insurance does for commercial banking. Derivatives alone required about \$4 trillion in collateral by the end of 2008, according to the International Swaps and Derivatives Association, and many other forms of private borrowing are also backed by collateral. That means no one really knows for sure how much collateral the modern financial system requires to function. What we do know is there is a large demand for safe, liquid securities to act as collateral.

The supply of collateral eventually grew to meet that demand. As shadow banking grew, and foreign governments acquired greater amounts of U.S. Treasury debt, highly rated securitized assets like mortgage-related securities and collateralized debt obligations stepped in as instruments of collateral.

These three trends, Gorton says, produced the shadow banking sector that existed before the crisis. Shadow banking essentially creates a checking account for large institutions, and in that sense it is money creation, just like households' checking accounts. In fact, the Fed used to count some shadow banking instruments as money in M3, the broadest measure of the money supply. The Fed stopped measuring M3 in 2006 because the costs of tracking all that complex, private activity exceeded the minimal benefit it provided to the conduct of monetary policy.

The Repo Market

A major instrument in shadow banking is repurchase agreements or “repos,” a type of short-term loan. Here's how a repo contract works: I agree to lend you \$100 for a set period of time, often just one day. You use the \$100 to make investments or pay off other liabilities, and in the meantime you give me a set of bonds — perhaps highly rated credit card or mortgage securitizations — with a market value of \$102 as collateral. The extra \$2 provides a small buffer, called a haircut, in case you're unable to pay the loan back and I have trouble reselling the bonds to recover my funds. The harder it would be to unload the collateral on the market, the greater the haircut I would require. After the period expires, I give you back the collateral, and you give me back the \$100 plus interest — although many repo lenders simply “roll” their investment each day and stay invested. Repos are much like a demand deposit, which can be withdrawn at any time, so repo lenders are “depositors” in the shadow banking system.

The size of the repo market is staggering. One large com-

ponent is the “tri-party” repo market, in which repos are funneled through one of two national clearing banks, JPMorgan and BNY Mellon. These clearing banks report that the largest lenders individually provided more than \$100 billion daily before the crisis. At the peak the tri-party market financed a monthly average of \$2.8 trillion in assets. The market is relatively thin: The top 10 cash borrowers account for 85 percent of tri-party repo volume, and the top 10 lenders provide about 65 percent of the funds invested. Institutions would regularly borrow \$100 billion in the tri-party repo market, sometimes as much as \$400 billion. Many borrowers were highly leveraged. Investment bank Lehman Brothers, for example, maintained \$700 billion of assets and corresponding liabilities on capital of about \$25 billion. A large portion of those assets were long-term investments that could not easily be sold if cash were needed, yet Lehman, like others, chose to fund them largely through short-term repo markets since copious demand for short-term investments made that funding source cheap. In 2008 Lehman would sometimes roll over \$200 billion of its balance sheet each day in repos.

Many market participants also use repos that are not funneled through any common intermediary (called simply “bilateral” repos). “Almost nothing is known about this whole market,” Gorton says, so there is no way to know for sure how big the repo market ultimately became. His best estimate, based on existing knowledge of various corners of financial activity, is that the total repo market may have grown as large as \$12 trillion, a couple trillion larger than the traditional banking sector.

Fixing the Run on Repo

How was the breakdown of repo markets like a bank run? Repo lenders face a daily decision to roll over the investment — that is, to not “withdraw” their funds from the shadow banking system. The more repo lenders withdraw, the more likely the borrower is to become insolvent and default, leaving lenders with the collateral. Yet if repo lenders begin to not want or trust the collateral, their version of deposit insurance, they'll be more likely to withdraw their investment. If this self-reinforcing cycle escalates, lenders have no choice but to withdraw or risk being the last one standing and holding potentially devalued collateral.

Here's how this played out during the fall of 2008: On rumors of severe housing exposure and potential failure, Lehman Brothers' counterparties refused to roll over the investments that funded its operations. This created a panic. Investors were uncertain which large institutions — many of which they or their counterparties had extended loans to — could face a funding crisis next. Yet mounting subprime defaults also made investors doubt the value of the collateral that was supposed to make them whole. Repo lenders began requiring larger and larger haircuts as insurance. Repo borrowers were forced to sell other assets in order to provide the haircuts. As the panic wore on, more and more assets were sold and their prices dropped, requiring the borrowers

to sell still more, dropping their prices further. Collateral became worth less and less until repo lenders stopped lending entirely. That took away a major ultimate funding source for virtually all types of economic activity, all within a matter of days.

The run was stemmed when the Federal Reserve, the Federal Deposit Insurance Corporation, and the Treasury stepped in to provide short-term loans through a variety of liquidity facilities. Through the course of the crisis these facilities were targeted to a number of shadow banking markets in addition to repo. The shadow banking system has contracted by \$5 trillion since the crisis (see chart), estimate a group of New York Fed researchers, but they and many others argue that official lending drastically reduced the negative effect on the economy, which otherwise may have gone into an even deeper recession.

The run on repo markets was no different than the bank runs modeled 30 years ago by economists Doug Diamond and Philip Dybvig, says Morgan Ricks, a former hedge fund trader and U.S. Treasury employee who currently teaches at Harvard Law School. Their model's innovation was to show how the banking system can be subject to runs even if all actors are fully rational and informed, an instability the government can cure by insuring deposits. If there is a similar fundamental instability in repo markets, an important consideration for policymakers is the extent to which that market requires some kind of government support in order to remain stable.

The key for repo markets, according to Gorton, is to recognize that safe, liquid collateral functions like deposit insurance for repo lenders. To create those conditions, collateral needs to be what he calls "information insensitive." These are assets so safe that it is not profitable for anyone to expend resources analyzing them for arbitrage opportunities. As a result they should be impervious to large price swings based on new information, safe for relatively uninformed agents to hold, and very likely to remain liquid.

Many types of securitized debt, including those used as collateral, met the definition of information insensitivity. Much of the debt was deemed by rating agencies to be near riskless. The chain of mortgage securitization in some cases was prohibitively complex or literally impossible to trace, Gorton argues, which raises the cost of gathering information about the risk. High ratings and the expectation that the asset's value was not vulnerable to new information may have made these assets ideal as a form of collateral.

But investors can become unwilling to hold those instruments of collateral when it suddenly becomes profitable for the market at large to produce information on them — for example, when significant, previously unknown exposures to subprime losses become apparent and there are potentially large mispricings to trade on. When this took place, repo lenders withdrew their investments rather than launch the costly infrastructure that would be required to assess the collateral's value on an ongoing basis. In a blackout it is too late for everyone to become an electrician, Gorton says.

Repo investors arguably didn't place a high probability on this outcome for a number of reasons. The borrowers were major broker-dealers like investment banks that had no interest in defaulting (and may have been perceived as implicitly backed by government liquidity in the event of failure, an expectation which would turn out to be true). So the risk of ever taking ownership of the collateral may have seemed small. Even if borrowers defaulted, much of the collateral was ultimately based on house prices, which had never declined on a national scale.

Despite the unexpected outcome, it hardly makes sense for everyone to become an electrician in the future, Gorton says. Rather, he supports a proposal that has been floated in the wake of previous financial disturbances, that of "narrow banking." Only a heavily regulated and restricted set of banks would be allowed to purchase securitized assets. They in essence would manufacture safe collateral for the shadow system to use, again, as currency in the market for funds. Effectively, the government would determine which securities are eligible to be used as collateral, verify their safety, and provide liquidity via the Fed's discount window in the event of panic. This safe supply of collateral would have the potential to prevent future runs in shadow banking, though it would also necessarily limit the supply (raise the cost) of maturity transformation services of banking and shadow banking.

Morgan Ricks offers an alternative solution. As suggested by the Diamond-Dybvig model, Ricks proposes to extend deposit insurance to the creditors of any entity that engages in maturity transformation, or the type of "borrowing short to lend long" that got many institutions into a funding bind during the crisis. If one thinks of repo and other loans as deposits in the shadow banking system, his proposal means the government would have to decide which deposits are funding "safe enough" investments. Then it would prohibit maturity transformation outside that circle — effectively, it would prohibit banking from taking place in the shadows. Insurance would come with regulation, activity restrictions, and, he argues, fees that would pay for it all, minimizing the exposure of taxpayers.

Would deposit insurance weaken market discipline in shadow banking, as it potentially does in commercial banking? Ricks says no, because market discipline is something of a myth in these markets. Just as the Diamond-Dybvig model predicts, to the extent that it is possible for nonfundamentals-based information to trigger a run — such as rumors of insolvency rather than actual insolvency — creditors will be oriented not toward business fundamentals but toward whether a firm's other providers of liquidity are staying in the game. During a panic, even if a short-term creditor has done its homework and is convinced of a firm's financial strength, the only rational move is to step away, Ricks says.

Banking by Any Other Name

Both plans require a clear stance by the government on what activities or assets would be supported. But there is a fine

line between staving off panics and providing incentive for individual institutions to take and spread risk. That's why the devil is in the details with any proposal that involves government support.

"What you really want to do is prevent bank runs when it's truly a systemic panic, but not when it's because of the fault of the bank itself. You want a bank to face the full costs of any stupid thing it does on its own," said University of Chicago economist Raghuram Rajan in a December 2009 interview with the Minneapolis Fed. Rajan has been credited with sounding an early warning of the system's potential instability at a Federal Reserve conference in 2005.

The trouble, Rajan says, is that these instances overlap when competition and perhaps moral hazard cause banks to herd together in risky behavior. Then the run is both systemic and a result of individual choices that turn out to be ill advised.

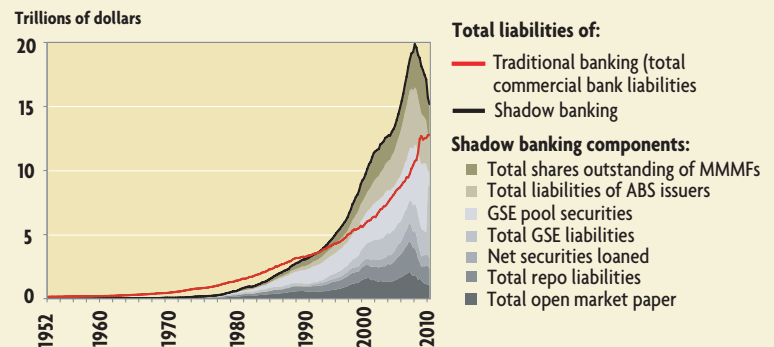
Though economists and other onlookers have different views on where and how the safety net boundaries should be drawn, nearly all agree that a safety net with ambiguous borders is the least desirable of all possible scenarios. The country saw this unfold in dramatic fashion as Bear Stearns was rescued and Lehman Brothers allowed to fail. Many believe the government's decision to let Lehman fail set off a new wave of uncertainty over which counterparties would actually be given assistance.

You can't have it both ways, according to Ricks. There is a fundamental trade-off between market discipline and stability. Trying to have both — by having a safety net, but one whose boundaries were vague — nurtured an environment for unpriced risks to spread.

But drawing lines is not easy when activities vary widely, even among like types of institutions. Given the modern, complex financial system, regulators are increasingly called upon to regulate by function. "If it looks like a bank, and smells like a bank, it is functionally a bank," says Ricks. "Repo is not an institution, it's a market, a type of instrument, a type of funding source."

How Big Did Shadow Banking Get?

That depends on how one defines "shadow banking." Pozsar, Adrian, Ashcraft, and Boesky (2010) define the sector as bank-like activity not backed by explicit government support before the financial crisis. The components included by the authors in that definition, displayed here, make clear that the sector easily eclipses the traditional banking sector in total liabilities. Some researchers, like Gary Gorton of Yale, estimate the sector is even larger if one includes other private transactions like bilateral repurchase agreements (bilateral repos), which were never properly measured.



NOTE: Original chart created by Pozsar, Adrian, Ashcraft, and Boesky (2010), replicated here by the Federal Reserve Bank of Richmond. Shadow banking liabilities excludes those held as assets by commercial banks. SOURCE: Federal Reserve Flow of Funds data

Regulation almost always shrinks the banking industry and thus the availability of credit to the economy, Gorton says. Trying to regulate a shockless system into existence would also stymie economic activity. Even if that weren't an issue, regulators have a limited ability to quash risk. The more you penalize the risks we are aware of, the more you encourage the risks that are hidden from view.

"Any time your system is dependent on the regulators outsmarting the bankers, the bankers will win," Gorton adds. The problem with most of the recent efforts at financial reform is they "just want to impose more and more regulations on these firms and that's just going to move the banking system somewhere else." An important lesson from the crisis is that risky behavior will almost always move to the shadows.

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