Running in the Shadows

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THE RUN ON REPO AND THE COLLAPSE OF THE SHADOW BANKING SYSTEM

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I. INTRODUCTION

It is helpful to think about banking systems as a chain. The chain must not break if the system is to continue running. If the chain breaks— as in the case of a bank run—then the entire system may cease to function. Banks depend on the ability to take short-term liabilities (such as demand deposits) and invest in longer-term assets that earn a higher rate of return than the interest paid on their liabilities. However, because of the maturity mismatch between typical bank assets and liabilities, banks must have stable access to sources of short-term liquidity. In a bank run, the chain breaks; depositors withdraw funds from a bank, until eventually the bank is unable to meet its
obligations and becomes insolvent. Traditional bank runs were ended by the enforcement of reserve requirements, the advent of the Federal Reserve as a lender of last resort, and, most importantly, the implementation of deposit insurance. These measures effectively boosted bank liquidity and removed the incentive for depositors to withdraw their funds during periods of increased uncertainty about bank solvency.

The financial crisis of 2007-2008 can be characterized as a run on the shadow banking system. Over several decades, the United States slowly and quietly developed a massive shadow banking system—a complex chain of borrowers and investors entering into repo agreements financed by money-market mutual funds and primary dealers, collateralized with asset-backed securities derived from mortgages originated by lenders and securitized through special purpose vehicles, then purchased by banks with capital raised by entering into repo agreements. For years, this chain of transactions operated to meet banks' short-term liquidity needs, until uncertainty in the value of the asset-backed securities used as collateral caused a run on repo in the shadow banking system. The chain keeping the shadow banking system together broke when the on their repo agreements, sending banks clamoring to meet their short-term financing needs.

This paper examines the role that repurchase agreements played in the financial crisis and the idea that, although subprime mortgages were a proximate cause that provided an initial shock to the shadow banking system, it was the run on repo that ultimately broke the chain and caused the system to collapse, bringing the value of non-subprime assets and the rest of the economy down with it.

Section II documents the rise of the shadow banking system, beginning with a discussion of traditional banking, historical banking panics, and the backstops implemented to prevent runs
on traditional commercial banks. It continues by documenting the evolution of traditional banking and the rise of the shadow banking system. Finally, subsection C examines the mechanics of repurchase agreements and the function played by these transactions in the modern banking system.

Section III discusses the run on repo that occurred during the recent financial crisis. It begins with a look at events that led to increased uncertainty about the underlying value of the securities used as collateral in repurchase agreements as well as uncertainty about counterparty default risk. The section continues by analyzing how this systemic shock led to a run on repo, resulting in a liquidity crisis for banks, who were then forced to sell non-subprime assets at depressed prices in order to satisfy their short-term obligations as they came due.

Section IV applies this understanding of the shadow banking system in the context of banking regulations by analyzing the regulatory framework of the modern banking system through the lens of historic banking crises. The section concludes by considering a number of proposals that have been suggested to strengthen the financial system moving forward.

Section V concludes that regulations focused on reducing the number of subprime mortgages, while necessary, will not succeed in preventing the next financial crisis. Subprime mortgages created uncertainty, which triggered the run on repo, just as historical bank runs were triggered by various factors that increased uncertainty about traditional bank solvency. However, to the extent that we cannot predict what asset class might be problematic in the future, an effective regulatory framework must include backstops that prevent future runs on repo in order to isolate the effects of problems that arise within specific asset classes so that these problems do not become systemic events.
II. The Rise of Shadow Banking, Securitization, and Repo

Sale and Repurchase agreements have grown over the last 20-30 years to represent a major source of short-term funding for financial institutions.

A. Traditional Banking

Traditional commercial banks received demand deposits, and used these deposits to fund its lending activities, such as issuing residential and commercial mortgages. These mortgages were held on bank balance sheets, along with other loans. The bank’s short-term liabilities, demand deposits, are used to purchase long-term assets (by underwriting loans). Usually this works fine, as only a small fraction of accounts with a bank are likely to be withdrawn on any given day, the bulk of the money on deposit being pooled and lent out long term. However, as more and more customers demand their money, it may get to the point that the bank has to sell its assets at a loss to cover withdrawals, eventually leading to the failure of the institution.

When multiple banks are affected, the situation becomes a panic, which may ultimately result in systemic failure and even possibly the complete loss of available of capital in a financial system, as occurred during the great depression. The economic losses resulting from such a crisis are enormous.

In order to prevent the detrimental effects that result from bank runs, numerous regulations and techniques have developed to stem the risk of individual and systemic bank failure. Our oldest bank buildings, it may be observed, tend to have large lobbies and many teller windows. This was to prevent lines forming out the door that could be perceived by passersby as
the beginnings of a run. Ultimately, traditional bank panics were effectively stopped in America by the creation of the Federal Deposit Insurance Corporation, instituted in 1933 under the Glass-Steagall act. The FDIC guarantees bank deposits to a given amount, currently $250,000.

Gorton and Huang (2001) observe that deposit insurance is just one way to solve the problem of information asymmetry in a system with small, undiversified banks. A given depositor may know something about the state of the economy as a whole, but little about a particular bank, and an individual is likely to test any misgivings about a bank’s stability by the best means possible of getting information quickly, that is, withdrawing their money. Note the implication that this is not likely to be a problem in systems with fewer and well-diversified banks about which more information is readily available.

B. The Rise of the Shadow Banking System

We now leave the traditional banking system and turn to the growth of conditions that spawned a close cousin of the traditional bank run during the recent financial crisis. Much of the modern financial picture developed as a response to and because of limitations of the traditional banking system following the institution of deposit insurance and heavier regulation governing such institutions. It is immediately clear for example that deposit insurance, with its coverage limit set by the legislature, does not provide adequate security for investors wishing to place large amounts of cash in relatively safe interest-bearing investments. Some of the tools that have grown up around these limitations and the entities involved have come to be known as “shadow” banking. This enigmatic name comes principally from the light regulatory scheme surrounding

2 Gorton, Gary and Huang, Lixin, Bank Panics and the Endogeneity of Central Banking. 2002, at 4
3 Id., at 5
these operations. The “shadow” banking operations we are concerned with include broadly investment banks, mortgage brokers, and money market mutual funds engaging in repurchase agreements (repo) agreements using asset backed securities and other debt-backed instruments.

Shadow banking grew rapidly in the last third of the 20th century, as several significant developments made traditional banking less profitable. MMMFs were created, which allowed depositors to earn a higher rate of interest on their deposits, while also being completely liquid, allowing depositors to remove their funds at any time. Unlike in traditional banks, where the cost of being insured was passed along to the consumer, these accounts bore no such costs. And while not insured by the FDIC, they were generally considered to be relatively low risk. Under regulations, they could only buy extremely high quality, very liquid debt, and as such appeared very safe. Shares of a fund were tacked to a dollar per share and paid interest in the form of dividends. It seemed implicit that shares of the fund would not drop below this value, called “breaking the buck.” As a result of this safety and desirable returns for a demand account, many consumer and small business depositors moved their deposits from traditional checking and savings accounts into MMMF accounts. These funds, alongside institutional investors, pension funds, and non-bank institutions, had large amounts of money that needed to be safely invested while retaining some of the liquidity of the demand deposit account, making it ideal for providing the short-term cash needs of banks through repurchase agreements. Henceforth, we refer to these players in the shadow banking system as investors.

On the other side, new financial instruments created through securitization allowed banks the use of these assets as collateral in repo transactions to satisfy their liquidity needs. Banks had commonly borrowed from one another via unsecured overnight lending that allowed institutions
with a cash surplus to earn interest on their cash. Sale and repurchase agreements provided these institutional actors with another option to meet their overnight lending and borrowing needs. Concomitantly, the use of computers greatly reduced transaction costs involved, easily pairing banks with specific collateral on the one side with investors willing to take on different levels of risk on the other. As costs lowered and transactions became standardized, just about everyone with cash on hand and short term investment needs took to the repo market. This included many large corporations, as well as cities and municipalities with temporary cash on hand. MMMFs, a major investor in repo, held $552 Billion in repo agreements in December 2008. It is very difficult to estimate the total size of the repo market. Gorton observes, “the unfortunate reality is that there are no official data on repo other than what the Federal Reserve collects with regard data to the repo amounts done by the 19 primary-dealer banks. According to Fed data, primary dealers reported financing $4.5 trillion in fixed income securities with repo as of March 4, 2008. But, we know that this covers only a fraction of the repo market in the U.S. The U.S. Bond Market Association (now known as the Securities Industry and Financial Markets Association) conducted a survey of repo and securities lending in 2005, estimating that the total exceeded $5.21 trillion.” Some estimates, however, go even higher. To get an idea of the scale of growth in the repo markets, some have placed the amount of total investments in repo at as much or more than the total assets of the U.S. Banking system of $10 Trillion.

The legal framework that allows these transactions to suffice in the absence of deposit insurance is still evolving, but the important fact is that these agreements, when structured correctly, are not subject to the automatic stay. If a bank does not return the money loaned to it

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4 Gorton, Gary and Metrick, Andrew, Securitized Banking and the Run on Repo, 11.
5 Id., 12
6 See Id., at 12
under the agreement, the investor may possess the collateral given unilaterally even if the bank is in reorganization. The 1978 bankruptcy code carried on a longstanding practice of exempting certain kinds of financial contracts from bankruptcy process. It appeared that in practice repo agreements involving many classes of securities met the conditions for exemption, though this was not yet tested in courts.\(^7\) Repurchase agreements based on mortgage-backed securities stalled in the wake of a court decision, in re Lombard.\(^8\) In this case repurchase agreements using securities as collateral were treated as subject to the automatic stay in a bankruptcy proceeding. 1984 amendments to the bankruptcy code ran to the rescue by explicitly removing certain repo agreements from the automatic stay, but it is not fully clear that this included repo agreements using the asset-backed securities that became problematic during the early crisis period of 2007-2008. However, It may be inferred that the legislature intended a safe harbor for all assets in a repurchase agreement. Congress said, “The effective functioning of the repo market can only be assured if repo investors will be protected against open-ended market loss arising from the insolvency of a dealer or other counterparty in the repo market. The repo market is as complex as it is crucial. It is built upon transactions that are highly interrelated. A collapse of one institution involved in repo transactions could start a chain reaction, putting at risk hundreds of billions of dollars and threatening the solvency of many additional institutions.”\(^9\) Congress, still concerned with the effect of the automatic stay and the trustee's avoidance powers on the repo market, cleared things up in the 2005 bankruptcy reform act passed, explicitly creating safe harbor

\(^7\) Gorton, Gary and Huang, Lixin, Regulating the Shadow Banking System., 2010, at 14
protection (no automatic stay) for any repurchase agreement regardless of the security involved. It is fairly clear that this amendment made the law reflect actual practice in the markets.\(^{10}\)

C. Understanding Repurchase Agreements

A repurchase agreement (repo) is a contract used by participants in the financial market in order to satisfy short-term liquidity needs. Under a repo agreement, a bank (the “seller” or “borrower”) sells securities to an institutional investor (the “buyer” or “lender”) in exchange for cash.\(^{11}\) The seller simultaneously agrees to repurchase the collateral at a higher price after a specified term (most commonly overnight).

In this way, repos are similar to secured loans. The collateral securities are transferred to the buyer’s balance sheet for the term of the repo agreement. If the seller defaults on its obligation to repurchase the security, the buyer may sell the collateral in the market. Since the buyer pledges collateral, repos are considered to be safer investments than unsecured overnight lending for buyers, and the interest rate paid by the seller is correspondingly lower.

Several features of repurchase agreements made them an attractive alternative to unsecured overnight lending. From the seller’s perspective, in addition to providing cheaper short-term financing, repo agreements allow sellers to maintain exposure to the underlying assets and enhance

\(^{10}\) Id.

\(^{11}\) From the buyer’s perspective the transaction is considered a “reverse-repo.” The lender’s balance sheet receives an inflow of securities and an outflow of cash. See Ong, Kingsley T.W. and Yeung, Eugene Y.C., Repos & securities lending: the accounting arbitrage and their role in the global financial crisis, Capital Markets Law Journal, Vol. 6, No. 1, 92 at 92.
leverage. From the buyer’s perspective, repos provide a more secure way to earn a return on surplus funds compared to unsecured lending. Repos can also be used by buyers to obtain specific securities needed to make delivery on a futures contract or to cover a short position.

The securities typically pledged as collateral in repo transactions include US treasuries, agency bonds, corporate bonds, and, most notably for our purposes, mortgage backed securities. In a typical bi-lateral repo transaction, this collateral is transferred from the seller and is held on the buyer’s balance sheet for the repo term. In the event that the seller fails to fulfill its obligation to repurchase the securities at maturity, the buyer already has possession of the collateral and may sell the securities in the market. Since repos are exempt from the automatic stay in bankruptcy proceedings, the buyer can unilaterally enforce the termination provisions of the repo agreement and simply walk away with the collateral in the event of default or bankruptcy filings.

In order to understand how a repurchase agreement works, imagine a bank with mortgage-backed securities worth $10,000. The bank goes into the repo market and finds an investor, who loans the bank $8,000. The bank receives the $8,000 and transfers its mortgage-backed securities worth $10,000 to the investor. The bank simultaneously agrees to repurchase the same securities from the investor on the following business day for $8,800. The following business day, the bank transfers $8,800 to the investor and gets back the collateral it had pledged, concluding the transaction.

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12 See, e.g., Bank for International Settlements, Implications of Repo Markets for Central Banks, Report of a Working Group Established by the Committee on the Global Financial System of the Central Banks of the Group of Ten Countries, Mar. 9, 1999, at 4. (“[R]repos can be used to build up leveraged long positions in securities markets since securities lenders maintain their exposures to the securities they have repoed out. To build leveraged positions, market participants use cash raised through an initial repo transaction to buy securities which, in turn, are repoed out to raise more cash to buy more securities and so on. With each transaction the leverage ratio is increased.”)

13 Repos driven by a need for a specific security are referred to as a “special.” See id. at 4.

14 Hordahl, Peter and King, Michael R., Developments in repo Markets During Financial Turmoil, BIS Quarterly Review, Dec. 2008, at 37, 38

15 See Gorton, Gary and Metrick, Andrew, Securitized Banking and the Run on Repo, at 10.
The “repo rate” is the rate of interest earned by the investor on the funds loaned to the bank. In our example, the amount received by the bank for its assets (X) was $8,000. The amount paid by the bank to repurchase the assets (Y) was $8,800. The percentage \( \frac{(Y-X)}{X} \) is the repo rate. In our example, the repo rate \( \frac{($8,800-$8,000)}{$8,000} \) was equal to 10%.

Typically, the total amount of the deposit will be some amount less than the market value of the assets pledged as security, with the difference called a “haircut.” This initial margin, or haircut, reflects the perceived underlying risk of changes in the market value of the underlying assets. In our example, the collateral pledged by the bank had a market value \( V \) of $10,000. Yet, the bank only received $8,000 in cash \( X \). The percentage \( \frac{(V-X)}{V} \) is the haircut. Thus, in the example above, the haircut \( \frac{($10,000-$8,000)}{$10,000} \) was equal to 20%.

III. The Run on Repo

For a long time, repurchase agreements seemed like a win-win. Investors with large amounts of cash had a safer way to earn interest on their capital, and banks had a cheaper access to short-term financing. However, when certain asset classes, which were used as collateral for repos, began to show signs of weakness, the shadow banking system became stressed to the point of collapse. The visible change occurred when the investors in the repo market lost confidence in the value of non-Treasury collateral and the solvency of the dealers with whom they were transacting. Fleming describes the climate as a situation where “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

\[16\] See id. at 38.
for a given amount of collateral—and by halting lending against certain types of collateral altogether.”

To trace the source of this crisis of confidence, we must look to that now familiar villain, the subprime mortgage. Although there was widespread awareness of the deterioration in the housing market and its effects on subprime mortgages, it was not immediately clear where the fall-out from this problem was going to land. The system had worked so well up to this point in part because the securities were thought to be information-insensitive. That is, it was thought that banks could not profitably gain information about the underlying value of the securities that wasn’t already available in the market. Adverse selection of assets pledged as securities was not thought to be possible. Therefore, investors did not require much information about the collateral securities aside from their asset class. Furthermore, because there was little question about the value of the underlying securities, and because the market for such securities was extremely active, counterparty risk was not considered to be terribly important. In the event that a party was to default on its obligation to repurchase, the securities could quickly be liquidated in the market at little cost.

As the financial crisis hit, investors began to call into question the value of much of the collateral backing these transactions. This was coupled with the beginnings of a slide in the ABX index that measured different tranches of subprime mortgage derivatives. The ABX represented a ready source of information on the aggregate health of certain classes of residential mortgage backed securities (RMBS). It was abundantly clear that there was substantial risk being assumed in taking on these kinds of collateral in a repurchase agreement, though it was less clear how

17 Fleming, TSLF at 2
18 See Gorton, Gary and Metrick, Andrew, Securitized Banking and the Run on Repo, at 19
19 Id. at 15
exactly how much risk, which became a problem in and of itself. During this period the value of asset backed securities with exposure to subprime mortgages plummeted. The result was an immediate retreat away from repurchase agreements involving non-treasury securities.

The effects of this move were quick and devastating. We will analyze in turn the effects and some of the factors most exacerbated the problem, showing how the run to safer short-term investments amounted to a banking panic and a run on the primary dealers that relied on the repo market for financing.

Prior to the crisis, repo agreements were commonly “rolled”. That is, the bank and investor would simply agree to continue the agreement for another night rather than settling. As the crisis began to infect the repo market, investors would refuse to roll their repo agreements unless the haircut was increased. Increases in the haircut are equivalent to deposit withdrawals in traditional banking. For example, suppose that a bank has a repo agreement for $100MM cash on $100MM collateral at 0% haircut. If the haircut is increased to 20%, then the bank would have to return $20MM in cash or come up with over $25MM in additional collateral. In effect, this was like depositors withdrawing funds from the bank. The average haircut on non-treasury securities rose from nearly 0% before the crisis to 50% at the peak.\(^{20}\) This massive withdrawal in liquidity amounted to a run on the shadow banking system.

The flight to safer short-term investments like treasury securities occurred at a time when banks were in a poor position to secure money from other sources. As the market wobbled in 2007, unsecured interbank lending rates soared as banks became concerned about the health of their peers. The situation went from bad to worse when Lehman collapsed, causing unsecured

\(^{20}\) Gorton, Gary and Metrick, Andrew, Securitized Banking and the Run on Repo, 4
interbank lending to freeze completely. As the cost of unsecured interbank loans increased or lending ceased, banks looked to the repo market to make up for the funding shortfall, where they hoped to pledge MBS as collateral. Simultaneously, investors were becoming less willing to enter into repos backed by non-treasury securities, and retreated from these transactions. This, in turn, led to a further increase in haircuts for this non-treasury collateral.

In 2008, the increase in haircuts climbed further (some asset classes eventually stopped being accepted as collateral altogether, which is equivalent to a 100% haircut). The extent of the problem became clear as investors ran toward treasury securities as a safe haven. The market for repo collateralized by mortgage backed securities evaporated because of perceived risk of the seller failing to deliver cash at the end of the repo agreement and the risk that the value of the underlying collateral would decrease.

This resulted in a marked increase in demand for repo agreements collateralized by treasury securities. This demand, coupled with the desire for treasury securities as a safe haven for many market participants, led to scarcity because of the limited supply in the market.

Meanwhile, delivery failures (or settlement fails) mounted on repos collateralized by treasury securities. A delivery failure is the failure of the lending party to settle by returning the collateral. Collateral received in a repo agreement is often relent in another transaction for the term of the agreement. Therefore, the lender cannot return the collateral without borrowing it from another party to cover this position. As repo rates on treasuries were near zero at this time, it was more expensive to borrow the securities than it was to keep them past the delivery date and not receive interest.

21 Hordahl, Peter and King, Michael R., Developments in repo Markets During Financial Turmoil, BIS Quarterly Review, Dec. 2008, 44
22 Id., at 37
Because these securities were in high demand for purposes other than repo, this led to unwillingness on the part borrowers to use treasury for collateral in repo. Even the unusually low repo rates for treasury securities was not enough to compensate for the risk that a delivery fail would occur. Since the interbank lending and non-treasury repo markets had already come to a halt, the failure in the treasury repo market left banks with few alternatives in order to generate the liquidity necessary to meet its maturing obligations.

The most marked effect of increased haircuts, was a massive deleveraging of banks as these institutions struggled for liquidity. Banks use the short-term funding from repos to purchase longer-term securities on which they aim to earn higher interest. This maturity mismatch meant that, when banks suddenly were no longer able to renew their repo agreements or find other short-term funding sources, they were forced to sell assets in order to meet their short-term obligations. The result is a deleveraging analogous to a traditional bank selling assets to meet cash demands in excess of their reserve.

As this occurred on a massive scale throughout the banking system, these forced sales (or fire sales) of assets quickly drove security prices down. This contagion effect spread the problem from of subprime mortgages to other securities. As these prices slid, haircut problems began anew in what were previously considered high-quality non-treasury securities. As this snowballed, traditional sources of funding in these transactions, such as MMMFs, grew continually more skittish, further reducing the total funding available. The end result of this process was an almost

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23 Id., at 47
24 Gorton, Gary and Metrick, Andrew, Securitized Banking and the Run on Repo, 16
25 Id., at 16
26 Hordahl, Peter and King, Michael R., Developments in repo Markets During Financial Turmoil, BIS Quarterly Review, Dec. 2008, 37
complete move by the investor side to accepting only the highest quality collateral backed up the US Treasury, and, on the demand side, a paralyzing liquidity crisis among the dealer banks.

Looking still closer at the problem, it becomes apparent that increased haircuts also enormously affect the kind of liquidity that could be gained by reusing collateral or funds obtained in a repo agreement to build leveraged positions.27 This is a difficult concept, but the basic point is that the money, once obtained through the repurchase agreement, does not simply sit on bank balance sheets, but is put to use. While the initial agreement continually rolls over, the bank essentially holds onto these funds, continually paying the repo-rate “interest” as each short-term contract matures and perhaps adding some additional collateral to cover changes in the haircut (note that if the market is functioning well, there is always a party ready to enter a repo agreement, so one party deciding not to roll over a repo loan is not problematic).

Say you are the bank in the transaction you just obtained $100MM by pledging $100MM in collateral at a 0% haircut. Aside from maybe using the $100MM in cash you now have free for daily operations, you might use a large portion of the funds to buy additional assets. Furthermore, you may choose to move these newly-purchased assets off of your balance sheet through another repurchase agreement, thus obtaining additional cash. If the haircut is low, then you get almost the same amount of cash for the second repurchase agreement made with the new collateral as you did for the first, so it is easy to move around funds in this way to increase long positions through this leverage mechanism. If, on the other hand, the haircut is high, then each subsequent transaction

27 See, e.g., Bank for International Settlements, Implications of Repo Markets for Central Banks, REPORT OF A WORKING GROUP ESTABLISHED BY THE COMMITTEE ON THE GLOBAL FINANCIAL SYSTEM OF THE CENTRAL BANKS OF THE GROUP OF TEN COUNTRIES, Mar. 9, 1999, at 4. (“[R]epos can be used to build up leveraged long positions in securities markets since securities lenders maintain their exposures to the securities they have repoed out. To build leveraged positions, market participants use cash raised through an initial repo transaction to buy securities which, in turn, are repoed out to raise more cash to buy more securities and so on. With each transaction the leverage ratio is increased.”)
requires the suspension of much more collateral. Say the haircut is 20% then after the first
transaction, then you have only $80MM in cash to work with. After purchasing securities and
entering a second repo agreement, you only have $64MM free cash on hand and so on. The bank’s
source of funding that would have been available now has to come from somewhere else, and once
again you are left selling off assets when alternative funding isn’t available.

US investment banks in the shadow banking model came to rely very heavily on repo for
short term financing to develop these leveraged positions, with some banks reportedly financing
up to half of their assets in the repo market. In a “run on repo,” raised haircuts sever the chain
that provide these banks with reliable access to short-term funding, resulting in massive
deleveraging as banks are forced to sell their assets in order to meet their short-term obligations
that they are unable to finance elsewhere.

IV. Regulating the Shadow Banking System

A. Post-crisis Reforms

1. Federal Reserve Response

The post-crisis development most relevant to the shadow banking system was the Federal Reserve’s
introduction of the Term Securities Lending Facility (TSLF) in March 2008. This facility was
created “to promote liquidity in the financing markets for Treasury and other collateral and thus
to foster the functioning of financial markets more generally.” The TSLF was an auction facility,
which allowed primary dealers to upgrade their collateral through an asset swap, where highly

28 Hordahl, Peter and King, Michael R., Developments in repo Markets During Financial Turmoil, BIS Quarterly
Review, Dec. 2008, 46
rated but less liquid securities could be exchanged for treasury securities. Weekly auctions were held, where the Federal Reserve’s 19 primary dealers bid to borrow US Treasury securities for a 28-day term. The dealers pledged other securities as collateral in exchange for the highly liquid treasury securities, which they could then use as collateral to obtain cash in the repo market.

Depending on market conditions, the TSLF alternated between two schedules of collateral it accepted: Schedule 1 consisted of a narrow list of eligible collateral, including agency debt and MBS; Schedule 2 consisted of a broader list of collateral, including non-agency MBS, asset-backed securities, investment grade corporate bonds and municipal securities. By providing dealers with the ability to conduct these asset swaps, the TSLF increased the supply of Treasury collateral in the market and reduced the supply of the less liquid collateral it accepted.

The TSLF’s liquidity provisions helped to reduce systemic risk “by assuring market participants that, should short-term investors begin to lose confidence, financial institutions [would] be able to meet the resulting demands for cash without resorting to potentially destabilizing fire sales of assets.”

Because the TSLF was organized as an auction facility rather than a discount window, dealers did not have to worry about the stigma associated with discount window borrowing, and did not hesitate to borrow from the facility. Before the TSLF expired on February 1, 2010, it had

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31 See Hordahl at 50.
33 For a general discussion of the stigma associated with discount window borrowing, see Armantier et al., Stigma in Financial Markets: Evidence from Liquidity Auctions and Discount Window Borrowing during the Crisis, Federal Reserve Bank of New York Staff Reports, no. 483, January 2011.
auctioned over $2 trillion worth of treasury securities.34 During this period, the financing spread between treasury and non-treasury collateral narrowed from 100 basis points prior to the first TSLF auction to 25 basis points two months later, owing to an rise in Treasury financing rates from unusually low levels.35 An unusually low Treasury general collateral rate had increased the likelihood of settlement fails for repurchase agreements collateralized by treasury securities, causing banks to pull out of the repo market.36 Therefore, an increase in the financing rate for treasury securities and a decrease in the spread indicates that the repo market for treasury securities had resumed functioning in the wake of this measure.

2. Legislative Response

The Dodd-Frank Act of 201037 includes many provisions relevant to shadow banking. Hedge funds must now be registered with the SEC, all systemically important financial institutions will now be regulated by the Federal Reserve, and retail finance lenders will now be subject to consistent federal regulation through the Consumer Financial Protection Bureau.38 On the other hand, Dodd-Frank is almost entirely silent on securitization and repurchase agreements. Section 120 of the Dodd-Frank Act did, however, create the Financial Stability Oversight Council, “which has the power to recommend significant changes in regulation, if such changes are deemed necessary for

34 This figure represents the gross value of the Treasury securities lent in all transactions throughout the existence of the TSLF. The maximum amount outstanding at any given time was limited to $200 billion. Data from http://www.federalreserve.gov/newsevents/reform_tslf.htm
35 Fleming at 7-8.
36 See Hordahl at 46-47 (noting that when “fails to deliver Treasuries [which] had averaged around $90 billion per week during the two years preceding the crisis . . . then soared to record highs of almost $2.7 trillion following the Lehman default . . . [I]nvestors who had previously lent out their Treasuries pulled back from the repo markets, as the low [repo] rates available were not enough to compensate for the risk that the securities might not come back.”
37 ***Dodd Frank
38 Gorton, Regulating the Shadow Banking System at 1.
financial stability.”39 This authority would allow for significant new regulation of securitization and repurchase agreements without the need for new legislation.40

VOLCKER RULE

The Volcker Rule (“the Rule”) was included under section 619 of the Dodd-Frank Wall Street Reform and Protection Act (“Dodd-Frank or “the Act”)41. The Rule adds a new section 13 to the Bank Holding Company Act of 1956 (to be codified at 12 U.S.C. 1851), and generally prohibits banking entities, including bank holding companies (BHCs), depository institutions, and their affiliates, from engaging in proprietary trading in securities and derivatives.42 The Rule also prohibits banks from having certain relationships with hedge funds and private equity firms.43

The Volcker Rule is designed to safeguard the stability of the US banking system by preventing specified categories of financial institutions from engaging in certain risky investment activities. The general principle upon which the Rule is based—the separation of traditional banking activities from other activities—has long been an underlying theme in US banking regulation. However, in decade leading up to the recent financial crisis, banking regulation experienced a marked shift away from this principle, toward a more unified system of banking.44 This shift has been widely criticized as having contributed to the recent financial crisis.45

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39 Id.
40 Id. at footnote 2.
42 See 76 Federal Register 8265, 8265.
43 See 12 USCS 1851(a)(1)(B).
44 See David Skeel, The New Financial Deal, 86–87 (2011) (noting that proprietary trading has become crucial to investment banking as the result of technological and market changes).
Prior to its repeal, the Glass-Steagall Act\textsuperscript{46} prohibited commercial banks from participating in other financial activities, including insurance and securities activities. In 1999, the Gramm-Leach-Bliley Act\textsuperscript{47} lifted such activity restrictions, enabling modern banks to engage in many of the financial activities previously prohibited under Glass-Steagall.

The imposition of the Volcker Rule represents a return to the fundamental regulatory philosophies underlying Glass-Steagall. The Rule, like Glass-Steagall, aims to promote economic stability by separating these basic commercial banking operations from other financial activities with higher perceived risk.

The basic operations of commercial banks are essential to a well-functioning financial system. Both the lending and depository functions of commercial banks are necessary to our country’s overall economic stability. As a result, a variety of policies have been established to help ensure the continued availability of such functions. In order to promote the ongoing liquidity of financial institutions, federally subsidized deposit insurance and overnight lending facilities weave a “long-established 'safety net' undergirding the stability of commercial banks.”\textsuperscript{48}

However, as the financial crisis began to unfold, mounting speculation over the role these subsidies may have played in precipitating the crisis led policymakers to reconsider the extent to which such benefits should be granted. Of particular concern was the moral hazard such federally subsidized financial institutions were exposed to in the pre-crisis regulatory environment. Proprietary trading and other non-banking activities had assumed a much more prominent role among financial institutions in the years preceding the crisis. Many were concerned that the “safety

\begin{itemize}
\item \textsuperscript{46} 73 P.L. 66 (1933).
\item \textsuperscript{47} 106 P.L 102 (1999).
\end{itemize}
net” designed to protect the commercial banking operations of these institutions may have indirectly subsidized these proprietary trading activities, leading firms to assume more risk than they might otherwise have.

Adding to these concerns, the U.S. Government made the decision to rescue a number of failing financial institutions in an effort to avoid the potentially catastrophic effects of such failures on the financial system. These actions, unprecedented in both magnitude and scope, cultivated a palpable sense of public outrage over the seemingly unfair treatment of these “too big to fail” institutions. Moreover, the residue of moral hazard resulting from these efforts reinforced the sense that, in the absence of regulatory reforms, financial institutions' risk tolerance would continue to be influenced by explicit subsidies and implicit, taxpayer-funded guarantees.

The programs designed to stabilize financial institutions—Federal Deposit Insurance and access to the Fed’s discount window—also provided those financial institutions with a competitive advantage in their financing, in their size and in their ability to take and absorb risks. Arguably, such advantages directly contributed to the evolution of financial institutions which were “too big to fail.”

While there is a need for a “safety net” in the form of deposit insurance through the FDIC and emergency liquidity provisions through the Fed’s lender-of-last-resort facility, the benefit of such taxpayer subsidies should be limited to the traditional lending and depository functions of banking institutions, and should not indirectly subsidize proprietary trading and other speculative activities carried on in other subsidies of a BHC.

By limiting banks’ exposure to the risk involved in proprietary trading and speculative investment activities, the Volcker Rule seeks to limit future taxpayer exposure to the types of risk

49 See id.
that resulted in the bailout of “too big to fail” institutions in the wake of the financial crisis. Particularly in light of the moral hazard problem that arises with the implicit guarantee that the government will prevent bank failures in order to avoid the systemic effects such a failure would cause, it is important for regulations to properly incentivize banks to undertake economically efficient levels of risk. When the full cost of the risk involved in a firm’s trading activity is not brought to bear on that entity, the firm is likely to assume excess risk. Limiting banking institutions' proprietary trading activities eliminates one source of such risk.

Furthermore, the prohibitions against proprietary trading embodied in the Volcker Rule also serve to reduce the strong conflict of interest that arises when banks are allowed to conduct investment management activities in a fiduciary capacity for their customers while simultaneously engaging in proprietary trading for their own accounts.

While the Volcker Rule, on its face, appears to represent a dramatic departure from pre-crisis financial services regulation and organization, the philosophy underlying the Rule has long been a tradition in US financial regulation. Statutory firewalls have often been implemented as a backstop to limit the exposure of systemically important commercial banking institutions to securities activities. This is a dramatic contrast to the European philosophy of unified banking, which crept into the US regulatory system over the years in an effort to remain competitive globally. The financial crisis reminded US regulatory authorities of the risks involved in such an undertaking.

However, it remains to be seen if the implementation of the Volcker Rule will be effective in mitigating these risks. It is not clear that proprietary trading losses even made a material contribution to causing the financial crisis. Losses suffered by banks tended to result from their
mortgage-backed securities holdings themselves, rather than the speculative trading of those securities. Volcker himself has conceded that “proprietary trading in commercial banks was . . . not central” to the crisis.” Further, the Volcker Rule may simply cause proprietary trading to move to less-regulated businesses such as hedge funds. Absent market or regulatory restraint, the result is likely to be an increase in overall risk-taking. Until the rule is implemented and the market has an opportunity to react to the new regulations, the impact that the Volcker rule (and its unintended consequences) will ultimately have on the stability of the financial system remains unclear.

RISK RETENTION

Many view the years leading up to the financial crisis as an era in which banks had moved from an “originate to hold” model of lending to an “originate to distribute” model. According to critics of this move, this modern banking model contributed to the financial crisis by allowing banks to originate low-quality sub-prime loans without concern for their underlying credit risk.

After all, claim these critics, banks earned lucrative fees by originating and servicing loans, which they quickly distributed by securitizing and selling to unwitting third-parties in the form of asset-backed securities (ABS). Because banks were able to sell these sub-prime loans into the market, they no longer had to concern themselves with such details as the borrowers’ ability to repay them. This risk was transferred to investors who had purchased ABSs, the details of which

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were, by design, so complex and opaque that those who ultimately bore the credit risk associated
with sub-prime mortgages were unable to accurately analyze the securities backed by them. And so
the story goes for policy-makers keen on proving to constituents that they had identified the cause
of this financial crisis and, more importantly, that they were taking steps to ensure that it could
not happen again.

In the wake of the financial crisis, the backlash to this conception of modern banking led
Congress to include the “Improvements to the Asset-Backed Securitization Process” section of The
Dodd-Frank Wall Street Reform and Consumer Protection Act. By imposing risk-retention and
transparency requirements on financial institutions involved in asset-backed securitization, this
section of the Act purports to remove the incentive for banks to originate large quantities of sub-
prime loans.

The risk-retention requirements are aimed at ensuring that banks retain exposure to the
risk associated with loans underlying any ABS they sponsor. The transparency requirements are
aimed at ensuring that purchasers of an ABS are able to accurately understand the risk associated
with the security and its underlying assets. Together, these reforms attempt to align the interests of
those responsible for originating and securitizing loans with those who purchase the securities
backed by them.

By attempting to align the interests of parties on each side of an ABS transaction, The
Dodd-Frank Act ultimately seeks to force loan originators to improve their underwriting standards.
In theory, if banks are required to retain a portion of the risk inherent in those ABSs which they
sponsor, then they will package fewer sub-prime loans into ABSs. On the demand side, requiring
banks to disclose more information regarding the risk involved in each ABS may cause many investors to demand securities backed by higher-quality loans.

Unfortunately, these new regulations may have missed the mark. While the goal of these provisions—to prevent the type of flawed underwriting standards and origination practices that led to the financial crisis—is commendable, it is unlikely that these “Improvements to the Asset-Backed Securitization Process” make much progress toward its attainment.

The risk-retention requirements contained in the Dodd-Frank Act are squarely aimed at reforming the so-called “originate-to-distribute” lending model. Historically, banks used demand-deposits to make loans to borrowers, held these notes through maturity, and earned a profit on the interest. Over time, as banks adapted to shifting market forces and an ever-changing regulatory climate, they began to rely less on earned interest as a source of profits. Rather than holding loans to maturity, modern banks would transfer pools of loans into special purpose vehicles (SPVs), which would issue ABSs to be sold to investors.

When borrowers made principle and interest payments on their loans, these investors would receive their share of the resulting stream of cash flows. However, as housing prices fell, adjustable rates reset at higher levels, and borrowers were no longer willing or able to make mortgage payments, it was these security holders who bore the losses. As more and more borrowers went into default on loans that had been securitized, critics began to blame securitization for contributing to the decline in underwriting standards that had helped usher in the financial crisis. Because they had come to rely on loan origination and servicing fees rather than interest payments, and because the default risk had been shifted to investors through securitization, banks
were incentivized to originate and securitize more and more loans without regard for how they would perform, claimed critics of the originate-to-distribute model.\(^{53}\)

In an effort to remedy this agency problem, the Dodd-Frank Act contains risk-retention requirements intended to align the interests of those who sponsor ABSs with those who invest in them.\(^{54}\) These provisions mandate the Securities and Exchange Commission (SEC), along with other agencies, to impose regulations requiring “any securitizer to retain an economic interest in a portion of the credit risk for any asset that the securitizer, through the issuance of an asset-backed security, transfers, sells, or conveys to a third party.”\(^{55}\) Many details of the risk-retention regulations, including the form and composition of the retained risk, as well as the scope of exemptions for high-quality assets, were left to be determined by regulators.\(^{56}\)

Although these provisions lack much specificity and leave many terms to be defined by regulatory agencies, the Act does enumerate a variety of standards with which the forthcoming regulations must comply. Foremost among them is the requirement that banks retain at least 5% of the credit risk of any asset pool that is securitized.\(^{57}\) The Act requires an interest to be retained by the sponsor of an ABS transaction—typically the financial institution that arranges, manages, and directs the transaction.\(^{58}\)

The regulatory agencies charged with defining the contours of the risk-retention rules (the Agencies) include: The Office of the Comptroller of the Currency, Treasury (OCC); The Board of Governors of the Federal Reserve System (Board); The Federal Deposit Insurance Corporation

\(^{54}\) See Id. at 129. “When securitizers retain a material amount of risk, they have ‘skin in the game,’ aligning their economic interest with those of investors in asset-backed securities.”
In response to the Act's mandate, the Agencies jointly proposed rules to implement the risk-retention requirements. The proposed rules' risk-retention requirements focus on a five percent test of each class of securities issued in a securitization, not merely five percent of the credit risk of the underlying collateral. This would require five percent retention of each “vertical slice” of a transaction—i.e. five percent of each tranche of securities issued.

Under Dodd-Frank, certain classes of assets are exempt from these risk-retention requirements. The Act includes a qualified residential mortgage (QRM) exemption for high-quality residential mortgages, but leaves the particulars for regulators to determine. The Act also grants regulators the authority to specify underwriting standards for any additional number of classes of “low credit risk” assets, and to reduce the risk-retention requirement below five percent for those assets.

Under the Agencies' proposed rules, residential mortgages underwritten by government sponsored entities (GSEs), such as Fannie Mae and Freddie Mac, are exempt from the five percent retention requirement. At the present time, most residential mortgage-backed securities are comprised of loans guaranteed by GSEs. As a result, the short-term impact of these risk-retention requirements may be limited, in the short-term, by the scope of these exemptions. Ultimately, the

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60 See id.
61 See id. at 24101-24102.
62 See id.
64 See id. at sec. 78o–11(e)(4).
65 See 76 F.R. 24089 at 24117.
longer-term impact of these regulations is more difficult to estimate, especially given the significant extent of regulatory discretion to exempt asset classes from the risk-retention requirements.

Furthermore, the “originate-to-distribute” model doesn’t tell the whole story of modern banking. The same investment banks that securitize residential mortgage-backed securities (RMBS) also invest in them. RMBSs are an important source of collateral in repurchase agreements, which have replaced demand-deposits as a primary source of short-term liquidity for modern financial institutions that sponsor ABSs.66

Accordingly, the idea that sponsors didn’t have “skin in the game” may not be entirely accurate. Many financial institutions failed specifically because of their exposure to sub-prime RMBS (e.g., Countrywide, Lehman, Bear Sterns). The same firms responsible for originating and securitizing RMBS either failed or realized large losses due to their subprime exposure (their risk retained from such mortgages). The problem was not that these firms were not exposed to the risk inherent in the RMBS that they created, but that these firms failed to properly assess such risks.

In addition, while the rules prohibit securitizers from hedging or transferring the required retained interest, financial institutions eager to minimize exposure to certain asset classes may still be able to profit off of them through origination or securitization activities. Under the proposed rules, sponsors may allocate a portion of the risk retention responsibilities to the originators.67 Therefore, a sponsor could contract with qualifying originators who are willing to assume a significant portion of the retained interest as a condition of their asset purchase. Any remaining risk would be offset, to a great extent, from fees earned servicing the loan.

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66 See Gary Gorton and Andrew Metrick, Regulating the Shadow Banking System, Brookings Papers on Economic Activity, 261 (Fall 2010).
67 See 76 F.R. 24089 at 24145.
As long as one party to the transaction is willing to assume a greater portion of the default risk in exchange for greater short-term profits, it is unlikely that these provisions alone will succeed in eliminating unsustainable underwriting practices from the market. The market may respond with a new crop of originators eager to take on the extra risk by assuming a significant share of the retained interest. In such an event, these risk-retention requirements are unlikely to be effective in preventing the proliferation of risky ABSs in the market.

In addition to these risk-retention requirements, Dodd-Frank also reformed the disclosure and reporting requirements for asset-backed securities. The Act requires enhanced reporting and disclosure regarding the quality of the assets underlying each ABS issued. These regulations mandate the Agencies to require issuers to disclose asset-level or loan-level data necessary for investors to independently evaluate the ABS, and to adopt data formatting standards for reporting such data. These disclosures must include: (i) unique identifiers relating to loan brokers or originators; (ii) the nature and extent of the compensation of the broker or originator of the assets backing the security; and (iii) the amount of risk retention by the originator and the securitizer of such assets.

The Act also requires securitizers to disclose repurchase requests of assets securitized across all trusts aggregated by the securitizer, so that investors may identify underwriting deficiencies. Further, issuers filing registration statements are required to perform a due diligence review of the assets underlying an ABS and to disclose those due diligence findings. The Act also requires credit rating agencies to include, in their ratings reports, a description of the representations,

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68 See 15 U.S.C. 77g(c).
69 See id.
70 See id.
71 See P.L. 111-203, Title IX, Subtitle C, Sec. 943(1) (2010).
72 See 15 U.S.C. 77g(d).
warranties and enforcement mechanisms available to investors in asset-backed securities and how they differ from those in issuances of similar securities.73

While these new disclosure requirements are less controversial than the risk-retention requirements, it is not clear that they may do much to insulate the U.S. economy from another financial crisis. At best, rating agencies and investors will have more information to unpack in their attempt to evaluate these complex securities at significantly increased transaction costs. At worst, tens of thousands of pages of documentation, containing the details of thousands of loans, collateralized by thousands of properties, will only make these complex financial instruments even more difficult to evaluate.

The “Improvements to the Asset-Backed Securitization Process” section of the Dodd-Frank Wall Street Reform and Consumer Protection Act aims to achieve a lofty and admirable goal—to incentivize loan originators and securitizers to improve underwriting standards in order to avoid the future proliferation of the same type of bad debt responsible for contributing to the recent financial crisis. Unfortunately, the legislation seems destined to miss the target, as it appears to be premised on a misconception of the modern model of banking. The idea that those responsible for originating and securitizing sub-prime mortgages did so only because they were able to avoid the default risk associated with such loans through securitization does little to explain the financial crisis. Many banks involved in originating sub-prime mortgages and issuing sub-prime mortgage-backed securities failed as a result of their exposure to those loans. Many more suffered significant losses. It was precisely because these banks had retained significant exposure to ABS that they struggled or failed.

73 See P.L. 111-203, Title IX, Subtitle C, Sec. 943(2) (2010).
Prior to Dodd-Frank, modern financial institutions did not operate on a strict originate-to-distribute model. Banks commonly held significant amounts of ABSs on their balance sheets. These ABS were used as collateral in repurchase agreements (repos), which banks used to meet their short-term financing needs. ABSs made up such a significant portion of the collateral used in repo transactions that, when the value of those securities became uncertain and banks stopped accepting them as collateral, the repo market froze, with the resulting liquidity crisis ultimately causing the financial crisis.74

Requiring banks to retain a larger interest in the lowest-quality ABS that they sponsor (those securities failing to meet the statutory requirements of QRMs), may have the unfortunate effect of actually increasing their reliance on this class of securities as collateral in the repo market. A policy that threatens the quality of the collateral used repo transactions could contribute to a future liquidity crisis during the next downturn in the housing market.

Furthermore, there may also be a possibility that these new regulations could lull investors into a false sense of security. If investors believe that the risk-retention and disclosure requirements will result in lower-risk ABS, then they may feel as though they can safely invest in these securities. However, if the regulations do not, in fact, incentivize banks to improve loan-origination and monitoring standards, then these regulations may ultimately end up being detrimental to the very investors they sought to protect.

Ultimately, the effect of this legislation will be determined by the Agencies, who have been granted significant authority over the details of its implementation. However, as it stands, the

current reforms appear to impose significant transaction costs on the ABS market with little protection against the next financial crisis in return.

B. Moving Forward

Since the Financial Stability Oversight Council has the power to recommend measures that would regulate securitization and repurchase agreements, we consider what regulations should be introduced. Regulations focused on reducing the number of subprime mortgages, while necessary, will not succeed in preventing the next financial crisis. Subprime mortgages created uncertainty, which triggered the run on repo, just as historical bank runs were triggered by various factors that increased uncertainty about traditional bank solvency. However, to the extent that we cannot predict what asset class might be problematic in the future, an effective regulatory framework must include backstops that prevent future runs on repo in order to isolate the effects of problems that arise within specific asset classes so that these problems do not become systemic events.

In order to achieve stability in the shadow banking system, the future regulatory framework should aim to prevent future runs on repo by addressing both the risk of fluctuations in the value of assets used as collateral in repo transactions and counterparty default risk. The risk related to changes in the value of assets used as collateral in repo transactions can be managed through standardized collateralization, while counterparty default risk can be managed by introducing measures that mimic the deposit insurance function in traditional banking.

Prior to the enactment of deposit insurance in 1934, the government’s efforts to ensure safe bank-produced media of exchange were centered around the idea that the collateral backing
for bank money should be safe and transparent. Before the U.S. Civil War, the predominant form of bank money was privately issued bank notes backed by the bank’s assets, namely, long-term loans originated by the bank. The Free Banking Act of 1838 and the National Bank Acts in 1863 and 1864 were implemented in response to banking panics that occurred when the value of the assets backing bank notes fell. These regulations incrementally transformed the system to require banks to deposit US Treasuries as collateral for notes issued. The move from opaque, risky, long-term loans to transparent, short-term Treasury securities as collateral for bank notes resulted in the stability and safety of the bank notes themselves.

Modern banks finance themselves by entering into repurchase agreements with investors rather than issuing bank notes to depositors, but as the financial crisis has demonstrated, the modern banking system is still subject to panics when the value of the collateral used in these transactions is called into question. If standardized collateralization provided stability in the market for bank notes, perhaps a similar regulatory scheme can lend stability to the repo market.

In this context, regulations to achieve this stability should be aimed at creating a sufficient amount of high-quality collateral to be used in repo transactions and limiting the collateral eligible for use in repo transactions to these high-quality asset classes.

Gorton and Metrick propose an interesting solution to achieve these aims. In short, they suggest that the securitization function currently achieved by bank-created SPVs should be performed by new Narrow Funding Banks (NFBs). These NFBs would not be bank-sponsored, but would be new entities located between securitizations and final investors. Bank regulators would determine what asset classes are eligible for purchase by NFBs, establish capital requirements,

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75 Gorton, Regulating the Shadow Banking System, at 17.
76 Id.
77 Id.
conduct periodic examinations, and allow NFBs access to the discount window. With these rules, bank regulators would set collateral requirements for NFBs in much the same way that the National Bank Act set collateral requirements for bank notes.

In addition, the success of the Term Securities Lending Facility suggests that the Federal Reserve’s ability to serve a market intermediary role and expand the supply of eligible collateral for repo markets can effectively provide an alternative source of high-quality collateral in the event that the private market is unable to produce enough high-quality collateral to meet demand. This may suggest that a permanent version of the TSLF should be created. A permanent TSLF-type facility would also help prevent settlement fails in the repo market, but additional steps should be taken to remove the incentive to fail by increasing the cost of failing.78

Ultimately, traditional bank runs were ended by deposit insurance. With the federal government’s guarantee of bank deposits, depositors no longer needed to be concerned about bank solvency or liquidity. In the shadow banking system, it may not be practical for the government to actually insure funds lent in repo transactions because of the sheer size of these deposits. However, the system of deposit insurance can be mimicked, to some extent, by several regulations.

Regulations that impose minimum haircuts for repo transactions would provide additional protection against unexpected changes in the market value of collateral. Collateral serves a similar function to insurance by proving investors with a way to recoup their money in the event of counterparty default. The aforementioned standardized collateralization would result in higher-quality collateral used in repo transactions that would be subject to less volatility in value, and

78 Hordahl at 52.
minimum haircuts should be set to reflect the remaining volatility and ensure that the value of the collateral does not fall below the amount deposited by the investor.

Traditional deposit insurance is only made available to qualified banks that meet certain requirements. Similarly, regulations that establish limits on the types of entities that may participate in the repo market could further help to manage counterparty risk involved in repo transactions. Further, the imposition of position limits on certain types of repo market participants could be implemented in order to limit these participants’ involvement.

We believe that the combined effects of these proposed regulations would serve functions analogous to the regulations that provided for standardized collateralization and deposit insurance which effectively ended traditional bank runs.

V. Conclusion

The repo market is likely to remain an important source of short-term financing for banks and other financial institutions.\(^79\) However, as the recent financial crisis has demonstrated, the shadow banking system is subject to bank runs, just like the traditional banking system prior to its reform. Therefore, it is important, and we believe possible, to effectively regulate the shadow banking system and the repo market in order to prevent future runs on repo and ensure the stability of this important component of the modern financial system.

The traditional banking system succeeded in preventing bank runs by implementing policies providing for standardized collateralization and deposit insurance. These policies made depositors information insensitive with regard to the solvency of the bank and the value of its

\(^{79}\) Id. at 51.
assets. Because depositors were insulated from exposure to losses in the event of bank failure, the incentive to withdraw deposits in anticipation of such failure was removed.

Regulation focused on reducing the number of subprime mortgages, while necessary, will not succeed in preventing the next financial crisis. Our belief is that subprime mortgages created uncertainty which triggered the run on repo, just as historical bank runs were triggered by various factors that increased uncertainty about traditional bank solvency. However, to the extent that we cannot predict what asset class might be problematic in the future, an effective regulatory framework must include backstops that prevent future runs on repo in order to isolate the effects of problems that arise within specific asset classes so that these problems do not become systemic events. We believe that the combined effects of the regulations proposed in section III would serve functions analogous to the regulations that provided for standardized collateralization and deposit insurance which effectively ended traditional bank runs.

By bringing the repo market out of the shadows and into the regulatory framework, we may be able to avoid another debilitating liquidity crisis in the future by preventing future repo runs. If, however, we fail to ensure the safety of modern banks by regulating the shadow banking system, then “we are destined to have more crises or forced to live with a greatly constrained financial system."\(^{80}\) The future of the shadow banking system is largely unknown, but the importance of effective regulations cannot be overstated. Our hope is that the lessons learned from previous crises will not be forgotten.

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\(^{80}\) Gorton, Regualating at 26.