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LAW, LIQUIDITY, AND MONETARY POLICY

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M. Konrad Borowicz[†]

ABSTRACT

The effective transmission of monetary policy depends on the Federal Reserve's ability to regulate liquidity in the financial system. However, monetary policy is not the only institutional framework that affects liquidity. Bankruptcy law's "safe harbors" for repurchase agreements affect liquidity by creating incentives for money market creditors to adjust their leverage in a procyclical fashion. In the last decade, the bankruptcy treatment of repurchase agreements has been the subject of a heated debate among academics and policymakers. This Article seeks to contribute to the debate on the proper scope of safe harbors by departing from the rigid macroeconomic framework that inspired many of the arguments made in that debate to date in favor of a more flexible one, emphasizing the role of the institutional frameworks in liquidity regulation. Specifically, this Article argues that the effective regulation of liquidity requires the coordination of monetary policy and bankruptcy law. Currently, the two are designed independently based on different policy considerations. Against this backdrop, this Article proposes a design of bankruptcy treatment of repurchase agreements incorporating considerations of monetary policy. The design links monetary policy and legal policy in a coherent framework for macro-financial policymaking revolving around liquidity.

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INTRODUCTION

The U.S. Bankruptcy Code provides for “safe harbors” that exempt the creditors of repurchase agreements (“repo”)¹ from the basic rule that halts creditor collection efforts immediately after a bankruptcy case is filed.² In an accompanying article, I show that, theoretically, the safe harbors have procyclical effects—meaning that they exacerbate booms and busts.³ In a boom, when asset prices are higher, leverage, measured as a ratio of debt to assets, decreases.⁴ During such periods, the safe harbors create strong incentives for creditors to underwrite additional leverage secured on those assets without increasing the interest rate.⁵ In contrast, in a bust when asset prices are lower, leverage increases.⁶ During such periods, the safe harbors create strong incentives for creditors to enforce, prompting debtors to deleverage.⁷ These procyclical leverage adjustments would likely exist even if repo creditors did not benefit from the safe harbors, but the availability of safe harbors makes those adjustments more pronounced.

In this Article, I hypothesize how the procyclical effects of the safe harbors impact liquidity and monetary policy transmission. The effective transmission of monetary policy depends on the Federal Reserve’s ability to regulate liquidity in the financial system.⁸ By liquidity I mean both market liquidity and funding liquidity. A commonly accepted definition stipulates that a security has good *market liquidity* if

¹ While the safe harbors cover several types of contracts, this Article focuses on repos as the central instrument of the money market.

² The rule is known as ‘automatic stay’ and can be found in 11 U.S.C. § 362. The safe harbors were codified in 11 U.S.C. § 546. For a discussion of the evolution of that rule, see Edward R. Morrison & Joerg Riegel, *Financial Contracts and the New Bankruptcy Code: Insulating Markets from Bankrupt Debtors and Bankruptcy Judges*, 13 AM. BANKR. INST. L. REV. 641, 644–45 (2005).

³ See M. Konrad Borowicz, *A Theoretical Framework for Law and Macro-Finance*, J. FIN. REGUL. 1 (2022), <https://academic.oup.com/jfr/advance-article/doi/10.1093/jfr/fjac011/6692454> [<https://perma.cc/P2RL-5EXT>].

⁴ *Id.* at 2.

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

⁸ Tobias Adrian & Hyun Song Shin, *Liquidity, Monetary Policy, and Financial Cycles*, 14 CURRENT ISSUES ECON. & FIN. 1, 7 (2008).

it is “easy” to trade, while *funding liquidity* is a characteristic of banks or investors who have enough available funding from their own capital or (collateralized) loans.⁹

Central to the task of liquidity regulation are the efforts of the Federal Reserve to influence the price of (collateralized) loans, including repo.¹⁰ Tobias Adrian and Hyun Song Shin even define *aggregate liquidity*, as the rate of growth of repo.¹¹ Their research shows that the growth of repo is a function of the prevailing monetary policy stance.¹² Specifically, when monetary policy is “loose” relative to macroeconomic fundamentals, financial institutions expand their balance sheets through collateralized borrowing; as a consequence, aggregate liquidity increases.¹³ Conversely, when monetary policy is “tight,” institutions shrink their balance sheets, reducing both the stock of repos and aggregate liquidity.¹⁴

In this Article, I argue that the safe harbors distort monetary policy transmission through the liquidity channel. I distinguish between (1) an expansionary stance when the policy rate is low, and liquidity is abundant; and (2) a contractionary stance when the rate is high, and liquidity is scarce. I argue that repo safe harbors exacerbate the effects of expansionary monetary policy by incentivizing creditors to oversupply liquidity. When monetary policy is “loose” relative to macroeconomic fundamentals, the safe harbors incentivize creditors to make funding liquidity more available to debtors and allow them to finance more assets, thereby increasing their market liquidity. As a result, aggregate liquidity increases and, in the absence of appropriate regulatory measures aimed at regulating it, the increase can flood the economy and make it vulnerable to violent disruptions.

Repo safe harbors also exacerbate the effects of contractionary monetary policy by incentivizing creditors to enforce rights when liquidity is scarce. When monetary policy is “tight,” the safe harbors incentivize creditors to reduce the availability of

⁹ Markus K. Brunnermeier & Lasse Heje Pedersen, *Market Liquidity and Funding Liquidity*, 22 REV. FIN. STUD. 2201 (2009).

¹⁰ Adrian and Shin even define liquidity as the rate of growth of repo. Adrian & Shin, *supra* note 8, at 1, 5.

¹¹ *Id.* at 5 (“Our discussion of financial institution behavior suggests a natural definition of liquidity as the rate of growth of aggregate balance sheets. In more concrete terms, we can define liquidity as the rate of growth of repos, since repos and other forms of collateralized borrowing are the tool that financial institutions use to adjust their balance sheets.”).

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

funding liquidity, prompting debtors to deleverage by selling assets—thereby reducing their market liquidity. Aggregate liquidity then increases, and a liquidity crisis—such as the one at the core of the Great Financial Crisis (“GFC”)—ensues.¹⁵

On the policy side, I propose that, in the absence of other appropriately calibrated regulatory measures, repo creditors (1) should enjoy stronger protections when they lend in periods of liquidity scarcity; but (2) should have weaker protections when they lend in periods of liquidity abundance and subsequently enforce in periods of scarcity. The goal of the proposal is to assist policymakers in liquidity regulation and increase the effectiveness of monetary policy transmission. To implement the proposal, I suggest that the safe harbors are removed, and that market participants rely on the true sales doctrine with appropriate collateral haircuts set by the Federal Reserve.¹⁶ Accordingly, the U.S. Bankruptcy Code should be amended, and the legislative history should clearly state that the goal of the safe harbors is to facilitate the implementation of liquidity management and monetary policy.

This Article is organized into four parts.

Part I describes the basic mechanism of monetary policy implementation. Historically, the Federal Reserve implemented monetary policy through interventions in repo markets. The evolution of the legal treatment of the safe harbors, which resulted in the broadening of its scope, further boosted liquidity in those markets and the financial system. That evolutionary path also made those markets and the system vulnerable to shocks. The unanticipated shock of the Great Recession showcased those vulnerabilities and prompted commentators to question the scope of the safe harbors.¹⁷ Economists and legal scholars proposed new, narrower designs of the safe harbors, which nevertheless failed to translate into law.

Parts II and III discuss the standard conceptions of market and funding liquidity, respectively, in more detail, as well as their importance and drivers, stressing the role of the law. I show that funding liquidity is channeled through the money market, the structure of which has undergone important institutional transformation as a result of the evolution of the safe harbors. As I proposed in my earlier research, the safe harbors not only have procyclical effects but also distort the

¹⁵ Nancy L. Stokey & Robert E. Lucas, Jr., *Liquidity Crises: Understanding Sources and Limiting Consequences: A Theoretical Framework*, FED. RSRV. BANK MINNEAPOLIS (May 17, 2011), <https://www.minneapolisfed.org/article/2011/liquidity-crises-epp> [<https://perma.cc/L4FG-L369>].

¹⁶ See *infra* Section IV.D.

¹⁷ See *infra* Section I.D.

transmission of monetary policy. We must consider these macro financial impacts of the safe harbors when proposing their new design.

The policymakers' failure to regulate liquidity in the years leading up to the GFC prompted the emergence of a new paradigm of liquidity regulation post-GFC—a paradigm that revolves around banks. Part IV critically discusses the emerging paradigm of liquidity regulation and its limitations, particularly in view of its failure to prevent the September 2019 and March 2020 liquidity crises. I discuss the mechanism through which the regulation exacerbated the crises and propose a new paradigm of liquidity regulation revolving around a countercyclical design of the safe harbors. The paradigm addresses some of the limitations of the existing proposals for the reform of the safe harbors, in particular, the effects of those proposals on the transmission of monetary policy.

I. WHAT DOES THE LAW HAVE TO DO WITH MONETARY POLICY?

A. *Monetary Policy and Repurchase Agreements*

In the United States, the Board of Governors of the Federal Reserve System (“the Board”) is entrusted with the task of “maintain[ing] long run growth of the monetary and credit aggregates commensurate with the economy’s long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.”

The Board relies on a variety of tools to carry out its mandate, most importantly, the policy rate or the target federal funds rate set by the Federal Open Market Committee (“FOMC”).¹⁸ The rate represents the price at which the Board would like to see the banks lend money, specifically bank reserves as a high-powered form of money, to each other.¹⁹ Under the current framework, banks must maintain a certain level of reserves with banks of the Federal Reserve System to continue to be chartered as a bank.²⁰ The reserve requirement implements the Board’s monetary policy and gives the Board tremendous leverage over the banking system.

¹⁸ *Federal Funds Effective Rate*, FRED, <https://fred.stlouisfed.org/series/FEDFUNDS> [<https://perma.cc/U7B3-KGWR>] (last updated Sept. 1, 2022).

¹⁹ *Id.*

²⁰

The Federal Reserve Act authorizes the Board to establish reserve requirements within specified ranges for purposes of implementing monetary

Historically, Federal Reserve System banks would seek to influence the federal funds rate by conducting open market operations. Over time, the operations became centralized at the Trading Desk at the Federal Reserve Bank of New York (“the Desk”).²¹ Suppose the Board wanted to relax monetary policy. In that case, it would relax the reserve requirement by allowing the Desk to lend reserves to banks with excess to the Desk, referred to as Primary Dealers,²² in exchange for Treasury notes. The Desk would then accept bids for loans at a price representing the Board’s target rate or the rate at which the Board would like to see the banks lend reserves to each other. If the rate is two percent, the Desk would offer reserves to banks at two percent. In turn, an increase in the holding of reserve allows banks to lend more money to the economy.

Legally, Dealers would not borrow money from the Desk but rather *sell* Treasury notes to the Desk and *agree to repurchase* them at a pre-agreed time and price.²³ For example, a Dealer might propose to sell \$10,100,000 worth of Treasury notes to the Desk for \$10,000,000 of reserves with an agreement to repurchase the Treasuries back for \$10,200,000 at maturity. Figure 1 below graphically illustrates the structure of this repurchase or repo transaction.

policy on certain types of deposits and other liabilities of depository institutions. The dollar amount of a depository institution’s reserve requirement is determined by applying the reserve requirement ratios specified in the Board’s Regulation D (Reserve Requirements of Depository Institutions, 12 CFR Part 204) to an institution’s reservable liabilities (see table of reserve requirements). The Federal Reserve Act authorizes the Board to impose reserve requirements on transaction accounts, nonpersonal time deposits, and Eurocurrency liabilities.

Reserve Requirements, BD. GOVERNORS FED. RSRV. SYS., <https://www.federalreserve.gov/monetarypolicy/reservereq.htm> [<https://perma.cc/69CB-TYWF>].

²¹ Huberto M. Ennis & Jeff Huther, *The Fed’s Evolving Involvement in the Repo Markets*, FED. RSRV. BANK RICHMOND (Sept. 2021), https://www.richmondfed.org/publications/research/economic_brief/2021/eb_21-31 [<https://perma.cc/VVP4-NSR5>].

²² Primary dealers are trading counterparties of the New York Fed in its implementation of monetary policy. They are also expected to make markets for the New York Fed on behalf of its official account holders as needed, and to bid on a pro-rata basis in all Treasury auctions at reasonably competitive prices. *Primary Dealers*, FED. RSRV. BANK N.Y., <https://www.newyorkfed.org/markets/primarydealers> [<https://perma.cc/UNF4-J6LD>]. Effective November 9, 2016, the relationships between the New York Fed and primary dealers is governed by the Federal Reserve Bank of New York Policy on Counterparties for Market Operations.

²³ *Repo and Reverse Repo Agreements*, FED. RSRV. BANK N.Y., <https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/repo-reverse-repo-agreements> [<https://perma.cc/23DN-G6WB>].

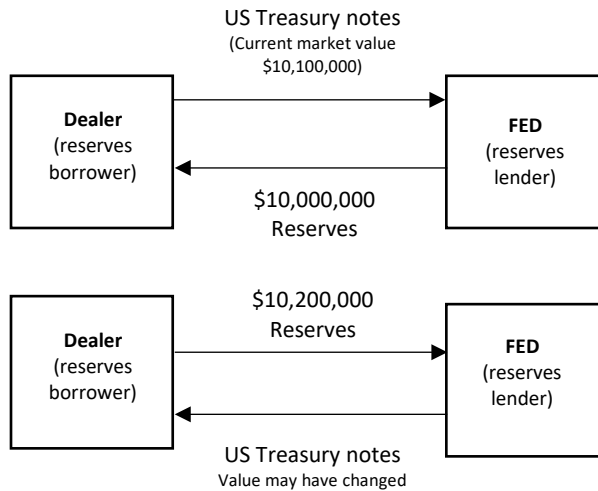


Figure 1: Repo Between a Dealer and the Central Bank

The unusual legal structure of the transaction, somewhat at odds with its economic function, had to do with the preferential treatment in bankruptcy of claims that can be legally characterized as related to assets purchased rather than provided as security. I will elaborate on this point further in the Article.²⁴

On the economics of repo, note first that the 200,000 represents the effective two percent cost or price of the transaction for Dealer; and, second, that the value of the Treasuries (\$10,101,010) did not matter for the economics of the transaction because the transaction was, in effect a *secured loan*, in which the Treasuries acted as collateral. Pre-GFC, the Federal Reserve (“the Fed”) could be usefully understood as the proximate (secured) lender to the economy. As Ben Bernanke, the former Chair of the Board, once put it, “[a]ll the Federal Reserve can do is make loans against collateral.”²⁵ The motivation of the Fed to lend money was different from that of a commercial bank. Specifically, the Fed acted to implement monetary policy, not to make money (even though it sometimes made money in that way too). That

²⁴ See *infra* Section I.B.

²⁵ Henry Schuster & Rebecca Peterson, *Ben Bernanke’s Greatest Challenge*, CBS NEWS (Mar. 12, 2009, 2:55 PM), <https://www.cbsnews.com/news/ben-bernankes-greatest-challenge/> [<https://perma.cc/K7PZ-J4BC>].

motivation determined its collateral policy—i.e., what kind of assets it will accept in exchange for reserves and from whom.²⁶

During the GFC, the FOMC set the policy rate to zero and the Fed adopted a large-scale asset purchase program to provide further support to financial markets.²⁷ Since then, the supply of reserves has been mainly driven by the Fed purchases rather than repo transactions.²⁸ Because the scale of those purchases was so large, the supply of reserves in the system has also increased exponentially.²⁹ In this new system of ample reserve, the Fed uses its ability to pay interest (“IOR”) on the reserve to make reserves an attractive form of short-term investment for Dealers.³⁰

²⁶ When the Federal Reserve was established in 1913, it was assumed that all state-chartered banks would join to have access. Nevertheless, as Ricks notes, “as of 1922 only 15% of eligible state banks had joined—and the trend was toward withdrawal.” MORGAN RICKS, *THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION* (2016). This was mainly because membership required compliance with cash reserve requirements. Indeed, as Tippetts noted, “[m]any [banks] regard the loss as payment for insurance, and cheap insurance at that. But many member banks . . . claim that the protection given is charged for at too high a rate.” Charles Sanford Tippetts, *State Bank Withdrawals from the Federal Reserve System*, 13 AM. ECON. REV. 401, 404–05 (1923). However, that trend has reverse over time because, in economic terms, that access constitutes a massive subsidy by making it cheaper for banks with access to Federal Reserve to access funding in private markets. “The size of the funding subsidy depends on money-claimants’ judgments about the likelihood that the government will intervene to support the firm in the event of a run.” RICKS, *supra*, at 186. Access to Federal Reserve liquidity has also grown over time. The Wall Street Crash of 1929 and the Great Depression was a big catalyst for that. The Emergency Relief and Construction Act of 1932 added section 13(3) to the Federal Reserve Act of 1913, providing that in “unusual and exigent circumstances,” the Federal Reserve may lend to non-banks as well. Emergency Relief and Construction Act of 1932, Pub. L. No. 72-302, ch. 520, § 210, 47 Stat. 709, 715 (1932). Ricks further points out that the ability of the Federal Reserve to do that was also limited concerning the scope of collateral that could be used—the only collateral that the Federal Reserve would accept from non-banks comprised Treasury securities. Few Wall Street firms had a sufficient supply of such securities. Therefore, they lobbied for the collateral limits to be removed and were successful. “In 1991 Congress did away with the long-standing collateral limits on Federal Reserve loans to nonbanks. The change was tucked into the Federal Deposit Insurance Corporation Improvement Act, where it was barely noticed.” RICKS, *supra*, at 197. As Ricks points out, the one person that noticed was the macroeconomist, Anna Schwartz, a co-author of Milton Friedman. She wrote “As interpreted by Sullivan & Cromwell, a New York law firm, for its clients in a memorandum of December 2, 1991, this provision enables the Fed to lend directly to security firms in emergency situations In my view, the provision in the FDIC Improvement Act of 1991 portends expanded misuse of the discount window.” Ricks notes that one of the unintended consequences of the 1991 amendment was an incentive for securities firms, in particular hedge funds, to grow.

²⁷ Ennis & Huther, *supra* note 21.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

For a while, policymakers assumed the changes that resulted from the GFC removed the need for the Fed to engage in daily reserve management and, by extension, the need for the Fed to actively participate in the repo market for that purpose.³¹ In the last couple of years, however, those assumptions were proven wrong, most spectacularly in mid-September 2019, when overnight repo “rates spiked and exhibited significant volatility, amid a large drop in reserves due to the corporate tax date and increases in net Treasury issuance.”³² As recounted by economists at the Fed:

In response to elevated money market rates, especially with the fed funds rate printing at the top of the target range on September 16 . . . the Desk offered up to \$75 billion against Treasury, agency, and agency MBS collateral. This operation provided \$53 billion in additional reserves and led to an immediate decline in rates. The Desk offered up to \$75 billion in overnight repo each morning for the rest of that week, with all three operations fully subscribed. With subsequent announcements of further repo operations, overnight rates stabilized over the remainder of the week and [federal funds] returned to well within the target range.³³

The events of September 2019 demonstrate that repo operations remain essential to the effective transmission of monetary policy via the Desk’s operations in a market sometimes referred to as the money market.³⁴ The money market is a

³¹ Jane Ihrig, Gretchen C. Weinbach & Scott A. Wolla, *Teaching the Linkage Between Banks and the Fed: R.I.P. Money Multiplier*, ECON. RSCH.: FED. RSRV. BANK ST. LOUIS (Sept. 2021), https://research.stlouisfed.org/publications/page1-econ/2021/09/17/teaching-the-linkage-between-banks-and-the-fed-r-i-p-money-multiplier?utm_source=twitter&utm_medium=SM&utm_content=stlouisfed&utm_campaign=4675a2fa-fb12-4121-b85c-0f6fb90ea492 [<https://perma.cc/Y9G2-F3HS>].

³² Sriya Anbil, Alyssa Anderson & Zeynep Senyuz, *What Happened in Money Markets in September 2019?*, BD. GOVERNORS FED. RSRV. SYS. (Feb. 27, 2020), <https://www.federalreserve.gov/econres/notes/feds-notes/what-happened-in-money-markets-in-september-2019-20200227.html> [<https://perma.cc/2VPT-ZCCD>].

³³ *Id.*

³⁴ Ihrig, Weinbach & Wolla, *supra* note 31. The role of repo, specifically reserve repo, is also fundamental. As the stock of reserves grew following the GFC, it became clear that the abundance of reserves—combined with limits to arbitrage—could push the fed funds rate below the bottom of the Fed’s target range. *Id.* To reduce the likelihood of below-target rates, the Fed introduced programmatic repo transactions with a wide range of financial firms in 2013. This program—the Overnight Reverse Repo Program (ON RRP)—allows eligible counterparties to lend excess funds to the Fed through repo

market for money in the sense that the Federal Reserve relies on it to introduce or remove money in the form of bank reserves from the financial system.

The Federal Reserve is not the only repo lender in the money market. Other institutions include pension funds, insurance companies, money market funds (“MMF”), exchange-traded funds, sovereign wealth funds, and even corporations. Why do they do that? Because it is safer than keeping cash at a bank as a deposit.³⁵ Under the Federal Deposit Insurance Act, bank deposits are only insured up to \$250,000.³⁶ Lending through a repo is deemed to be a preferable alternative to deposits because repo is overcollateralized through haircuts.

To understand the role of haircuts in a repo, consider a modified version of the repo transaction from the example above, now with a Dealer as a cash borrower and a MMF as a cash lender. In the example above, I noted that the Treasuries’ value did not matter for the transaction cost because the transaction was, in effect, a collateralized loan, in which the Treasuries acted as collateral.

Nevertheless, a change in the value of the Treasuries could have changed the economics of the transaction. The difference between the market value of the collateral and the cash received by the borrower represented a ‘haircut,’ the purpose of which is to provide the lender with greater security. If the Treasuries’ value decreased during the transaction, the Dealer would have to post additional collateral to meet the pre-determined haircut requirement.

A repo claim is therefore like a bank deposit, which itself, together with reserves and cash, is one of the principal forms of money. The label ‘money markets’ should make even more sense now. The money market is a market for money because

transactions at a specified rate, ensuring that repo rates (and other short-term money market rates, by extension) remain close to or above the ON RRP rate. *Id.*

³⁵ Zoltan Pozsar & Manmohan Singh, *The Nonbank-Bank Nexus and the Shadow Banking System* 3–4, 7 (Int’l Monetary Fund, Working Paper No. 11/289, 2011). As Singh and Pozsar note, asset managers are the managers of the long-term savings of (primarily) households. *Id.* at 3. “[A]sset managers invest these [savings] in long-term instruments, such as equities, bonds and asset-backed securities.” *Id.* Asset managers, however, do not just invest long-term. *Id.* at 4. Because of, inter alia, portfolio allocation decisions (the day-to-day management and return mandates effectively requires them to make some profits) asset managers routinely lend securities for use as collateral. *Id.* Asset managers lend their securities to dealer banks against cash. *Id.* at 9. This gives rise to large cash pools in the ‘asset management complex.’ *Id.* at 7. The traditional banking system is not well fit to handle these cash pools. *Id.* “No risk manager would sign off on significant unsecured bank exposures via uninsured deposits.” *Id.* Instead, “asset managers prefer alternatives such as short-term publicly guaranteed debt (such as Treasury bills. . .).” *Id.*

³⁶ 12 U.S.C. § 1821.

(1) the Federal Reserve uses it to implement monetary policy through repos; and
(2) repos are like money.

B. Repo Safe Harbors for All (Types of Collateral)!

Why are repos structured as sales? The principal benefit of structuring the transaction as such was to achieve bankruptcy remoteness of the repo claim. Put simply, should the repo borrower fail, the repo creditor would have a priority claim over secured creditors of the borrower. At least, that was the assumption under which market participants operated in the money market in the early 1980s. Around that time, their assumption was unexpectedly challenged by a ruling in a proceeding concerning the demise of Lombard-Wall, Inc., a small investment firm, due to its inability to return cash it had obtained in overvalued long-term repos.³⁷

In the proceedings before the United States Bankruptcy Court for the Southern District of New York (“SDNY”), Judge Edward J. Ryan initially froze all securities that Lombard-Wall had sold under repos.³⁸ After permitting several counterparties to sell off their securities, he ruled in September 1982 that the repo agreements Lombard-Wall had negotiated with a particular bank were secured loans. Therefore, these repos were subject to the automatic stay provisions of the Bankruptcy Code, which block any efforts of a creditor to make collections or to enforce a lien against the property of a bankrupt estate.³⁹ According to this interpretation, even if the lender had acquired actual title to the securities, the borrower would be deemed under the law to have an equitable interest in the securities. Although this last ruling dealt specifically with only one bank, it was viewed as precedent.⁴⁰ And it “scared the hell out of the industry.”⁴¹

At the urging of primary government securities dealers and some prompting by the Federal Reserve Bank of New York, Congress amended Title 11 of the U.S. Code to exempt certain repos from the automatic stay provisions of the Bankruptcy Code

³⁷ See *In re Lombard-Wall, Inc.*, 23 B.R. 165 (Bankr. S.D.N.Y. 1982).

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ Fiona Maclachlan, *Repurchase Agreements and the Law: How Legislative Changes Fueled the Housing Bubble*, 48 J. ECON. ISSUES 515, 517 (2014) (quoting MARCIA L. STIGUM, *THE REPO AND REVERSE MARKETS* 219 (1989)).

⁴¹ *Id.*

when it enacted the Bankruptcy Amendments Act of 1984 in June of that year.⁴² Coverage was limited to overnight repos and term agreements up to a year in Treasury and agency securities.⁴³ As Lumpkin notes, the legislation did not resolve whether a repo agreement is a secured lending arrangement or a purchase and sale transaction.⁴⁴ However, it enabled lenders to liquidate any repo securities in their possession under either interpretation.⁴⁵

Even though only repos backed by Treasury and agency securities benefited from the safe harbors, beginning in the mid-1990s, repo financing was extended to this riskier, non-traditional collateral. As Maclachlan notes, “[r]epo desks at the broker-dealers found that making repo loans with non-traditional collateral was profitable, and seemed to be low risk. It helped the securitization part of the firm’s business to be able to offer repo financing to buyers.”⁴⁶ Examples of non-traditional collateral included higher tranches of residential mortgage-backed securities (“RMBS”). “Since non-traditional collateral did not have the exemption from automatic stay, repo contracts were written to represent the transaction as a true sale, so that if the borrower filed for bankruptcy, the lender could retain possession of the securities.”⁴⁷

In 2000, a court ruling in the bankruptcy of Criimi Mae, a publicly held commercial mortgage real estate investment trust relying on RMBS as collateral in its repo transactions, took market participants by surprise, creating a disturbance in the repo market.⁴⁸ Against the market’s expectations, the court ruled that the repo Criimi Mae was using to finance its assets was equivalent to a secured loan and that the automatic stay should be applied to the collateral.⁴⁹

⁴² Stephen A. Lumpkin, *Repurchase and Reverse Repurchase Agreements*, 73 FED. RESV. BANK RICHMOND: ECON. REV. 15, 21 (Jan. 1987). “The Treasury department, however, did not endorse the change to the code, expressing the opinion that the exemption from automatic stay would reduce the incentive of repo lenders to lend only to sound institution.” Maclachlan, *supra* note 40.

⁴³ Bankruptcy Amendment Act of 1984, Pub. L. No. 93-353, 98 Stat. 364, 365 (1984).

⁴⁴ Lumpkin, *supra* note 42.

⁴⁵ *Id.*

⁴⁶ Maclachlan, *supra* note 40.

⁴⁷ *Id.* at 518.

⁴⁸ *See In re Criimi Mae, Inc. Sec. Litig.*, 94 F. Supp. 2d 652 (D. Md. 2000).

⁴⁹ *Id.*

Almost immediately following the ruling, the industry began to lobby for expansion of the scope of the safe harbors to assets other than Treasury bills.⁵⁰ As Maclachlan notes, the principal argument articulated by the industry in favor of the safe harbor was that a vast volume of cash flows is facilitated by repo markets every day.⁵¹ “If the flow is stopped at any point, the whole system could seize up. Managing cash inflows and outflows is challenging in the best circumstances. The position was that if collateral was tied up in bankruptcy proceedings, a systemic crisis could ensue.”⁵² The lobbying was successful. In 2005, Congress enacted the Bankruptcy Abuse Prevention and Consumer Protection Act (“BAPCPA”), which exempted ‘non-traditional collateral’ from automatic stay.⁵³

By allowing RMBS to be used as collateral in a repo, the new safe harbors effectively facilitated the integration of the money and capital markets. Mortgages originated in the capital market could now be packaged, securitized, and be, together with pools of other mortgages, used as collateral in the money market. Indeed, reliance on collateral derived from capital markets became increasingly common in repo transactions. Financial economists Gary Gorton and Andrew Metrick documented the wide variety of assets used as collateral in repo markets in the period immediately before the crisis.⁵⁴ These included triple-A-rated RMBS, but also triple-A-rated auto loans and even triple B+ rated corporate securities.⁵⁵ As the authors note, “the categories themselves show how far the repo market has evolved from simply being a market related to U.S. Treasuries.”⁵⁶

⁵⁰ Maclachlan, *supra* note 40, at 518.

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.* As she further notes, “[i]n contrast to the period twenty years earlier, when changes to the bankruptcy code relating to repo collateral were debated, the argument made by market participants for an expansion of the safe harbor from automatic stay went largely unnoticed. For example, in the dissenting and minority views represented in the Report of the Committee of the Judiciary House of Representatives that accompanied BAPCPA, there was no mention of the automatic stay exemptions.” *Id.* at 518–19.

⁵⁴ Gary B. Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo* 17 (Nat’l Bureau of Econ. Rsch., Working Paper No. 15223, 2009).

⁵⁵ *Id.*

⁵⁶ *Id.*

C. *Repo Safe Harbors in the Literature*

As RMBS was becoming an increasingly popular class of collateral, prices of real estate, which ultimately backed RMBS, started falling. The Real Home Price Index developed by the Nobel-winning economist Robert Shiller shows them falling beginning in 2006.⁵⁷ As a result of the falling housing prices, the price of RMBS also began to fall, prompting what Gorton and Metrick called a “run on repo,” by which they mean margin calls on repo transactions.⁵⁸ The haircut index rose from zero in early 2007 to nearly fifty percent at the peak of the GFC in late 2008.⁵⁹ Several classes of assets stopped entirely from being used as collateral during this period, an unprecedented event equivalent to a haircut of one hundred percent.⁶⁰

The central role of the run on repo in the GFC prompted scholars in finance and law to examine the economic effects of the safe harbors. Gorton and Metrick weighed the various economic benefits of the safe harbors, such as their role in creating a money-like instrument, against their more problematic role in integrating the money and capital markets.⁶¹ They proposed that regulators use access to this safe harbor as the lever to enforce minimum repo haircuts and control leverage.⁶² More specifically, they argued that regulations should distinguish between repos entered by banks and other institutions.⁶³ The first type would capture the monetary function of repo and include “eligible” collateral consisting of U.S. Treasury securities, liabilities of certain types of regulated financial institutions, and other asset classes the regulator deems appropriate.⁶⁴ The second type would be regulated

⁵⁷ *S&P/Case-Shiller U.S. National Home Price Index*, FRED, <https://fred.stlouisfed.org/series/CSUSHPINS> [<https://perma.cc/9PH2-Q9FG>] (last updated Sept. 27, 2022).

⁵⁸ *Securitized Banking and the Run on Repo*, *supra* note 54.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, 41 *BROOKINGS PAPERS ON ECON. ACTIVITY* 261, 266 (2010).

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

to be more expensive than the first type because it would entail minimum haircuts.⁶⁵ The extent of use of the second type would also be limited.⁶⁶

Financial economist Darrell Duffie and bankruptcy law scholar David Skeel also analyzed the benefits and costs of the safe harbors.⁶⁷ On the costs side, they noted that:

[These] safe harbors could potentially raise social costs through five major channels: (1) lowering the incentives of counterparties to monitor the firm; (2) increasing the ability of, or incentive for, the firm to become too big to fail, with the attendant moral hazard of relying on bailouts; (3) inefficient substitution away from more traditional forms of financing; (4) increasing the market impact of collateral fire sales; and (5) lowering the incentives of a distressed firm to file for bankruptcy in a timely manner.⁶⁸

On the benefits side, they discussed: (1) “a reduction of the incentives of repo and derivatives counterparties to ‘run’ as soon as the debtor’s financial condition is suspect, accelerating a default or even causing a self-fulfilling expectation of default that need not otherwise occur”; (2) they increase “the ability of a firm to rely on critical hedges”; and (3) they “reduce[d] the risk of costly delivery gridlocks in securities markets that could otherwise occur at the failure of one or more systemically important financial institutions.”⁶⁹

Duffie, the economist, and Skeel, the bankruptcy law scholar, gave somewhat different weights to the costs and benefits.⁷⁰ Still, they agreed that the treatment of repos turns on the distinction between repos that are collateralized by highly “liquid” securities, on the one hand, and repos that are collateralized by less “liquid” kinds of assets.⁷¹ That is because the more liquid the market for a class of securities is, the

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ Darrell Duffie & David A. Skeel Jr., *A Dialogue on the Costs and Benefits of Automatic Stays for Derivatives and Repurchase Agreements*, in *BANKRUPTCY NOT BAILOUT* 133 (Kenneth E. Scott & John B. Taylor eds., 2012).

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

greater the expected efficiency gain of that market's continued reliance for liquidity on repo and securities lending safe harbors, and the lower the likely benefit to failing debtors of a potential stay on repos backed by that class of securities.⁷²

Legal scholars Edward Morrison, Mark Roe, and Judge Christopher Sontchi of the SDNY also considered the impact of safe harbors on "liquidity."⁷³ First, they say that the safe harbors exacerbate the fragility of core financial institutions by encouraging unstable short-term funding.⁷⁴ Second, they recognize that their "argument assumes that the safe harbors merely 'move' liquidity around, favoring some markets (repos) and not others (longer-term financing)."⁷⁵ And that "[t]he net 'liquidity effect' of the safe harbors might not be zero."⁷⁶ But "[t]he safe harbors could have a net positive effect, increasing liquidity overall and lowering the cost of capital of institutions that rely on repo financing."⁷⁷ Their reform proposal revolves around "rolling back" the safe harbors for repos other than for repo transactions, in which safe assets are used as collateral.⁷⁸ They argue that bankruptcy law should not be used to regulate financial markets.⁷⁹

The extensive debate about safe harbors prompted the interest of policymakers, but it has not led to changes in policy. Economists at the Federal Reserve Bank of New York observed that the adoption of those proposals would result in a decline in size of the repo market and the money market, in general.⁸⁰ The Financial Stability Board noted that "changes to bankruptcy law treatment [or repos] . . . may be viable

⁷² *Id.*

⁷³ See Edward R. Morrison, Mark J. Roe & Christopher S. Sontchi, *Rolling Back the Repo Safe Harbors*, 69 *BUS. LAW.* 1015 (2014).

⁷⁴ *Id.* at 1027.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.* at 1017.

⁸⁰ VICTORIA BAKLANOVA, ADAM COPELAND & REBECCA MCCAUGHRIN, REFERENCE GUIDE TO U.S. REPO AND SECURITIES LENDING MARKETS 40 (2015), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr740.pdf [<https://perma.cc/M7FE-47BP>].

theoretical options but should not be prioritized for further work at this stage due to significant difficulties in implementation.”⁸¹

D. *Repo Safe Harbors and Macroeconomics*

The policy proposals articulated by economists and lawyers alike indirectly revisited a well-known trade-off in macroeconomics between stability and efficiency. As the neoclassical macroeconomist, Thomas Sargent, noted, historically, it has been difficult for American policymakers to agree about how to draw those lines.⁸² As I showed in Section I.C., sometime in the 1980s, policymakers in the U.S. concluded under considerable influence of the private sector, that the balance should be tipped towards efficiency. As a result, money and capital markets in the U.S. became integrated. Securitization and repos were all manifestations of that process of integration of money and capital markets. Repos increased the money supply, and volatile RMBS was used as collateral. The financial system nearly collapsed as a result.

It is easy to understand why, in the wake of the GFC, legal scholars were focused on restoring stability. Through their proposal, they essentially advocated a return to a period when money markets and capital markets were separated—effectively the period before the 1980s. If regulatory frameworks for capital and money markets remain fragmented, such structural solutions may be appropriate.

However, they need not be fragmented if policymakers share a common conceptual and analytical framework as well as a policy goal. My goal in this Article is to contribute to the debate on the proper scope of safe harbors by departing from the rigid framework, arguably inspired by macroeconomic theory of Milton

⁸¹ FIN. STABILITY BD., STRENGTHENING OVERSIGHT AND REGULATION OF SHADOW BANKING 19 (2013), https://www.fsb.org/wp-content/uploads/r_130829b.pdf [<https://perma.cc/T8FK-6KEB>].

⁸² Thomas J. Sargent, *Where to Draw Lines: Stability Versus Efficiency*, 78 *ECONOMICA* 197, 199 (2011) (“The names of the liabilities (bank notes and bills of exchange in the 18th century, bank notes and deposits in the 19th and 20th centuries, claims on money market mutual funds and maybe even credit default derivatives in the 21st century), and the names of the assets (self-liquidating commercial loans in the 18th and 19th centuries, sovereign debt in the 20th, and mortgage backed securities in the 21st century) have changed, but the underlying theoretical issues endure. What kinds of assets should financial intermediaries be permitted to hold, and what kinds of liabilities should they issue? Regulating banks’ portfolios can foster a stable price level and stable monetary (narrow) aggregates, but at the cost of creating rate-of-return wedges (i.e., situations in which different people face different rates of return on assets carrying the same risks). These rate-of-return wedges open incentives for evasion and impose costs in terms of economic efficiency.”).

Friedman,⁸³ in favor of a more flexible one, emphasizing the role of the institutional frameworks in liquidity regulation. In the following two parts, I review the classical and more contemporary conceptual accounts of market and funding liquidity, their importance, and identify drivers, including legal drivers, which will help me make such a contribution later in Part IV of this Article.

II. LAW, MARKET LIQUIDITY, AND MONETARY POLICY

A. *Standard Conceptions of Market Liquidity*

The standard definition of market liquidity comes from the macroeconomist John Maynard Keynes whose *Treatise on Money* published in 1931 contains the famous definition of an asset more liquid than another if it is “more certainly realizable at short notice without loss.”⁸⁴ In his 1962 Presidential Address to the Royal Economic Society, John Hicks offers several interpretations of Keynes’ definition of liquidity.⁸⁵ The first, which he flatly rejects, focuses on the ‘without loss’ element of the definition. Under this interpretation, the liquidity of an asset can be determined by looking at the difference between the price of the asset reflected on the books of the seller and the market price of the asset. Book entries are updated periodically, so there would be nothing illiquid about an asset that sold at a discount to a price at which it has been entered in the book several months prior. It could be that the valuation of the asset has changed during that period without the asset’s liquidity being impacted.

The second interpretation of Keynes’ definition of liquidity put forward by Keynes revolves around “marketability” or “tradability.” Hicks defines a security as marketable if it is sold just as well after negotiation—search and advertising as it is without it. That is, we can compare the liquidity of two assets by the relative sacrifice one makes from a rapid sale. “An asset may be ‘realizable at short notice without loss’ in the sense that the price at which it is realizable at short notice is much the same as that at which it is realizable at longer notice.”⁸⁶ For example, consider an asset that the seller carries on its book for \$100 even though the only counterparty interested in the asset is willing to pay \$90 for it. If the counterparty is willing to pay

⁸³ Friedman famously argued that the quantity of money in circulation is the most important driver of the economic cycle. See generally MILTON FRIEDMAN & ANNA SCHWARTZ, *MONETARY STATISTICS OF THE UNITED STATES: ESTIMATES, SOURCES, METHODS* (1970).

⁸⁴ 2 JOHN MAYNARD KEYNES, *TREATISE ON MONEY* 67 (1930).

⁸⁵ J.R. Hicks, *Liquidity*, 72 *ECON. J.* 787 (1962).

⁸⁶ *Id.* at 790.

\$90 today as well as in a week, that would suggest that the asset is liquid. Hicks claims this interpretation is “more appealing” but is still not what Keynes meant.

Third, he understands Keynes’ definition of liquidity to require perfect marketability. Here, in distinguishing a more and less liquid asset the focus is on the “more certainly” realizable aspect of Keynes’ definition. Hicks suggests that, among marketable financial assets, we can regard them as more or less liquid by using a utility function to manage the trade-offs between maximizing the desirable odd moments (e.g., positive mean and skew) and minimizing undesirable even moments (e.g., variance) of asset returns. We can see clearly that this last interpretation has been informed by the emerging literature on financial economics, and in particular the work of Harry Markowitz on portfolio selection.⁸⁷

Elements of the early view of Keynesian liquidity can be identified in the later literature on market liquidity in financial economics. The work of Hirshleifer is a good example of the literature emphasizing minimal loss a crucial feature of a liquid asset.⁸⁸ In Hirshleifer’s account, investors in debt instruments apply a discount to the purchase price, which is a function of the period to maturity of the asset. For example, a corporate bond has a maturity period, which can range from one to ten years or even beyond. The maturity period, in principle, guarantees a certain rate of return over the life of the bond reflected in the interest coupon payable periodically to the investors. For example, a ten-year bond paying a five percent coupon will yield five percent annually for ten years. After the expiry of the ten years, or at the bond’s maturity date, the bond’s principal will be payable too.

If the investor holding the bond wanted to sell it before its maturity, for example, in year two or three, the prospective purchasers of the bonds would likely apply a discount to the price reflecting the risk that the rate of return over the life of the bond will be lower than expected, for example, as a result of a default of the issuer. Under this conception, shorter-term bonds, or bonds closer to maturity, would be more liquid than longer-term bonds or bonds further away from maturity.

Lippman and McCall focus on the marketability aspect of Keynes’ definition.⁸⁹ They define liquidity as “the optimal expected time to transform the asset into money.”⁹⁰ From that point of view, the critical dimension of the environment in

⁸⁷ See Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952).

⁸⁸ See Jack Hirshleifer, *Liquidity, Uncertainty and the Accumulation of Information*, in UNCERTAINTY AND EXPECTATIONS IN ECONOMICS 136 (C.F. Carter & J.L. Ford eds., 1972).

⁸⁹ Steven A. Lippman & John J. McCall, *An Operational Measure of Liquidity*, 76 AM. ECON. REV. 43 (1986).

⁹⁰ *Id.* at 44.

which the liquidity of an asset is being measured is search costs. The search costs, a species of transaction costs, determine the asset's liquidity. Stocks would be more liquid than bonds, with sell time closer to zero, largely because of the efficiency of the centralized microstructure of stock markets. Bonds, as well as repos, typically trade in a decentralized microstructure, where parties interact with each other directly rather than through a centralized intermediary, such as an exchange. Search costs tend to be higher in such markets and we could expect the liquidity of instruments trading in such markets to also be lower.

The third conception of liquidity involves the uncertainty of an asset's value. Proponents of this definition argue that it is of little importance to sell an asset on short notice and with a small loss if the asset itself is worth little when one needs it. In that sense, liquid assets are more effective in moving income through time. Holmström and Tirole explore this meaning of liquidity and distinguish between assets (such as stocks) that are generally correlated with the market, and therefore may experience dilution and assets (such as government bonds), which are generally negatively correlated with market risk.⁹¹ These safe assets are the ultimate liquid assets. In their later work, they develop a liquidity asset pricing model revolving around perfect marketability.⁹² Such instruments are sometimes referred to as information insensitive.⁹³

B. *Why Market Liquidity Matters*

In standard financial economics, liquidity matters because it helps eliminate risks associated with holding an asset. As noted by Levine, the standard link between liquidity and economic development arises because some high-return projects require a long-run commitment of capital, but savers do not like to relinquish control of their savings for long periods.⁹⁴ Thus, if the financial system does not augment the liquidity of long-term investments, less investment is likely to occur in high-return projects. Indeed, Hicks argues that the products manufactured during the first decades of the Industrial Revolution had been invented much earlier.⁹⁵ Instead, the

⁹¹ Bengt Holmström & Jean Tirole, *Private and Public Supply of Liquidity*, 106 J. POL. ECON. 1 (1998).

⁹² BENGT HOLMSTRÖM & JEAN TIROLE, *INSIDE AND OUTSIDE LIQUIDITY* 102 (2011).

⁹³ See Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49 (1990).

⁹⁴ Ross Levine, *Finance and Growth: Theory and Evidence*, in *HANDBOOK OF ECONOMIC GROWTH* 865 (Philippe Aghion & Steven N. Durlauf eds., 2005).

⁹⁵ *Id.* at 877 (citing J.R. HICKS, *A THEORY OF ECONOMIC HISTORY* 149 (1969)).

critical innovation that ignited growth in 18th century England was capital market liquidity. With liquid capital markets, savers can hold liquid assets—like equity, bonds, or demand deposits—that they can quickly and easily sell if they seek access to their savings. Simultaneously, capital markets transform these liquid financial instruments into long-term capital investments. Thus, the Industrial Revolution required a financial revolution to make large capital commitments for an extended period.⁹⁶

Market liquidity can also be instrumental to the implementation of governmental policies. In Section I.D., I alluded to the central role of market liquidity in RMBS in the pursuit of housing policies by the U.S. government. The importance of market liquidity in Treasuries is crucial for the implementation of monetary policy. Repo markets have a history as a market, in which dealers effectively resale to the Federal Reserve the Treasuries they are expected to buy on period auctions organized by the U.S. Treasury.⁹⁷ The markets existed to support monetary policy, which also explains why participants traditionally relied on Treasuries as collateral. We can also imagine that market liquidity in the so-called “green assets” will, in the future, be central to the achievement of objectives associated with the mitigation of climate change.

C. *What Drives Market Liquidity?*

Considering the importance of market liquidity for financial and economic development, we may also want to ask what the drivers of the availability of liquidity are. In the literature discussed above, liquidity is a feature of assets. Each of the above accounts makes the point that some assets may be more liquid than others, but the liquidity of all can be measured in terms of the relative difficulty of transforming them into cash without a significant discount. What would be the obstacles to making that happen?

⁹⁶ *Id.* (citing Valerie R. Bencivenga, Bruce D. Smith & Ross M. Starr, *Equity Markets, Transactions Costs, and Capital Accumulation: An Illustration*, 10 *WORLD BANK ECON. REV.* 241 (1996)). More recently, Dari-Mattiacci and co-authors, make a similar claim in the context of the emergence of the Dutch East India Company. Giuseppe Dari-Mattiacci, Oscar Gelderblom, Joost Jonker & Enrico C. Perotti, *The Emergence of the Corporate Form*, 33 *J.L., ECON., & ORG.* 193 (2017).

⁹⁷ *Administration of Relationships with Primary Dealers*, FED. RSRV. BANK N.Y. (Mar. 24, 2016), https://www.newyorkfed.org/markets/pridealers_policies.html [<https://perma.cc/XC3W-QVF8>] (“The New York Fed may take action against any primary dealer that does not comply with the standards set forth in this policy. That action will vary depending upon the type of non-compliance, but may range, for instance, from suspension from any or all operations for a period of time to termination as a primary dealer.”).

Information is the principal driver in virtually all the above accounts of market liquidity.⁹⁸ The market liquidity problem is an extension of the information problem or a matter of market efficiency. Markets are efficient when agency costs are low. As Joseph Stiglitz puts it, in a thick market with a little divergence of beliefs (a lot of information), agents can sell an asset even at times of market stress.⁹⁹ Hence these assets can be considered liquid. But at times of stress, agents have large divergences of beliefs, and hence it will be costlier to convert assets, i.e., they will be less liquid. It follows that those assets are liquid because they are information *sensitive*, which is to say their value depends on information. If information is available, traders will adapt the price, and there will be no obstacles for trading.

What we have said so far would suggest that the primary way in which law could increase market liquidity would be by reducing information, or more generally, agency costs, including search costs. Under this view, assets trading in more efficient markets should be more liquid. La Porta, Lopez-de-Silanes, and Shleifer showed that regulations and supervisory practices that force accurate information disclosure boost the overall level of stock market liquidity.¹⁰⁰ In other words, the law can increase liquidity by reducing information costs.

Does the above claim apply equally to debt markets? Recent theoretical research suggested that it does not because debt is different, and its economic properties are only slowly becoming understood.¹⁰¹ Recent empirical research confirms that. For example, in a recent study, economists examined the liquidity effects of a European regulation that requires banks to provide detailed disclosures

⁹⁸ As Hirshleifer notes, “[t]he great advantage of short-term assets, given risk-aversion and an uncertain world, is that they facilitate the utilization of new information about the environment as it becomes available over time.” Hirshleifer, *supra* note 88. Lippman’s and McCalls’s emphasis on search costs also covers information. Lippman & McCall, *supra* note 89, at 49 (“Illiquid asset is one that can’t be sold This can occur when there are informational asymmetries . . . that induce the potential buyers to undervalue the asset.”).

⁹⁹ See Joseph E. Stiglitz, Professor, Columbia Univ., Presentation at the Federal Reserve Bank of Atlanta 2014 Financial Markets Conference: Tapping the Brakes: Are Less Active Markets Safer and Better for the Economy? 10 (Apr. 15, 2014), <https://www.atlantafed.org/-/media/Documents/news/conferences/2014/-fmc/Stiglitz.pdf> [<https://perma.cc/9WH2-2V8L>].

¹⁰⁰ Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Schleifer, *What Works in Securities Laws?*, 61 J. FIN. 1 (2006).

¹⁰¹ See generally Bengt Holmström, *Understanding the Role of Debt in the Financial System 1* (Bank for Int’l Settlements, Working Paper No. 479, 2015).

about the individual loans underlying their RMBS.¹⁰² They found that the liquidity of treated RMBSs declined by fourteen percent post-regulation. How to explain that?

The results confirm that many investors, mostly money market investors, do not particularly care about information but just want or need to allocate their money safely. They seek debt because debt, particularly overcollateralized debt, can be designed as information-insensitive.¹⁰³ When presented with additional information about such asset, investors decided to withdraw their money altogether, not necessarily because the quality of the asset has deteriorated but because of the cost of processing the additional information about the assets.

RMBS is an information-insensitive asset in a low-information regime, but that is no longer the case in a high-information regime like the one introduced by the new regulation. Information production is costly, and investors may not be willing to always incur that cost, even though various information intermediaries, such as banks and credit rating agencies, can help reduce the cost of information production. That said, information production is costly for them too. As Holmstrom notes:

People often assume that liquidity requires transparency, but this is a misunderstanding. What is required for liquidity is symmetric information about the payoff of the security that is being traded so that adverse selection does not impair the market. Without symmetric information adverse selection may prevent trade from taking place or in other ways impair the market. Trading in debt that is sufficiently over-collateralized is a cheap way to avoid adverse selection. When both parties know that there is enough collateral, more precise private information about the collateral becomes irrelevant and will not impair liquidity.¹⁰⁴

These findings suggest an interesting, somewhat counterintuitive dynamic, namely, transparency does not necessarily increase market liquidity of assets secured by collateral, such as repo and RMBS. Instead, transparency in debt markets can contribute to a *decrease* in market liquidity. This is not an argument against improving market infrastructure. On the contrary, it supports the case for better infrastructure. Market liquidity sometimes is not an option even for the safest assets,

¹⁰² See generally Karthik Balakrishnan, Aytekin Ertan & Yun Lee, *(When) Does Transparency Hurt Liquidity?* (Sing. Mgmt. Univ. Sch. Acct., Research Paper No. 2021-126, 2020).

¹⁰³ Gorton & Pennacchi, *supra* note 93, at 65.

¹⁰⁴ Holmström, *supra* note 101, at 5.

not even for Treasuries.¹⁰⁵ That is because market liquidity ultimately rests on funding liquidity, and that is sometimes scarce. As captured in the famous adage of Keynes, “[o]f the maxims of orthodox finance none, surely, is more anti-social than the fetish of liquidity, the doctrine that it is a positive virtue on the part of the investment institutions to concentrate their resources upon the holding of ‘liquid’ securities. It forgets that there is no such thing as liquidity of investment for the community as a whole.”¹⁰⁶

III. LAW, FUNDING LIQUIDITY, AND MONETARY POLICY

A. *Standard Conceptions of Funding Liquidity*

Market liquidity ultimately rests on funding liquidity because banks, and investors, need to get their money from somewhere—it is rare for them to rely on their own capital. To my knowledge, the first paper to introduce the concept of funding liquidity was James Pierce’s “Commercial Bank Liquidity.”¹⁰⁷ Pierce explored the issue of liquidity management by banks focusing on its impact on the availability of credit. What did Pierce understand as funding liquidity (or, as he called it, “commercial bank liquidity”)?

On the funding side, his focus was on demand deposits and loans from the Federal Reserve. He observed that liquidity is an essential determinant in decisions to make loans. In his model, commercial loans are assumed to be illiquid (as they were at that time because banks would originate them and hold them on their balance sheet), and the only other asset that banks can hold consists of ‘liquid assets.’ The latter serves as a buffer for unexpected deposit withdrawals.

He distinguishes an institutional approach to bank management from a portfolio approach. Under the first approach, which has prevailed for a long time, banks prioritized liquidity. By contrast, under the second approach—inspired by developments in theories of portfolio management, which were starting to gain prominence in the 1960s—banks will maximize their profits.

¹⁰⁵ See generally Andreas Schrimpf, Hyun Song Shin & Vladyslav Sushko, *Leverage and Margin Spirals in Fixed Income Markets During the Covid-19 Crisis*, 2 BIS BULL. 1, 1–8 (2020) (“Even though government bonds are safe assets, large holdings by leveraged investors may detract from orderly market functioning and may necessitate interventions by the central bank.”).

¹⁰⁶ JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY* 78 (1936).

¹⁰⁷ See generally James L. Pierce, *Commercial Bank Liquidity*, 52 FED. RSRV. BULL. 1093, 1093 (1966).

An increase in the expected return on loans relative to liquid assets encourages banks to shift funds into loans in this approach. Even though this shift of funds reduces the liquidity of the asset portfolio, a bank is willing to accept an increased probability of either unforeseen asset sales or borrowing from its Reserve Bank if it is sufficiently compensated by an increased rate of return on loans.¹⁰⁸

He later introduces certificates of deposits (“CDs”)—an instrument akin to commercial paper used to borrow on a short term by firms—as an alternative source of funding liquidity. Pierce argues that “the ability of banks to market their liabilities induces them to desire a higher loan-to-deposit ratio for every value of the terms on new loans.”¹⁰⁹ This leads him to conclude that “when endogenous liabilities are introduced, asset liquidity loses much of its crucial importance. Markets for CD’s and other endogenous liabilities bear part of the burden of adjustment to exogenous deposit losses.”¹¹⁰ [The paper by Pierce is perhaps the first to suggest that funding liquidity can effectively act as a replacement for market liquidity.]

The focus of the later literature on funding liquidity is on the interbank market, which is the primary source of funding for banks in many contemporary financial systems. This strand of literature has its origins in a 1987 paper by Douglas Gale and Sudipto Bhattacharya.¹¹¹ The focus of their analysis is on liquidity shocks arising because of deposit withdrawals. Because these withdrawals are imperfectly correlated across banks, banks can essentially provide insurance to each other through interbank lending markets.

Indeed, interbank lending markets have become an essential source of funding for banks in the 1980s. Historically, banks have borrowed from each other in the federal funds market or the market for bank reserves held at the Federal Reserve. Beginning in the 1960s, the Eurodollar market became an important source of funding for banks as well as corporations and governments.¹¹² As they note, banks can also borrow from each other through repos. They find that the Eurodollar and

¹⁰⁸ *Id.* at 1098.

¹⁰⁹ *Id.* at 1100.

¹¹⁰ *Id.* at 1101.

¹¹¹ See generally Douglas Gale & Sudipto Bhattacharya, *Preference Shocks, Liquidity, and Central Bank Policy*, in *NEW APPROACHES TO MONETARY ECONOMICS* 35 (W. Barnett & K. Singleton eds., 1987).

¹¹² Selva Demiralp, Brian Preslopsky & William C. Whitesell, *Overnight Interbank Loan Markets*, 58 *J. ECON. & BUS.* 67, 70 (2004).

repo markets have replaced the fed's fund market as the go-to-market for interbank loans.

Franklin Allen and Douglas Gale develop a more sophisticated account of interbank markets revolving around hedging as a form of financial innovation.¹¹³ Credit default swaps are a common form of hedging, but banks use other types of swaps, in particular foreign exchange swaps and interest rate swaps. The use of these instruments has transformed the role of banks in the U.S.¹¹⁴

Financial intermediaries use markets to hedge themselves against liquidity shocks. They can only do that efficiently if markets are complete, i.e., provide a hedge for all possible types of liquidity shocks. Allen and Gale argue that while markets can provide insurance against liquidity shocks that are imperfectly correlated across banks, they cannot provide insurance against perfectly correlated aggregate liquidity shocks. Market incompleteness could give rise to financial intermediaries resorting to (fire) asset sales.¹¹⁵

Allen, Carletti, and Gale analyze how the central bank should intervene to complete markets and effectively restore efficiency.¹¹⁶ Using open market operations to fix the short-term interest rate, the central bank can prevent price volatility and implement an efficient solution. These models get further extended by incorporating the provision of liquidity by central banks through the issuance of money.¹¹⁷ This means that central banks are replacing private banks in repo markets or employing quantitative easing.

B. *Why Does Funding Liquidity Matter?*

Financial institutions manage funding liquidity through the interbank lending market as well as by employing various hedging strategies. The Federal Reserve monitors the availability of funding liquidity in the money market and seeks to address distortions in the availability of liquidity through direct or indirect

¹¹³ See generally Franklin Allen & Douglas Gale, *Financial Intermediaries and Markets*, 72 *ECONOMETRICA* 1023 (2004).

¹¹⁴ Franklin Allen & Anthony M. Santomero, *What Do Financial Intermediaries Do?*, 25 *J. BANKING & FIN.* 271, 273 (2001).

¹¹⁵ See generally Jean Tirole, *Illiquidity and All Its Friends*, 49 *J. ECON. LITERATURE* 287 (2011).

¹¹⁶ See generally Franklin Allen, Elena Carletti & Douglas Gale, *Interbank Market Liquidity and Central Bank Intervention*, 56 *J. MONETARY ECON.* 639 (2009).

¹¹⁷ See generally Franklin Allen, Elena Carletti & Douglas Gale, *Money, Financial Stability and Efficiency*, 149 *J. ECON. THEORY* 100 (2013).

interventions in that market. Its actions are dependent on how ineffective the money market is in supplying liquidity.

Most of the time, the market is effective, which allows for the effective transmission of monetary policy and efficient operation of the money and capital markets. When that is the case, we will observe continuous markets at the various prices of money. The distinction between, on the one hand, a repo backed by Treasuries and, on the other, a repo backed by RMBS will appear as merely a quantitative differentiation between the prices of various financial assets even though the two are qualitatively different. As Mehrling notes, this transformation from quality to quantity makes it possible to construct theories of economics and finance that abstract from the hierarchical character of the system (as most do).¹¹⁸

However, as Mehrling further notes, the hierarchical character remains, and shows itself from time to time, especially when the market makers are not doing their job well, or when they are overwhelmed by the task at hand, such as under the extreme stress of war finance or during periods of a financial crisis

Even in less extreme times, the normal fluctuation of the hierarchy regularly puts strain on market making institutions. In expansion mode, it is an easy business. But a contraction of credit, or steeping of the hierarchy, means an increased qualitative differentiation between credit and money, which is to say between the instruments the market maker holds as assets and the instruments it holds as liabilities.¹¹⁹

Funding liquidity matters because it constitutes the foundation of market liquidity. The monetary and financial systems are closely linked, but that link, or relationship, is hierarchical as described in Section I.E. What the Federal Reserve and dealers do in the money market has direct implications for capital market creditors, but also debtors. Monetary policy is the key driver of funding liquidity, and thereby market liquidity. It can even replace market liquidity altogether, as it has for RMBS during the GFC.

C. What Drives Funding Liquidity?

Monetary policy drive funding liquidity, but what is the mechanism of that impact exactly? Consider a stylized description of the operation of the money market

¹¹⁸ See generally PERRY MEHLING, *THE NEW LOMBARD STREET* (2010).

¹¹⁹ *Id.*

and its impact on the capital market during a period of expansionary monetary policy presented by Perry Mehrling, another leading figure of macro-finance.¹²⁰ The stylized description assumes that expansionary monetary policy is conducted by way of money market operations involving repo. I noted earlier that in the regime of ample reserve, monetary policy is more likely to be conducted by way of asset purchases (or sales) or changes in the IOR.

However, that shift in the means of implementation of monetary policy does not fundamentally alter its impact on liquidity. The immediate effect of expansionary monetary policy is to increase liquidity and that effect is achieved irrespective of whether the policy is implemented by way of money market operations involving repo (or reverse repo), asset purchases (or sales) or changes in the IOR.

Expansionary policy means lower money market rates allowing dealers to buy or, more commonly, fund (through repos) financial assets originating in capital markets, such as corporate bonds, loans, and RMBS. The price of those assets increases immediately. There may be an impact on the greater availability of credit, but that comes later when investment bankers start underwriting new debt for their corporate clients and commercial bankers start underwriting loans for households.

When the price of those assets goes up, the yields on those assets go down. By anticipating the demand for those assets, including their demand as collateral, their sellers, or providers, such as investment banks, will offer lower yields when underwriting bonds, loans, or RMBS for their clients. One of the crucial and often overlooked impacts of expansionary monetary policy is on draining the system of valuable collateral, particularly Treasuries. In the absence of Treasury collateral, other types of assets, such as RMBS, will have to fill the gap. Furthermore, the underwriters of those assets, particularly investment banks, will be incentivized to create more of them because of the increase in demand and rising asset prices. Figure 2 below represents a simplified scheme of the relationship between money markets and capital markets.

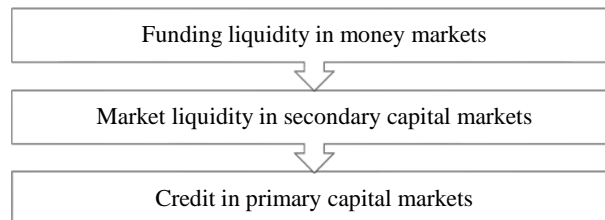


Figure 2: Money Market Funding of Capital Market Lending

¹²⁰ *Id.*

What, if anything, does the above ‘top-to-bottom’ description of the impact of expansionary monetary policy on liquidity tell us about the economic effects of the safe harbors? The effective transmission of monetary policy depends on the policymakers’ ability to regulate liquidity in the financial system. As noted earlier, in the U.S., the Board seeks to regulate the availability of liquidity in the financial system by setting the price of money and certain money-like instruments, such as repo. Tobias Adrian and Hyun Song Shin even define liquidity as the rate of growth of repo.¹²¹ They also analyzed how monetary policy affects overall liquidity conditions.¹²² When monetary policy is “loose” relative to macroeconomic fundamentals, financial institutions expand their balance sheets through collateralized borrowing; as a consequence, the supply of liquidity increases. Conversely, when monetary policy is “tight,” institutions shrink their balance sheets, reducing the stock of repos and the overall supply of liquidity.

What is the implication of this finding for our understanding of the economic effects of the safe harbors? Recall that Morrison, Roe, and Sontchi’s main concerns were that the safe harbors (i) move liquidity around towards unstable short-term funding; and (ii) possibly could have a net positive effect, increasing liquidity overall and lowering the cost of capital of institutions that rely on repo financing.¹²³ From a macro-financial standpoint, those concerns are more justified during a period of expansionary monetary policy when the repo safe harbors could exacerbate the effects of expansionary monetary policy by over-incentivizing creditors to lend.

For example, despite linking the safe harbors to liquidity, Morrison, Roe, and Sontchi fail to consider the crucial role of monetary policy in determining liquidity. The massive influx of liquidity into the RMBS asset class came on the back of the expansionary monetary policy of the early 2000s. That policy shifted to a contractionary mode in 2005, as illustrated in Figure 3 in response to concerns about the housing market, which is also when prices started falling.¹²⁴ Is it plausible to suggest that the safe harbors exacerbated the intended effects of expansionary monetary policy of the early 2000s?

¹²¹ Adrian & Shin, *supra* note 8.

¹²² *Id.*

¹²³ See Morrison, Roe & Sontchi, *supra* note 73.

¹²⁴ *Federal Funds Effective Rate*, FRED, <https://fred.stlouisfed.org/series/FEDFUNDS> (last updated Apr. 1, 2022).

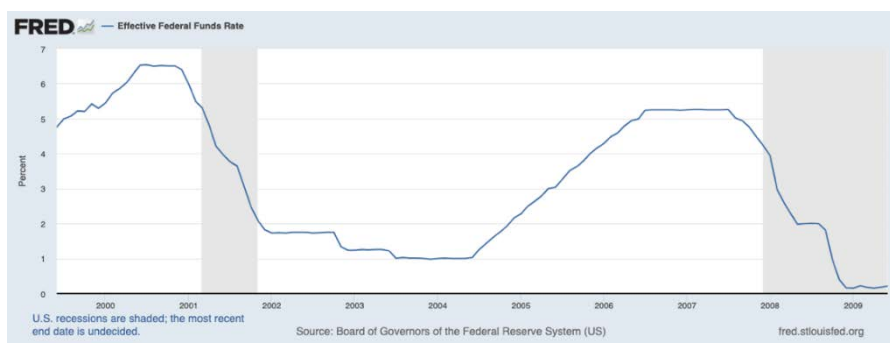


Figure 3: Federal Funds Rate (1998–2010)

In the years leading up to the GFC, the safe harbors facilitated a large influx of liquidity to mortgage markets on the back of expansionary monetary policy. That effect existed because repo safe harbors exacerbated the effects of expansionary monetary policy by incentivizing creditors to oversupply liquidity.¹²⁵ During periods characterized by an expansionary monetary policy stance, the safe harbors incentivized creditors to make funding liquidity more available to debtors and allowed them to finance more assets thereby increasing their market liquidity. Aggregate liquidity increased and, in the absence of appropriate regulatory measures aimed at regulating it, flooded the economy and potentially made it vulnerable to violent disruptions.

When monetary policy stance shifted from an expansionary one to a contractionary one, the safe harbors had the opposite effect. During periods of contractionary monetary policy, the safe harbors incentivized creditors to reduce the availability of funding liquidity, prompting debtors to deleverage by selling assets thereby reducing their market liquidity. Aggregate liquidity increased and, in the absence of appropriate regulatory measures aimed at supporting it, a liquidity crisis ensued. The GFC was, at its core, a liquidity crisis. As a consequence of falling asset

¹²⁵ See Maclachlan, *supra* note 40, at 518 (“The Fed’s low interest rate policy in the early 2000s created an incentive for money market funds to venture into riskier repo, as a means of generating enough revenue to cover their operating costs. Still another factor responsible for the growing use of nontraditional collateral was the shortage of traditional collateral that was . . . emerging as a result of the demand for it in derivatives transactions and in payments systems.”); see also Kandarp Srinivasan, *The Securitization Flash Flood*, CORP. L. & FIN. EJ. (2019), <https://papers.ssrn.com/abstract=2814717> (showing that demand for safe collateral in repo markets made it attractive for financial institutions to issue securitized products; using the 2005 BAPCPA as a natural experiment that shocked the demand for collateral in repo markets, it establishes collateralized borrowing in short-term debt markets as a contributing factor to the rise of mortgage securitization).

prices, particularly RMBS prices, dealers could not make markets in those assets and banks did not have sufficient capital.¹²⁶

The safe harbors are not the only institutional framework affecting liquidity. Following the GFC, influential research by macro-financial economists at the International Monetary Fund (“IMF”) showed the impact of the rules for collateral rehypothecation or re-use on funding liquidity.¹²⁷ A simple example of a scenario in which collateral is rehypothecated is when a primer broker uses the collateral provided by its client, e.g., a hedge fund, to fund its activity.¹²⁸ The primer broker can use that to obtain its funding. Note the dynamic here—the prime broker has money, and the hedge fund has collateral. The hedge fund uses the collateral to obtain money, which it can now invest. The prime broker uses the same collateral also to obtain money. The limits to the size of rehypothecation are primarily practical, not legal.

As Manmohan Singh and James Aitken, the researchers at the IMF, note, this was certainly the case in the U.K.¹²⁹ They provide a fascinating account of the differences in rehypothecation rules in the U.K. and the U.S.¹³⁰ The fundamental difference is that, in the U.K., an unlimited amount of the customer’s assets can be rehypothecated, and there are no customer protection rules.¹³¹ By contrast, in the U.S., Rule 15c3-3 of the Securities Act limits a broker-dealer from using its customer’s securities to finance its proprietary activities.¹³² Under Regulation T, the broker-dealer may use/rehypothecate an amount up to 140% of the customer’s debit balance.¹³³

¹²⁶ Markus Brunnermeier, *Deciphering the Liquidity and Credit Crunch 2007–2008*, 23 J. ECON. PERSPS. 77 (2009).

¹²⁷ Manmohan Singh & James Aitken, *The (Sizable) Role of Rehypothecation in the Shadow Banking System 1* (Int’l Monetary Fund, Working Paper No. 10/172, 2010).

¹²⁸ *Id.* at 3 (“Every Customer Account Agreement or Prime Brokerage Agreement with a prime brokerage client will include blanket consent to this practice unless stated otherwise. In general, hedge funds pay less for the services of the prime broker if their collateral is allowed to be rehypothecated.”).

¹²⁹ *Id.* at 4.

¹³⁰ *Id.* at 4–13.

¹³¹ *Id.* at 4.

¹³² *Id.*

¹³³ *Id.*

Furthermore, the U.S. also has a dedicated investor protection regime for borrowers whose collateral had been rehypothecated.¹³⁴ In 1970, the U.S. created the Securities Investor Protection Corporation (“SIPC”) through the Securities Investor Protection Act.¹³⁵ The SIPC had been designed to return funds to investors who have been harmed by a troubled brokerage firm’s activities.¹³⁶ As they note:

[T]his difference between the United States and the United Kingdom meant that when Lehman Brothers International Europe (LBIE, U.K.) filed for insolvency, there was little statutory protection available to those customers who allowed re-use of their collateral. In the United States, however, SIPA provides for certain procedures that will apply in the event of the insolvency of a broker-dealer.¹³⁷

The consequences were striking in the case of Lehman.¹³⁸ Lehman’s administrators, PricewaterhouseCoopers, confirmed in October 2008 that certain assets provided to LBIE were rehypothecated and no longer held for the customer on a segregated basis.¹³⁹ As a result, the client may no longer have a proprietary interest in the assets. LBIE investors (e.g., hedge funds) fell within the general body of unsecured creditors.¹⁴⁰ Consequently, hedge fund assets with LBIE have remained frozen in the U.K., whereas this is not the case in the United States thanks to SIPA.¹⁴¹ Disentangling hedge fund assets from the broker-dealer/banks’ proprietary assets that have been rehypothecated together has been an onerous task in the U.K.¹⁴²

The repeated use of source collateral facilitates system-lubrication but also the build-up of leverage-like collateral chains between banks and asset managers.¹⁴³ As Singh and Pozsar note, the re-use of collateral has implications for the analysis of

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *See id.*

¹³⁹ *Id.* at 5.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ Manmohan Singh, *Velocity of Pledged Collateral: Analysis and Implications* 1 (Int’l Monetary Fund, Working Paper No. 11/256, 2011).

financial institutions' balance sheets and the measurement of financial and monetary aggregates.¹⁴⁴ Singh further notes that post-Lehman, two effects have occurred: overall collateral availability has declined, and the intermediation chains have become much shorter.¹⁴⁵ He notes that this decline in leverage and re-use of collateral may be viewed positively from a financial stability perspective.¹⁴⁶ However, from a monetary policy perspective, the lubrication in the global financial markets is now lower as the velocity of money-type instruments has declined.¹⁴⁷

Institutionally, a possible interpretation of these findings is that central bankers should play a greater role in guiding legal policy makers with respect to the optimal macro-financial design of the rules that have a considerable effect on liquidity, such as the rules on rehypothecation or the safe harbors. That has not been the case so far. For example, concerning rules on rehypothecation, the focus of existing discussions is on the harmonization of rules.¹⁴⁸ Such harmonization efforts can further exacerbate the effects of monetary policy and distort its transmission globally, thereby undermining the productive capacity of the world's economy. The restrictive proposals for the reform of the safe harbors could have a similar effect. To counter such affects, policymakers need an analytical framework for revolving around liquidity and linking monetary policy and the law, in particular bankruptcy law.

IV. LIQUIDITY REGULATION

The GFC dramatically showcased the need for liquidity regulation.¹⁴⁹ Nevertheless, liquidity regulation has generally lagged behind other regulatory reforms prompted by the crisis.¹⁵⁰ In a 2014 speech, Daniel Tarullo, a former member

¹⁴⁴ Pozsar & Singh, *supra* note 35. These items are importantly not covered by traditional accounting concepts and financial analyses nor directly addressed by Basel III at the individual financial institution level.

¹⁴⁵ Singh, *supra* note 143, at 3.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ See FIN. STABILITY BD., TRANSFORMING SHADOW BANKING INTO RESILIENT MARKET-BASED FINANCE (2017), <https://www.fsb.org/wp-content/uploads/Re-hypothecation-and-collateral-re-use.pdf> [<https://perma.cc/WB25-VHK9>].

¹⁴⁹ Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Rsrv. Sys., Speech at the Clearing House 2014 Annual Conference: Liquidity Regulation (Nov. 20, 2014), <https://www.federalreserve.gov/newsevents/speech/tarullo20141120a%20.htm> [<https://perma.cc/L6DZ-V7K3>].

¹⁵⁰ *Id.*

of the Board, identified two key reasons why liquidity regulation has fallen behind.¹⁵¹ First, before the GFC, there was little, if any, regulation of liquidity and hence little experience to draw on.¹⁵² Second, liquidity regulation complements and depends on other important financial policies—notably capital regulation, resolution procedures, and lender-of-last-resort practice.¹⁵³ As he notes, “work on liquidity regulation has built on reforms in these other areas and occasioned some consideration of the interaction among these various policies.”¹⁵⁴

For example, it is apparent that prior to the GFC, banking regulation had procyclical effects, which monetary policy did not account for.¹⁵⁵ Following the GFC, banking regulations have been adapted to account for changes in the macroeconomic environment, but their specific design has in recent years continued to interfere with the transmission of monetary policy, as discussed in more detail below. The effects of the repo safe harbors considered in this Article further complicate the task of coordination of monetary and prudential policies.

Below, I discuss the emerging paradigm of liquidity regulation and its limitations. I argue that while banking regulation is crucial to effective liquidity regulation, it is insufficient under the current institutional setup of the monetary and financial system. Effective liquidity regulation also needs to consider how the current design of the repo safe harbors affects liquidity, and thereby the transmission of monetary policy.

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ *Id.*

¹⁵⁵ See Claudio Borio et al., *Procyclicality of the Financial System and Financial Stability: Issues and Policy Options*, 1 BANK INT’L SETTLEMENTS PAPERS 1, 57 (2001) (arguing that risk models relied on by banks allow them to lower capital requirements in moments when the probability of crisis increases); Tobias Adrian & Hyun Song Shin, *Liquidity and Leverage*, 19 J. FIN. INTERMEDIATION 418 (2010) (showing that during booms, banks increase their liabilities by more than their assets have risen, thus raising their leverage) (“During troughs, they reduce their liabilities more sharply than their assets have declined, thus lowering their leverage.” As they further note, the actions of the investment banks are guided by the banks’ models of risk and economic capital dictate active management of their overall value at risk—the risk of loss on banks’ asset portfolios—through adjustments of their balance sheets.); ERIK F. GERDING, *LAW, BUBBLES, AND FINANCIAL REGULATION* (2014) (noting these procyclical effects occurred in the normal operation of those rules).

A. *Banking Regulation as Liquidity Regulation*

Tarullo focuses on banks when discussing the emerging paradigm of liquidity regulation that¹⁵⁶—in the aftermath of the GF—have been made subject to stricter capital requirements under the third iteration of the Basel Accords (“Basel III”).¹⁵⁷ But Basel III went further. For the first time, it required banks to comply with a liquidity ratio, which dictates that banks hold a certain amount of assets characterized by market liquidity, also referred to as high-quality liquid assets.¹⁵⁸ It also introduced an element of countercyclicality to banking regulation through the countercyclical capital buffer, which aims to ensure that banking sector capital requirements account for the macro-financial environment in which banks operate.¹⁵⁹ All the above measures have implications for liquidity, even though it is difficult, at this time, to say what the impact of their adoption has on liquidity.¹⁶⁰

Basel III also required banks to comply with a leverage ratio designed to prevent banks from incurring too much debt.¹⁶¹ In 2014, the Federal Reserve, together with the Office of the Comptroller of Currency and the Federal Deposit Insurance Corporation, introduced the leverage ratio requirement of Basel III by way of the SLR.¹⁶² The SLR captures on- and off-balance sheet exposures as well as

¹⁵⁶ See Tarullo, *supra* note 149.

¹⁵⁷ BASEL COMM. ON BANKING SUPERVISION, *BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEM* (2010).

¹⁵⁸ *Liquidity Coverage Ratio (LCR)—Executive Summary*, BIS (Apr. 30, 2018), <https://www.bis.org/fsi/fsisummaries/lcr.htm> [<https://perma.cc/KZ83-FLVV>].

¹⁵⁹ *Countercyclical Capital Buffer (CCyB)*, BIS, <https://www.bis.org/bcbs/ccyb/index.htm> [<https://perma.cc/Y7JL-BABC>] (last updated Dec. 17, 2021) (“Its primary objective is to use a buffer of capital to achieve the broader macroprudential goal of protecting the banking sector from periods of excess aggregate credit growth that have often been associated with the build-up of system-wide risk. Due to its countercyclical nature, the countercyclical capital buffer regime may also help to lean against the build-up phase of the credit cycle in the first place. In downturns, the regime should help to reduce the risk that the supply of credit will be constrained by regulatory capital requirements that could undermine the performance of the real economy and result in additional credit losses in the banking system.”).

¹⁶⁰ See generally Stephen J. Lubben, *Resolution, Orderly and Otherwise: B of A in OLA*, 81 U. CIN. L. REV. 485, 489 (2013) (discussing orderly bank resolution rules that have been put in place and which are a crucial part of the emerging paradigm of liquidity regulation).

¹⁶¹ *Basel III Leverage Ratio Framework—Executive Summary*, BIS (Oct. 25, 2017), https://www.bis.org/fsi/fsisummaries/b3_lrf.htm [<https://perma.cc/G29M-N54K>].

¹⁶² *Id.*

derivatives and, crucially, repo-style exposures.¹⁶³ U.S. Global Systematically Important Banks (“G-SIBs”) are subject to higher minimum ratios.¹⁶⁴ In the U.S., the SLR for G-SIBs is also higher than in other countries. The leverage ratio is believed to have had a considerable and somewhat unintended effect on liquidity.

Two recent instances of a liquidity crisis are commonly attributed, in part, to the SLR. First, as already discussed earlier, in mid-September 2019, overnight money market rates spiked, prompting the Federal Reserve to offer up to \$75 billion daily against Treasury, agency, and agency MBS collateral for an extended period of time.¹⁶⁵

A more recent liquidity crisis occurred in March 2020, in the early days of the COVID-19 pandemic.¹⁶⁶ Despite a deteriorating economy, the yield on ten-year Treasuries increased by sixty-four basis points from March 9th to March 18th.¹⁶⁷ As Vissing-Jorgensen notes, this was not due to higher expected inflation or increased default risk for government debt—factors that would ordinarily explain such a move.¹⁶⁸ In response, the Federal Reserve purchased over one trillion dollars of Treasuries in the first quarter of 2020, more than in either the first, second or third quantitative easing program of the Federal Reserve.¹⁶⁹

Furthermore, in March 2020, the Federal Reserve also temporarily suspended the operation of the SLR by excluding U.S. Treasury securities and deposits at Federal Reserve Banks from the calculation of the rule.¹⁷⁰ The press release from 2020 said:

¹⁶³ *Id.*

¹⁶⁴ *See id.*

¹⁶⁵ Anbil, Anderson & Senyuz, *supra* note 32.

¹⁶⁶ *See* ANNETTE VISSING-JORGENSEN, THE TREASURY MARKET IN SPRING 2020 AND THE RESPONSE OF THE FEDERAL RESERVE (2021), <https://www.nber.org/papers/w29128> [<https://perma.cc/K8CE-M7CA>].

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ Press Release, Bd. of Governors of the Fed. Rsrv. Sys., Federal Reserve Board Announces Temporary Change to Its Supplementary Leverage Ratio Rule to Ease Strains in the Treasury Market Resulting from the Coronavirus and Increase Banking Organizations’ Ability to Provide Credit to Households and Businesses (Apr. 1, 2020) [hereinafter Coronavirus Leverage Ratio Release].

Liquidity conditions in Treasury markets have deteriorated rapidly, and financial institutions are receiving significant inflows of customer deposits along with increased reserve levels. The regulatory restrictions that accompany this balance sheet growth may constrain the firms' ability to continue to serve as financial intermediaries and to provide credit to households and businesses. The change to the supplementary leverage ratio will mitigate the effects of those restrictions and better enable firms to support the economy.¹⁷¹

In anticipation of the expiry date of the suspension, a heated debate took place among the proponents of an extension of the suspension and the advocates of putting an end to it. The industry was overwhelmingly in favor of an extension,¹⁷² but many commentators pointed out the self-serving nature of that position.¹⁷³ In March 2021, the Federal Reserve announced that it would not extend the suspension.¹⁷⁴

The liquidity crises of 2019 and 2020 showcased new challenges for the existing bank-centered paradigm of liquidity regulation. Banking regulation has changed considerably following the GFC, in large part, to incentivize financial institutions to manage liquidity more conservatively. Banks started doing just that, but that had the unintended consequences of affecting liquidity and monetary policy transmission.

The Federal Reserve addressed the 2019 liquidity crisis through a significant direct intervention. In March 2020, it adopted the same ad hoc tool but also went further by suspending the SLR. Several commentators pointed out that that move

¹⁷¹ *Id.*

¹⁷² Francisco Covas & Anna Harrington, *Regulators Need to Revisit the Calibration of Leverage Ratios*, BANK POL'Y INST. (Mar. 3, 2021), <https://bpi.com/regulators-need-to-revisit-the-calibration-of-leverage-ratios> [https://perma.cc/MRS9-VFTX].

¹⁷³ See, e.g., Jeanna Smialek, *Fed Lets Break for Banks Expire but Opens Door to Future Changes*, N.Y. TIMES (Mar. 19, 2021, 10:42 PM), <https://www.nytimes.com/2021/03/19/business/economy/federal-reserve-bank-leverage.html>; Colby Smith & James Politi, *Democratic Senators Call for Tougher Capital Requirements for US Banks*, FIN. TIMES (Mar. 2, 2021), <https://www.ft.com/content/44792b80-c331-44e3-b02c-41a151f4cb6c>.

¹⁷⁴ Jeff Cox, *The Fed Will Not Extend a Pandemic-Crisis Rule That Had Allowed Banks to Relax Capital Levels*, CNBC (Mar. 19, 2021, 9:00 AM EDT), <https://www.cnbc.com/2021/03/19/the-fed-will-not-extend-a-pandemic-crisis-rule-that-had-allowed-banks-to-relax-capital-levels.html#:~:text=Federal%20Reserve-,The%20Fed%20will%20not%20extend%20a%20pandemic%20crisis%20rule%20that,banks%20to%20relax%20capital%20levels&text=The%20Fed%20declined%20to%20extend,deposits%20from%20their%20reserve%20requirements> [https://perma.cc/M2HU-YRZP].

potentially undermined the capital adequacy of the banking system.¹⁷⁵ In other words, there are good reasons why the SLR should not be used in this way for liquidity regulation.

More importantly, even those who blamed the SLR for the 2019 and 2020 liquidity crises acknowledge that the SLR was only part of the problem. Some recalibration of the SLR may be warranted. Still, it is implausible to argue that it will be sufficient to manage liquidity on a system-wide basis. The current institutional setup of the money market makes the task of liquidity regulation far more challenging.

B. *The Collateral Supply Effect*

Carolyn Sissoko is one of the leading figures in macro-financial economics identifying those challenges. She recently put forward a provoking argument on why liquidity regulation is more challenging in the current institutional setup of the money market.¹⁷⁶ In her view, the liquidity crises of 2019 and 2020 demonstrated that liquidity in the money market is now a function of *collateral supply*.¹⁷⁷ Put simply, banks can only access funding in the money market if they provide adequate collateral. Sissoko identifies three specific problems that this dynamic creates for liquidity regulation.¹⁷⁸

First, a sufficient supply of sufficient quality collateral is necessary for the expansion of liquidity. Treasuries are the highest quality of collateral available. It would seem that the issuance of more Treasuries would be desirable and increase liquidity. However, as pointed out by Sissoko, government debt issues now affect the money market not just due to the need to settle payment for the debt but also due to the ongoing need to fund the carry of the debt.¹⁷⁹ Building on the work of Zoltan Pozsar,¹⁸⁰ the leading authority on the money market, Sissoko notes:

¹⁷⁵ James Politi, *Federal Reserve Debates Tougher Regulation to Prevent Asset Bubbles*, FIN. TIMES (Oct. 17, 2020), <https://www.ft.com/content/5c2b7d15-7e37-475a-8d42-1e8e0a3b8708>.

¹⁷⁶ Carolyn Sissoko, Senior Lecturer—Econ., Univ. W. Eng., Paper Presented at the Yale Program on Financial Stability: The Collateral Supply Effect on Central Bank Policy (Feb. 17, 2021), <https://papers.ssrn.com/abstract=3545546> [<https://perma.cc/9JZD-8GWZ>].

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ *Id.* at 14.

¹⁸⁰ ZOLTAN POZSAR, GLOBAL MONEY NOTES #22: COLLATERAL SUPPLY AND O/N RATES (2019), <https://research-doc.credit-suisse.com/docView?language=ENG&format=PDF&sourceid=em&>

[T]he market for repo loans sees an increase in demand due to the increase in collateral supply, the fact that the supply of reserves and of deposits is unchanged implies that this fiscal policy will put pressure on the repo interest rate as the demand for money market loans increases without a corresponding increase in the supply of funds on the money market. In short, fiscal policy can be expected to have a direct effect on quantity and price of the short-term credit available in the repo market—even when the reserve position of the banking system does not change.¹⁸¹

There is a clear interaction between fiscal and monetary policy, which cannot be ignored in a framework for liquidity regulation. Large Treasury issuances are likely to draw on funding liquidity and decrease it, as they had in September 2019. The SLR only made the problem worse.

Second, as further noted by Sissoko, because long-term debt is an important component of collateral supply, any significant increase in long-term rates will dramatically affect the value of the aggregate collateral supply, thereby making monetary policy implementation more difficult.¹⁸² Monetary policy is implemented through changes in short-term rates, which affect long-term rates and asset prices. Insofar as those assets are used as collateral, the impact of monetary policy may be much more significant in a collateral-reliant money market because an increase in interest rates on long-term debt will result in a decline in the value of outstanding debt making lenders in the repo market even less inclined to lend. In the extreme, it is doubtful whether the interest rate can still be viewed as a useful tool of monetary policy.

Third, the events of March 2020 provide evidence of structural instability in the repo market. At the core of that instability, is the volatility of the assets used as collateral. While the regulatory reforms put in place following the GFC sought to address that problem and prompted money market participants to rely on Treasuries as collateral more, the events of March 2020 show that even Treasuries are not immune from pressure. In other words, the collateralized money market can put pressure not only on funding, as in September 2019, but also on market liquidity, as in March 2020.

document_id=1081430871&serialid=kUNMCYdil6x5fOqMe8dLGYrZydoJkWe8VY6OZv9evbI%3D&cspld=null [https://perma.cc/65L8-7DYV].

¹⁸¹ Sissoko, *supra* note 176, at 15.

¹⁸² *Id.* at 16–19.

The problems with the collateral demand/supply dynamics role as the de facto driver of liquidity in the money market identified by Sissoko have not gone unnoticed. Among the proposals for liquidity regulation designed to address these issues arising in a collateral-reliant money market are central counterparty (“CCP”) for Treasuries, dealer of last resort, and a standing repo facility.

The CCP proposal has been put forward by a leading authority on market microstructure, Darrell Duffie.¹⁸³ The proposal is based on the premise that the March 2020 dysfunction is entirely explained by the lack of capacity on dealer balance sheets.¹⁸⁴ As Sissoko notes, CCP does not provide additional balance sheet space but instead allows for more efficient use of existing balance sheet capacity since dealers only need to finance net positions.¹⁸⁵ It is unclear whether the incremental increase in balance sheet capacity that it can make available is commensurate with the balance sheet demands of the repo market in a liquidity spiral.¹⁸⁶

Second, the dealer of last resort proposal has by now become the conventional mode of dealing with liquidity crises. Since 2008, it has been used repeatedly, most recently in September 2019 and March 2020. Still, as Sissoko notes, the sheer size of the necessary intervention by the Federal Reserve should prompt us to think about reforming market structure because it is tough to predict the repercussions of actions that are so very large.¹⁸⁷ Indeed, we find evidence of such repercussions already.¹⁸⁸ The March 2020 dealer of last resort action directly caused the banks to be undercapitalized and required regulatory relief from their leverage ratio requirements.¹⁸⁹

¹⁸³ Darrell Duffie, *Still the World’s Safe Haven? Redesigning the U.S. Treasury Market After the COVID-19 Crisis* (Hutchins Ctr., Working Paper No. 62, 2020), https://www.brookings.edu/wp-content/uploads/2020/05/WP62_Duffie_v2.pdf [<https://perma.cc/PR6U-K92Y>]. For an earlier proposal driven by different considerations, see Paolo Saguato, *The Liquidity Dilemma and the Repo Market: A Two-Step Policy Option to Address the Regulatory Void*, 22 STAN. J.L. BUS. & FIN. 85 (2017).

¹⁸⁴ Sissoko, *supra* note 176, at 24.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.* at 25.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.*

Third, rather than providing liquidity through a sequence of discretionary open market operations, a standing repo facility would allow banks to sell Treasury bills to the Federal Reserve, with the assurance of subsequent repurchase, in unlimited quantities at an administered rate. David Andolfatto and Jane Ihrig developed a proposal outlining the operation of such a facility.¹⁹⁰ They argue that a standing repo facility would enable tight control over short-term interest rates while reducing financial institutions' need for reserves.¹⁹¹ At their October 2019 meeting, the Federal Open Markets Committee discussed such a facility.¹⁹² Subsequently, on July 28, 2021, the Federal Reserve announced the establishment of a domestic standing repo facility ("SRF").¹⁹³

The problem with the SRF identified by Sissoko is that the terms of the repo require the Fed to demand additional collateral if the market price of the Treasuries falls.¹⁹⁴ Just as in March, when such demands caused relative value traders to sell Treasuries, these demands can set off adverse dynamics in the repo market—unless the proposal is for a different kind of debt contract that is not participating in the procyclical collateral demands associated with a liquidity spiral.¹⁹⁵ Thus, she concludes, far from preventing violent disruptions in the Treasury market, an SRF is likely to make the Fed part of the problem.¹⁹⁶

Thus, while these proposals address some gaps in the liquidity regulation frameworks revolving around banks, they come with their limitations. More importantly, they do not address the fundamental structural factor that creates the problem in the first place—the distortion the safe harbors created for the transmission of monetary policy. During a period of expansionary monetary policy, the safe

¹⁹⁰ *Id.*

¹⁹¹ David Andolfatto & Jane E. Ihrig, *Why the Fed Should Create a Standing Repo Facility*, FED. RSRV. BANK ST. LOUIS (Mar. 6, 2019), <https://www.stlouisfed.org/on-the-economy/2019/march/why-fed-create-standing-repo-facility> [<https://perma.cc/27AZ-DP3G>].

¹⁹² FED. OPEN MKT. COMM., FED. RSRV. BD., MINUTES OF THE MEETING OF OCTOBER 29–30 (2019), <https://www.federalreserve.gov/monetarypolicy/files/fomcminutes20191030.pdf> [<https://perma.cc/LPG3-MU9J>].

¹⁹³ *Fed Establishes Two Standing Repo Facilities to Support Money Markets*, REUTERS (July 28, 2021), <https://www.reuters.com/article/usa-fed-standing-repo/fed-establishes-two-standing-repo-facilities-to-support-money-markets-idUSL1N2P42BD> [<https://perma.cc/J6PY-PG5X>].

¹⁹⁴ Sissoko, *supra* note 176, at 25.

¹⁹⁵ *Id.*

¹⁹⁶ *Id.* at 26.

harbors will incentivize dealers to lend. However, the supply of Treasuries available in the market could limit their ability to do so, thereby undermining the expansionary policy objectives of the government. While this problem can be addressed through the suspension of the SLR, as it has been during the COVID-19 pandemic, that creates its own set of problems.

How to address the structural problem underpinning the operation of our money markets? As noted earlier, Sissoko's preferred policy solution is the removal of the safe harbors and a move towards an unsecured money market.¹⁹⁷ Her proposal builds on her earlier work, in which she examined the history of the evolution of the money market in Britain.¹⁹⁸ She shows that, historically, the British money market relied almost exclusively on unsecured credit.¹⁹⁹ It also relied on several other institutional features, such as guarantees, ensuring that all the parties' incentives were aligned.²⁰⁰

The result was a stable money market, which adequately met the capital market's credit requirements because the lender focused on the asset being financed, not on the collateral. In contrast, in contemporary money markets, the lender's focus is on the collateral, which makes the availability of liquidity in the money market procyclical and unstable. Sissoko calls for a limitation on capital market investors' ability to fund themselves on a secured basis in the money market.²⁰¹

While I find the proposal persuasive in principle, the problem with the proposal is that its implementation would deprive policymakers of an essential source of policy leverage. There is value in preserving that source of leverage, a point also made in Gorton and Metrick's policy proposal. Below, I show how policymakers could exercise that leverage by implementing a countercyclical design of the safe harbors.

C. *Liquidity Regulation as Collateral Regulation*

My goal in this section is to formulate a macro-financial policy proposal for the design of the safe harbors incorporating considerations of monetary policy. Under

¹⁹⁷ *Id.* Her proposal builds on her earlier work, in particular, see Carolyn Sissoko, *The Legal Foundations of Financial Collapse*, 2 J. FIN. & ECON. POL'Y 5 (2010).

¹⁹⁸ Carolyn Sissoko, *Shadow Banking: Why Modern Money Markets are Less Stable than 19th c. Money Markets but Shouldn't Be Stabilized by a 'Dealer of Last Resort'* (USC L., Working Paper No. 14-21, 2014), <https://papers.ssrn.com/abstract=2392098> [<https://perma.cc/3SXF-U9ET>].

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ *Id.*

the proposal, in the absence of other appropriately calibrated regulatory measures, repo creditors should only enjoy stronger rights when they lend in periods of liquidity scarcity but weaker rights when they lend in periods of liquidity abundance and subsequently enforce in periods of scarcity. The goal of the proposal is to assist policymakers in the task of liquidity regulation and increase the effectiveness of monetary policy transmission.

How can policymakers identify a period of liquidity abundance? For funding liquidity, either the repo rate or the growth of aggregate liquidity, defined as the growth of repo, can be used as indicators, as suggested in the work of Adrian and Shin.²⁰² A decrease in funding liquidity should be followed by an increase in the repo creditors' protection. Policymakers should encourage leverage during such time, and that can be achieved by strengthening the rights of repo creditors in the money market with respect to new transactions, but not existing transactions.

Furthermore, policymakers should also monitor the bid-ask spreads across various markets, particularly in the Treasuries markets, to identify periods of liquidity scarcity. The bid-ask spread is one of the most direct market liquidity measures. A decrease in market liquidity should be followed by an increase in the legal protection of repo creditors.²⁰³

D. Safe Harbors Redux

For the design of the safe harbor rules to have the effect described above, the law would have to incorporate a time-varying element or condition. This could be achieved by amending Section 546(e) of the Bankruptcy Code as follows (new text in *italics*):

Notwithstanding sections 544, 545, 547, 548(a)(1)(B), and 548(b) of this title, the trustee may not avoid a transfer made by or to (or for the benefit of) a repo

²⁰² See Adrian & Shin, *supra* note 8.

²⁰³ What about the loss of welfare that could follow from the proposed design? The principal normative benchmark for the paradigm of liquidity regulation proposed here is macroeconomic efficiency. In other words, even if there is some loss of microeconomic efficiency among different groups of creditors, the framework should be designed in a way that will create macroeconomic efficiencies. The social welfare analysis under the framework encompasses the welfare of all agents in the economy, including agents who are nominally outside the debt relationship at issue in bankruptcy. However, we should not dismiss microeconomic considerations even though our focus is on macroeconomic considerations. When bankruptcy law is designed optimally, the creditors who incur a loss of social welfare in one part of the cycle are compensated during the other part. For example, creditors lose out during a credit boom period, but they are compensated during a period of a credit bust. In the long run, social welfare is maintained and even increased if we do not have a crisis. Indeed, the analysis here is in the long run, which distinguishes this analysis from microeconomic ones.

participant or financial participant, in connection with a repurchase agreement entered into at a time *when the [repo rate] rate was in the range of 0%–2%*, and that is made before the commencement of the case, except under section 548(a)(1)(A) of this title.

For example, consider the repo rate from April 2018 to August 2020 in Figure 4 below. During this time, the rate spiked several times above two percent, signaling problems with funding liquidity in the money market, specifically, that dealers did not have the balance sheet space. Conceivably, if they did not benefit from the safe harbor before the spikes, they would have more space when the liquidity crunch came, which happened following a large issuance of Treasuries.

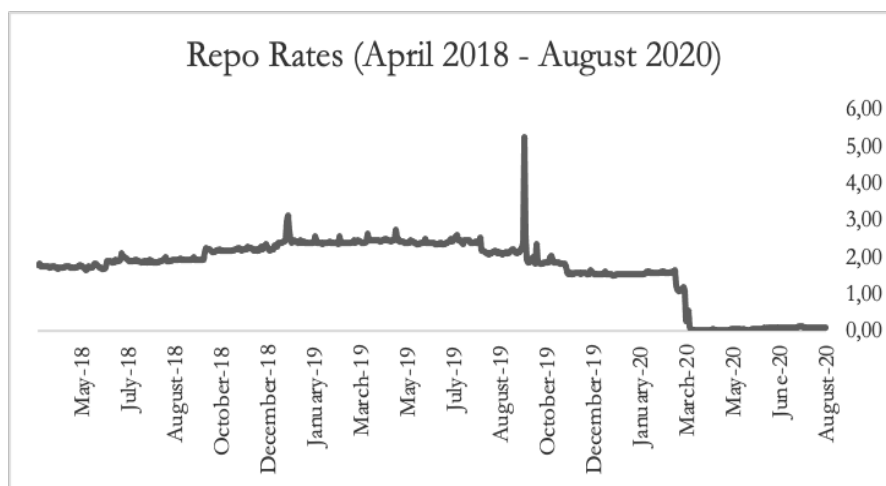


Figure 4: Repo Rates²⁰⁴

The legislative change proposed above would mean that only repo contracts entered into on a date when either (1) the repo rate was higher than two percent; or (2) bid-ask spreads widened out sharply in certain asset markets, particularly Treasuries, would benefit from the safe harbor, should one of the counterparties default.²⁰⁵ The idea behind the change would be to encourage market participants to

²⁰⁴ See *Repo Rates Data Historical Search*, FED. RSRV. BANK N.Y., <https://apps.newyorkfed.org/markets/autorates/rates-search-page> (last visited Apr. 5, 2022).

²⁰⁵ The adjustment to the strength of the rights of repo creditors would likely result in an increase in the rate in a credit boom reflecting the greater risk faced by repo creditors in the new regime. Thus, the 2% should only be viewed as illustrative and, in practice, the Federal Reserve would have to select a rate or range that would reflect the impact of the new regime on repo rates.

support market liquidity and/or provide funding liquidity without undermining the capital adequacy of the banking system.

The non-defaulting counterparties of repo contracts entered on a date when (1) the repo rate was lower than two percent; and (2) bid-ask spreads were narrow—would have to rely on the doctrine of a true sale to enforce their claims outside of bankruptcy. I mentioned earlier that this is what they have historically done, but an adverse interpretation of the provision led to lobbying for safe harbors. In principle, there is nothing that stops financial market participants from arguing that repos are true sales in courts again.

Still, clarification of the scope and function of the doctrine would be helpful. As Hughes notes, the doctrine is confused and unsettled.²⁰⁶ As she further notes, this could be because even if a transaction is deemed a secured loan rather than a true sale, the creditors of a securitization vehicle will still enjoy a first-priority interest in the asset.²⁰⁷

However, if creditors have to contend with bankruptcy, their recovery may be delayed and diminished.²⁰⁸ In other words, bankruptcy remoteness is achieved through the doctrine of true sales matters for creditors of securitization vehicles and aggregate liquidity.

The two main doctrinal formulations of true sales in the U.S. are recourse and price. Recourse generally means the extent to which the seller of receivables remains liable for the receivables' performance.²⁰⁹ If the seller remains liable, then the level of recourse is high, and hence the sale is not a *true* sale.²¹⁰ By contrast, if there is no recourse, i.e., the purchaser is solely liable for the performance of the receivables, then there is no recourse, and the sale is a true sale.²¹¹

²⁰⁶ Heather Hughes, *Property and the True-Sale Doctrine*, 19 U. PA. J. BUS. L. 870 (2017).

²⁰⁷ *Id.* at 872.

²⁰⁸ Kenneth Ayotte & Stav Gaon, *Asset-Backed Securities: Costs and Benefits of "Bankruptcy Remoteness"*, 24 REV. FIN. STUD. 1299 (2011).

²⁰⁹ Thomas Plank offers an extensive, if somewhat outdated, discussion of the recourse formulation of the true-sales doctrine. Thomas E. Plank, *The True Sale of Loans and the Role of Recourse*, 14 GEO. MASON L. REV. 287 (1991).

²¹⁰ *Id.*

²¹¹ *Id.*

The second doctrinal formulation of a true sale revolves around price. Under this formulation, used by some courts, securitized assets are considered true sales only if the value of the assets provided as collateral in the transaction was *adequate* to the money paid.²¹² If it is not, the creditor would be at the risk of losing the benefit of bankruptcy remoteness of those assets, and the securitization transaction would be considered a secured loan.

While the determination of adequate prices is difficult, it could be aided by standardized haircuts set by the Federal Reserve in a countercyclical fashion. Consider the following example of a repo with an asset manager as a cash lender and a dealer as a borrower. Collateral offered by the borrower is a RMBS trading at (market value) 110% of par value. The lender will normally apply some haircut—perhaps will accept it at par value only. The borrower can borrow 100 for 110 worth of collateral. But if the prices are elevated during a period of liquidity abundance, the haircut should be higher to reduce liquidity, e.g., par value ten percent. The above hypothetical can be represented graphically as follows:

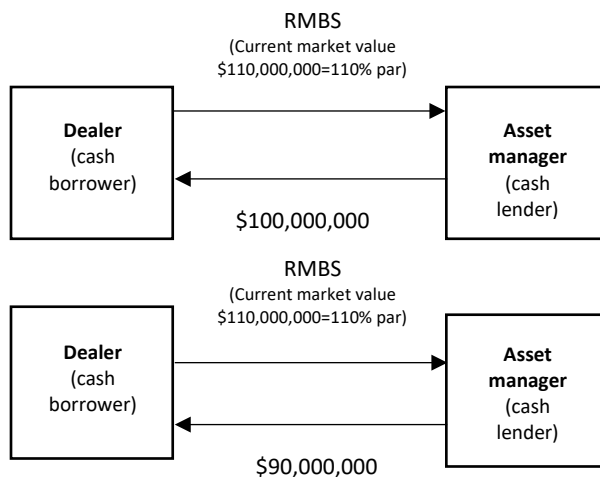


Figure 5

The question is, how and why would the Federal Reserve set such haircuts? The Federal Reserve is already doing this, for example, to determine whether certain assets should be eligible as collateral for certain of its lending facilities, such as the Term Asset-Backed Securities Loan Facility of the Federal Reserve Bank of New York. Conceivably, those haircuts could be used as a guide when determining

²¹² *Id.*

whether the value of the assets provided as collateral in a repo or securitization transaction was adequate to the money paid and, as a result, whether the repo or securitization should be regarded as a true sale.

E. Some Institutional Objections

Perhaps the main objection that could be made with respect to the above adaptation of the safe harbors is that it would be difficult to implement as a practical matter. The proposed design would require bankruptcy law to change depending on the prevailing monetary policy stance or other relevant macro-financial conditions. Nevertheless, from a practical standpoint, the challenge of a periodic change of bankruptcy law can be overcome if the new design of bankruptcy law incorporates a set of rules as a form of automatic stabilizers. Admittedly, the design of bankruptcy law as an automatic stabilizer would require some creative legal thinking, but it is surely not an impossible design.

Insofar as countercyclical bankruptcy law incorporates a certain amount of discretion for the agents enforcing it, we would face another problem: the potential unwillingness of certain institutional actors to exercise such discretion. Tarullo recently made that point with respect to the countercyclical capital buffer in banking regulation.²¹³ Still, the pandemic has demonstrated that banking regulation can be applied in a countercyclical fashion, as demonstrated by the temporary exemption from the supplementary leverage ratio granted to banks in April 2020.

A similar point could be made concerning the role of courts in the normative framework proposed above. While they may not be well equipped to deal with this issue at this time, we can imagine that this could change. After all, the courts adjudicating bankruptcy cases are specialized federal bankruptcy courts, which could easily acquire that kind of expertise. In the past, they incorporated macroeconomic considerations into their reasoning.²¹⁴

V. CONCLUSION

In this Article, I argued that the current legal treatment of repo creditors affects the effectiveness of the transmission of monetary policy. Specifically, I argued that repo safe harbors exacerbate (1) the effects of expansionary monetary policy by incentivizing creditors to oversupply liquidity; and (2) the effects of contractionary monetary policy by incentivizing creditors to enforce when liquidity is scarce. I also

²¹³ Daniel K. Tarullo, *Time-Varying Measures in Financial Regulation*, 83 LAW & CONTEMP. PROBS. 1 (2020).

²¹⁴ See, e.g., Emily Strauss, *Crisis Construction in Contract Boilerplate*, 82 LAW & CONTEMP. PROBS. 163 (2019).

proposed a design of the safe harbors incorporating macroeconomic considerations and seeking to mitigate these procyclical effects. The design links monetary policy and legal policy in a coherent framework for macro-financial policy making revolving around liquidity.

