Safe Banking: Finance and Democracy

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Banking is based on two fundamentally irreconcilable functions: safekeeping of deposits and relending of deposits. Safekeeping is meant to be a risk-free function, but using deposits to fund loans inevitably poses risk to deposits, thereby undermining the safekeeping function. The expensive, inefficient, and unreliable apparatus of bank regulation is an attempt to square the circle between safekeeping and lending: government liquidity and deposit insurance facilities, capital and reserve requirements, investment restrictions, and supervisory examinations are all aimed at keeping the risks of the lending function in check so as to ensure the safety of deposits.

This Article argues for splitting the lending function from the safekeeping function in both traditional- and shadow-banking markets through what it terms "Pure Reserve Banking." In a Pure Reserve Banking regime, "safe banks" would offer safekeeping and payment services, and nothing else. Loans would be a function solely of capital markets, which would operate without government facilitation of shadow-banking deposit substitutes. Historically, a separation between deposits and lending was not possible, but it is now feasible with today's deep and efficient capital markets, which already provide the funding for much of the borrowing in the economy.

Splitting the lending function from the safekeeping function would protect both the money supply from the market and the market from the money supply. It would enable the government to end its massive support of both formal-banking markets and shadow-banking markets and would thereby remove the moral hazard that encourages asset bubbles through overlending. At the same time, divorcing lending from safekeeping would instill greater market discipline on lending markets because lending institutions could be allowed to fail without endangering the money supply. Decoupling deposits and lending would eliminate the root cause of financial market instability and enable truly safe banking that is not dependent on an increasingly complex, politicized, and untenable regulatory system.

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INTRODUCTION

Modern banking holds out two promises. Banks promise safekeeping of and ready access to depositors' funds (the "Deposit Function"). Banks also promise to be a ready source of funding for borrowers (the "Lending Function"). This Article argues that these two promises are fundamentally inconsistent and irreconcilable and that the tension between them is the root cause of instability in the financial system.

The institutional combination of deposit-taking and lending is known as "fractional reserve banking," because only a fraction of deposits are retained as reserves; the rest are reloaned. Fractional reserve banking is an inherently unstable system. The risks involved with lending cannot be squared with an absolute promise of safekeeping and liquidity absent the expensive, inefficient, and unreliable apparatus of modern bank regulation: central bank liquidity facilities, deposit insurance, capital and reserve requirements, investment restrictions, and supervisory examinations. The machinery of modern bank regulation is primarily (if sometimes indirectly) an effort to square the circle between the Deposit and Lending Functions, and it inevitably results in more-elaborate and more-cumbersome regulations as well as the erosion of market discipline.

Modern banking regulation, however, covers only part of the market providing Deposit and Lending Functions. The past several decades have witnessed the development of a shadow-banking system—financial markets such as the markets for money market funds, repos, credit derivatives, commercial paper, and securitization, which provide substitute deposit and lending products but exist outside the bank regulatory system.

Shadow-banking markets exist because of a range of government interventions that encourage investors to view shadow-banking products as functional substitutes for bank deposits in terms of safety, while offering greater yield. Shadow banking is effectively subsidized by favorable regulatory treatment. The existence of shadow banking enables regulatory arbitrage between highly regulated formal deposits and largely unregulated deposit

substitutes, and the regulatory subsidization of shadow banking further encourages the growth of the shadow-banking sector.

This Article argues that many of the problems in financial regulation could be solved by cutting the Gordian knot that institutionally twines the Deposit and Lending Functions by adopting what it terms "Pure Reserve Banking." Pure Reserve Banking means both (1) prohibiting formal depositaries from engaging in any form of lending and (2) withdrawing all forms of government support and regulatory subsidization for the shadow-banking system that enable shadow banking to provide ersatz deposits.

If Deposits were split asunder from Lending, the Deposit Function would be served by "safe banks" with all deposits kept on hand as "reserves."[1] This is a concept known as "100% reserve banking." In a Pure Reserve Banking world, 100% reserve banks would take deposits and provide payment services, and nothing else. Banks would not make loans, would not otherwise reinvest deposits, and would keep all deposits on hand. Instead, the Lending Function would be served entirely by capital markets, in which investors would expressly assume risk. Because Pure Reserve Banking would also withdraw all government support for the shadow banking that occurs in capital markets, investors would price risk more appropriately; risk would not be underpriced because of government interventions signaling the "safety" of shadow-banking investments. In effect, Pure Reserve Banking would withdraw all government subsidies from both the regulated-banking and the shadow-banking markets.

Historically, a division between the Deposit and Lending Functions was not possible because of the immaturity of capital markets; banks were the only reliable source of a large volume of funding. Fractional reserve banking might have been efficient

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[1] US banks are currently required to maintain a graduated reserve equal to 3 percent of net transaction accounts from natural person depositors that are between $14.5 to $103.6 million and 10 percent of their deposits from natural person depositors that are over $103.6 million. 12 USC § 461; 12 CFR § 204.4. See also *Reserve Maintenance Manual* *16 (Board of Governors of the Federal Reserve System, June 2015), archived at http://perma.cc/XN9U-98RX. Some countries have eliminated reserve requirements altogether. See Gordon H. Sellon Jr and Stuart E. Weiner, *Monetary Policy without Reserve Requirements: Case Studies and Options for the United States*, 82 Fed Res Bank Kan City Econ Rev 5, 9 (2d Q 1997) (examining the experiences of Canada, New Zealand, and the United Kingdom without reserve requirements). See also Yueh-Yun C. O'Brien, *Reserve Requirement Systems in OECD Countries* *4 (Finance and Economics Discussion Series, July 23, 2007), archived at http://perma.cc/9QUY-RX38 (noting substantial variations in the structure of reserve requirements).

relative to its historical alternatives. Today, however, we have sufficiently developed capital markets to imagine a separation of these Functions. Many loans are already funded through the capital markets via loan syndication, participation, and securitization. The development of deep and efficient capital markets enables us to move to a more rational and stable market structure that separates the Deposit Function from the Lending Function.

Divorcing the Deposit Function from the Lending Function through Pure Reserve Banking would have benefits for both safekeeping and lending. Safe banks with 100% reserves pose no risk of bank runs; even if all depositors withdrew their funds, a 100% reserve bank would not be rendered insolvent. Accordingly, there would be no need for government liquidity facilities such as the Federal Reserve's discount window, for the Federal Deposit Insurance Corporation's (FDIC's) deposit insurance, or for the rest of the extensive bank regulatory apparatus. Consumers and businesses that want safe assets would have truly safe assets in the form of bank deposits.

Separating the Deposit Function from the Lending Function through Pure Reserve Banking would protect capital markets from bubbles created by the moral hazard of both formal-bank- and shadow-bank-created money. Bank lending functions as a type of money creation, multiplying the money supply beyond central bank–created currency. Banks' role in creating money is a major reason for the government's provision of liquidity facilities and deposit insurance. Government liquidity facilities, deposit insurance, and the implicit guaranty of "too big to fail" institutions result in a moral hazard for banks because there is an asymmetry between the banks' privatized gains and their socialized losses. This moral hazard encourages banks to overproduce money. An overexpansion of the money supply encourages inefficient overproduction in the economy and results in asset bubbles. "Safe banks" with 100% reserves would not engage in money production, so the moral hazard–fueled bubble problem would disappear.

Shadow banking also effectively expands the money supply but is not formally backed by government liquidity facilities or insurance. When the shadow-banking money supply was threatened in 2008, the result was massive temporary government intervention.[2] Despite post-2008 reforms that have reduced the

[2] This intervention included the Treasury Department's $700 billion Troubled Asset Relief Program and several Federal Reserve credit and liquidity programs (the Term Securities Lending Facility, the Primary Dealer Credit Facility, the Asset-Backed Commercial

size and improved the stability of some shadow-banking markets, the problem of the implicit guaranty of the shadow-banking market still remains. While the impulse of some reform proposals has been to regulate the entire shadow-banking market like banks,[3] an alternative would be to withdraw all of the forms of government support that enable the existence of the shadow-banking market in the first place.

A separation of the Deposit and Lending Functions through Pure Reserve Banking would protect the money supply from the market's volatility by making all money creation a government function. Eliminating the private creation of money means that a broker-dealer's failure would not endanger the money supply as it did in 2008 when Lehman Brothers collapsed. If capital markets were separated from banks, regulators could afford to let financial institutions that were engaged in capital market operations fail. Splitting Deposits from Lending would impose market discipline on the financial institutions that are involved in capital markets. Moreover, if Deposits were separated from Lending, it would allow Deposits to serve as a safe base of capital that could be deployed by depositors to recapitalize firms that were temporarily undervalued because of crashes in the Lending markets.

Finally, separating the Deposit and Lending Functions through Pure Reserve Banking would eliminate the enormous transaction and political costs of bank regulation. Bank regulation creates tremendous compliance costs for banks as well as costs for the government. Modern bank regulation is also unreliable. As the savings and loan crisis of the 1980s and the financial crisis of 2008 showed, regulation can fail. Indeed, regulation is inevitably subject to significant asymmetric political pressure that erodes its effectiveness. As long as we continue to rely on quotidian bank regulation rather than on structural changes in

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Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, the Money Market Investor Funding Facility, and the Term Asset-Backed Securities Loan Facility), as well as orchestrations of the bailout of Bear Stearns and AIG through the Federal Reserve Bank of New York's various Maiden Lane LLC special-purpose subsidiaries. See Adam Veness, et al, *Developments in Banking and Financial Law: 2009*, 28 Rev Bank & Fin L 383, 492–505 (2009).

[3] See, for example, Morgan Ricks, *A Regulatory Design for Monetary Stability*, 65 Vand L Rev 1289, 1292 (2012) (proposing federal licensing and insurance of all short-term debt instruments); Gary Gorton and Andrew Metrick, *Regulating the Shadow Banking System* *268 (Brookings Papers on Economic Activity, 2010), archived at http://perma.cc/HM6B-L63X (proposing federal insurance for money market mutual funds).

the banking business to ensure financial stability, we will continue to be at risk of serious financial crises. Moving to Pure Reserve Banking would reduce the influence of politics on financial regulation and, in so doing, would contribute to financial stability.

Technological and market changes have made Pure Reserve Banking technically feasible, but it is not on the political horizon for the foreseeable future, at least in the United States.[4] Nonetheless, this Article's first principles critique of fractional reserve banking matters because it highlights the implicit political choices and distributional effects of retaining a fractional-reserve-banking system and of subsidizing the shadow-banking sector.

Fractional reserve banking and the subsidization of shadow banking foster economic volatility, the distributional consequences of which are highly regressive but inure to the benefit of financial institutions. At the same time, fractional reserve banking and the subsidization of shadow banking obscure monetary policy—thereby reducing its democratic accountability, despite its enormous distributional impact. Retaining the current system of state-subsidized volatile growth with privatized gains and socialized losses is a choice that society may well be willing to make. It is not a choice that can be meaningfully made, however, unless the decision and its consequences are clear to all in society. If this choice is made by a subset of private parties or by mere stasis, society will have forfeited democratic control over finance.

This Article highlights how financial markets are constituted, structured, and supported by governments. Once government's pervasive role in the market is recognized, the question

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[4] Subsequent to the dissemination of this Article in draft form, an Icelandic government report proposed the adoption of a "Sovereign Money" proposal that is very similar to Pure Reserve Banking. The proposal features separate transaction and investment accounts, with transaction accounts kept at the central bank and investment accounts at commercial banks. See Frosti Sigurjonsson, *Monetary Reform: A Better Monetary System for Iceland* *14 (Prime Minister of Iceland, Mar 2015), archived at http://perma.cc/BR2Q-3W6P. See also *Iceland's Daring Raid on Fractional Reserve Banks: Reykjavik Considers Wresting Money Creation from Financial Sector*, Fin Times 6 (Apr 10, 2015) (providing background on the Icelandic report). The Green Party of the United Kingdom has also endorsed a "Positive Money" proposal with many similarities to Pure Reserve Banking. See Ben Dyson, *Green Party 'Gets It' on Monetary Policy* (PositiveMoney, Mar 29, 2012), archived at http://perma.cc/FG3R-CUY6. Switzerland is scheduled to hold a referendum on full reserve banking in 2016. See Mehreen Khan, *Switzerland to Vote on Banning Banks from Creating Money* (Telegraph, Dec 24, 2015), archived at http://perma.cc/WMX4-9WG2.

of how to regulate financial markets is a question not of letting the market decide but of democratic decision-making. By underscoring how deeply legally constructed our financial markets and the choices made in our financial system's structure are, this Article advances the policy conversation about how to restore democratic control over finance. Financial markets are not organic developments steered by the invisible hand. Instead, they are marionettes, manipulated by the strings of the government. Market forces operate within the framework created by the government. Accordingly, finance is not an issue just for markets. Finance is also an issue for democracy. Because the government shapes financial markets and because finance determines distributions of wealth and power in society, finance should be subject to democratic control. Thus, even if the policy prescriptions of this Article are not adopted, the identification of the policy choices that are entailed in our current system is important.

Beyond the Article's larger attempt at highlighting the nexus of finance and democracy, the Article also contributes to the economic and legal literature on macroprudential regulation in two ways. First, it brings 100% reserve–banking proposals into the twenty-first century by incorporating modern capital markets and shadow banking into the concept. And second, it underscores the legal-political consequences of fractional reserve banking.

The 100% reserve–banking component of Pure Reserve Banking is not new. Variations of 100% reserve banking have been periodically bruited in macroeconomic literature for over a century, and the United States nearly adopted a 100% reserve–banking proposal during the Great Depression.[5] The economics literature, however, has never adapted the 100% reserve–banking idea to the realities of modern capital markets and shadow banking.

Modern capital markets make a purer version of 100% reserve banking far more feasible than before. At the same time, however, the existence of shadow banking makes 100% reserve banking an incomplete and futile reform if not paired with the withdrawal of government support for shadow banking. As long as government support for shadow banking holds out the implicit

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[5] See Ronnie J. Phillips, *An End to Private Banking: Early New Deal Proposals to Alter the Role of the Federal Government in Credit Allocation*, 26 J Money, Credit & Bank 552, 555 (1994); William R. Allen, *Irving Fisher and the 100 Percent Reserve Proposal*, 36 J L & Econ 703, 705 (1993).

promise that certain non-deposit assets are "safe," there will be an inevitable arbitrage between deposits and shadow banking. 100% reserve banking would actually exacerbate this arbitrage by decreasing the yield that banks could pay on deposits, thereby increasing the disparity in yield between deposits at 100% reserve banks and shadow-banking deposit substitutes.

Existing 100% reserve proposals universally fail to address the problem of shadow banking, as do other bank-reform proposals, such as those that would massively increase bank capital requirements.[6] Without addressing shadow banking, reforms will inevitably be undermined by regulatory arbitrage between formal and shadow banking.

To date, the macroeconomics literature has generally not recognized that shadow-banking deposit substitutes are fundamentally legally constituted rather than organic market developments.[7] The legal foundations of shadow banking mean that the shadow-banking sector can be substantially reformed by withdrawing the various types of government support that enable shadow banking to provide credible deposit substitutes. This Article advances the economics literature by arguing for the pairing of 100% reserve banking with the elimination of all government support for shadow-banking deposit substitutes. A pairing of such reforms is the only way to make 100% reserve banking successful.

The legal literature has only recently begun a serious engagement with macroprudential regulation. The legal literature has never previously engaged with the 100% reserve–banking concept, although it has recognized the legally constituted nature of various shadow-banking products. Pure Reserve Banking is rich in regulatory and political implications, particularly the ability to eliminate most of the complex, costly, and politicized structure of prudential bank regulation and government support of financial markets. It also has profound implications for the transparency and democratic accountability of monetary policy. This Article marks the first exploration of the regulatory and political consequences of the macroeconomic reforms attendant to

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[6] See, for example, Anat Admati and Martin Hellwig, *The Banker's New Clothes: What's Wrong with Banking and What to Do about It* 216 (Princeton 2013) (recognizing the problem of shadow banking but limiting reform proposals to formal banking).

[7] But see John V. Duca, *What Drives the Shadow Banking System in the Short and Long Run?* *4 (Federal Reserve Bank of Dallas, Feb 2014), archived at http://perma.cc/GHA4-42TU (explaining how the shadow-banking system is affected by short- and long-run factors stemming from regulatory burdens and information costs).

both 100% reserve banking and the elimination of government support for shadow banking.

This Article proceeds as follows. Part I describes the dual functions of modern banking and presents a just-so story of how these two incompatible functions came to coexist in the same institutions. Part II considers attempts to square the circle and have the Deposit and Lending Functions coexist. It reviews attempts to create "safe" financial instruments, government banks, and deposit insurance. Part III presents an alternative approach, namely, splitting the Deposit and Lending Functions institutionally through Pure Reserve Banking, while also eliminating the regulatory arbitrage of the Deposit Function that is facilitated by government support for shadow banking. Part III considers what Pure Reserve Banking would look like, how it would affect the Deposit and Lending Functions, and how it would affect bank regulation. A conclusion summarizes.

I. THE DUAL FUNCTIONS OF MODERN BANKING

The business of banking involves two functions: the Deposit Function of safekeeping and payments, and the Lending Function of making loans and investments.

A. The Deposit Function

Banks' distinctive function is to provide safekeeping for deposits.[8] The taking of deposits is what makes a bank a bank. The Deposit Function is about the protection of value. It is not specific to money, other than to the extent that money is defined merely as a store of value. Thus, banks offer not only deposit accounts but also safe-deposit boxes. In both cases, the bank is being entrusted with the depositor's assets. The bank makes an absolute promise to return those assets (or equivalent ones, in the case of fungible assets) to the depositor intact.

Consumers and businesses value the safekeeping function because banks are able to specialize in safekeeping in ways that individual consumers and businesses are not. Because of banks' focus on safekeeping, it makes sense for them to invest in security measures like fireproof vaults, security guards, and computer security systems that might not be cost-effective for any individual consumer or business.

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[8] See Richard A. Lord, *The Legal History of Safekeeping and Safe Deposit Activities in the United States*, 38 Ark L Rev 727, 728 (1985).

At the same time, however, consumers and businesses like to have ready access to their funds. They have liquidity needs and want to be able to withdraw their funds at any time. Because withdrawals are typically for the purpose of transferring funds to third parties, consumers and businesses also want payment services that link with their safely kept funds.

The payments function is not the core of the Deposit Function, but it is a standard ancillary piece of the safekeeping business that adds significant value for consumers and businesses. Imagine a world in which banks did not offer payment services. Consumers and businesses would have to withdraw currency from the bank and physically transfer it to their payees (or to payment agents). It would be cumbersome and would increase risks of theft. Combining payment services with safekeeping creates efficiencies by eliminating transaction costs.[9]

The key point to understand about the Deposit Function is that it is driven by consumers' and businesses' risk aversion. Consumers and businesses want zero risk that their funds will disappear when held by the bank or in transit for payment. The Deposit Function is meant to be risk-free.

B. The Lending Function

Banks' second function is to be a source of funds for consumers and businesses. This is not a function that is specific to banks; anyone can provide funding for others' enterprises. I can make you a loan and vice versa. But banks specialize in providing funding, which they do in the form of loans. These loans necessarily involve assuming some amount of risk. The level of risk can be tailored and controlled to some degree, but it cannot be eliminated.

Because the Lending Function involves risk, it is fundamentally in tension with the Deposit Function. The money that banks loan out is primarily depositors' funds rather than the bank's own equity capital or other borrowed money.

Bank deposits are either general or specific deposits.[10] Unless a bank and depositor otherwise agree, a deposit is a general

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[9] This is not to say that payment services are costless. All payments involve some measure of credit risk and also have their own transaction costs. But banks have economies of scale for payments that help reduce payments' transaction costs.

[10] Donald Resseguie, 1 *Banking Law* § 9.06 at 9-19 (LexisNexis 2015); *Commercial Bank of Pennsylvania v Armstrong*, 148 US 50, 59 (1893); *Marine Bank v Fulton Bank*, 69 US (2 Wall) 252, 256 (1864). For a normative treatment of the debt versus bailment issue

deposit,[11] and general deposits are usually what we think of when we think of bank deposits. A general deposit is a loan made to a bank. This means that the bank is the general depositor's debtor,[12] but that the bank has legal title to the funds deposited; these funds may be commingled with the bank's other funds.[13] All the general depositor has is a general, unsecured claim against the bank, not a claim to the specific funds.

In contrast, with a specific deposit, the bank is in the position of a bailee for the depositor.[14] Title to the specially deposited funds or to assets placed in the safe-deposit box does not transfer to the bank but instead remains with the depositor.[15] A bailee holds specific property in trust for the bailor and must return that same property when required to do so by the terms of the bailment. Moreover, because the bailment is held in trust, the bailee is a fiduciary. Accordingly, a bailee may not use a bailment for his own benefit, and to the extent that he does, he is

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regarding bank deposits, see generally Timothy C. Harker, *Bailment Ailment: An Analysis of the Legal Status of Ordinary Demand Deposits in the Shadow of the Financial Crisis of 2008*, 19 Fordham J Corp & Fin L 543 (2014). Roman law makes a finer distinction than the Anglo-Saxon tradition that is based not only on whether repayment must be of the specific item loaned or of a fungible item but also on whether repayment is on demand or per term. Thus, in Roman law there is a loan contract (*mutuum*) requiring repayment of only the same number of units of the same sort and quality received (*tantundem*) at the end of a term, a loan contract requiring the return of the specific items loaned at the end of a term (*commodatum*), and a deposit contract (*depositum*) requiring return of the item that was entrusted on demand. See Jesús Huerta de Soto, *Money, Bank Credit, and Economic Cycles* 1–20 (Mises Institute 2006) (Melinda A. Stroup, trans) (noting the problem from the deposit of a fungible good, or a *depositum irregolare*). Renaissance Italian bankers distinguished between time deposits (*depositi a discrezione*), which were legally considered equity investments rather than debts, and demand deposits (*depositi*). See Raymond de Roover, *The Rise and Decline of the Medici Bank: 1397–1494* 98–102 (Harvard 1963).

11 See Resseguie, 1 *Banking Law* § 9.06 at 9-19 (cited in note 10).

12 See *In re Interborough Consolidated Corp*, 288 F 334, 347 (2d Cir 1923); *Bank of the Republic v Millard*, 77 US (10 Wall) 152, 156 (1869).

13 See Resseguie, 1 *Banking Law* § 9.06 at 9-19 (cited in note 10).

14 See id; *Commercial Bank of Pennsylvania*, 148 US at 59. Whether a safe deposit is a bailment is a matter of contention. The majority position holds that it is a bailment, even though the bank may not know the contents of the safe-deposit box. See, for example, *Martin, Lucas & Chioffi, LLP v Bank of America*, 714 F Supp 2d 303, 311 (D Conn 2010); *Cohen v Manufacturers Safe Deposit Co*, 78 NE2d 604, 606 (NY App 1948). A minority of cases have held that the safe-deposit box relationship is actually similar to a landlord-tenant relationship. See Resseguie, 1 *Banking Law* § 10.03 at 10-10 (cited in note 10). Safe-deposit agreements themselves often purport to be mere leases of storage space rather than bailments. See, for example, *Your Deposit Account Agreement* (US Bank, June 15, 2015), archived at http://perma.cc/H58J-755X.

15 See, for example, *In re Kountze Brothers*, 27 F Supp 1002, 1003 (SDNY 1938); *Pitts v Pease*, 39 F2d 14, 15 (5th Cir 1930); *State v Bartley*, 58 NW 172, 176 (Neb 1894); *Preston v Prather*, 137 US 604, 615 (1891).

answerable to the bailor for any gains and losses.[16] A bailee enjoys no upside from the use of the bailment.

In contrast, a general deposit is a loan from the depositor to the bank. Thus, the bank is free to use the deposit as it sees fit. While the bank has an obligation to repay the principal amount of the deposit and any interest owed at the promised maturity, the bank is not answerable to the depositor for any gains made from the use of the deposit beyond those specified in the contract. A bank enjoys the upside from relending a deposit beyond any interest that is promised to the depositor.

This subtle legal distinction matters quite a bit, because it means that banks reloan deposits but not safe deposits. Relending deposits necessarily involves risk. The bank is willing to take the risk of relending deposits because it can keep the upside. Thus, banks will often pay interest on deposits, but that is not a necessary feature of deposits. Instead, it is a competitive means of attracting deposits, and it is possible only because the bank believes it can profitably relend the deposits even if it pays interest.

There is always the risk, however, that a bank's relending of deposits will go badly and that the bank's losses will exceed the bank's capital and make it impossible for the bank to repay the deposits when they come due. Thus, by engaging in the Lending Function, banks necessarily impair the Deposit Function. It is not possible, absent government support, for a bank to credibly offer absolute safekeeping to its depositors and to also make loans.

C. How the Banker Got His Business: A Just-So Story

Despite the tension between the Deposit and Lending Functions, we take it for granted that a bank is a place where we both place deposits and obtain loans. But it hardly has to be this way—and indeed, it was not for most of history. As economist Professor James Tobin has observed, "[t]he linking of deposit money and commercial banking is an accident of history."[17] There is some evidence of fractional reserve banking in the Hellenistic

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[16] See, for example, *Magruder v Drury*, 235 US 106, 119 (1914). As a young lawyer, President Abraham Lincoln famously (and successfully) defended a trover action against a bailee of a horse. See *Johnson v Weedman*, 5 Ill 495, 496 (1843). The bailee had ridden the horse and was sued for conversion for the wear and tear on the beast. The Illinois Supreme Court held that there was no conversion because there was no evidence of actual damage. Id at 497.

[17] James Tobin, *A Case for Preserving Regulatory Distinctions*, 30 Challenge 10, 14 (Nov/Dec 1987).

and Roman worlds,[18] as well as in Jewish practice.[19] Nonetheless, the historical development of fractional reserve banking remains shrouded, and it seems fair to say that its modern practice developed in Spain and northern Italy in the Middle Ages[20] and then took off in seventeenth-century London.[21] In other words, the development of banks as institutions offering both safekeeping and loans is a fairly recent development. This institutional combination likely arose from simple opportunism, although we cannot be sure.[22] Still, we might tell a just-so story that serves as a creation myth of the modern bank and its combination of the Deposit and Lending Functions.[23]

1. The *Goldsmith's Tale*.

It is the year 1300 CE. Bartolomeo, a goldsmith in Renaissance Florence, has invested in a very secure strongbox, in which he stores his wares when they are not on display. Bartolomeo's neighbor, Cosimo, a prosperous silk merchant, has recently concluded a large sale and is in possession of a small fortune of five thousand gold florins. Banks do not yet exist, so what is Cosimo to do with the money? Cosimo fears that if he keeps the coins in his house, he will be the target of theft. Cosimo knows

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[18] See Huerta de Soto, *Money, Bank Credit, and Economic Cycles* at 49 (cited in note 10); W.V. Harris, *Rome's Imperial Economy: Twelve Essays* 236 (Oxford 2011); Sitta von Reden, *Money in Ptolemaic Egypt: From the Macedonian Conquest to the End of the Third Century BC* 287–90 (Cambridge 2007); W.V. Harris, *A Revisionist View of Roman Money*, 96 J Roman Stud 1, 10–12 (2006); Peter Temin, *Financial Intermediation in the Early Roman Empire*, 64 J Econ Hist 705, 722 (2004); Jean Andreau, *Banking and Business in the Roman World* 39–41 (Cambridge 1999) (Janet Lloyd, trans).

[19] See, for example, *Talmud*, Baba Metzia 3:11 (describing a presumption under which a bailment with a money changer is reloanable unless specially indicated otherwise by the depositor's tender of the funds in a sealed bag); id at 43a; Maimonides, *Mishneh Torah*, Sefer Mishpatim, She'elah u-Fikkadon 7:6; Joseph Karo, *Shulḥan Arukh* 188:1. These texts represent the major codifications of Jewish law from the second century through the sixteenth century of the Common Era.

[20] See Meir Kohn, *Early Deposit Banking* *1 (unpublished manuscript, Feb 1999), archived at http://perma.cc/S7WT-KHZ4 (discussing the growth of deposit banking out of money changing in medieval Italy); Abbott Payson Usher, 1 *The Early History of Deposit Banking in Mediterranean Europe* 15–20 (Harvard 1943) (detailing the emergence of fractional reserve banking in the late Middle Ages).

[21] See, for example, George Selgin, *Those Dishonest Goldsmiths* *5–6 (unpublished manuscript, Jan 20, 2011), archived at http://perma.cc/UQ9U-B6SR.

[22] See id at *2–3 (arguing that there is no evidence of London goldsmiths clandestinely lending coins that they were supposed to store).

[23] I am not the first to tell a story like this. See, for example, William J. Baumol and Alan S. Blinder, *Economics: Principles and Policy* 626–27 (Cengage 12th ed 2012); Stuart I. Greenbaum and Anjan V. Thakor, *Contemporary Financial Intermediation* 95 (Elsevier 2d ed 2007).

of Bartolomeo's strongbox, and he trusts Bartolomeo. Cosimo asks Bartolomeo if he can store his coins in the strongbox and offers to pay for the privilege of doing so. Bartolomeo accepts the offer, promising Cosimo access to the coins whenever he wants. Thereafter, Cosimo regularly makes withdrawals from and deposits to Bartolomeo's strongbox. At this point, we have the safekeeping function of banking. Bartolomeo the Bank keeps funds for Cosimo the Customer.

Bartolomeo makes Cosimo's funds available to him in the form of a deposit—gold florins—rather than in any other medium, such as Venetian grossi or Hungarian forints or gold ingots or jewelry. Not only is the total value of Cosimo's funds preserved but so is their precise liquidity and spendability.

Cosimo is planning a business trip to Venice to buy silk from Levantine merchants there.[24] Cosimo needs funds to pay for the silk and comes to claim his coins from Bartolomeo. Cosimo tells Bartolomeo about the trip and mentions that he is worried that he will be robbed while traveling with his coins. Bartolomeo suggests a solution: Salomone, a Venetian goldsmith, owes him a debt of one thousand gold florins. Bartolomeo will give Cosimo a letter instructing Salomone to pay the florins to Cosimo when he arrives in Venice, in satisfaction of the debt to Bartolomeo. That way, Cosimo need not carry coins with him on his journey. Bartolomeo will get paid by taking one thousand gold florins from those that Cosimo deposited with him. Of course, Bartolomeo charges Cosimo a small fee for this payment service.

Bartolomeo has invented the bill of exchange, one form of what we now call a check. Thus, we now have the payments function of banking that enables the depositor to transfer his funds without actually physically withdrawing them, by means of paperization (which today is often done digitally). Spendability is thus enhanced.

Up to this point, Cosimo's stash of gold florins has been sitting securely in Bartolomeo's strongbox. Bartolomeo often has customers who need ready funds. These customers sell him their jewelry, which Bartolomeo promises to sell back to them in three months at a 10 percent markup. If the customers fail to repurchase the jewelry, Bartolomeo will sell it to someone else. Thus, Bartolomeo is also doing business as a pawnbroker. And because

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[24] For a discussion of the legal aspects of Venice's Levantine trade, see E. Natalie Rothman, *Brokering Empire: Trans-imperial Subjects between Venice and Istanbul* 77–84 (Cornell 2012).

he cleverly structures his loans as sales and repurchases, he does not run afoul of the Church's prohibition on usury—lending money on interest.[25]

Bartolomeo finds the pawn business quite profitable, but he has to turn down some potential borrowers because he simply does not have adequate funds of his own to make all of the loans. After several months of Cosimo making deposits and withdrawals, Bartolomeo realizes that Cosimo never withdraws all of his money. Cosimo always maintains at least five hundred gold florins on deposit. Bartolomeo decides to take five hundred of the gold florins that Cosimo has deposited with him and use them to fund more pawn loans, figuring that the loans will be repaid or the collateral jewelry sold before Cosimo ever asks for his money. In other words, Bartolomeo is going to make money by lending out Cosimo's money, without Cosimo's permission. At this point, we have combined the Deposit Function with the Lending Function, and Bartolomeo has invented "fractional reserve" banking, meaning that only a fraction of the funds deposited with him will be kept on hand as reserves.

Bartolomeo has also embarked on one of the major functions of financial intermediation, namely, maturity transformation. While Bartolomeo's liability to Cosimo is on demand, his pawn-loan customers' liability is on a trimonthly basis. This maturity transformation is valuable to the pawn-loan customers, as they are able to lock in longer-term capital than if Bartolomeo had just passed through Cosimo's funds on an on-demand basis. Thus, if Fortuno the Farmer, a prosperous peasant, takes out a pawn loan in the spring, he might not be able to repay it until the summer's harvest is brought in. Fortuno needs capital with maturities that fit with his own income pattern. Bartolomeo is

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[25] Alternatively, Bartolomeo and Cosimo might enter into a contract known as a *depositum confessatum*, which would declare that the parties had entered into a deposit contract, rather than a loan, but would also provide for "penalties" if the deposit were not returned after a certain period of time. These penalties would function as interest. See Huerta de Soto, *Money, Bank Credit, and Economic Cycles* at 65–66 (cited in note 10). Bartolomeo might also evade usury restrictions through a technique known as "dry exchange," or *cambium siccum*, in which a borrower would pay a bill of exchange with another bill of exchange for a greater amount equal to the amount of the loan plus the finance charge on the loan. See Daniel R. Coquillette, *The Mystery of the New Fashioned Goldsmiths: From Usury to the Bank of England (1622-1694)*, in Vito Piergiovanni, ed, *The Growth of the Bank as Institution and the Development of Money-Business Law* 91, 97 (Duncker & Humblot 1993); Raymond de Roover, *What Is Dry Exchange? A Contribution to the Study of English Mercantilism*, 52 J Polit Econ 250, 252 (1944).

providing a valuable maturity-transformation function. But it comes at a serious risk, as we shall see.

For a couple of years, this relending scheme works very well for Bartolomeo. But one day, Cosimo comes in and announces that he would like to withdraw all of his money. He has decided to take up holy orders and give all his money to the Church. Bartolomeo is horrified because he does not have all of Cosimo's funds on hand, as he has loaned them out and they are not due for a couple of weeks. Bartolomeo is solvent, but he has an asset-liability duration-mismatch problem.

Bartolomeo realizes that Cosimo could report him to the Signoria (the government), which would severely punish him for defalcation. Desperate, Bartolomeo offers Cosimo a deal—if Cosimo does not turn him in and keeps his funds on deposit, Bartolomeo will pay Cosimo twenty-five gold florins a month—half of what Bartolomeo is making on the pawn loans. Lured by lucre, Cosimo reconsiders his decision to live a life of monastic penury and accepts the deal. While Cosimo was not originally a willing source of funds for the pawn loans, now he is entrusting his money to Bartolomeo for financial intermediation. Now the Lending Function has become a type of investment function. Cosimo is now keeping his funds on deposit with Bartolomeo not just for safekeeping but also to get an investment return.

Now authorized to invest Cosimo's funds, Bartolomeo decides to invest Cosimo's money, along with all of his own, in a voyage planned by Marino the Mariner. It is a can't-miss expedition to bring back exotic spices from the Levant. The voyage promises exponentially greater returns than the pawn loans. Alas, one day Bartolomeo hears the terrible news: Marino's ship was lost at sea with all its cargo. His investment is worthless.

No sooner has he heard of the tragedy than Cosimo shows up and asks for all of his money back because he needs to provide a dowry for his homely daughter. Bartolomeo's problem now is not an asset-liability duration mismatch but instead insolvency. This time his pleading with Cosimo is for naught; without the dowry, Cosimo's daughter's prospects are ruined. A vengeful Cosimo reports Bartolomeo to the Signoria, which hauls Bartolomeo away for condign punishment.[26]

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[26] Perhaps ordering this punishment himself, Durante degli Alighieri, also known as Dante, serving as one of the six priors of the Republican Florentine Signoria, will take note and assign Bartolomeo and other usurers to the Seventh Circle of Hell in his *Inferno*. Dante Alighieri, *The Inferno* 112–13 (Temple Classics 1900) (H. Oelsner, ed) (Carlyle,

As part of Bartolomeo's humiliation, his stall on the Ponte Vecchio is smashed in two by the officers of the Signoria, signifying that he is a *banca rotta*—a "broken bench" or a bankrupt. While Cosimo was happy to take the upside of the investment in the Bartolomeo "bank," he still expected safekeeping. In the end, he got neither.

To complete our story, Bartolomeo's clever nephew Prospero the Pawnbroker grows up shamed by his uncle's disgrace, but he realizes that the basic banking business actually worked pretty well and recognizes a way to make it work better: he will diversify his funding and thus the liquidity demands that he must meet. Prospero replicates Bartolomeo's business, but instead of taking funds from just one depositor, he takes deposits from all of the silk and wool merchants in the city. Prospero realizes that not all the merchants are likely to simultaneously seek to withdraw their funds absent unusual conditions. Thus, Prospero is able to lend out some of the funds as long as he maintains a sufficient liquid reserve to satisfy those depositor claims that arise from time to time; he does not need to maintain all of their funds on hand.

Prospero's depositors also learn from Cosimo's experience with Bartolomeo. They insist that Prospero invest only in safe investments like pawn loans, which are made on good collateral that is worth more than the value of the loan. None of these loans is particularly large, so the depositors are protected to some degree by diversification. But these pawn loans will never bring in returns equal to a successful voyage to the Levant. So the depositors sacrifice some yield for safety.

Prospero's depositors still have a problem, however: How do they know that Prospero is only making pawn loans? How do they know that he is not investing their funds in the voyage of Marino's nephew, Narcisso the Navigator, or speculating on Tuscan farmland, which will become worthless if the peasantry is decimated by the Black Plague? And some of the depositors recognize that if Florence is threatened by a papal or French army, there will be a run on Prospero's bank because depositors will scramble to flee the city with their funds, lest their funds be looted if the city is sacked. How can these forward-looking depositors

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trans). See also John Addington Symonds, *An Introduction to the Study of Dante* 57–58 (Macmillan 4th ed 1899).

be sure that they will be repaid when Prospero has reloaned their funds?

The depositors start demanding that Prospero undergo periodic audits by their representatives and that he maintain a certain level of reserves on hand. And thus, bank regulation is born in an attempt to square the circles of safekeeping and investment risk.

The invention of bank regulation does not completely solve the depositors' problem, however. How can they trust their representatives to get it right? What if Prospero has bribed the auditors? Or what if the auditors are clueless or simply incapable of sniffing out Prospero's financial knavery? The depositors require their auditors to swear a sacred oath on their eternal souls and in the end rely on the auditors' good faith and acuity. Not surprisingly, not all of the depositors sleep soundly at night.

One day, the auditors discover that Prospero has in fact loaned out funds beyond his reserve limit to some very speculative ventures. The auditors triumphantly report their discovery to the depositors. But what good does this do? Prospero will be disgraced and punished, but the depositors' funds are still at risk. Absent some type of deposit insurance system, the prudential regulation alone may not protect the depositors. Thus, the depositors find themselves demanding that the state guaranty their deposits.

In the story above, fractional reserve banking emerged from a tawdry tale of opportunism. Today, it is a system that has become universally accepted and that has had several centuries of staying power. Thus, even if fractional reserve banking's origins were in opportunism, it may well have been an efficient development. One can spin out multiple efficiency yarns, but two compatible stories we might consider are the *Depositor's Tale* and the *Banker's Tale*.

2. The *Depositor's Tale*.

The *Depositor's Tale* is a microeconomic-efficiency story. In this story, depositors are willing to tolerate fractional reserve banking because it is the best option relative to their alternatives. Cosimo went along with Bartolomeo's scheme because it was the best opportunity available.

Until the development of deep and liquid capital markets, savers like Cosimo had few options for liquid investments (and far fewer investment options in general). Moreover, depositors lacked

credible safekeeping alternatives. How could Cosimo ever be sure that Bartolomeo was not relending some of his funds? No bank or other depositary could credibly commit to 100% reserves prior to the development of modern bank regulatory systems. In these circumstances, fractional reserve banking was, despite its risks, the best deal that depositors could get: it offered them liquidity and a reasonable measure of safekeeping plus some modest yield.

Even if this story were once true, it is no longer clear why it would hold today. Capital markets now offer an enormous range of liquid investment alternatives, such as Treasury securities; investment-grade corporate, municipal, and structured bonds; and money market mutual funds. At the same time, modern bank regulatory regimes mean that a bank can today much more credibly promise not to reloan deposits than could Bartolomeo the Bank. Technological and market changes may have changed the efficiency of fractional reserve banking.

3. The *Banker's Tale*.

There is also a possible macroeconomic-efficiency story regarding fractional reserve banking. Both fractional reserve banking and payment systems enabled the creation of private money.[27] Bank deposits are effectively a form of money. When a bank makes a loan, the loan is seldom disbursed in cash. No currency actually changes hands. Instead, the loan is disbursed to the borrower's deposit account at the bank. The result is that the bank's balance sheet gains both an asset (the loan) and a liability (the deposit). The borrower's balance sheet also gains an asset (the deposit) and a liability (the loan). Because both banks and borrowers are able to spend their newly created assets, the money supply has effectively expanded.[28]

Prior to the Renaissance, money creation was primarily public. The pre-Renaissance money supply consisted of coins minted by governments.[29] This situation was less than optimal. Governments might not in fact have had the means to produce sufficient

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[27] See Felix Martin, *Money: The Unauthorised Biography* 108 (Knopf 2014); Christine Desan, *Making Money: Coin, Currency, and the Coming of Capitalism* 25 (Oxford 2014) (noting that fractional reserve banking "allows people to expand the number of units circulating beyond that produced by the fiscal activity of the stakeholder or government at the center, supplementing the amount of money generated by public spending alone").

[28] See Michael McLeay, Amar Radia, and Ryland Thomas, *Money Creation in the Modern Economy*, 54 Bank Eng Q Bull 14, 16 (2014).

[29] See Niall Ferguson, *The Ascent of Money: A Financial History of the World* 23–24 (Penguin 2008).

currency by minting, which was expensive and dependent on supplies of precious metal.[30] More troubling, however, was that governments often debased their currencies to obtain immediate increases in their spending capacities.[31] If a king wanted to finance a war or a new palace or some other project, a simple way to do so was to debase the currency. The pre-Renaissance money supply was driven not by market supply and demand but by the needs of the state.[32]

The development of fractional reserve banking and non-real-time payment systems enabled private money creation, which was arguably the great economic development of the Renaissance.[33] Private money creation loosened the supply constraint that existed because of state control of monetary production. It also reduced the ability of the state to engage in financial repression through debasement.

In this efficiency story, the European economy boomed once it was freed from a fettered money supply, and this growth was furthered by the development of new markets (especially after 1492), new technology (especially in terms of navigation), and new payment systems that enabled long-distance commerce and movements of capital.

According to this story, countries that stayed tied to public money lagged behind, while those that developed private money creation boomed. Thus, Spain's coffers, bloated with gold and silver extracted from New World mines, allowed its banking system to stagnate. Meanwhile, the economies of the Netherlands and England, which had developed very advanced banking systems, punched above their weight in part because of the ability of their financial systems to provide the capital and liquidity needed for business ventures.[34]

Obviously, this story is reductionist and oversimplifies a range of social, political, and economic factors that might explain the relative success of some states. It also ignores the booms and busts accompanying private money, which could constrict much more rapidly than public money precisely because it was ultimately convertible into specie or other legal tender money, of

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30 Id at 24.

31 See Martin, *Money* at 88–89 (cited in note 27). See also *The Case of Mixed Money in Ireland*, 2 Howell's St Trials 114, 114–15 (PC 1605) (describing the history of the debasement of English currency).

32 See R.G. Hawtrey, *Currency and Credit* 279–84 (Longmans, Green 1919).

33 See Ferguson, *The Ascent of Money* at 41–52 (cited in note 29).

34 See id at 51–52.

which there was a more limited supply. Built into this macroeconomic-efficiency story is also the assumption that economies grew faster than they otherwise would have *because* of the private money supply. Perhaps this is true, but it is not a falsifiable assumption and correlation does not imply causation. There is no way to readily net out the effects of the booms and busts, much less of private money as a whole. The macroeconomic-efficiency story, like the microeconomic-efficiency story, is as much of a just-so story as the *Goldsmith's Tale*.

Yet, even if there were once a macroeconomic efficiency to private money creation, that efficiency might no longer hold given changes in markets, governments, and technology. Governments can create money themselves much more efficiently in today's age of paper currency and electronic benefit transfers than in the minting days of yore. Money is no longer tied to specie extraction.[35]

There is also much more massive government spending (which puts government money into circulation) and government borrowing (which creates government obligations that operate as money) today than there was prior to the twentieth century.[36] In the developed world, government fiscal activity is now generally subject to some measure of democratic accountability; fiscal activity no longer reflects the whims and caprices of a monarch but is instead an expression of democratic politics.

Finally, governments are now much more actively and adeptly involved in control over the private production of money. The operation of the money supply is much better understood today than it was in past centuries, and this allows for much greater and more-skillful government stewardship of the money supply. Central banks now control the money supply by adjusting the price of money through setting target interest rates.[37] Money production has become monetary policy, and it is done no longer simply to facilitate the monarch's spending but instead to achieve the politically desired levels of growth, employment, and inflation.[38]

These market, governmental, and technological changes mean that the efficiency of private money creation that stems

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35 See id at 62.

36 See id at 65–69.

37 See Baumol and Blinder, *Economics* at 644–46 (cited in note 23).

38 See McLeay, Radia, and Thomas, 54 Bank Eng Q Bull at 14–15 (cited in note 28).

from fractional reserve banking is no longer so self-evident, even if its inherent instability is increasingly obvious.

II. SQUARING THE CIRCLE? ATTEMPTS TO MAKE BANKING SAFER

Several market and regulatory solutions have emerged to address the problem of the instability created by fractional reserve banking. They include the direct provision of depository services by the government; the government provision of solvency and liquidity backstops for private institutions; and the transactional construction of "safe assets." This Part reviews these solutions and their shortcomings.

A. Direct Government Credit: Government Banks

One approach to combining the Deposit and Lending Functions is to have government banks. Depositors at government banks have claims against the government. While government debt, like any debt, has some risks, a claim against the government is as safe as debt can be. Indeed, investing in US government debt is a way to functionally create a safe deposit—US government debt is as risk-free as an investment can be, and because it trades in highly liquid secondary markets, it also offers liquidity benefits similar to those of a demand deposit. Additionally, so-called "Agency" debt, issued by governmental agencies or government-sponsored entities, does not generally bear the "eagle"[39]—it is generally not expressly backed by the full faith and credit of the US government, but it is usually perceived as implicitly guarantied and accordingly it has liquidity similar to that of government debt.[40]

As of the end of 2014, there was about $14.4 trillion of outstanding US government securities and another $7.9 trillion in "Agency" securities.[41] While these numbers may seem eye-popping,

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[39] The sole exception to this general statement are Ginnie Mae securities, which are privately issued mortgage-backed securities guarantied by the Government National Mortgage Association ("Ginnie Mae"). See note 143.

[40] See Frank J. Fabozzi and Michael J. Fleming, *US Treasury and Agency Securities*, in *The Handbook of Fixed Income Securities* 1, 10 (Federal Reserve Bank of New York 7th ed 2004). See also Sean Campbell, Canlin Li, and Jay Im, *Measuring Agency MBS Market Liquidity with Transaction Data* (Board of Governors of the Federal Reserve System, Jan 31, 2014), archived at http://perma.cc/582K-A5XS (noting that bid–ask spreads (a measure of liquidity) on Agency mortgage-backed securities are very similar to those on Treasury securities).

[41] *Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts; Third Quarter 2015* *113 (Board of Governors of the

they are in fact small relative to demand. Government debt and Agency debt are issued based on government and Agency needs rather than on market demand. Moreover, government debt and Agency debt, although highly liquid, are not linked with a payment system, which limits liquidity in the real economy. To spend a Treasury bond on most purchases, one must first sell it for cash and then spend the cash on the ultimate purchase. Accordingly, government and Agency debt cannot satisfy the full market demand for the Deposit Function.

Governments can meet the Deposit Function not only through direct debt issuance but also by accepting formal deposits at government banks. The United States has had a couple of experiences with government banks. From 1911 to 1967, the US Postal Service ran a Postal Savings Bank.[42] From 1919 to the present, the Bank of North Dakota has operated as a state-run bank.[43] The Postal Savings Bank offered only passbook savings accounts of limited size, as well as some payment services.[44] Unlike a checking account, a passbook savings account cannot be used to make payments. It merely offers safekeeping of the depositor's funds, withdrawable in cash but not transferrable via check or other payment medium. When the Postal Savings Bank existed, the Postal Service was still a cabinet-level US government agency, and postal savings deposits were backed by the full faith and credit of the United States.[45] What's more, the Postal Savings Bank paid interest on deposits at a statutory rate of 2 percent.[46] This combination of absolute safety and yield made postal savings deposits incredibly attractive during the Great Depression. Privately owned banks were failing and offered little yield on their deposits. As a result, the Postal Savings Bank's

Federal Reserve System, Dec 10, 2015), archived at http://perma.cc/S2LA-6675 (showing the total outstanding US government securities in line 3 of Table L.208 and the total outstanding Agency securities and mortgage-backed securities in line 4 of Table L.208).

42 See generally Act of June 25, 1910, 36 Stat 814, repealed by Act of Mar 28, 1966, Pub L No 89-377, 80 Stat 92. Democratic presidential candidate Bernie Sanders has called for the revival of postal banking. See *Text of Bernie Sanders' Wall Street and Economy Speech* (MarketWatch, Jan 5, 2016), archived at http://perma.cc/PMM6-NWMW.

43 See *Early Days of the BND* (Bank of North Dakota), archived at http://perma.cc/F7WP-9FD5.

44 See Act of June 25, 1910 §§ 3–6, 36 Stat at 815–16.

45 See Act of June 25, 1910 § 16, 36 Stat at 819.

46 Act of June 25, 1910 § 7, 36 Stat at 816.

deposits swelled to around 10 percent of the total deposits in the commercial banking system.[47]

While the Postal Savings Bank offered a limited Deposit Function (with safekeeping, but not linked payments), its Lending Function was more limited. The Postal Savings Bank did not make loans to private enterprises. Instead, it was required, by statute, to either redeposit its deposits with commercial banks in the geographic area where postal deposits were received (relending money to commercial banks) or invest in Treasury bonds (relending money to the US government, but with a maturity transformation).[48]

Yet some risk remained. To the extent that the Postal Savings Bank reinvested in Treasury bonds, the Lending Function created some liquidity risk but no meaningful credit risk, as the credit risk remained that of the US government. But when the Postal Savings Bank reinvested in local commercial banks, it did assume real credit risk—and indeed, it assumed the very credit risk that postal savings depositors had chosen to avoid. The Postal Savings Bank thus squared the circle of the Deposit and Lending Functions only through the pledge of the full faith and credit of the United States.

Obviously, there is still some risk when dealing with a sovereign. Sovereigns will sometimes encounter liquidity problems. And the Leviathan can always choose to change the terms of its bargain and either formally renounce its obligations or impose bank holidays or inflate the currency (a risk for any deposits denominated in that currency). But these risks exist in any financial system with government-controlled currency.[49]

The United States' other experiment with government banking is the Bank of North Dakota. The Bank of North Dakota both takes deposits and makes loans to private enterprises, but it is not backed by the full faith and credit of the United States

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[47] Maureen O'Hara and David Easley, *The Postal Savings System in the Depression*, 39 J Econ Hist 741, 741 n 1 (1979).

[48] Act of June 25, 1910 § 9, 36 Stat at 816–17 (explaining that "postal savings funds received under the provisions of this Act shall be deposited in solvent banks" and that funds "may at any time be withdrawn by the trustees for investment in bonds or other securities of the United States").

[49] One claim of cryptocurrencies, such as Bitcoin, is that they are immune from politically controlled inflation. See Stephen Small, *Bitcoin: The Napster of Currency*, 37 Houston J Intl L 581, 608 n 163 (2015). These cryptocurrencies, however, carry with them a host of other risks that more than offset their inflation stability. See Kevin Dowd and Martin Hutchinson, *Bitcoin Will Bite the Dust*, 35 Cato J 357, 359 (2015).

(it is instead backed only by that of the state of North Dakota)[50] and its deposits are not federally insured.[51] While states cannot discharge their obligations in bankruptcy, it is also very difficult to force states to pay obligations that they either do not wish to or cannot pay. The credit of the state of North Dakota may well be better than that of the privately owned banks operating in that state, but because the state of North Dakota does not have control over the currency, it is limited in its ability to readjust its obligations; thus, the safety offered by the Bank of North Dakota is not absolute but only relative.

Moreover, the Bank of North Dakota also engages in only a limited Lending Function: it is permitted to make direct loans for student loans, farm real estate, and the acquisition of bank stock, as well as for a few other limited and specifically enumerated purposes.[52] All other commercial or consumer lending is done through participation in loans made by other banks. Likewise, the Bank of North Dakota offers only limited payment services: it does not provide debit cards, credit cards, or online bill pay, because its policy is to not compete with the private sector for retail deposits.[53]

The Postal Savings Bank offered and the Bank of North Dakota offers limited banking services because of political concerns about competition between a governmental entity and the private sector. In theory, however, there is no reason that a public option in banking need be so limited.[54] Theoretically, a public option in banking (or even a government-banking monopoly) would be able to offer the full panoply of Deposit and Lending Function services. Government banks are able to successfully combine the Deposit and Lending Functions, but only because of government debt's status as the ultimate "safe asset" and the government's nearly limitless liquidity due to its taxation power and as backed by its monopoly on violence.

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50 See ND Cent Code § 6-09-10.

51 See *Frequently Asked Questions* *3 (Bank of North Dakota), archived at http://perma.cc/9N6M-JSSP.

52 See ND Cent Code § 6-09-15(g).

53 See *Frequently Asked Questions* at *7 (cited in note 51).

54 See Adam J. Levitin, *Public-Private Risk Sharing in Financial Regulation* *48 (unpublished manuscript, Apr 5, 2013) (on file with author); Adam J. Levitin and Susan M. Wachter, *The Public Option in Housing Finance*, 46 UC Davis L Rev 1111, 1115–17 (2013); Adam J. Levitin, *Public-Private Competition in Payments: The Role of the Federal Reserve* *5 (Georgetown University Law Center Business, Economics and Regulatory Policy Working Paper Series, June 23, 2009), archived at http://perma.cc/D433-VQ4H.

The design of both the Postal Savings Bank and the Bank of North Dakota shows a concern about public competition with private entities. But for both public options and government monopolies, another problem exists: politicized allocation of credit. When the government is in a position to decide which borrowers may obtain credit and on what terms, the credit-granting decision may be made not solely on the basis of the expected return on assets for the loan but may include political considerations. As a result, the Lending Function can become plagued with public-choice problems. While government banks can successfully combine the Deposit and Lending Functions, this combination comes at the expense of concerns about politicized finance.

B. Government Guaranties: Deposit Insurance and Liquidity Provision

An alternative attempt to square Deposits with Lending is to hold these inconsistent functions together through bank regulation. Bank regulation seeks to ensure that banks do not assume excessive risks and that they have the capital and liquidity to absorb losses while still honoring all depositor withdrawals.

As we saw with the unfortunate Bartolomeo, banks face two distinct problems: liquidity and solvency. Even if a bank is solvent, meaning that its assets are worth more than its liabilities, it may be illiquid, and to a depositor, the difference may not matter much, because time may be of the essence for the depositor's withdrawal.

To solve these problems, modern bank regulation has come up with a host of devices. Foremost among them are capital regulation and government deposit insurance to address solvency concerns, and reserve requirements and government liquidity facilities to address liquidity concerns. Layered across these solvency and liquidity protections are regular supervisory examinations, activity restrictions, and investment limitations—all of which are aimed at preventing banks from having to turn to the solvency and liquidity protections in the first place.[55]

Solvency, liquidity protections, precatory supervision, and activity restrictions are the core of modern bank regulation. While bank regulation has grown to include consumer-protection,

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[55] See Jeremy C. Stein, *Liquidity Regulation and Central Banking* *3–6 (Federal Reserve Bank of Richmond, Apr 19, 2013), archived at http://perma.cc/RJ9Y-FXLP.

fair-lending, and anti-money-laundering regulations, these regulations are meant to address a different set of problems that are not connected with the linkage of the Deposit and Lending Functions. Title 12 of the United States Code and Title 12 of the Code of Federal Regulations (Banks and Banking) together currently stand at nearly 11,000 pages (10,902 to be precise),[56] and this is without the completion of all of the rulemakings mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act[57] ("Dodd-Frank Act"). This count excludes certain banking-related statutes (such as the Truth in Lending Act[58] and the Electronic Fund Transfer Act[59]) and regulations (such as Federal Housing Administration insurance regulations[60]) that are codified in other titles.

By way of comparison, the 10,902 pages of banking statutes and regulations are fewer than either the 19,651 pages of tax statutes and regulations[61] (which administer an ex post tax system rather than an ex ante regulatory system) or the 12,226 pages of agricultural statutes and regulations,[62] but far more than the 5,155 pages of food and drug statutes and regulations[63] or the 4,231 pages of commerce and trade statutes and regulations (including securities regulations).[64] It is unlikely that any single individual is familiar with most of these, much less with all of the existing banking regulations.

In contrast, in 1952, federal banking statutes and regulations totaled only approximately 700 pages, a body of knowledge more conceivably mastered by a single person. The sheer volume of federal banking laws now makes it nearly impossible for regulators to understand all of the laws' interactions, much less how

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56 Title 12 of the United States Code was 1,946 pages in the 2012 GPO printing. Title 12 of the Code of Federal Regulations was 8,956 pages in the 2014 GPO printing.

57 Pub L No 111-203, 124 Stat 1376 (2010).

58 Title I of the Consumer Credit Protection Act ("Truth in Lending Act"), Pub L No 90-321, 82 Stat 146 (1968), codified as amended at 15 USC § 1601 et seq.

59 Financial Institutions Regulatory and Interest Rate Control Act of 1978 § 2001 ("Electronic Fund Transfer Act"), Pub L No 95-630, 92 Stat 3641, 3728–41, codified as amended at 15 USC § 1693 et seq.

60 See 24 CFR Part 203.

61 Title 26 of the United States Code was 3,864 pages in the 2012 GPO printing. Title 26 of the Code of Federal Regulations was 15,787 pages in the 2014 GPO printing.

62 Title 7 of the United States Code was 2,014 pages in the 2012 GPO printing. Title 7 of the Code of Federal Regulations was 10,212 pages in the 2014 GPO printing.

63 Title 21 of the United States Code was 769 pages in the 2012 GPO printing. Title 21 of the Code of Federal Regulations was 4,386 pages in the 2014 GPO printing.

64 Title 15 of the United States Code was 2,101 pages in the 2012 GPO printing. Title 15 of the Code of Federal Regulations was 2,130 pages in the 2014 GPO printing.

any particular regulatory change might affect the system. The inability for an individual to reasonably anticipate the possible consequences of regulatory changes is of particular concern in the area of financial regulation because of the hydraulic rule of financial regulation: finance will inevitably flow to the least regulated channel. Material changes in regulation will almost assuredly affect the market equilibrium. For example, a change in the regulation of credit derivatives or bank capital requirements is likely to have spillover effects on mortgage-lending markets. While this type of unstable equilibrium is also present in some other areas of regulation, such as taxation, precisely because it deals with a highly fungible good (money), it is less likely to be a problem in, say, food and drug or transportation or fisheries regulation. Because of the hydraulic nature of finance, the complexity and unknowability of the regulatory system mean that there are too many unforeseeable consequences from regulatory changes.[65]

Beyond complexity, the tools of bank regulation suffer from epistemic and political problems. For example, capital and liquidity requirements are effective only until they are not. As long as a bank has adequate capital and liquidity, it will not have solvency or liquidity problems. The effectiveness of capital and liquidity requirements is entirely dependent on the regulatory determination to maintain the requirements at sufficiently high levels.

It is difficult for regulators to know ex ante just how much capital and liquidity will be needed in the future, and regulators are subject to asymmetric lobbying pressures in regard to capital and liquidity requirements. Banks do not want higher capital and liquidity requirements, because higher requirements lower their return on equity and render them less attractive investments.[66] Accordingly, banks will reliably lobby for lower capital and liquidity requirements, arguing for requirements closer to those necessary for times of normal stress rather than maintaining capital and liquidity against the rare peak-stress situation.

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[65] See Adam J. Levitin, *The Paper Chase: Securitization, Foreclosure, and the Uncertainty of Mortgage Title*, 63 Duke L J 637, 649 (2013) (detailing confusion about the legal process for transferring title to mortgages). For a discussion of the hydraulic nature of financial regulation, see generally Adam J. Levitin, *Hydraulic Regulation: Regulating Credit Markets Upstream*, 26 Yale J Reg 143 (2009).

[66] See Admati and Hellwig, *The Banker's New Clothes* at 115 (cited in note 6).

Given regulators' uncertainty about proper capital levels, bank regulators' close relationship with the banking industry and their desire to curry favor with (and obtain potential future employment in) the industry, the absence of a lobby for higher capital levels,[67] and concern about whether higher capital requirements will reduce economic growth,[68] there are reasons to think that capital and liquidity requirements will always be systemically biased to be too low for periods of peak stress.[69] The result is a financial system that gooses the return on equity for banks' shareholders in good times and then relies on impromptu bailouts to cover for inadequate capital and liquidity in bad times. Indeed, the 2008 crisis showed that regulators are loath to use their authority to order prompt corrective action of capital levels,[70] instead preferring to turn to bailouts. Gains are privatized while losses are socialized, resulting in a moral hazard that disincentivizes banks from taking care in their lending activities.

A similar problem exists with deposit insurance. Deposit insurance is either implicitly or explicitly backed by the government.[71] The value of deposit insurance is the pledge of government

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67 See Adam J. Levitin, *The Politics of Financial Regulation and the Regulation of Financial Politics: A Review Essay*, 127 Harv L Rev 1991, 2042–49 (2014).

68 Higher capital (equity) requirements may reduce economic growth by reducing banks' returns on equity, which would make them less attractive investments and thus reduce their ability to lend to the extent that returns on equity are not offset by reduced debt finance costs. See id at 2033–37. But see Admati and Hellwig, *The Banker's New Clothes* at 109–10 (cited in note 6) (contending that higher capital requirements will not affect growth based on the Modigliani-Miller theorem of capital structure irrelevance).

69 See Erik F. Gerding, *Law, Bubbles, and Financial Regulation* 313–18 (Routledge 2014) (discussing procyclical regulations).

70 See 12 USC § 1831(o) (requiring prompt corrective action to resolve the problems of insured depository institutions). See also William K. Black, *Why Is Geithner Continuing Paulson's Policy of Violating the Law?* (Huffington Post, Mar 26, 2009), archived at http://perma.cc/K5YX-HJUZ (asserting that regulators violated 12 USC § 1831(o) by failing to take prompt corrective action before troubled banks became insolvent).

71 Contrary to popular belief, deposit insurance in the United States is actually privately funded. The FDIC, a federal regulatory agency, oversees the Deposit Insurance Fund (DIF). The DIF is a mutual insurance fund for the banking industry. It is funded by the banks, rather than through congressional appropriations. See *The Deposit Insurance Fund* (FDIC, Sept 2, 2015), archived at http://perma.cc/U2L5-9CN6. Although the FDIC's logo, which insured banks are required to display, states "Backed by the Full Faith and Credit of the United States," the logo does not state exactly what is backed by the full faith and credit. See *Ordering & Using FDIC Signs & Logos* (FDIC, Oct 27, 2015), archived at http://perma.cc/9UNV-YQ39. Indeed, it would seem to be the FDIC itself, rather than the DIF, that is backed by the full faith and credit; there is no pledge of the credit of the United States to support the DIF. (Query, however, whether the United States would be estopped from denying the pledge of full faith and credit to back deposits.) Instead, the credit of the United States is explicitly pledged only to support

credit to back the Deposit Function of banks. This pledge creates the moral hazard that can exist with any type of insurance if premiums underprice for risk. This moral hazard is exacerbated by an agency problem: a bank's losses are not necessarily the losses of the bank's employees, who may have short-term compensation and an ability to easily redeploy their human capital if their employer fails.

While the structure and pricing of insurance can limit the moral hazard, as can prudential regulation, it exists nevertheless, because gains are privatized while losses are socialized. This imbalance creates an inherent moral hazard in the banking system that encourages greater levels of risk-taking, meaning more and riskier loans. Unless a deposit insurance system has an explicit government guaranty, and that guaranty is properly priced, then this greater level of risk-taking will be inefficient because it does not account for its costs. An implicitly guaranteed system, such as that in the United States, is nothing more than a subsidy to the banking system.

It may well be that we want this subsidy because we think that it encourages economic activity and growth. As long as banks keep risk in check, it would seem that we can have our cake and eat it too: more economic growth, but with no cost to the government.

This is wishful thinking. A deposit insurance system necessitates intensive regulation of banks, as the over eleven thousand pages of codified banking statutes and regulations in the United States underscore. The government ends up in the situation of Prospero's depositors in Renaissance Florence, trying to stay on top of the risks of the banks. This is a costly and likely inefficient process, as regulations are unlikely to ever be perfectly tailored. What is more, it is unreliable, as the savings and loan crisis of the 1980s and the financial crisis of 2008 showed.[72]

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any bonds that the FDIC might issue. The FDIC, however, does not typically issue bonds. See *FAQs* (DIF), archived at http://perma.cc/RNU3-WJGP.

The formalities of the FDIC arrangement hardly matter, though. While the DIF is a mutual insurance fund, it is implicitly backed by the US government—and that is sufficient. See Alan J. Kaplan, *Full Faith and Credit of U.S. Government behind the FDIC Deposit Insurance Fund* (FDIC, Nov 9, 1987), archived at http://perma.cc/2F36-QNDE.

[72] Even though the 2008 crisis was not primarily a commercial banking crisis, large depositories did fail, including Wachovia, Washington Mutual, and IndyMac; but for massive federal intervention, Citibank would have failed as well. See Levitin, 127 Harv L Rev at 2014–15 (cited in note 67). Moreover, the bailouts of the large investment banks were undertaken because of the risk they posed to the commercial banking system. Investment banks are frequently counterparties of commercial banks; the failure of Morgan

Irrespective of whether these crises were caused by factors beyond regulators' control or by regulatory decisions,[73] the inescapable fact is that regulation did not prevent these crises.

The same story can be told for liquidity support facilities from the Federal Reserve and the Federal Home Loan Banks.[74] While nominally these lender-of-last-resort facilities are meant to provide liquidity under the Bagehot principle by lending at punitive rates against sound collateral,[75] in practice they often lend at non-punitive rates against dodgy collateral,[76] meaning that all the upside is held by the borrowing financial institution while all the risk is held by the government.

Government solvency and liquidity support is a costly and inefficient form of subsidization that creates a moral hazard in banking because losses are socialized while gains are privatized. The result is to encourage excessive risk-taking and overextension of credit, which can result in leverage-fueled asset bubbles—the collapse of which comes at a cost to the public fisc.

C. Shadow Banking: Government Facilitation of Deposit Substitutes

Another approach to combining the Deposit and Lending Functions has been through transactional innovations. Transactional innovations have created a number of deposit substitutes, such as repos, swaps, securitization, commercial paper, and money market funds that form what is known as the "shadow-banking" system—financial markets that provide bank-like functions without bank-like regulation. Thus, shadow banking not only fulfills the Lending Function by providing financing for

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Stanley, for example, threatened to bring down not only other investment banks but also the commercial banks that serve as the investment banks' clearing banks, and hence the whole commercial banking system. See James Bullard, Christopher J. Neely, and David C. Wheelock, *Systemic Risk and the Financial Crisis: A Primer*, 91 Fed Res Bank St Louis Rev 403, 407 (2009).

A similar story exists with insurance company AIG. AIG's largest credit book was its so-called regulatory capital portfolio, comprising billions of swaps with European banks that were designed to reduce those banks' regulatory capital requirements. Had AIG failed, these banks would have been massively undercapitalized. See Congressional Oversight Panel, *The AIG Rescue, Its Impact on Markets, and the Government's Exit Strategy* *41, 111–12, 123 (GPO, June 10, 2010), archived at http://perma.cc/PJH8-WQYT. It was not AIG itself that was the concern but the impact of its failure (directly or indirectly) on commercial banking counterparties.

73 See Levitin, 127 Harv L Rev at 2039–49 (cited in note 67).

74 See Kathryn Judge, *Three Discount Windows*, 99 Cornell L Rev 795, 814 (2014).

75 See Levitin, 127 Harv L Rev at 1997 (cited in note 67).

76 See id.

borrowers but also fulfills the Deposit Function by generating apparently low-risk "safe assets" for investors.

Shadow banking is often assumed to be an organic development. One of the insights of legal scholarship, however, is that various shadow-banking products, like all financial instruments, are legally constituted.[77] Most of this scholarship has examined specific shadow-banking products, not the system as a whole.[78] Moreover, the insight into the legal construction of shadow-banking products is more implicit in the literature than it is directly discussed in such terms.

Professors Anna Gelpern and Erik Gerding, however, have demonstrated that shadow banking's ability to produce "safe assets" is the product of a wide range of government interventions that serve to make, label, or guaranty investments in shadow-banking instruments as "safe."[79] While some measure of the "safety" of "safe assets" comes from private ordering, government intervention is what actually facilitates the "safety" of these assets. The legal construction of "safe assets" is qualitatively different from the general legal construction of markets because of the product- and institution-specific nature of the regulations creating "safe assets," which go beyond generally applicable ordering principles of contract and tort.

The ability to produce credibly "safe assets" is essential to the vitality and size of the shadow-banking system. Absent the ability to promise investors "safety" as strongly as a

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77 See, for example, Katarina Pistor, *A Legal Theory of Finance*, 41 J Comp Econ 315, 315 (2013) (arguing that financial markets are legally constructed). To be sure, all markets—not just financial markets—are legally constructed, as market terms depend on which obligations are enforceable and how. Markets are built on contract and tort obligations (and on what does not constitute an enforceable obligation), and enforcement of those obligations requires a legal apparatus—which must in turn be funded, and which requires some sort of tax regime.

78 See generally, for example, Jill Fisch and Eric Roiter, *A Floating NAV for Money Market Funds: Fix or Fantasy?*, 2012 U Ill L Rev 1003; Mark J. Roe, *The Derivative Market's Payment Priorities as Financial Crisis Accelerator*, 63 Stan L Rev 539 (2011) (examining the subsidy for derivatives counterparties in bankruptcy law); Kenneth C. Kettering, *Securitization and Its Discontents: The Dynamics of Financial Product Development*, 29 Cardozo L Rev 1553 (2008) (analyzing the legal construction of securitization, repos, and credit derivatives); Frank Partnoy and David A. Skeel Jr, *The Promise and Perils of Credit Derivatives*, 75 U Cin L Rev 1019 (2007) (analyzing the legal construction of credit derivatives and regulatory licenses that are implied through credit ratings).

79 See Anna Gelpern and Erik F. Gerding, *Inside Safe Assets* *19 (unpublished manuscript, Oct 5, 2015) (on file with author). See also Edward J. Janger, *The Costs of Liquidity Enhancement: Transparency, Risk Alternation, and Coordination Problems*, 4 Brooklyn J Corp, Fin & Comm L 39, 40 (2009) (noting how commercial law is focused on enhancing the liquidity of debt).

government-facilitated market would, the shadow-banking market would assuredly be substantially smaller, as shown by the post-2008 collapse of the investor confidence in the private-label mortgage-backed securities market.[80]

Scholars have noted that there is an insatiable market demand for "safe assets"—deposit substitutes with slightly more yield—from institutional cash pools.[81] The existing supply of insured bank deposits and government debt is inadequate for this demand.[82] FDIC insurance caps make bank deposits unworkable for large institutional cash pools, and government debt issuance is too limited relative to the demand. Moreover, investors want not just safety but also yield.

Institutional cash pools require safety—the investors often have fixed obligations of their own, such as pension plan payments—but they are also reluctant to lose the time value of money on huge cash pools by having them sitting in non-interest-bearing accounts. Instead, institutional cash pools seek to obtain yield to offset lost time value and inflation while still protecting the integrity of their principal. In other words, investors want to have their cake and eat it too. Shadow banking offers the solution in the form of "safe assets": short-term debt or debt-like

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[80] See generally Adam J. Levitin, *Housing Finance Reform: Fundamentals of a Functioning Private Label Mortgage Backed Securities Market* (Georgetown University Law Center, Oct 1, 2013), archived at http://perma.cc/2M7C-TWDJ (documenting written testimony before the Senate Committee on Banking, Housing, and Urban Affairs detailing the post-2008 private-label mortgage-backed securities market).

[81] See, for example, Gary B. Gorton and Guillermo Ordoñez, *The Supply and Demand for Safe Assets* *1 (NBER Working Paper Series, Jan 2013), archived at http://perma.cc/6T9V-5GV6; *Global Financial Stability Report: The Quest for Lasting Stability* *81 (International Monetary Fund, Apr 2012), archived at http://perma.cc/CL5P-F8RS; Zoltan Pozsar, *Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System* *8 (International Monetary Fund, Aug 2011), archived at http://perma.cc/G8BB-ECBT; Arvind Krishnamurthy and Annette Vissing-Jorgensen, *The Aggregate Demand for Treasury Debt*, 120 J Polit Econ 233, 234–35 (2012); Jeremy C. Stein, *Monetary Policy as Financial-Stability Regulation* *7 (NBER Working Paper Series, Mar 2011), archived at http://perma.cc/UKZ3-CZBJ; Ben S. Bernanke, et al, *International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007* *13–14 (Board of Governors of the Federal Reserve System, Feb 2011), archived at http://perma.cc/8JJQ-75VG; Gary B. Gorton, *Slapped by the Invisible Hand: The Panic of 2007* 45–50 (Oxford 2010); Ricardo J. Caballero, *The "Other" Imbalance and the Financial Crisis* *2–3 (NBER Working Paper Series, Jan 2010), archived at http://perma.cc/7ZT4-5G9Z; Viral Acharya and Philipp Schnabl, *Do Global Banks Spread Global Imbalances? The Case of Asset-Backed Commercial Paper during the Financial Crisis of 2007–09* *3 (International Monetary Fund, Nov 2009), archived at http://perma.cc/DE8B-D9N5.

[82] See Pozsar, *International Cash Pools* at *9–10 (cited in note 81).

instruments, particularly repos, commercial paper, asset-backed commercial paper, and money market mutual funds.

Short-term debt promises the Holy Grail of safety plus yield. Short-term debt appears safe. The short term reduces interest-rate risk and credit risk. Moreover, short-term debt is often collateralized, which further reduces credit risk. And most importantly, a range of government interventions facilitates the appearance or fact of safety. The effect of these government interventions is to subsidize shadow-banking markets through an implied guaranty.

The government guaranty of shadow banking is most obvious in the case of regulatory capital requirements. Regulated depositories are required to hold a minimum amount of capital (defined by regulation) against their risk-weighted assets. Assets with lower risk weights require less capital, which enables the banks to be more highly leveraged and to potentially generate a higher return on equity, all else being equal. Regulatory capital requirements can be understood as acting as a type of tax on transactions; asset classes with higher risk weights are less attractive than those with lower risk weights. Every major type of shadow-banking product benefits from favorable risk weighting. Not only does the low risk weighting convey a message of implied safety but it also incentivizes banks to engage in shadow-banking transactions.

The following sections review (but far from exhaustively) the government interventions facilitating various shadow-banking products. Readers who are not concerned about the details of these facilitations should skip to Part III.

1. Repos.

Repo contracts—sale and repurchase agreements for securities or mortgages—are formally sale instruments, but they function as loans from the buyer-lender to the seller-borrower. A repo loan is collateralized by the asset sold and repurchased, with the difference in sale and repurchase prices constituting the finance charge to the seller-borrower. Repos thus involve the Lending Function and act as a type of money creation.[83] Repos also involve the Deposit Function because of various features that enhance

[83] See Erik F. Gerding, *Credit Derivatives, Leverage, and Financial Regulation's Missing Macroeconomic Dimension*, 8 Berkeley Bus L J 29, 51–52 (2011); Gorton and Metrick, *Regulating the Shadow Banking System* at *266, 277 (cited in note 3); Gorton, *Slapped by the Invisible Hand* at 27 (cited in note 81).

the likelihood of repayment and liquidity. The collateralized nature of repos enhances the likelihood of repayment, and repos' short-term (often overnight) maturity enhances their liquidity.

The repo market benefits from a range of government support. Repo counterparties are protected from counterparty credit risk through exemptions from the bankruptcy stay and clawback provisions.[84] These exemptions have provided an important impetus to the growth of repo markets, which grew significantly after Congress exempted them from the Bankruptcy Code in 1984.[85] The bankruptcy exemptions for repos greatly enhance their liquidity by rendering them "informationally insensitive debt[s]" that are "immune to adverse selection by privately informed traders" and normally have low-valuation search costs, like bank deposits.[86] The special treatment of repos in bankruptcy functions as a subsidy for repo lenders that is funded through the transfer of value from other creditors in bankruptcies.

Repo-market participants also benefit from being able to piggyback on implied government guaranties of central-market participants. Sometimes repos are done through bilateral contracts, but many of them are cleared in a tri-party market with both repo parties contracting with a clearing bank. This process involves the clearing banks assuming intraday credit risk on the repos.

There are two clearing banks in the tri-party market: JPMorgan Chase and Bank of New York Mellon.[87] The clearing banks assume enormous intraday risk that is not subject to regular capital requirements[88] or to the correspondent exposure limitation

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84 See 11 USC §§ 362(b)(7), 546(e), 559.

85 See Viral V. Acharya and T. Sabri Öncü, *The Repurchase Agreement (Repo) Market*, in Viral Acharya, et al, eds, *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance* 319, 330 (Wiley 2011).

86 Gerding, *Law, Bubbles, and Financial Regulation* at 324 (cited in note 69).

87 See *Tri-party Membership* (Tri-Party Repo Infrastructure Reform Task Force, Sept 12, 2015), archived at http://perma.cc/ZG3Y-CCCQ.

88 Repurchase agreements with securities firms have either a 0 percent or a 20 percent risk weighting under US bank capital regulations, meaning that they result in a 0 percent or 2 percent regulatory capital charge, respectively. See 12 CFR Part 3, Appendix A, § 3(a)(1)(viii), (2)(xiii)(C)(3). Under the Basel I capital regime that was in place in the United States until 2009, banks were required to hold regulatory capital equal to 8 percent of their risk-weighted assets, but only for their banking books and not for their trading books. See Basle Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards* *14 (July 1988), archived at http://perma.cc/5NBP-2LLB. Under Basel I, a bank's trading book was subject to capital requirements solely for market risk. See Hal S. Scott and Anna Gelpern, *International Finance: Law and Regulation* 477–82 (Sweet & Maxwell 3d ed 2012). Clearing banks,

of 25 percent of capital.[89] For example, before Lehman Brothers filed for bankruptcy, JPMorgan was advancing Lehman Brothers over $100 billion in intraday credit through the repo-clearing process.[90]

If JPMorgan had been required to hold regulatory capital against its intraday repo-clearing exposures, it would have needed as much as another $8 billion in capital for the Lehman Brothers exposures alone (at a time when JPMorgan's market capitalization was never more than $181 billion), and Lehman Brothers was only part of JPMorgan's repo-clearing business.[91] Similarly, the exemption from the standard single-counterparty exposure limitation of 25 percent of capital enabled JPMorgan to assume an additional $55 billion in intraday exposures just for Lehman Brothers.[92] The lack of capital requirements and single-counterparty exposure limitations for intraday repo exposure functions as a significant subsidy for repo markets.

Tri-party repos bear the implied guaranty of the two clearing banks—both of which are "too big to fail," so their obligations bear an implied government guaranty that benefits the repo counterparties.[93] Moreover, the Federal Reserve Bank of New York is an active participant in the repo market,[94] signaling the safety of the market. Furthermore, since 2009, the Federal Reserve Bank of New York has also been active in encouraging reforms in tri-party-repo clearing aimed at reducing the clearing banks' intraday credit exposure by 90 percent.[95] While these reforms have

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however, historically made repo loans on an uncommitted basis, which exempted them from capital charges altogether. See 12 CFR Part 3, Appendix B, § 2 (defining a "[q]ualifying securities borrowing transaction"). See also Bruce Tuckman, *Systemic Risk and the Tri-party Repo Clearing Banks* *5 (Center for Financial Stability, Feb 2, 2010), archived at http://perma.cc/2R4W-B7QD.

89 See 12 CFR § 206.4(a)–(b) (setting limits on credit exposure and defining "[c]alculation of credit exposure" to exclude both "exposure related to settlement of transactions" and "intraday exposure").

90 See Tom Junod, *The Deal of the Century* (Esquire, Sept 11, 2009), archived at http://perma.cc/EK2T-C9YA. On Lehman Brothers' repo exposure, see generally William O. Fisher, *Predicting a Heart Attack: The Fundamental Opacity of Extreme Liquidity Risk*, 86 Temple L Rev 465 (2014).

91 See Fisher, 86 Temple L Rev at 482 (cited in note 90).

92 See id.

93 See Tuckman, *Systemic Risk and the Tri-party Repo Clearing Banks* at *8 (cited in note 88).

94 See Tracy Alloway and Michael MacKenzie, *Repo Market Turns Corner as Fed Bolsters Role*, Fin Times 15 (June 20, 2014).

95 See *Tri-party Repo Infrastructure Reform* (Federal Reserve Bank of New York), archived at http://perma.cc/DX85-HAU8; Daniel K. Tarullo, *Shadow Banking and Systemic*

been purely voluntary and are not binding regulations, the role of the New York Fed (which often serves as the agent for the Board of Governors of the Federal Reserve System) in facilitating the reforms puts a government imprimatur of good housekeeping on the tri-party-repo market.

2. Swaps.

Credit derivatives such as credit-default swaps and total-return swaps can be used to create synthetic loans, in which the swap counterparties agree to pay each other based on the performance of the swap's reference asset. Thus, the seller of credit-default-swap protection receives periodic cash payments from the protection buyer until and unless a defined credit event on the reference asset occurs and the payment stream reverses, with the protection seller paying the protection buyer. Neither counterparty needs to have any preexisting legal or economic interest in the reference asset.

The swap counterparties are not just wagering on the performance of the reference asset.[96] They are also assuming credit risk from exposure to each other. As a result, swaps are frequently collateralized and are often for relatively short terms, such as one year.[97] Credit derivatives do not directly fill either the Deposit or the Lending Function, but they are often paired with other financial instruments to achieve such a function. A lender can match a credit derivative to a loan so as to hedge out the credit risk on the loan, resulting in something close to the Deposit Function of safekeeping. (There is limited liquidity in this arrangement, but both the loan and the swap positions can be sold.) Credit derivatives can also bolster the Lending Function. As Professor Erik Gerding has noted, "[b]y allowing financial institutions—those institutions that borrow to lend—to increase leverage, credit derivatives can operate to increase the overall amount of liquidity in financial markets. This increase in

Risk Regulation *7 (Board of Governors of the Federal Reserve System, Nov 22, 2013), archived at http://perma.cc/U47W-VQRK.

96 See Nazanin Baseri, *Credit Default Swaps and Clearing*, 3 Legis & Pol Brief 39, 41–43 (2011).

97 See Cameron A. Gee and Dean N. Gerber, *Collateralization of Swap Obligations in Leveraged Financings* (Vedder Price, May 2010), archived at http://perma.cc/6RAX-C7RD (noting the "increased incidence" of collateralized swap transactions).

liquidity can be thought of as increasing the effective supply of money in the market."[98]

The market for credit derivatives is facilitated by a range of government interventions. First, credit derivatives are typically collateralized, and the collateral is often in the form of securities.[99] The sufficiency of the securities as collateral is evaluated in part based on the credit rating of the securities. Credit ratings, as discussed below, are a major part of the government facilitation of shadow banking.[100] Second, credit derivatives may be used to reduce banks' regulatory capital requirements.[101] Third, credit derivatives can receive favorable risk weightings for regulatory capital.[102]

Perhaps most importantly, credit swaps are protected from counterparty credit risk through exemptions from the Bankruptcy Code's automatic stay and clawback provisions.[103] The automatic stay prevents most creditors of a bankrupt firm from proceeding with collection actions outside of the bankruptcy process.[104] Non-debtor counterparties to various types of financial contracts, including credit derivatives, are exempted from the automatic stay for the purpose of terminating and accelerating their contracts and liquidating any margin that is posted to the contracts. Similarly, these non-debtor counterparties are exempted from actions to recover voidable preferences, voidable setoff preferences, unperfected liens, and constructive fraudulent transfers.[105]

Credit derivatives trade over-the-counter through a handful of large dealer banks, which frequently serve as swap counterparties themselves.[106] These dealer banks are all "too big to fail" financial institutions, so their counterparties benefit from the implicit

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98 Gerding, 8 Berkeley Bus L J at 32 (cited in note 83) (citation omitted).

99 See generally *Collateral Use for OTC Derivatives* (International Swaps and Derivatives Association, Oct 2009), archived at http://perma.cc/4FEG-AJA6.

100 See Part II.C.3.

101 See William W. Bratton and Adam J. Levitin, *A Transactional Genealogy of Scandal: From Michael Milken to Enron to Goldman Sachs*, 86 S Cal L Rev 783, 812–21 (2013) (describing relief from regulatory capital requirements via synthetic securitizations).

102 See 12 CFR Part 3, Appendix A, § 4(c)–(d).

103 See 11 USC §§ 362(b)(7), 546(e), 559.

104 See Franklin R. Edwards and Edward R. Morrison, *Derivatives and the Bankruptcy Code: Why the Special Treatment?*, 22 Yale J Reg 91, 95 (2005).

105 See id at 96.

106 See Annette L. Nazareth and Jeffrey T. Dinwoodie, *Clearinghouse Regulatory Basics for Swap Market Participants* *1 (GlobalCapital, Mar 14, 2014), archived at http://perma.cc/4939-A8P3.

government guaranty of their liabilities, thereby relieving the counterparties of much of the counterparty credit risk. Since 2010, most swaps have been required to clear through clearinghouses.[107] The clearinghouses serve as novated counterparties to the swaps, meaning that the original counterparties assume the counterparty risk of the clearinghouse. This has the effect of concentrating risk on the clearinghouses, which in turn have become implicitly guarantied as "too big to fail" entities and which potentially have the ability to call on an emergency Federal Reserve liquidity facility.[108] The clearinghouses also have the ability to call on their members for additional capital.[109] Given that clearinghouse members are "too big to fail" dealer banks, the clearinghouses are able to piggyback on the implied guaranty of these banks' liabilities.

3. Securitization.

Securitization is a financing technique that involves the issuance of debt securities against an isolated pool of cash flow–generating assets. The payments on the debt securities (known as "asset-backed securities" or ABS) are serviced from the cash flows from the securitized assets, such as a pool of mortgages or credit card receivables. Critically, the securitized assets are legally segregated from the other assets and liabilities of their creator, so the investors in the ABS do not assume the operational risks of the assets' creator but instead assume only the risks of the specific assets' performance.[110]

Securitization is a close substitute for traditional banking. It provides financing for borrowers by relending the funds that were provided by capital market investors. Most ABS function similarly to deposits because they are highly liquid and low risk.[111]

Although there is limited liquidity through sale for most ABS, there is tremendous liquidity available to investors through hypothecation. ABS can be pledged as collateral for

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[107] See id.

[108] See Stephen J. Lubben, *Nationalize the Clearinghouses!* *5 (Seton Hall Public Law Research Paper, June 24, 2014), archived at http://perma.cc/39U4-DE9Q.

[109] See Adam J. Levitin, *Response: The Tenuous Case for Derivatives Clearinghouses*, 101 Georgetown L J 445, 462 (2013).

[110] See Jonathan C. Lipson, *Re: Defining Securitization*, 85 S Cal L Rev 1229, 1239–40 (2012).

[111] See Douglas J. Elliott, *Bank Liquidity Requirements: An Introduction and Overview* *2 (Brookings Institution, June 23, 2014), archived at http://perma.cc/NZ5N-Z7B7.

loans, such as in repo transactions. Prior to 2008, ABS often served as repo collateral at par.[112] ABS thus offer investors a high level of liquidity.

Most private-label ABS (those issued without a guaranty from the government or a government-sponsored entity) are low risk because the securities are tranched in a senior-subordinate structure rather than being pure pass-throughs.[113] The tranching focuses most risk on the junior positions.[114] Additionally, private-label ABS frequently feature credit enhancements such as over-collateralization, excess spread, shifting interest, reserve accounts, and pool and bond insurance.[115] Moreover, some securitizations utilize various swaps to hedge out other types of risk, such as interest-rate risk. As a result, most private-label ABS are low-risk investments; even with the housing market's collapse, although over 90 percent of mortgage-backed ABS were rated AAA at issuance, relatively few of these AAA-rated securities have incurred realized losses.[116] Instead, investors' losses on these securities have mainly been in market value. Securitization functions as a substitute banking market providing both the Deposit and Lending Functions to borrowers and investors.

Securitization markets are facilitated by a range of government interventions. ABS are loosely regulated through special securities-law disclosure requirements[117] and, since 2010, through a yet-to-be-implemented risk-retention requirement.[118] Regulation can be seen as a form of licensing.

The ABS market is also highly dependent on credit ratings. Institutional investors comprise the bulk of ABS investment.[119] Many institutional investors are restricted to investing solely in investment-grade securities.[120] Credit ratings are given by federally

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112 See Gary Gorton and Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J Fin Econ 425, 428 (2012) (illustrating the change in repo haircuts on ABS).

113 See Nicola Cetorelli and Stavros Peristiani, *The Role of Banks in Asset Securitization*, 18 Fed Res Bank NY Econ Pol Rev 47, 49 (July 2012).

114 See Andreas Jobst, *What Is Securitization?* *49 (Finance & Development, Sept 2008), archived at http://perma.cc/GD4R-87X3.

115 See Adam J. Levitin and Susan M. Wachter, *Explaining the Housing Bubble*, 100 Georgetown L J 1177, 1191–92 (2012) (detailing credit enhancements).

116 See id at 1190.

117 See 17 CFR § 229.1100(a)–(b).

118 See 15 USC § 78o-11.

119 See *Asset-Backed Securities* (SEC, Oct 23, 2014), archived at http://perma.cc/AC7M-CNX6.

120 See Andrew Baum and David Hartzell, *Global Property Investment: Strategies, Structures, Decisions* 361 n 5 (Wiley 2012).

licensed nationally recognized statistical rating organizations (NRSROs).[121] This gives a government imprimatur to credit ratings that suggests their reliability.[122]

The government imprimatur on credit ratings is furthered by the incorporation of credit ratings by NRSROs in SEC regulations;[123] in Basel risk-weighting standards for bank capital;[124] in other federal bank capital regulations;[125] in Federal Reserve discount-window and daylight-overdraft collateral requirements;[126] in state insurance company reserve and investment requirements;[127] in state banking regulations;[128] in state regulations on investment of public funds;[129] and even in state regulations relating to retirement homes,[130] workers compensation,[131] and public utilities.[132] The incorporation of NRSRO credit ratings in a range of investment requirements and in capital risk weightings encourages investment in rated asset classes. In particular, the use of NRSRO ratings in Basel I risk weightings encouraged depositary institutions to invest in highly rated ABS because Basel I required little capital to be held against highly rated ABS—less than for mortgages themselves.[133] Indeed, the

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121 See 15 USC §§ 78o-7 to -9; 17 CFR §§ 240.17g-1 to -7.

122 NRSROs also benefit from judicial determinations that they are not engaged in "professional speech" when issuing credit ratings and that they therefore must be found to have acted with "actual malice" to be liable for negligent misrepresentation in their ratings. See, for example, *In re Enron Corp Securities, Derivative & "ERISA" Litigation*, 511 F Supp 2d 742, 810 (SD Tex 2005) (finding that the First Amendment shielded a credit rating agency from negligent misrepresentation absent "actual malice"); *Lowe v Securities and Exchange Commission*, 472 US 181, 210 (1985) (holding that an expression of opinion about a commercial product is commercial speech that is protected by the First Amendment).

123 See, for example, 17 CFR § 270.2a-7 (requiring ratings from NRSROs for money market mutual fund investments).

124 See, for example, 12 CFR Part 3, Appendix A, § 4(c) (showing Basel implementation for national banks in Tables C and D).

125 See, for example, 12 CFR § 932.4 (setting Federal Home Loan Bank capital requirements).

126 See *Discount Window and Payment System Risk Collateral Margins Table* (Federal Reserve Discount Window), archived at http://perma.cc/3VXZ-A3RL.

127 See, for example, Iowa Code § 511.8; Iowa Admin Code § 191-49.5; NY Ins Law § 1405.

128 See, for example, 7 Tex Admin Code § 91.802.

129 See, for example, Ohio Admin Code Ann § 113-6-01; 200 Ky Admin Reg § 14:091; Utah Admin Code § R628-10-4.

130 See, for example, 11 NY Codes, Rules & Regs § 350.6.

131 See, for example, 34 Pa Admin Code § 125.9.

132 See, for example, NJ Admin Code § 14:4-4.6.

133 See, for example, 12 CFR Part 3, Appendix A, § 4(d) (assigning a 20 percent risk weight to AAA-rated ABS); 12 CFR Part 3, Appendix A, § 3(a)(3)(iii) (assigning a 50 percent risk weight to performing loans secured by first mortgages on one- to four-family

mere fact that regulated financial institutions are permitted to invest in ABS legitimizes ABS as "safe assets."

The ABS market benefits from legal rules that shield ABS from bankruptcy and bank receivership. Many types of ABS are issued by non-business trusts, which are ineligible for bankruptcy protection.[134] Even when ABS issuers are eligible for bankruptcy, the issuers' corporate structures are often designed to prevent bankruptcy filings by making it difficult for the issuer to authorize the filing of a bankruptcy petition.[135] True-sale and substantive consolidation doctrines protect most securitized assets from getting clawed back into the bankruptcy estate of the assets' originator,[136] and even when an ABS issuer ends up in bankruptcy, the securities-transaction safe harbor against most clawback actions[137] is likely to protect the ABS investors from avoidance of preferential or fraudulent transfers. Similarly, federal banking regulations also create safe harbors that protect securitizations from being clawed back into bank and credit union receiverships.[138]

Certain ABS—most notably ABS that are backed by residential or commercial mortgages—also benefit from favorable tax treatment. The Internal Revenue Code allows for pass-through tax treatment for deals that qualify as "real estate mortgage investment conduits" (REMICs).[139] This means that the entity issuing the ABS is not taxed on its earnings as a regular company

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residential properties); 12 CFR Part 3, Appendix A, § 3(a)(4) (assigning a 100 percent risk weight to all assets not specified for lower risk weights).

134 See 11 USC § 101(9) (defining "corporation"); 11 USC § 101(41) (defining "person"); 11 USC § 109(e) (limiting bankruptcy to "persons").

135 See generally *In re General Growth Properties, Inc*, 409 BR 43 (Bankr SDNY 2009); *In re Kingston Square Associates*, 214 BR 713 (Bankr SDNY 1997).

136 See generally, for example, *Major's Furniture Mart, Inc v Castle Credit Corp*, 602 F2d 538 (3d Cir 1979) (applying the true-sale doctrine and holding that a transaction intended to create a security interest in an account was not a sale); *In re Owens Corning*, 419 F3d 195 (3d Cir 2005) (discussing substantive consolidation doctrine). But see generally *In re LTV Steel Co*, 274 BR 278 (Bankr ND Ohio 2001) (treating securitized assets as part of the bankruptcy estate of the originator for purposes of adequate protection).

137 See 11 USC § 546(e).

138 See 12 CFR § 360.6 (creating a securitization safe harbor for FDIC depositary receiverships); 12 CFR § 709.10 (creating a securitization safe harbor for National Credit Union Administration (NCUA) credit union receiverships).

139 26 USC § 860D. For the federal regulations governing these conduits, see 26 USC §§ 860A–G. Prior to 2010, ABS further benefited from favorable accounting treatments that enabled off–balance sheet treatment. See *Statement of Financial Accounting Standards No. 140* *6 (Financial Accounting Standards Board, Sept 2000), archived at http://perma.cc/7HV3-V4NQ (amended by Statements of Financial Accounting Standards Nos 166–67).

would be—only the investors in the ABS are taxed. The favorable tax treatment of mortgage-backed ABS is a subsidy of these ABS (and of the real estate market).

All ABS also come with various representations and warranties about the quality of the securitized assets.[140] The representations and warranties are frequently made by federally insured depositaries, thereby giving ABS investors indirect recourse to federal deposit insurance for certain risks. Finally, ABS are accepted as collateral by central banks, ensuring a modicum of liquidity even during market freezes.[141]

4. Agency securities.

Another class of securities that function as deposit substitutes are so-called "Agency" securities. Most Agency securities are securities issued or guarantied by privately owned but federally chartered entities such as the Federal National Mortgage Association ("Fannie Mae"), the Federal Home Loan Mortgage Corporation ("Freddie Mac"), and the Federal Home Loan Banks.[142] Agency securities include the corporate debt of these private, federally chartered entities as well as mortgage-backed securities that are guarantied by Fannie Mae and Freddie Mac.[143]

Agency securities (other than Ginnie Maes) are not expressly backed by the US government; indeed, in the case of Fannie Mae and Freddie Mac, the government backing is expressly disavowed by statute.[144] Nonetheless, these securities have long

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[140] See *SEC Adopts Asset-Backed Securities Reform Rules* (SEC, Aug 27, 2014), archived at http://perma.cc/7D8T-GKUA.

[141] See François Koulischer and Daan Struyven, *Central Bank Liquidity Provision and Collateral Quality*, 49 J Bank & Fin 113, 113–14 (2014).

[142] See Levitin and Wachter, 100 Georgetown L J at 1187–88 (cited in note 115).

[143] Also included under the rubric of "Agency" securities are securities guarantied by Ginnie Mae, an executive branch agency of the federal government. Ginnie Mae pledges the full faith and credit of the United States to guaranty the timely payment of principal and interest on privately issued securities backed by the payments from pools of mortgages that are themselves insured by the Federal Housing Administration, the Department of Veterans Affairs, or the Department of Agriculture. See *Our History* (Ginnie Mae, Oct 2, 2015), archived at http://perma.cc/9WV4-LK8H. Ginnie Mae–insured securities ("Ginnie Maes") are generally referred to as securitizations, but transactionally they are distinct from other securitizations because legal title to the loans backing the securities remains with the issuer, even though the loan documentation is transferred to a document custodian. See Federal Reserve System, Truth in Lending, 74 Fed Reg 60143, 60146 (2009). Thus, Ginnie Maes more closely resemble covered bonds than conventional securitizations.

[144] See 12 USC § 1455(h)(2); 12 USC § 1719(b), (d)–(e).

been understood to bear an *implicit* government guaranty,[145] in part because of the centrality of these institutions in supporting the politically critical housing market, which serves as a major repository of household wealth. Beyond the market importance of these institutions, the case for an implicit guaranty of Agency securities (again, other than Ginnie Maes) is bolstered by their federal chartering (limiting competition);[146] their federal auditing rights;[147] their federal prudential regulation;[148] their tax[149] and securities-law exemptions;[150] their special, favorable status that is accorded in Basel bank capital risk weightings;[151] their acceptance as Federal Reserve discount-window and daylight-overdraft collateral;[152] and their often special treatment in regulated institutions' investment rules.[153] Moreover, Agency securities are deemed by statute to qualify as federal government securities for purposes of state and federal investment limitations.[154] These regulatory features serve as an endorsement of Agency securities, and indeed, the federal government's bailout of Fannie Mae and Freddie Mac in 2008 is the best evidence of government facilitation in the market for Agency securities.

Agency securities are highly liquid in part because their credit risk is assumed to be that of the federal government and because they are accepted as collateral by the Federal Reserve.[155] Accordingly, Agency securities trade in a forward contract market[156] and

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145 See David Min, *How Government Guarantees Promote Housing Finance Stability*, 50 Harv J Legis 437, 457 (2013).

146 See 12 USC §§ 1452, 1723(a).

147 See 12 USC §§ 1456(b), 1723a(j).

148 See 12 USC § 4511 (creating the Federal Housing Finance Agency).

149 See 12 USC § 1452(e) (providing a tax exemption for Freddie Mac); 12 USC § 1723a(c) (providing a tax exemption for Fannie Mae); 12 USC § 1719(f) (prohibiting the assessment of fees and charges by the United States).

150 See 12 USC § 1455(g) (providing an exemption from SEC regulation for Freddie Mac); 12 USC § 1717(c)(1) (providing an exemption from SEC regulation for Fannie Mae).

151 See 12 CFR Part 3, Appendix A, § 3(a)(2)(vi)–(viii) (indicating a 20 percent risk weight for government-sponsored-entity securities and mortgage-backed securities).

152 See *Federal Reserve Collateral Guidelines* *2 (June 3, 2015), archived at http://perma.cc/W48D-YFDX.

153 See, for example, NY Ins Law § 1409(c) (exempting Fannie Mae and Freddie Mac securities from insurers' investment limitations).

154 See 12 USC §§ 1455(e)(1), 1723c.

155 Bid–ask spreads are a measure of liquidity in a security, with smaller bid–ask spreads indicating greater liquidity. Agency securities have bid–ask spreads only slightly greater than those of Treasury securities but substantially smaller than those of corporate securities. See Campbell, Li, and Im, *Measuring Agency MBS Market Liquidity with Transaction Data* (cited in note 40).

156 See Levitin, *Housing Finance Reform* at *12 (cited in note 80).

regularly serve as collateral for repos and other borrowing transactions.[157] The combination of perceived zero credit risk plus liquidity makes Agency securities near substitutes for government securities and hence for deposits.

5. Commercial paper.

Commercial paper also functions as a type of deposit substitute. Commercial paper is short-term debt issued by investment-grade issuers. These issuers are considered to be very low default risks, and the short maturity of the commercial paper reduces the risk horizon for investors.

A subset of commercial paper is functionally collateralized. Asset-backed commercial paper (ABCP) is short-term debt that is issued by special-purpose entities that do not engage in any business other than holding loans.[158] These loans functionally collateralize the ABCP because there are no other claimants against the loans held by the ABCP issuer. Moreover, the ABCP issuers have liquidity and credit puts to federally insured banks, which ensure that the ABCP issuers are able to pay on the ABCP irrespective of the performance of their loan assets.[159]

Issuance of commercial paper provides funding to borrowers, thereby fulfilling the Lending Function. Commercial paper also provides a safe, liquid store of value and a medium of exchange for investors, thereby fulfilling the Deposit Function.

All of this is again facilitated by government intervention. Commercial paper issuance is based on credit ratings, which are facilitated by SEC regulation of the rating agencies.[160] These ratings are then incorporated into securities laws that restrict other types of investment vehicles from investing in commercial paper and similar short-duration investment-grade securities.[161] Likewise, Basel bank capital risk weightings further incentivize investment in commercial paper.[162] Commercial paper benefits

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157 See Acharya and Öncü, *The Repurchase Agreement (Repo) Market* at 328 (cited in note 85) (noting that Agency securities are 51 percent of the collateral in the tri-party-repo market).

158 ABCP is thus very short-term securitization. See Emma-Jane Fulcher, et al, *The Difference between Traditional ABCP Conduits and SIVs* *2 (Fitch Ratings, Apr 8, 2008) (on file with author).

159 See id.

160 See 15 USC §§ 78o-7 to -9; 17 CFR §§ 240.17g-1 to -7.

161 See 17 CFR § 270.2a-7.

162 See, for example, 12 CFR Part 3, Appendix A, § 4(c) (showing Basel implementation for national banks in Table D).

from exemption from bankruptcy clawbacks,[163] and the Federal Reserve's willingness to accept commercial paper as collateral for discount-window borrowing, as well as to cover daylight overdrafts, ensures liquidity in the market.[164]

6. Money market mutual funds.

Finally, prime money market mutual funds (MMMFs) function as a complete banking substitute.[165] MMMF shares are technically equity in a particular MMMF, rather than debt obligations. Nonetheless, MMMF shares fulfill the Deposit Function because they have debt-like characteristics due to their unique accounting treatment, which enables a stable share price of $1.00 per share in most circumstances.[166] This stable net asset value (NAV) accounting means that MMMF shares are typically redeemable at par. Moreover, many MMMF accounts are checkable, enabling the immediate liquidity of the funds for investors.[167] MMMFs also meet the Lending Function, as they are major purchasers of commercial paper, Treasury bills, and other short-term debt.

The function of MMMFs is legally constructed. SEC regulations enable MMMFs to operate as deposit substitutes that offer a higher return than demand deposits at banks but without a commensurate increase in risk. Absent such regulatory stimulus, the MMMF industry would be substantially smaller, if it would exist at all.

Mutual funds are generally required to price and transact in their shares at the shares' current NAV, which is calculated at market value or fair value if market quotations are not available.[168] This means that mutual fund share prices float with the market. This is known as "floating-NAV" accounting and pricing. Because mutual fund shares are generally freely redeemable,

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163 See 11 USC § 546(e). See also *Enron Creditors Recovery Corp v Alfa, S.A.B. de C.V.*, 651 F3d 329, 334 (2d Cir 2011) (holding that the redemption of commercial paper is not subject to avoidance as fraudulent transfer because of the settlement-payment defense).

164 See *Federal Reserve Collateral Guidelines* at *3 (cited in note 152).

165 See Jonathan Macey, *Reducing Systemic Risk: The Role of Money Market Mutual Funds as Substitutes for Federally Insured Bank Deposits*, 17 Stan J L, Bus & Fin 131, 135 (2011).

166 See Marcin Kacperczyk and Philipp Schnabl, *Money Market Funds: How to Avoid Breaking the Buck*, in Acharya, et al, eds, *Regulating Wall Street* 305, 306 (cited in note 85).

167 See Macey, 17 Stan J L, Bus & Fin at 135 (cited in note 165).

168 See 15 USC § 80a-2(a)(41)(B); 17 CFR §§ 270.2a-4, 270.22c-1(a), 270.22c-2, 270.22e-2.

they offer liquidity to investors. Nonetheless, because mutual funds in general do not guaranty the return of principal intact, they do not engage in the Deposit Function.

In 1983, however, the SEC created an exemption from floating-NAV accounting and pricing for MMMFs.[169] MMMFs are mutual funds that are legally restricted to investing solely in diversified portfolios of short-term, investment-grade assets (a significant portion of which are commercial paper or repos).[170] The SEC permitted MMMFs to use an amortized cost method to calculate shares' NAV and to price using a penny-rounding method.[171] Amortized cost valuation means that the valuation of assets is at cost plus any amortization of premiums and accumulation of discounts, rather than at market value. The penny-rounding pricing method means that share prices can be rounded to the nearest penny.[172] Thus, if share value is above $0.995, it may be rounded up to $1.00. Amortized cost valuation plus penny-rounding pricing enabled MMMFs to sell and redeem their shares at a stable price (typically $1.00 per share), irrespective of small fluctuations in the value of their portfolios. Thus, in a MMMF, it is usually yield, rather than share price, that fluctuates. This method of accounting is known as "stable-NAV" accounting.[173]

MMMFs do not formally promise a minimum NAV per share of $1.00, but this is functionally their economic promise. Funds that dip below that and "break the buck" fail. Accordingly, MMMFs that run into trouble have often been bailed out by the financial institutions that sponsor them.[174] The result is that

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169 See generally Securities and Exchange Commission, Valuation of Debt Instruments and Computation of Current Price per Share by Certain Open-End Investment Companies (Money Market Funds), 48 Fed Reg 32555 (1983), codified as amended at 17 CFR Part 270.

170 See 17 CFR § 270.2a-7(d)(1)–(2). As of the end of the first quarter of 2014, 20 percent of MMMF assets were securities repurchase agreements. See *Financial Accounts of the United States* at *98 (cited in note 41) (presenting data regarding MMMF assets composed of securities repurchase agreements in line 5 of Table L.121). And another 36 percent of commercial paper was MMMF assets. See id at *114 (presenting data regarding commercial paper MMMF holdings in line 30 of Table L.209).

171 See 17 CFR § 270.2a-7(c).

172 See 17 CFR § 270.2a-7(c).

173 See *The New Regulatory Regime for Money Market Funds: A Window into the Mark-to-Market NAV* *1 (BlackRock, Jan 2011), archived at http://perma.cc/U2LK-4RUA.

174 See Jill E. Fisch, *The Broken Buck Stops Here: Embracing Sponsor Support in Money Market Fund Reform*, 93 NC L Rev 935, 944–45 (2015) ("MMFs rarely break the

MMMFs are perceived to be a deposit substitute because they offer guarantied return of principal on demand.

MMMFs are able to offer highly competitive pricing to banks in part because they receive more-favorable tax treatment than banks. Bank depositors are subject to two levels of taxation: the bank is taxed on its earnings, which affects the interest rate that the bank can pay the depositor, and the depositor is taxed on the deposits' earnings.[175] In contrast, MMMFs, like all mutual funds that qualify as "regulated investment companies" under the Internal Revenue Code, receive "pass-through" tax treatment—so only the investor's earnings are taxed and not the MMMF itself.[176] While the tax treatment of MMMFs is shared with most other mutual funds and significantly predates the rise of MMMFs,[177] the pass-through tax treatment is nonetheless a government subsidy for the MMMF industry.

In July 2014, the SEC adopted a rule paring back MMMFs' 1983 exemption from floating-NAV accounting and pricing.[178] Institutional MMMFs that do not invest solely in governmental obligations must use floating-NAV accounting and must use pricing that rounds out to the fourth decimal place.[179] This means that all retail (consumer) MMMFs and institutional MMMFs that invest solely in governmental obligations may continue to use stable-NAV accounting and penny-rounding pricing.

Moreover, the 2014 rule empowers the boards of directors of all MMMFs to impose liquidity fees on their funds and to temporarily suspend redemptions if fund liquidity declines beneath a minimum threshold.[180] Under the 2014 rule, any MMMFs that do not invest solely in governmental obligations are also subject to a default liquidity fee in such circumstances, unless the fund's board

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buck because MMF sponsors have traditionally been willing to support the $1 share price.").

175 See Ken B. Cyree, Scott E. Hein, and Timothy W. Koch, *The Impact of Taxes and Ownership on the Performance and Capital Structure of S Corporation Banks* *3 (unpublished manuscript, May 2010), archived at http://perma.cc/9CDA-EKJP (discussing taxation at the corporate level and on individual dividends and capital gains).

176 See 26 USC §§ 851–55.

177 Pass-through treatment for regulated investment companies dates back to 1936. See Steven Leigh Gill, *Tax Equalization in Mutual Funds* *6 (PhD dissertation, University of Massachusetts Amherst, Feb 2008), archived at http://perma.cc/S5ND-6YEC.

178 Securities and Exchange Commission, Money Market Fund Reform; Amendments to Form PF, 79 Fed Reg 47736, 47739 (2014).

179 See id at 47736.

180 See 17 CFR § 270.2a-7(c)(2)(i).

of directors determines that it is not in the fund's best interest.[181] Additionally, the 2014 rule subjects MMMFs to greater asset-diversification requirements,[182] stress testing,[183] and disclosure requirements, including the express disclosure of the fact that the funds are not guarantied or government backed[184] and of any history of financial support of the funds by affiliates.[185]

The effect of the SEC's 2014 reforms is to erode MMMFs' status as perfect deposit substitutes. For institutional, non-governmental MMMFs, there is no longer a guaranty of the return of principal intact, and for all MMMFs, there is no longer a guaranty of redemption on demand. As a result, MMMF investors are more clearly exposed to the risk of the Lending Function, and that is what the additional required disclosures are meant to underscore.

How much this will matter in terms of investor behavior is not clear. The implicit guaranty of fund-sponsor support of MMMFs will help assuage investor concerns about the return of principal intact, and it is hard to imagine the board of directors of a MMMF ever enacting redemption gates, because any fund that does so will have great difficulty in attracting future investment.[186] Moreover, the added diversification and stress-testing requirements are designed to ensure that MMMFs in fact continue to allow on-demand redemption at a $1.00 per share price, even if they cannot use accounting legerdemains to accomplish this. In other words, while proclaiming that the MMMFs are not deposits, the SEC has adopted regulations that resemble prudential regulations for depositories, rather than traditional securities regulations. Thus, while as of 2014 MMMFs are no longer allowed to formally act as deposit substitutes, they are still allowed to offer something very close, particularly for retail MMMFs.

The SEC's 2014 MMMF reforms are thus best understood as a type of regulatory theater that is designed to give the appearance of ending MMMFs' status as deposit substitutes without actually doing so and without applying prudential banking-type regulations to plan sponsors. Either reform would have seriously

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181 17 CFR § 270.2a-7(c)(2)(ii)–(iii).

182 17 CFR § 270.2a-7(d)(3).

183 17 CFR § 270.2a-7(g)(8).

184 See *Form N-1A* *6 (SEC, May 2015), archived at http://perma.cc/2EH2-TYUM.

185 See id at *18.

186 See generally Fisch, 93 NC L Rev 935 (cited in note 174).

diminished MMMFs' viability as a product by leveling the playing field with formal deposits. As things stand, however, MMMFs continue to function as an asset class principally because of the significant overlay of regulatory support.

7. Uninsured bank deposits.

Uninsured bank deposits would seem at first blush to be the very antithesis of "safe assets." After all, the FDIC disclaims any insurance of these deposits, virtually all of which exceed FDIC insurance limits, rather than holding them at uninsured institutions. And yet, often (but not always) the uninsured depositors at failed banks do not incur any losses. This is because the FDIC's preferred resolution procedure is to sell the "good" assets of a failed bank to another bank over a weekend.[187]

Typically the sale price of the "good" assets is reduced through the buyer's agreement to assume certain uninsured liabilities, including payment-system liabilities and uninsured deposits.[188] Buyers are frequently happy to assume the uninsured-deposit liability because it gives them a "relationship" entrée to gain other business from the depositors. Sophisticated uninsured depositors know that this is the likely outcome from a bank failure, so the risk that they assume on the uninsured deposits is actually much smaller. The FDIC's preferred form of bank resolution has the effect of functionally "insuring" uninsured deposits.

D. The "Safety" of "Safe Assets"

The overall market for deposit-substitute short-term debt is huge. As of the end of 2014, there were $3.7 trillion in securities repurchase agreements outstanding; $936.4 billion of commercial paper outstanding, of which $64.8 billion was ABCP; and $2.7 trillion in MMMF shares outstanding.[189] These private "safe assets" total just over $7.3 trillion and do not include credit derivatives. By comparison, there were $12.5 trillion in domestic bank and credit union deposits at the end of the first quarter of

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[187] See *Resolutions Handbook* *14 (FDIC, Dec 23, 2014), archived at http://perma.cc/NQ53-3A4L.

[188] See id at *36.

[189] See *Financial Accounts of the United States* at *98, 100, 112, 114 (cited in note 41) (providing data for repos in line 1 of Table L.207, for commercial paper in line 2 of Table L.209, for ABCP in line 16 of Table L.126, and for MMMFs in line 13 of Table L.121).

2014 and $22.2 trillion in government and Agency debt.[190] In total, then, there was over $42 trillion in assets meeting the Deposit Function to some degree.

The problem with short-term debt as a solution to the Deposit-Lending problem is that it is not risk-free. There is yield on short-term debt, and yield implies risk. Despite collateralization and guaranties (express and implied) from third parties, credit risk still exists for short-term debt. Collateral value can decline, and third-party guarantors can themselves be insolvent. There is also liquidity risk because of the maturity transformation that occurs in some types of short-term debt and because the liquidity for some types of short-term debt depends on the ability of the issuers to roll over the debt: new investments provide the liquidity to pay off the old investments.

Various forms of government intervention do a great deal to encourage investors to think of shadow-banking investments as "safe assets." Yet government interventions are often in the form of labeling or legal rules for private parties; express pledges of the full faith and credit of the United States do not exist for shadow-banking assets, nor is an implicit guaranty assumed for ordinary losses. The result is uncertainty about the extent to which these assets are in fact implicitly guarantied against catastrophic market losses.

This uncertainty seems to have been present in the minds of investors after the 2008 financial crisis, as money has flowed out of implicitly guarantied deposit-substitute "safe assets" and into true deposits with express government guaranties. During the financial crisis, deposit-substitute markets were hit hard. Repo markets experienced runs, first in 2007 in mortgage repo[191] and

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[190] See id at *84, 113 (providing data for deposits at private depositories in lines 23–25 of Table L.110, for US government securities in line 3 of Table L.208, and for Agency securities and mortgage-backed securities in line 4 of Table L.208).

[191] See Disclosure Statement in Respect of Plan of Liquidation of Mortgage Lenders Network USA, Inc under Chapter 11 of the Bankruptcy Code, *In re Mortgage Lenders Network USA, Inc*, Case No 07-10146, *13–14 (Bankr D Del filed Mar 12, 2008) (describing spillover problems from the failures of other subprime lenders, which resulted in warehouse lenders demanding more collateral). Between November 2006 and August 2007, virtually every subprime-origination specialty firm—over eighty firms in all—failed. See Worth Civils and Mark Gongloff, *Subprime Shakeout: Lenders That Have Closed Shop, Been Acquired or Stopped Loans* (Wall St J), archived at http://perma.cc/L7NF-RDPM. The run on subprime-mortgage originators' repo lines of credit was arguably the first sign of the financial crisis, but it has received little scholarly notice. But see generally Richard Stanton, Johan Walden, and Nancy Wallace, *The Industrial Organization of the US Residential Mortgage Market*, 6 Ann Rev Fin Econ 259 (2014) (discussing the vulnerability of warehouse lines of credit—financed in the form of

then in 2008 in securities repo.[192] Commercial paper markets froze in 2008,[193] and MMMFs broke the buck and experienced a run.[194] These problems with the shadow-banking deposits were solved only with an incredible alphabetic patchwork of Treasury and Federal Reserve programs. The Treasury guarantied the share value of MMMFs,[195] while the Federal Reserve established the Commercial Paper Funding Facility as a liquidity backstop for commercial paper issuers,[196] the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility to finance banks' purchases of ABCP from MMMFs in order to enable MMMFs to have the liquidity to meet their redemption demands,[197] and the Money Market Investor Funding Facility to provide greater liquidity in the secondary market in MMMF shares.[198]

Whether the 2008 bailouts and subsequent political backlash have strengthened or weakened the implicit guaranty of the shadow-banking system is unclear. Despite the post-2008 "never again" rhetoric, the bailouts of 2008 are a stark reminder that "too big to fail" markets are implicitly guarantied. The market appears to have lost a substantial amount of confidence in at least some classes of "safe assets" as deposit substitutes, however. Thus, at the end of 2007, the last full pre-crisis year, the market in manufactured short-term "safe assets"—including repos, commercial paper, uninsured deposits, and MMMF shares, but excluding credit derivatives—was $9.8 trillion, or 59 percent, of the $16.5 trillion market for deposits and deposit substitutes.[199] In

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mortgage repurchase agreements—to runs and the calling of New Century's warehouse line of credit).

192 See generally Gorton and Metrick, 104 J Fin Econ 425 (cited in note 112).

193 See Adam Davidson and Alex Blumberg, *The Week America's Economy Almost Died* (NPR, Sept 29, 2008), archived at http://perma.cc/MJR4-FBNT.

194 See, for example, Tami Luhby, *Run Ends on Money Market Funds* (CNN, Sept 29, 2008), archived at http://perma.cc/8NK4-72Z4.

195 See *Treasury Announces Temporary Guarantee Program for Money Market Funds* (Department of the Treasury, Sept 29, 2008), archived at http://perma.cc/76NM-NFPM.

196 See *Commercial Paper Funding Facility* (Board of Governors of the Federal Reserve System, Feb 5, 2010), archived at http://perma.cc/Q9DV-T9ZH.

197 See *Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility* (Board of Governors of the Federal Reserve System, Feb 5, 2010), archived at http://perma.cc/BY48-KRXX.

198 See *Money Market Investor Funding Facility* (Board of Governors of the Federal Reserve System, Feb 5, 2010), archived at http://perma.cc/NJ8Y-ZNGH.

199 See *Flow of Funds Accounts of the United States: Flows and Outstandings; Fourth Quarter 2007* *84–86 (Board of Governors of the Federal Reserve System, Mar 6, 2008), archived at http://perma.cc/JB5V-3ZCC. From the Fed's data, the numerator is the sum of Table L.205, line 9 (large time deposits); Table L.207, line 1 (repos); Table

contrast, as of the end of 2014, the market in "safe asset" deposit substitutes (excluding credit derivatives) was $9.3 trillion, or only 44 percent of a $21.3 trillion market for deposits and deposit substitutes.[200] One should be careful not to read too much into these big picture numbers, as other factors could affect shifts in investments, but they do point to the difference between true deposits and "safe asset" deposit substitutes.[201] "Safe assets" recreate the banking problem of combining a Deposit Function with a Lending Function, but they do so without the stabilizing benefits of ex ante government regulation and ex post government solvency and liquidity support.

The shadow-banking system continues to present an unsolved regulatory dilemma with three basic approaches possible: expanding the bank regulatory system to shadow banking, eliminating shadow banking through the withdrawal of government support, or continuing to implicitly guaranty the shadow-banking system. Post-2008 policy has slightly expanded ex ante regulation of some shadow-banking markets. The Dodd-Frank Act requires the clearing of most swaps through clearinghouses[202] and requires credit-risk retention for securitization.[203] Informally, the Federal Reserve has pushed for the reform of the tri-party-repo clearing process to reduce intraday overdraft risk.[204] These reforms, however, have nibbled around

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L.208, line 2 (commercial paper); and Table L.206, line 1 (MMMF shares). The denominator is the sum of Table L.204, line 1 (checkable deposits and currency); Table L.205, line 1 (time and savings deposits); and the items in the numerator, excluding large time deposits. Id. Large time deposits are used as a proxy for uninsured deposits.

200 See *Financial Accounts of the United States* at *110–14 (cited in note 41). From the Fed's data, the numerator is the sum of Table L.205, line 7 (large time deposits); Table L.207, line 1 (repos); Table L.209, line 2 (commercial paper); and Table L.206, line 1 (MMMF shares). The denominator is the sum of Table L.204, line 1 (checkable deposits and currency); Table L.205, line 1 (time and savings deposits); and the items in the numerator, excluding large time deposits. Id. Large time deposits are used as a proxy for uninsured deposits.

201 One can see the decline in "safe assets" as reflecting Gresham's Law. Gresham's Law holds that bad money will drive the good money out of circulation; if a clipped coin has the same purchasing power as a sound coin, consumers will pay with the clipped coin and hoard the sound coins. Gresham's Law holds true only when the bad money is functionally equivalent to the good money. See George Selgin, *Gresham's Law* (EH.net), archived at http://perma.cc/CK8V-MLF4. The corollary of Gresham's Law is that once the functional equivalency is removed, the bad money will cease to be in favor. Thus, the bad money of "safe assets" started to displace deposits as when the "safe assets" were seen as deposit equivalents, but once it became clear that they were not, the market's enthusiasm waned.

202 7 USC § 2(h); 15 USC § 78c-3.

203 15 USC § 78o-11.

204 See Tarullo, *Shadow Banking and Systemic Risk Regulation* at *7 (cited in note 95).

the edge of the shadow-banking regulatory problem, and they have all been focused on creating *private* contracting protections for market stabilization. Indeed, the main response to the shadow-banking problem has been declamatory through repeated denials of the implicit guaranty of shadow-banking markets, which the regulatory subsidization of shadow banking continues. Of course, implicitly guarantied markets are never actually guarantied—until the guaranty becomes real.

The economic importance of the largely unregulated shadow-banking system remains the key financial regulatory challenge—subsuming issues such as "too big to fail," as what often makes institutions "too big to fail" is their role in private money creation through shadow banking. The following Part of this Article proposes a two-part change in tack regarding both traditional and shadow banking: (1) splitting the Deposit and Lending Functions by prohibiting depositaries from making loans, and (2) eliminating all government facilitation and subsidization of "safe asset" creation by the shadow-banking market.

III. SAFE BANKING

As the previous Part of this Article shows, there are a number of approaches to making banking safer, but they all come at a cost. Either they do not truly make banking safe, as with short-term debt (excluding the implicit guaranty for catastrophic tail risk); they impose the costs of politicized finance, as with government banks; or they generate moral hazard that encourages bubbles, as with government guaranties.

Yet if the fundamental problem in modern banking is the combination of the incompatible promises of Deposits and Lending, a solution should be readily apparent: untwine these two financial functions.

A. Narrow Banking

Another approach to the problem of pairing Deposits and Lending can be found in the reform proposals that go under the rubric of "narrow banking." Narrow-banking proposals would generally restrict the range of bank activities and investments with an eye toward lessening risks to deposits. Some narrow-banking proposals would merely restrict banks from engaging in capital

market activities but would allow the relending of deposits.[205] Other proposals would restrict the use of deposits to investment solely in "safe" investments with "little or no nominal interest rate and credit risk," such as government obligations or the obligations of other narrow banks.[206] Some narrow-banking proposals would restrict banks to short-term investments,[207] while others would not.[208]

The Banking Act of 1933[209] ("Glass-Steagall Act") and the Volcker Rule in § 619 of the Dodd-Frank Act[210] can both be seen as very limited types of narrow-banking reforms. The Glass-Steagall Act prohibited commercial banks from engaging in certain investment banking activities.[211] The Volcker Rule prohibits certain types of bank investments.[212] Neither the Glass-Steagall Act nor the Volcker Rule attacks the idea that banks should not be relending deposits, however.

Narrow-banking proposals aim to reduce the risk that depositors incur with relending. But they do not eliminate it. Narrow banking does not separate Deposits from Lending. It separates Deposits and low-risk Lending activities from high-risk Lending activities, but it does not eliminate risk for deposits. From the perspective of a depositor wanting safety and liquidity,

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[205] See, for example, Arthur E. Wilmarth Jr, *Narrow Banking: An Overdue Reform That Could Solve the Too-Big-to-Fail Problem and Align U.S. and U.K. Regulation of Financial Conglomerates*, 31 Bank & Fin Serv Pol Rep 1, 2 (Mar 2012).

[206] George Pennacchi, *Narrow Banking*, 4 Ann Rev Fin Econ 141, 142 (2012). See also, for example, Kenneth Spong, *Narrow Banks: An Alternative Approach to Banking Reform* *9 (Levy Economics Institute Working Paper, Apr 1993), archived at http://perma.cc/HHJ2-97UF; James B. Burnham, *Deposit Insurance: The Case for the Narrow Bank*, 14 Reg 35, 35–36 (Spring 1991).

[207] See, for example, Pennacchi, 4 Ann Rev Fin Econ at 141 (cited in note 206); Spong, *Narrow Banks* at *9–11 (cited in note 206); Robert E. Litan, *What Should Banks Do?* 6, 164–90 (Brookings 1987) (proposing an option of 100% reserve banking for affiliates of bank holding companies that wished to expand beyond the traditional banking activities allowed in 1987 and envisioning these 100% reserve depositories as insured MMMFs).

[208] See, for example, Burnham, 14 Reg at 35 (cited in note 206).

[209] 48 Stat 162, codified as amended in various sections of Title 12.

[210] 124 Stat at 1620–31.

[211] See Glass-Steagall Act §§ 16, 21, 48 Stat at 184–85, 189, codified as amended at 12 USC §§ 24, 378; Glass-Steagall Act §§ 20, 32, 48 Stat at 188–89, 194, repealed by Gramm-Leach-Bliley Act § 101, Pub L No 106-102, 113 Stat 1338, 1341 (1999). The Glass-Steagall Act's separation of investment and commercial banking was not about protecting insured deposits but about preventing the movement of capital from local commercial uses to speculation in major metropolitan markets. See Donald C. Langevoort, *Statutory Obsolescence and the Judicial Process: The Revisionist Role of the Courts in Federal Banking Regulation*, 85 Mich L Rev 672, 694 (1987).

[212] See 12 USC § 1851(a)(1).

narrow banking is inadequate because to such a depositor risk is a binary proposition, not a spectrum. Thus, it matters little to the depositor whether her deposit is used to make loans, buy debt securities, support derivative positions, or purchase equity securities. All of these investments entail risk. Indeed, even investment in Treasury securities entails some liquidity risk because of the maturity transformation involved. Investment of deposits in "safe assets" still entails investment risk. Not surprisingly, some narrow-banking proposals expressly contemplate the continuation of federal deposit insurance.[213]

Narrow-banking advocates have correctly noted that narrow banking reduces banks' incentives to become large and complex because there is no additional "too big to fail" subsidy for doing so.[214] Narrow banking would reduce moral hazard and the overall risk of the financial system.[215] Yet this is not enough to eliminate the inherent risk of fractional reserve banking, as deposits are still used for lending, even if riskier lending activities are separate from deposits. Even in a very narrow banking system, it is still possible to construct extended chains of intermediation that ultimately, even if indirectly, expose deposits to the risks from highly speculative investments.

Although narrow banking would be an improvement on the current situation, narrow-banking proposals fail to follow their own logic to its conclusion—namely, that Deposits should be separated from Lending altogether. Untwining the Deposit and Lending Functions would mean that banks could not use deposits to make *any* loans or investments whatsoever. In other words, banks would be required to maintain all of their deposits on hand. Functionally, all deposits would be special deposits. Rather than engage in fractional reserve banking like Bartolomeo and Prospero, banks would engage in 100% reserve banking. 100% reserve banking is the logical conclusion of narrow-banking proposals, the butterfly to narrow banking's chrysalis.

B. 100% Reserve Banking

100% reserve banking presents an alternative route for achieving safe banking and financial stability. 100% reserve banking would mean that banks could not reloan deposits.

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213 See, for example, Burnham, 14 Reg at 35 (cited in note 206); Litan, *What Should Banks Do?* at 164–90 (cited in note 207).

214 See, for example, Wilmarth, 31 Bank & Fin Serv Pol Rep at 4–6 (cited in note 205).

215 See Pennacchi, 4 Ann Rev Fin Econ at 157 (cited in note 206).

Banks could make loans only to the extent of their equity capital. Because the deposits would not be reloaned, they would always remain safe—even if a bank lost all of its equity capital on bad loans, the deposits would remain untouched absent fraud or defalcation. Thus, if Bartolomeo had to engage in 100% reserve banking, it would not have mattered to Cosimo that Bartolomeo's investment in Marino's Levantine voyage foundered with Marino's galley.[216]

1. Historical 100% reserve–banking proposals.

The idea of mandating 100% reserve banking is not new.[217] In some sense, it is the original concept of banking and fractional reserve banking is the deviation. In modern times, various proposals for forms of 100% reserve banking have been endorsed by a number of leading economists,[218] most notably in what is known as the Chicago Plan, an originally anonymous 1933 banking reform proposal.[219] The Chicago Plan, most closely associated with economists Professors Irving Fisher[220] and Henry Simons,[221]

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[216] See Part I.C.

[217] For a history of the idea of 100% reserve banking, see Jaromir Benes and Michael Kumhof, *The Chicago Plan Revisited* *17–20 (International Monetary Fund, Aug 2012), archived at http://perma.cc/BW9S-9NW5; Allen, 36 J L & Econ at 704 (cited in note 5).

[218] See, for example, James Tobin, *Policies for Prosperity: Essays in a Keynesian Mode* 260–65 (MIT 1987) (Peter M. Jackson, ed); Ludwig von Mises, *The Theory of Money and Credit* 438–48 (Liberty Classics 1980) (H.E. Batson, trans); Milton Friedman, *A Program for Monetary Stability* 65–76 (Fordham 1960); M. Allais, *Économie & intérêt: Présentation nouvelle des problèmes fondamentaux relatifs au rôle économique du taux de l'intérêt et de leurs solutions* 33–34 (Imprimerie Nationale 1947); F.A. von Hayek, *Monetary Nationalism and International Stability* 81–84 (Longmans, Green 1937). See also Frederick Soddy, *Wealth, Virtual Wealth and Debt: The Solution of the Economic Paradox* 298 (Dutton 2d ed 1933) (presenting an endorsement from Professor Frederick Soddy, a Nobel laureate in chemistry).

[219] See Ronnie J. Phillips, *The 'Chicago Plan' and New Deal Banking Reform* *1 (Levy Economics Institute, June 1992), archived at http://perma.cc/6QSQ-G5BU. For a fuller exposition of the plan, see Paul H. Douglas, et al, *A Program for Monetary Reform* *15–27 (Kettle Pond Institute, July 1939), archived at http://perma.cc/HX58-JDY3; Frank D. Graham, *Partial Reserve Money and the 100 Per Cent Proposal*, 26 Am Econ Rev 428, 429 (1936); Albert G. Hart, *The "Chicago Plan" of Banking Reform: A Proposal for Making Monetary Management Effective in the United States*, 2 Rev Econ Stud 104, 105 (1935); James W. Angell, *The 100 Per Cent Reserve Plan*, 50 Q J Econ 1, 5 (1935); Lauchlin Currie, *The Supply and Control of Money in the United States* 163 (Harvard 1934). The Chicago Plan envisioned not only 100% reserve banking but also fixing the total quantity of circulating media of exchange (currency plus demand deposits).

[220] See generally Irving Fisher, *100% Money and the Public Debt* (Adelphi 1936).

[221] See Henry C. Simons, *Economic Policy for a Free Society* 62–65 (Chicago 1948); Henry C. Simons, *Rules versus Authorities in Monetary Policy*, 44 J Polit Econ 1, 4–6 (1936); Henry C. Simons, *A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy* 18, 23–24 (Chicago 1934).

came surprisingly close to adoption during the early New Deal.[222] In the decades since, the concept of 100% reserve banking has been endorsed both by heterodox Austrian School economists and more mainstream Chicago School economists. The Austrian economists hold that fractional reserve banking is inherently fraudulent and that banks' creation of money from relending deposits is equivalent to counterfeiting.[223] The Chicago School economists accept fractional reserve banking as legitimate, but they see it as a font of economic instability[224] or as a tool for undesirable government interference in private borrowing relationships[225] and for political control over lending.[226] The idea of 100% reserve banking has also periodically reemerged as a reform proposal, including in the wake of the 2008 financial crisis.[227] These proposals have gained little traction, in part because

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[222] See generally Phillips, *The 'Chicago Plan'* (cited in note 219).

[223] See, for example, Murray N. Rothbard, *The Mystery of Banking* 98–99 (Richardson & Snyder 1983):

> *[F]ractional reserve banks [ ] create money out of thin air*. Essentially they do it in the same way as *counterfeiters*. Counterfeiters, too, create money out of thin air by printing something masquerading as money or as a warehouse receipt for money. In this way, they fraudulently extract resources from the public, from the people who have genuinely earned their money. In the same way, fractional reserve banks counterfeit warehouse receipts for money, which then circulate as equivalent to money among the public. There is one exception to the equivalence: The law fails to treat the receipts as counterfeit.

See also Murray N. Rothbard, *The Case for a 100 Percent Gold Dollar* 21–27 (Libertarian Review 1974) (comparing fractional reserve banking to embezzlement); John Tamny, *Ron Paul, Fractional Reserve Banking, and the Money Multiplier Myth* (Forbes, July 29, 2012), archived at http://perma.cc/P4FX-5FMT.

[224] See generally, for example, Simons, *Economic Policy for a Free Society* (cited in note 221).

[225] See, for example, Friedman, *A Program for Monetary Stability* at 65–76 (cited in note 218).

[226] See, for example, Simons, 44 J Polit Econ at 1 (cited in note 221).

[227] See Martin Wolf, *The Shifts and the Shocks: What We've Learned—and Have Still to Learn—from the Financial Crisis* 343–50 (Penguin 2014); John H. Cochrane, *Toward a Run-Free Financial System*, in Martin Neil Baily and John B. Taylor, eds, *Across the Great Divide: New Perspectives on the Financial Crisis* 197, 214–15 (Hoover 2014); Martin Wolf, *Strip Private Banks of Their Power to Create Money*, Fin Times 7 (Apr 25, 2014); Andrew Jackson and Ben Dyson, *Modernising Money: Why Our Monetary System Is Broken and How It Can Be Fixed* 176–78 (Positive Money 2013); Matthew C. Klein, *The Best Way to Save Banking Is to Kill It* (Bloomberg, Mar 27, 2013), archived at http://perma.cc/7NXU-XVR4; Matthew C. Klein, *Why We Should Rip the Banks in Two* (Bloomberg, Mar 15, 2013), archived at http://perma.cc/4YZD-ZJL6; Brendan Greeley, *Why We'll Still Never See a 100% Reserve Economy* (Bloomberg, Jan 25, 2013), archived at http://perma.cc/G67F-G2FR; Benes and Kumhof, *The Chicago Plan Revisited* at *4 (cited in note 217); Laurence J. Kotlikoff, *Jimmy Stewart Is Dead: Ending the World's Ongoing Financial Plague with Limited Purpose Banking* 126–34 (Wiley 2010); Laurence J. Kotlikoff and Edward Leamer, *A Banking System We Can Trust* (Forbes, Apr 23,

of the political economy surrounding fractional reserve banking (as discussed in Part III.H), but they are a logical end point for attempts to take financial stability seriously. Thus, 100% reserve–banking proposals have started to enter the policy conversation outside its traditional home among libertarian, anti-central-banking Austrian School economists such as the UK Green Party and Icelandic reformers.[228]

To date, 100% reserve–banking proposals have been the province of macroeconomists; the legal literature has not previously engaged with the idea in any depth.[229] While a great deal of recent legal scholarship grapples with the problems of financial regulation and financial stability, most of this literature takes fractional reserve banking as an unquestioned assumption. Some of this literature rightly recognizes the particular problem of "money-claim financing [as] *the* central challenge for financial policy and regulation."[230] Yet none has taken the idea of 100% reserve banking seriously as a solution, much less worked through its operation and implications.

Perhaps more importantly, all previous 100% reserve–banking proposals have focused solely on regulation of depositaries. This Article extends this literature by marrying the 100% reserve idea to the elimination of government facilitation of "safe asset" creation by the shadow-banking sector. Absent reform of the shadow-banking sector, 100% reserve–banking requirements for depositaries are of limited use because funds will promptly flow into shadow-banking "safe assets" that function

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2009), archived at http://perma.cc/8AJU-BKJK (calling for an end to banks and replacement of all-cash mutual funds with a stable NAV and other mutual funds with a floating NAV); Huerta de Soto, *Money, Bank Credit, and Economic Cycles* at 49 (cited in note 10); Tobin, *Policies for Prosperity* at 260–65 (cited in note 218); Litan, *What Should Banks Do?* at 6, 164–90 (cited in note 207) (proposing an option of 100% reserve banking for affiliates of bank holding companies that wish to expand beyond the traditional banking activities allowed in 1987 and envisioning these 100% reserve depositories as insured MMMFs); James Tobin, *Financial Innovation and Deregulation in Perspective*, 3 Bank Japan Monetary & Econ Stud 19, 19–29 (Sept 1985).

[228] See note 4.

[229] The main exception is economist-lawyer Robert Litan's proposal for 100% reserve banking for affiliates of bank holding companies that wished to expand beyond the traditional banking activities that were allowed in 1987. Litan envisioned that bank affiliates of holding companies that did not want expanded powers would continue to operate as fractional reserve banks. See Litan, *What Should Banks Do?* at 6, 164–90 (cited in note 207).

[230] Ricks, 65 Vand L Rev at 1292 (cited in note 3). See also generally Chrystin Ondersma, *Shadow Banking and Financial Distress: The Treatment of "Money-Claims" in Bankruptcy*, 2013 Colum Bus L Rev 79; Margaret M. Blair, *Making Money: Leverage and Private Sector Money Creation*, 36 Seattle U L Rev 417 (2013).

as money, a medium of exchange that is liquid at par. For 100% reserve banking to work, the arbitrage between banking and shadow banking must be eliminated. Put another way, for 100% reserve banking to be successful, the government must have a monopoly over money creation. There cannot be any private money creation, be it through relending of deposits or through the creation of shadow-banking claims.

2. Pure Reserve Banking.

This Article introduces an absolutist version of 100% reserve banking: "Pure Reserve Banking." Pure Reserve Banking differs from previous 100% reserve–banking proposals in two key dimensions.

First, it would constitute a simple and absolute prohibition on the institutional combination of deposit-taking and lending. Under Pure Reserve Banking, depositaries would be forbidden from making loans or investments of any sort. Such pure 100% reserve depositaries could not be institutionally affiliated with firms that are engaged in any other type of activities, as any affiliation could give rise to an implicit guaranty. Previous 100% reserve proposals have typically envisioned some sort of "safe" reinvestment of deposited funds, such as in government securities.[231]

Second, Pure Reserve Banking would require the elimination of all government facilitation of shadow banking. Simply regulating depositaries while tolerating the continued existence of the shadow-banking market would make little sense, because the benefits of Pure Reserve Banking would be lost through arbitrage with the shadow-banking market. A clear cleavage between Deposits and Lending requires not only maintenance of 100% reserves but also the abolition of Deposit substitutes that enable regulatory arbitrage.

In concrete terms, this would entail the purging of a wide range of legal facilitations of deposit substitutions. For example, the special protections for financial contracts (repos, swaps, securities and commodities contracts, forward contracts, and master netting agreements) in bankruptcy would have to be repealed.[232] These special protections operate to encourage the illusion that these types of contracts are free of credit risk and hence deposit-like. Similarly, all MMMFs would have to be prohibited from

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[231] See, for example, Angell, 50 Q J Econ at 13 (cited in note 219).

[232] See 11 USC § 362(b)(6)–(7), (17), (27); 11 USC § 546(e); 11 USC §§ 559–62.

offering Deposit-type shares with a stable $1.00 per share NAV. Such stable value shares are possible only because the SEC continues to allow special accounting rules for some MMMFs.[233] Instead, the NAV for all MMMFs would have to fluctuate with the market. Likewise, securities laws restricting MMMF investments to commercial paper and similar short-term investment-grade securities would have to be eliminated along with special securities laws requiring disclosures and credit-risk retention for ABS. Risk weightings for insurance company investments would also have to be eliminated. (Bank capital risk weightings would necessarily be eliminated with any 100% reserve–banking system.) The institutional separation of swaps and repo dealers from depositaries would serve to abolish the implicit spillover of government support to these markets. Moreover, statutes that facilitate private money creation through negotiable instruments, such as Article 3 of the Uniform Commercial Code, would need to be substantially revised.

Beyond outlining a vision for Pure Reserve Banking, this Article also advances the literature by underscoring 100% reserve banking's legal and political implications. Most notably, 100% reserve banking renders most of the prudential bank regulatory apparatus as well as federal deposit insurance and the Federal Reserve System entirely superfluous and unnecessary. The regulatory response to the growing complexity of banks has been to increase the complexity of regulation. This in turn sets off an arms race of more-complex transactions to avoid regulation and of more regulation to plug the transactional gaps.[234] As a result, bank regulation today resembles a Rube Goldberg contraption with layers of regulation taped and patched to a jury-rigged structure.

The complexity of regulation itself raises risks because different regulations may be at loggerheads and because no single regulator can see and understand the entire field. More complex regulation is not only potentially less workable but is also expensive, both for the government and for banks. Excessively complex regulation can result in deadweight loss for the entire system.

The macroeconomists who have previously bruited 100% reserve banking have generally not recognized how the hugely

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[233] See 17 CFR § 270.2a-7(c).

[234] See Gerding, *Law, Bubbles, and Financial Regulation* at 397–98 (cited in note 69).

inefficient bank regulatory system is an outgrowth of fractional reserve banking. As a result, they have not recognized the regulatory implications of 100% reserve banking, namely that most of the prudential regulatory apparatus, including the Federal Reserve System and FDIC insurance, could be eliminated outright if 100% reserve banking were adopted. In many ways, however, this is the most important implication of 100% reserve banking—the total transformation and simplification of the American bank regulatory system. Rather than facing a system of heavily regulated traditional banking that is arbitraged through thinly regulated shadow banking, Pure Reserve Banking presents the possibility of a rationally designed system that produces greater financial stability with less regulation and without the dangers of regulatory arbitrage.

3. The feasibility of Pure Reserve Banking.

Previous proponents of 100% reserve banking have also generally not recognized the significance of changes in the US economy for the feasibility of 100% reserve banking.[235] When the Chicago Plan and Fisher's "100% Money" proposal were made, the United States had fairly limited capital markets. There were bond and equity markets, but they provided capital only to large businesses, and these markets did not provide capital to small businesses or consumer borrowers.[236] Indeed, up to the 1950s, a large share of consumer finance was provided by other consumers rather than by financial institutions; over half of the mortgage dollars outstanding in 1952 were owed to other consumers, rather than to financial institutions.[237] Accordingly, the Chicago Plan and the work of associated economists envisioned a world in which loans would be funded from banks' capital (including retained earnings), savings (as opposed to demand) deposits, and the repayment of existing loans.[238] Under the Chicago Plan, there would not be full institutional separation of Deposits and Lending.

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[235] See generally, for example, Rothbard, *The Case for a 100 Percent Gold Dollar* (cited in note 223).

[236] See Gerding, *Law, Bubbles, and Financial Regulation* at 86–87 (cited in note 69).

[237] See *Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts; Historical Annual Tables 1945–1954* *118 (Board of Governors of the Federal Reserve System, Dec 10, 2015), archived at http://perma.cc/TA9F-QK2P (showing in Table L.218 outstanding home mortgages in billions of dollars).

[238] See Benes and Kumhof, *The Chicago Plan Revisited* at *4 (cited in note 217).

Since the 1930s, however, US capital markets have expanded and become infinitely more sophisticated and efficient. Today, capital markets no longer fund just large business concerns but also all sorts of consumer and small-business debt. Consumer debts—residential mortgages, credit card receivables, automobile loans, and student loans—are all securitized, as are commercial real estate mortgages. This means that the loans are purchased by special-purpose issuers that fund the purchases by the issuance of securities. The payment stream on the loans is passed on to the securities holders, either as a straight pass-through or structured into senior-subordinate structures for credit risk, prepayment risk, and maturity.[239] Large commercial loans are virtually always syndicated, meaning that the loans are split into smaller component shares that are funded by various investors—sometimes banks, but also frequently hedge funds, pension plans, insurance companies, and other institutional investors.[240] The syndication interests are rated by rating agencies and trade in a reasonably liquid market. Syndicated loans have little functional distinction from debt securities.[241]

Thus, as of the end of the first quarter of 2014, 70 percent of all home mortgages were funded by entities *other* than depositories and credit unions or the government.[242] Depositories and credit unions held only 28 percent of outstanding home mortgages by dollar volume.[243] For non-mortgage consumer credit, depositories and credit unions held 49 percent of the dollar volume outstanding[244] with finance companies and securitizations holding another 23 percent.[245] And for non-financial corporate businesses,

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239 See generally Cetorelli and Peristiani, 18 Fed Res Bank NY Econ Pol Rev 47 (cited in note 113).

240 See Greenbaum and Thakor, *Contemporary Financial Intermediation* at 280–81 (cited in note 23).

241 See Elisabeth de Fontenay, *Do the Securities Laws Matter? The Rise of the Leveraged Loan Market*, 39 J Corp L 725, 740–42 (2014).

242 See *Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts; First Quarter 2014* *104 (Board of Governors of the Federal Reserve System, June 5, 2014), archived at http://perma.cc/7NDY-2NSE (calculating from Table L.218 with line 5 as the denominator and lines 15–22 summed as the numerator).

243 See id (calculating from Table L.218 with line 5 as the denominator and lines 11–14 summed as the numerator).

244 See id at *106 (calculating from Table L.222 with line 2 as the denominator and lines 7–8 summed as the numerator).

245 See id (calculating from Table L.222 with line 2 as the denominator and lines 10–11 summed as the numerator). The remainder of consumer-credit dollars outstanding

76 percent of their $9.6 trillion credit-market financing came from bond and commercial paper issuance[246] with another 8 percent from non-bank financial institution loans.[247] Non-mortgage bank loans accounted for only 7 percent of all non-financial corporate businesses' credit-market debt.[248] None of this accounts for the $21.2 trillion in market value of non-financial corporate businesses' outstanding equity, virtually none of which is held by depositories.[249]

All of this means that banks no longer play as important a financial-intermediation role as they once did. Instead, non-bank capital markets provide much of the credit to the US economy. While there is still plenty of financial intermediation taking place through banks, none of it requires the combination of the Deposit and Lending Functions. Capital markets are technically capable of assuming the entire Lending Function. There is no need for banks to make loans. A shift of the Lending Function entirely to capital markets would require some institutional expansion within capital markets, but it is all technically feasible, and it would not be difficult to redeploy the human capital and technological expertise that currently exist at fractional reserve banks to non-depository money brokerages. Indeed, this could, in many cases, be done through a corporate spin-off.

For example, capital markets' provision of the entirety of the Lending Function would require more and better-developed securitization pipelines, such that a consumer looking for a loan could go to a loan broker who would make the loan only if the loan could be sold into a securitization. Because securitizations take some time to assemble, some short-term temporary warehouse funding would be needed. ABCP facilities already meet such warehouse-financing needs but would have to expand for such a system to work. And to facilitate securitization, there

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are primarily student loans held by the federal government. See id (showing loans originated by the federal government in line 6).

246 See *Financial Accounts of the United States* at *68 (cited in note 242) (calculating from Table L.102 with line 23 as the denominator and lines 24–26 summed as the numerator).

247 See id at *68, 102 (calculating with line 23 of Table L.102 as the denominator and lines 31, 33, and 35 of Table L.216 summed as the numerator).

248 See id at *68 (calculating from Table L.102 with line 23 as the denominator and line 27 as the numerator).

249 See id (indicating the market value of outstanding equities in line 38 of Table L.102). At the end of the first quarter of 2014, depositories held 0.3 percent of all US corporate equities by market valuation. See id at *100 (calculating from Table L.213 with line 5 as the denominator and line 11 as the numerator).

would likely have to be a great deal of standardization of loan documentation and terms in order to offer more-standardized, and thus more-liquid, securitization products.[250]

These are matters of scale and scope, however, and not institutional competencies. Thus, the Lending Function could be assumed entirely by capital markets. Accordingly, there is no longer any reason to tolerate the institutional combination of the Deposit and Lending Functions and its attendant problems. The United States could go not just to Chicago Plan–style 100% reserve banking, with Lending being done out of banks' equity and pre-conversion deposit base, but to Pure Reserve Banking, with complete institutional segregation of Deposits and Lending, thereby removing any concerns of contamination and greatly simplifying regulation.

4. What would Pure Reserve Banking look like?

In a world of Pure Reserve Banking, consumers and businesses would typically have both a deposit account and a brokerage account. The deposit account would be at a 100% reserve bank (a "bank"). The bank would be prohibited from relending the funds in the deposit account. Accordingly, the funds on deposit would be insulated from the risk of the bank's failure. Otherwise, the deposit account would function exactly like a bank account currently does. The depositor would have payment privileges, just like a regular bank account today. Banks would presumably charge depositors a fee for their safekeeping and payment services.[251] Such fees might be higher than those charged

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[250] See Levitin and Wachter, 100 Georgetown L J at 1255–58 (cited in note 115).

[251] Even with 100% reserve banking, banks would still assume some credit risk when offering payment services because of kiting and charge-back risks. Currently, there are no real-time consumer-payment systems. Therefore, funds might be made available to a payee before the payment has actually cleared. This presents a risk ("kiting") to the bank that the payee will take the funds and abscond before the bank finds out that the payment is no good. The payor's bank may also be at risk if it has warranted the validity of the payment. Real-time payment clearing is technically possible, however. Its adoption would eliminate the kiting risk in payments.

Payments also present a credit risk to banks because of charge-backs—the reversal of unauthorized or incorrect payments. The payee's bank is obligated to repay the payor's bank on charge-backs. The payee's bank will then seek to recover the funds from the payee, but the payee might be unable or unwilling to pay. If so, the loss is on the payee's bank. Real-time clearing does not solve this problem, because charge-backs can occur after payment for reasons such as the payment having been for goods that turn out to be defective or non-conforming. As a result, the combination of payments with safekeeping raises some potential conflicts, but they are likely to be small-scale. While banks do face real risk on payments, the losses that a bank is likely to face from payment operations

in today's fractional-reserve-banking system, in which deposits and payments are often nominally "free" or even pay interest and rewards to consumers. These "free" or negative-cost deposits and payments are possible only because of the cross-subsidizations that exist from Deposits to Lending and from Lending to Payments.[252] Decoupling Deposits and Payments from Lending would eliminate these cross-subsidies and would result in greater transparency of the actual costs of Deposits and Payments and thus greater market discipline for banks in the provision of those services.

The funds' brokerage account would be maintained at a financial institution (an "investment broker") whence the consumer could direct his investment. The brokerage account would not guaranty the on-demand return of principal invested; investment brokers would be forbidden from accepting deposits. Instead, there would be express credit and liquidity risk on all funds placed in the brokerage account. The brokerage account could be used for payments; the technology already exists for funding payments from brokerage accounts. Checks, debit cards, and credit cards can all be linked to brokerage accounts already. Brokerage accounts could even offer immediate cash redemption through ATMs. But an investment broker could also place limits on the redemption of funds, and some investments might themselves have no-call provisions or redemption limitations or penalties.

In a Pure Reserve Banking world, a consumer or business seeking a loan would go to a capital markets institution (a "money broker"). Money brokers might work with various investment brokers to connect borrowers and funders or might serve as investment brokers themselves. A money broker might underwrite loans and fund them from its own corporate funds. Alternatively, a money broker might simply broker the loan.

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are unlikely to exceed the bank's capital and private insurance. (This assumes that some minimum level of capital would still be required by regulation, but it would not need to be calculated on a complex risk-weighting basis, such as under the Basel Capital Accords; rather, it could simply be some flat ratio of deposits or payment volume to capital.) Thus, we should be able to transition to a risk-free world for depositors without federal deposit insurance.

[252] See Adam J. Levitin, *Priceless? The Economic Costs of Credit Card Merchant Restraints*, 55 UCLA L Rev 1321, 1356 (2008) (noting a cross-subsidy from credit card revolvers to credit card transactors). Notably, the first mandatory cross-subsidy within payment systems was a function of the creation of the Federal Reserve System, as Federal Reserve Banks were required to clear their member banks' checks at par rather than discounting them for credit risk. See Federal Reserve Act § 16, 38 Stat 251, 265–68 (1913), codified as amended at 12 USC § 360.

Thus, a money broker could qualify the consumer or business for a loan on the basis of a preexisting set of underwriting guidelines or by auctioning off the funding (and possibly the servicing) of the loan.

Both processes are already common. Direct lending by money brokers would be no different from direct lending by banks today, other than the lack of a guarantied return of principal to investors. Mortgage brokers and mortgage banks regularly use "automated underwriting" programs to underwrite mortgage loans that they know they can subsequently sell to Fannie Mae and Freddie Mac.[253] Similar underwriting guidelines are used by auto dealers that serve as agents for finance company lenders and were used by mortgage banks for private-label mortgage-securitization conduits. Likewise, online payday lending involves websites that serve as "lead generators," with the "lead" being auctioned off to the highest bidder that wishes to fund the loan.[254] And in the corporate-debt world, most large loans are syndicated, meaning that the loan actually consists of multiple pieces that are each separately funded by different investors. Syndicated loans are arranged by a lead bank, but the lead bank will fund only a small part of the total loan, and the loan will be made based on the lead bank's assessment of whether there is a market of ready buyers for the other pieces of the syndication. In short, a great deal of consumer and business lending in the United States is already brokered and ultimately funded by non-banks.

In any event, in a world in which depositaries do not make loans, one would expect specialized agents and brokers to expand their retail presence. Moreover, rather than being just single-location shops, as mortgage brokers are today, they would likely also be institutional chains that would look and feel much like bank branches, only without the teller window for taking deposits. Conceivably, one could imagine co-located banks and money brokers or investment brokers sharing retail space, but without any corporate affiliation or profit-sharing arrangement that could give rise to an implicit guaranty of Lending activities from the Deposit accounts. The price-operational details are beside the point here other than to observe that there would need to be some sort of enforcement mechanism to police the extent of Deposit and

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[253] See Kathleen Engel and Patricia McCoy, *Automated Underwriting: Ten Years Later* (Credit Slips, Dec 14, 2006), archived at http://perma.cc/PVN3-UGYG.

[254] See, for example, Carter Dougherty, *Data from Payday Loan Applications Sold in Online Auctions* (Bloomberg, June 7, 2012), archived at http://perma.cc/29XR-BBJW.

Lending interaction. Such an enforcement mechanism would not be costless, but it would presumably be much less costly than the current complex regulatory system that is necessary to prop up fractional reserve banking.

What all this means is that from the perspective of a depositor/investor or borrower, Pure Reserve Banking would change little about how the world operates functionally. Consumers and businesses would still have the ability to have deposit or brokerage accounts or neither, just as they do today. The sole difference between deposit and brokerage accounts would be their risk and yield, because the deposit accounts could not be used to fund loans. Both would offer payment services. Consumers and businesses would shift their assets back and forth between deposit and brokerage accounts based on their risk preferences and market rates of return, just as they would continue to shift funds among investments in their brokerage accounts.[255]

Consumers and businesses would also continue to have the regular tools of risk mitigation at their disposal in capital markets, such as portfolio diversification, hedging, and stop-loss orders, which cause automatic liquidation of investments upon a specified decline in investment value. Consumers and businesses would also continue using financial institutions for funding, just not the ones at which they have deposit accounts. Itemized pricing might change because decoupling Deposits from Lending would end cross-subsidies. The total pricing, however, should not change—only its distribution and transparency. Because of the unbundling of financial services, the pricing of both Deposit and Lending services would be more transparent in a Pure Reserve Banking world, which should facilitate greater market discipline because consumers and businesses would have to choose whether they wanted to pay for particular services and how much risk they really wanted to assume.[256] Thus, Pure Reserve Banking might also facilitate consumers' ability to make informed consumption choices.

C. Effect on the Deposit Function

Pure Reserve Banking would have three effects on the Deposit Function. First, deposits would be absolutely insulated

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[255] The possibility of changes in consumer savings behavior or discontinuous risk preferences when faced with zero or negative returns is beyond the scope of this Article.

[256] It is not clear how Pure Reserve Banking would affect the problem of the unbanked.

from a bank's investment risk. (There would still be a de minimis risk of defalcation, fraud, or theft that could be covered by private insurance.) Because banks would not be able to reinvest deposits, investment risk and liquidity risk would be eliminated. Separation of the Deposit Function from the Lending Function would protect the money supply from the market's volatility; a broker-dealer's failure would not endanger the money supply as it did after Lehman Brothers' failure in 2008.

Second, as a legal matter, all deposits would become something more like specific deposits than general deposits.[257] While this need not extend to a depositor receiving back upon redemption the specific currency and specie that were deposited (because currency is fungible), the legal effect would be much the same: a bank deposit would not be a loan to the bank but a bailment, and the bank would have fiduciary obligations to the depositor to account for the funds that were deposited. Importantly, the deposit account would not simply be a piggy bank. It would still be linked to payment systems, and it is the combination of safekeeping and payments that makes deposit accounts particularly useful. Indeed, it is access to payment services that compensates for the zero or negative yield that would exist on deposit accounts in a Pure Reserve Banking system.

Third, banks would become much simpler operationally, with more-transparent pricing. This would improve market discipline for deposits and payments. With Pure Reserve Banking, depositors would pay for the safekeeping and payment functions that are offered by banks. Currently, some depositors pay net fees for their deposits in the form of monthly bank fees, service fees, and overdraft fees. Other depositors, however, receive net payments from banks in the form of interest payments on their balances. The cross-subsidies within this system are complex, varied, and beyond the scope of this Article, but they are generally regressive. If banks could not reinvest deposits, they would not be able to pay interest and would have no reason to do so. Instead, banks would compete for deposits on the basis of fees, service, and convenience, and regressive cross-subsidization among depositors would be reduced.

Because Deposits would be decoupled from Lending, Deposits could not be used to subsidize Lending, as often occurs. Deposits offer a low- or zero-cost source of funds that enables more

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[257] See Part I.B.

bank lending than otherwise and at cheaper rates because of an oversupply of bank credit. The result is a distortion of credit markets. Pure Reserve Banking would eliminate the Deposit-to-Lending subsidy and the resulting distortion. How this might affect consumer behavior or the accessibility of financial services is beyond the scope of this Article, although the possibility of a public option for 100% reserve banking, like the former US Postal Savings Bank,[258] seems more politically feasible than a public fractional reserve bank that would have to make lending and investment decisions.

D. Effect on the Lending Function

1. Source of funds.

Moving to Pure Reserve Banking would mean that the source of funding for all loans and investments would be capital markets, not banks. This is not a major change. While banks continue to play an important role in lending markets, banks' market share of lending has continually declined vis-à-vis the capital markets. Moreover, banks often serve only as the origination agents for capital markets. Many bank loans are participated, syndicated, or securitized, meaning that the funding is ultimately from non-bank investors.[259]

One concern about Pure Reserve Banking might be that it could result in a contraction of credit. It is not clear that this would be the case. Much depends on how much consumers and businesses really want to assume credit risk. Recall that in a Pure Reserve Banking world, banks would charge depositors for holding their funds; depositors would not be paid interest. This would make depositing funds in 100% reserve banks much less attractive, as depositors would have to pay direct fees as well as lose the time value of their deposits. Accordingly, there would be a strong incentive for consumers and businesses to place their funds in capital markets. To the extent that there is a contraction of credit, however, it is right-sizing, because the level of credit would reflect risk-internalized pricing rather than subsidization. The effect of Pure Reserve Banking on economic activity is discussed in more depth below.[260]

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[258] See notes 42–49 and accompanying text.

[259] See Jing He, *On Securitization of International Syndicated Loans*, 3 Intl J Bus & Mgmt 151, 151 (Nov 2008).

[260] See Part III.F.

A related concern about Pure Reserve Banking is that there could be a loss of the informational synergies that exist when deposit-taking and lending are centralized in the same firm. Deposit account history can provide an important information source about borrower creditworthiness.[261] While Pure Reserve Banking would result in some informational losses, it is not clear how important this is given that a great deal of lending is not bank lending[262] and that banks are legally forbidden from mandatorily tying credit card and deposit accounts together.[263] Most lending presently depends on an independent information infrastructure that is derived from credit reporting rather than from more bespoke observations. Accordingly, it is unlikely that there will be much loss of "information capital" in Pure Reserve Banking.

2. Maturity transformation.

Although the Deposit and Lending Functions are at loggerheads, their institutional combination produces one of the most important products of the banking system: maturity transformation. Banks transform short-term liabilities (deposits) into longer-term liabilities (loans) for their borrowers. Being able to obtain loans with appropriate maturities is critical for borrowers. If a maturity is too short, a borrower might not be able to repay a loan and will be dependent on being able to refinance the obligation. For example, Fortuno the Farmer wants a loan that will not come due until after he has sold off his fall harvest, rather than a loan that comes due in the summer.

Banks' promises of redemption of principal on demand mean that they are able to engage in maturity transformation—lending long-term against short-term liabilities—only to the extent that their deposit liabilities are stable and not redeemed en masse. Usually this gamble works, but when it does not, banking crises ensue.

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261 See Ben S. Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 Am Econ Rev 257, 259 (1983) (arguing that the Great Depression crimped lending because small-bank failures meant the loss of crucial information nodes in the economy).

262 See Ben S. Bernanke, *The Financial Accelerator and the Credit Channel* (Board of Governors of the Federal Reserve System, June 15, 2007), archived at http://perma.cc/N8AV-6E2M (questioning whether bank informational-screening benefits are still relevant).

263 See 15 USC § 1666g.

For example, in the United States in the 1970s, savings and loan institutions (S&Ls) took demand deposits to finance thirty-year fixed-rate mortgage loans using demand and short-term deposits. As interest rates rose, S&Ls had to offer competitive rates to retain their deposit bases.[264] Those that did not found themselves without the funding necessary to continue operations. But those that did found themselves paying higher interest rates on their liabilities than they earned on their mortgage loan assets. The result was the decapitalization of the S&Ls and the beginning of the savings and loan crisis.[265]

Falling interest rates in the early 2000s created a similar crisis for Fannie Mae and Freddie Mac, the government-sponsored entities (GSEs) that provide much of the capital and liquidity for the secondary mortgage market. The GSEs used non-callable corporate debt to finance their purchases of prepayable mortgages.[266] In other words, the maturity dates of the corporate debt were potentially much longer than those of the assets. When interest rates fell in 2001, there was an unprecedented wave of mortgage refinancing.[267] The result was that the interest that the GSEs were earning on their assets declined, but the interest costs on the non-callable corporate debt remained fixed. The result would presumably have been the decapitalization of the GSEs, but accounting scandals during this period prevent any definitive statements about the GSEs' finances.[268]

Asset-liability duration-mismatch problems also appeared during the run-up to the 2008 financial crisis. Structured investment vehicles (SIVs) are a class of investment funds that fund long-term liabilities with short- and medium-term debt.[269] In the summer of 2007, when SIVs found themselves unable to roll over their obligations, they failed.[270]

This same problem repeated itself in 2008 in the repo market when commercial paper markets froze.[271] Broker-dealers that fund themselves through repos often provided 30-, 90-, or 180-day term-repo funding to their prime brokerage clients but financed

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264 See Levitin and Wachter, 46 UC Davis L Rev at 1163 (cited in note 54).

265 See id.

266 See Levitin and Wachter, 100 Georgetown L J at 1221 n 141 (cited in note 115).

267 See id.

268 See id.

269 See Bratton and Levitin, 86 S Cal L Rev at 836–37 (cited in note 101).

270 See id at 841–43.

271 See Davidson and Blumberg, *The Week America's Economy Almost Died* (cited in note 193).

themselves via overnight repos.[272] Normally, this duration mismatch would have created a favorable yield spread for broker-dealers, but when the overnight repo markets collapsed, broker-dealers faced the problem of having loaned out non-callable funds and being cut off from their own funding. Only Federal Reserve intervention to restore liquidity to the commercial paper and repo markets saved the broker-dealers.[273]

The examples of the SIVs and the broker-dealers illustrate that the maturity-transformation function is hardly exclusive to banks. Indeed, there are many ways to achieve maturity transformation without involving a promise of redemption of principal on demand.

First, a lender can always make a longer-term loan than desired and rely on market liquidity to be able to sell the loan at the desired maturity date. Market liquidity thus functions like a put option for the lender. Second, lenders can use formal put options and other derivatives to achieve the maturities they want. A lender can make a ten-year loan but have a put option in the third year. From the lender's perspective, this is a three-year loan; from the option counterparty's perspective, it is a seven-year loan (beginning three years hence), and for the borrower it is a ten-year loan. A similar effect can be achieved using a total-return swap for the excess of the borrower's desired maturity over the lender's desired maturity. These two methods of maturity transformation both rely on having liquid markets in either debt or derivatives. Such liquidity will not always exist for all types of instruments. Not all methods of non-bank maturity transformation are liquidity dependent, however.

A third method of maturity transformation is securitization. Just like credit or interest-rate risk, duration risk can be tranched and allocated unequally among investors based on their risk preferences. Through securitization, a pool of thirty-year fixed-rate mortgages can be transformed into a set of short-duration bonds (say, three years), a set of medium-duration bonds (say, ten years), and a set of long-duration bonds (say,

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[272] See Kris Devasabai, *Hedge Funds Face Higher Prime Broker Charges under Basel III* (Risk.net, June 18, 2014), archived at http://perma.cc/44R4-MBT6; Kris Devasabai, *Pressure on Prime Broker Funding Model Threatens to Drive Up Financing Costs for Hedge Funds* (Risk.net, Jan 23, 2013), archived at http://perma.cc/WYE3-ZDCC.

[273] See Ben S. Bernanke, *Financial Reform to Address Systemic Risk* (Board of Governors of the Federal Reserve System, Mar 10, 2009), archived at http://perma.cc/73MA-KM4N.

thirty years), in part because many of the mortgages are likely to prepay.

A fourth method of maturity transformation is financing through non-bank finance companies. These companies raise funds by borrowing or by issuing equity and then invest these funds in loans that are purchased or made directly. Finance companies play an important role in some sectors of the lending economy, such as auto lending and especially small-business finance, in which loans are much less standardized and hence less liquid than consumer obligations. Indeed, during the 2008 financial crisis, the failure of finance company CIT was of much greater concern than would have been predicted for an institution of CIT's size because of its leading role in small-business finance.[274]

Finally, crowdfunding can potentially eliminate the need for maturity transformation without requiring liquid secondary markets. There are many legitimate concerns about crowdfunding, but if it works as its proponents claim, then it offers funding for all sorts of unique loans.

While maturity transformation is a valuable function that has long been associated with banks, there is no inherent reason why it must be performed by banks. Banks' role in maturity transformation is because of historical path dependence. Modern financial markets offer the secondary market derivative liquidity, which makes banks' role in maturity transformation superfluous.

3. Money creation.

Fractional reserve banking also means that banks are involved in the creation of money through credit. There is no single precise definition of money, but we might think of money, narrowly defined, as consisting of assets that serve simultaneously as a medium of exchange, a store of value, and a unit of account.[275]

Currency—physical bills and coins—fits the definition of money. Only the Federal Reserve has the authority to create currency that qualifies as legal tender.[276] But money consists of

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[274] See David Weidner, *The System at Risk in a CIT Failure* (Wall St J, July 17, 2009), archived at http://perma.cc/3X8Q-GXRU.

[275] See Jagdish Handa, *Monetary Economics* 5 (Routledge 2d ed 2009).

[276] See 31 USC § 5103; *Currency and Coin Frequently Asked Questions* (Federal Reserve Bank Services), archived at http://perma.cc/F7GT-3JKJ. Technically, some legal tender currency is also produced by the US Mint under the authority of the Treasury, but virtually all currency is minted to meet orders from the Federal Reserve Board.

more than currency. It also includes instruments that have similar characteristics, including bank deposits, shadow-banking instruments, and government obligations. Because bank deposits are denominated in dollars (or other currencies), they serve as units of account. Checkable bank deposits also represent media of exchange and stores of value to the extent that they are liquid at par or near par.

Banks create money in the form of deposits through lending.[277] Bank lending creates bank deposits. When a bank makes a loan to a consumer, that loan is typically disbursed in the form of a deposit at the bank, rather than in cash. This transaction increases the bank's assets (the loan) and liabilities (the deposit) as well as the consumer's assets (the deposit) and liabilities (the loan). The process works in reverse with loan repayment. When a bank loan is repaid, a deposit is eliminated and thus the supply of bank-created money contracts. The money supply thus expands (or contracts) with the extent of bank credit.

Whereas only the Federal Reserve can create money in the form of legal tender, money in the form of bank deposits is privately created through bank loans; this type of "bank money" functions as legal tender and is accepted in the payment of public and private obligations.

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[277] See McLeay, Radia, and Thomas, 54 Bank Eng Q Bull at 15 (cited in note 28) (detailing money creation). See also generally Zoltan Jakab and Michael Kumhof, *Banks Are Not Intermediaries of Loanable Funds—and Why This Matters* (Bank of England, May 2015), archived at http://perma.cc/3NTY-EWRJ. In contrast to the more modern understanding of banks as creating money by making loans, textbook macroeconomics 101 teaches that banks merely intermediate from savers to borrowers by taking deposits and relending them. This older (but very ingrained) understanding of banks as mere intermediaries of loanable funds emphasizes the role of reserve requirements as a limitation on relending. See Baumol and Blinder, *Economics* at 630 (cited in note 23). Thus, at a bank with a 10 percent reserve requirement, only $90 of a $100 deposit can be reloaned. That $90 will be redeposited, enabling $81 to be reloaned, and so on, ultimately generating an increase in the money supply that is equal to the product of the deposit and the "money multiplier." The money multiplier is $1 / R$, in which R is the reserve ratio expressed as a decimal. Thus, the $100 initial deposit would ultimately generate $1,000 in money creation.

Recent research, however, has indicated that the money supply is not in fact affected by reserve requirements. See Seth B. Carpenter and Selva Demiralp, *Money, Reserves, and the Transmission of Monetary Policy: Does the Money Multiplier Exist?* *1 (Finance and Economics Discussion Series, May 2010), archived at http://perma.cc/9YXB-VMWM. Moreover, a number of countries have abandoned reserve requirements altogether. See Sellon and Weiner, 82 Fed Res Bank Kan City Econ Rev at 5, 9 (cited in note 1). It is important not to confuse reserve requirements with capital regulations that require banks to have a particular ratio of equity to assets. Reserve requirements are about liquidity, not solvency.

Private creation of money is not limited to bank lending. Shadow-banking instruments also function as money. Shadow-banking instruments are denominated in standard units of account. They are often liquid, either through sale or hypothecation, and they are often liquid at par or near par.[278]

Government obligations also function as money. They are in standard units of account and they can be readily sold or hypothecated at or near par. The Assignment of Claims Act[279] and related legislation have enabled federal government contractors to obtain financing through the sale of their federal government invoices.[280] Similar state statutes also exist.[281] Consumers can borrow against tax refund obligations.[282] Local government revenue streams are sometimes securitized through either the issuance of revenue bonds or the outright sale of revenue streams to investors,[283] and government bonds trade in secondary markets and are easily hypothecated. Money creation through government obligations is not centralized. Some obligations are federal, and some are state or local. Even within a level of government, the creation of obligations is not centralized. Some are voluntarily created, such as through Treasury borrowing or government contracting, while others are created by virtue of judgments or refund liabilities.

Understanding both bank deposits and shadow-banking instruments to be part of the money supply, we can define the money supply (M) as consisting of currency (C), checkable bank deposits (D), shadow-banking instruments (S), and government

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278 Unlike bank deposits, however, shadow-banking instruments are not subject to formal reserve requirements. Thus, the money multiplier for shadow banking is theoretically unlimited. Practically, however, shadow-banking instruments are often collateralized, and the collateral requirements function much like a reserve requirement, limiting the shadow-banking money multiplier. See Andy Kessler, *The Fed Squeezes the Shadow-Banking System* (Wall St J, May 22, 2013), archived at http://perma.cc/4RJG-QJAX.

279 54 Stat 1029 (1940).

280 31 USC § 3727 (2006). See also 41 USC § 6305 (2012).

281 See generally *Assignment of Claims Act State Survey* (International Factoring Association 1999).

282 See generally Gregory D. Kutz, Managing Director of Forensic Audits and Special Investigations, US Government Accountability Office, Letter to the Honorable John Lewis, Chairman of the Subcommittee on Oversight of the Committee on Ways and Means, US House of Representatives (June 5, 2008), archived at http://perma.cc/J2KP-SZYE.

283 See, for example, Khalid A. Razaki, Raymond Pollastrini, and Robert J. Moreland, *Privatization of Infrastructure Assets: Financial Structures, Participant Motivations, and Lessee Tax Benefits* *2–4 (Journal of Finance and Accountancy, Feb 2013), archived at http://perma.cc/CXY6-EW4X.

obligations (G). Thus, $M = C + D + S + G$. This measure of the money supply differs from either of the measures used by the Federal Reserve. The Federal Reserve uses a measure known as M1 to track currency plus checkable bank deposits plus the negligible category of traveler's checks. The Fed also uses a broader measure known as M2 that includes time deposits, savings accounts, certificates of deposit, and retail MMMFs. Until 2006, the Fed also tracked a measure called M3 that further included some shadow-banking instruments, namely, all MMMFs and repos.[284]

Functionally, however, the real money supply is even broader than that tracked by M3, because M3 did not include all shadow-banking instruments. Thus, Professor Morgan Ricks has argued for measuring the money supply as including all credit instruments with a maturity of one year or less.[285] Ricks's duration limitation does not account for the way that longer-term instruments can also function as money. For example, instruments such as Treasury or Agency securities can function as money, as they are units of account that are highly liquid at par (more so than some shorter-maturity instruments). While short duration tends to increase the likelihood of par exchange, all else being equal, it is neither necessary nor sufficient for achieving par or near-par exchange. Accordingly, it is best to view the money supply as including not only currency and bank deposits but also all shadow-banking instruments that are liquid—whether through sale or hypothecation, at par or near par, and irrespective of duration—as well as government obligations.

What this means is that the money supply is a function of deliberate federal government activity (printing currency, Treasury borrowing, and federal contracting); deliberate state and local government activity (borrowing and contracting); unintentional government activity on federal, state, and local levels (judgments and refunds); and private activity (relending deposits and shadow banking). Accordingly, the US money supply is fundamentally decentralized, although there is federal government intervention to correct perceived supply and demand imbalances in pursuit of various economic growth and employment goals.[286] The aggregate money supply, however, is neither tracked nor fully controllable by the central bank.

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[284] See Blair, 36 Seattle U L Rev at 432–34 (cited in note 230).

[285] Ricks, 65 Vand L Rev at 1302 n 27 (cited in note 3).

[286] See 12 USC § 225a:

Shifting to 100% reserve banking would shift the money supply from being decentralized with government corrections to being more (although not fully) centralized.[287] Pure Reserve Banking would eliminate private money creation through bank deposits and through shadow banking. In other words, the money supply would be limited to currency and government obligations, or $M = C + G$. The result would be a government monopoly on money creation.[288] This means that monetary policy would shift from the Federal Reserve to the Treasury, making monetary policy directly subject to political discipline.

Whether such centralization is a good thing is an open question; it has not been explored in the theoretical-economics literature. The theoretical literature on public versus private liquidity provision is very limited and models only the benefits of supplementing private liquidity provision with public liquidity provision.[289] And indeed, that is the system that already exists. The aggregate level of liquidity in the economy is determined not solely by market forces but additionally by a combination of market forces and government actions. The liquidity produced by the market is increased or decreased through a combination of (1) Federal Reserve open-market activity, (2) government fiscal

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> The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain 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.

[287] To the extent that capital market obligations would be liquid at par, there would still be private money creation in the economy. The ability of capital market obligations to be reliably liquid at par, however, is largely dependent on an implicit government guaranty or other government facilitation of "safe assets"—so most, if not all, of this private-money-creation power would disappear.

[288] Whether this should produce a fixed rate of monetary growth, such as that advocated by Professor Milton Friedman (monetarism), or a discretionary rate is an issue beyond the scope of this Article. The point is simply that control of the money supply should be public, not private.

[289] The insight from the theoretical-economics literature is that actively managed government-supplied liquidity is necessary to supplement privately produced liquidity. See Bengt Holmström and Jean Tirole, *Private and Public Supply of Liquidity*, 106 J Polit Econ 1, 31 (1998). Privately supplied liquidity based on the relending of deposits suffers from the uncertainty of loan repayment. The government, in contrast, can more credibly commit to repayment because of its ability to commit future consumer income through taxation. The government has a superior ability to credibly commit to a medium of exchange that will be accepted at par (such as for tax and other legal obligations) and hence that will be liquid. In the face of market uncertainty, the government's more credible promise of a par medium of exchange can help achieve something closer to a socially optimal level of liquidity.

activity (borrowing and spending), and (3) financial market regulation that encourages or discourages private money creation to achieve the politically desired economic effects.

The existing political control of the money supply means that Pure Reserve Banking would not result in a *shift* from market to political determination of the money supply. The money supply would continue to be politically determined, but the politics would be more direct and transparent, as discussed below.[290]

4. Risk management and market discipline.

Decoupling Deposits from Lending would help foster greater market discipline and risk management in Lending markets. Capital market discipline is warped by the participation of depositories (including ersatz depositories, such as MMMFs) in capital markets. As long as Deposits and Lending are institutionally twined, financial institutions are able to hold the government hostage by threatening to disrupt the Deposit Function if they are not bailed out when they run into trouble in their Lending activities. For example, the failure of a large broker-dealer that finances itself primarily through repos could threaten one of the two clearing banks for tri-party repos, which would in turn threaten the stability of the whole financial system. Indeed, the Federal Reserve's bailout of Morgan Stanley and Goldman Sachs in 2008 was motivated in part by concerns about the effect of those banks' failures on the clearing banks for tri-party repos, which in turn were linked to the commercial banking system.[291]

The implicit and explicit guaranties that this hostage situation produces in turn create a moral hazard of privatized gains and socialized losses. This moral hazard incentivizes banks to assume inefficiently excessive risk in their investments and to overproduce money through overlending. Moreover, because depositories' counterparties in trades and derivative transactions know that depositories are likely to be bailed out if they get into trouble, the counterparties are willing to assume greater credit risk on the depositories. The result is a general erosion of market discipline in capital markets.

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[290] See Part III.E.4.

[291] See Financial Crisis Inquiry Commission, *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States* *295–96 (Jan 2011), archived at http://perma.cc/UYE7-AFUH.

Separating Deposits from Lending means that lending institutions can be allowed to fail. A major brokerage house or other capital markets player could collapse without impairing deposits or the money supply. Moreover, if Deposits were separated from Lending, there would be a safe base of capital—Deposits—that could be deployed by depositors from their deposit accounts to their brokerage accounts to recapitalize those firms that are temporarily undervalued because of a collapse in the lending markets. Separating Deposits from Lending not only helps create more ex ante stability, hopefully avoiding market crashes, but it also helps with ex post stabilization after crashes.

5. Bubble prevention.

Separating the Deposit Function from the Lending Function would protect capital markets from bubbles created by the moral hazard of bank-created money. This moral hazard encourages banks to overproduce money because more lending results in more bank deposits. An overexpansion of the money supply makes money artificially underpriced. This has the effect of creating asset bubbles, because assets can be purchased with borrowed money.[292] Cheaper borrowing costs enable borrowers to bid up the price of assets away from sustainable fundamental values. 100% reserve banks do not engage in money production, so the moral hazard–fueled credit-bubble problem would disappear if 100% reserve banking were required.

E. Effect on Regulation

Most discussions of 100% reserve banking pay little attention to its effects on regulation. Yet arguably the most important and beneficial impact of 100% reserve banking would be its transformation of bank regulation. 100% reserve banking would have a salutary effect on financial regulation in five ways. First, it would render much of the overly complex system of bank regulation irrelevant and unnecessary, allowing the elimination of FDIC insurance, the Federal Reserve System, and most of the prudential bank regulatory apparatus. Second, it would significantly reduce the enormous compliance costs of prudential bank regulation. Third, it would depoliticize bank regulation. Fourth, it would increase the transparency of monetary politics. And

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[292] See Gerding, *Law, Bubbles, and Financial Regulation* at 45 (cited in note 69).

fifth, it would eliminate the political pressure of "too big to fail" and thus eliminate bailouts. The result would be a much simpler, more transparent, and less politically manipulable system of bank regulation that would serve the interests of financial stability far more than our current byzantine structure.

1. Elimination of deposit insurance, the Federal Reserve System, and prudential bank regulation.

The first and most obvious effect of 100% reserve banking on bank regulation would be the irrelevancy of most of the institutional structure of bank regulation. If Deposits were separated from Lending, a much less extensive financial regulatory system would be required. There would be no need for either the FDIC or the Federal Reserve System, as 100% reserve banks would not need either solvency or liquidity support. Indeed, prudential regulation in general for either banks or capital markets would be unnecessary. There would be no need for the complex Basel Accords system of bank capital regulation or for most of the nearly eleven thousand pages of federal banking statutes and regulations.[293] In other words, bank regulation would become simpler and more comprehensible, with lower attendant regulatory costs. Consumer-protection regulation would continue to be necessary for deposits and fair lending, and antifraud regulation would be required for capital markets, but most of the complex and expensive financial regulatory state would be unnecessary.

2. Reduction of the compliance costs of bank regulation.

Separating the Deposit and Lending Functions would also greatly reduce the enormous compliance costs of bank regulation. Bank regulation creates tremendous compliance costs for banks as well as costs for the government.[294] While the estimation of bank compliance costs is an imprecise exercise, the most comprehensive consideration, from 1998, estimated regulatory

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[293] See Part II.B.

[294] There are no reliable measures of total compliance costs for banks (in part because there is no standard metric), but it is beyond peradventure that they are sizable and growing. For recent attempts to quantify some regulatory costs, see generally Ron Feldman, Ken Heinecke, and Jason Schmidt, *Quantifying the Costs of Additional Regulation on Community Banks* (Federal Reserve Bank of Minneapolis), archived at http://perma.cc/6B4L-A2E9; *Understanding the Effects of Certain Deposit Regulations on Financial Institutions' Operations: Findings on Relative Costs for Systems, Personnel, and Processes at Seven Institutions* (Consumer Financial Protection Bureau, Nov 2013), archived at http://perma.cc/73XB-PNWZ.

compliance costs as between 12 and 13 percent of banks' non-interest expenses.[295] Using that estimate, regulatory compliance costs for insured depositories alone would have been around $50–$54 billion in 2013–2014.[296]

The 12–13 percent estimate, however, is likely to be an underestimation given the substantial expansion in bank regulation since 1998. Indeed, Standard & Poor's credit rating agency estimates that the Dodd-Frank Act's reforms alone will result in an additional $2.0–$2.5 billion in annual compliance costs for the eight largest US banks.[297] Nor does the $50–$54 billion estimate include the compliance costs of non-depository financial institutions that are attributable to bank holding companies. Additionally, there are costs to taxpayers from the government's own regulatory activity in creating regulations and ensuring compliance.[298]

Although we cannot be sure of the precise amount of compliance costs for banks and the government, they are clearly quite large. The scope of bank regulatory costs should be taken as a strong indicator about how overly convoluted bank regulation has become in an attempt to hold the positively charged ions of Deposits and Lending together.

3. Depoliticization of bank regulation.

Most arguments for 100% reserve banking have focused on the direct economic benefits of decoupling Deposits and Lending, but there are political economy benefits as well. Eliminating the massive prudential regulatory apparatus would also make the state of financial regulation and the stability of financial markets less dependent on regulatory discretion and the political climate.

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[295] Gregory Elliehausen, *The Cost of Bank Regulation: A Review of the Evidence* (Board of Governors of the Federal Reserve System, Apr 1998), archived at http://perma.cc/3AAU-5XDR.

[296] See *Quarterly Banking Profile* (FDIC, Aug 28, 2014), archived at http://perma.cc/86TT-S99T (showing non-interest expenses of $206.8 billion in the first half of 2014 and $208.4 billion in the first half of 2013).

[297] Matthew B. Albrecht and Carmen Y. Manoyan, *Two Years On, Reassessing the Cost of Dodd-Frank for the Largest U.S. Banks* *3 (Standard & Poor's, Aug 9, 2012), archived at http://perma.cc/B3LP-J3QR.

[298] While most bank regulators, such as the Office of the Comptroller of the Currency (OCC), FDIC, and NCUA, are funded by assessments on industry, not all are (for example, the Federal Reserve Board). See Levitin, 127 Harv L Rev at 2043 (cited in note 67).

Currently, financial regulation and monetary policy are heavily intertwined because banks are the "transmission belt for monetary policy."[299] Bank regulation—formal rules and informal "guidance"—affects the extent of private money creation by banks. Financial regulation and monetary policy are indelibly linked in the current US arrangement, in part because of the role of the Board of Governors of the Federal Reserve System as both a bank regulator and as part of the national monetary policy body, the Federal Open Market Committee.[300]

The combination of financial regulation and monetary policy has two negative consequences. First, bank regulation becomes warped because it is serving two masters: prudential regulation and monetary policy. And second, because monetary policy is tied to bank regulation, the political choices in monetary policy are obscured and thus not as susceptible to democratic accountability as transparent policy choices.

The entanglement of bank regulation and monetary policy warps bank regulation because bank regulation becomes the mechanism for implementing both prudential regulatory policies and monetary policy, the goals of which can be in tension. Prudential regulation of banks (as separate from monetary policy) has a clear normative goal: institutional safety-and-soundness, which is about sustainability, stability, and limited risk-taking.[301] While there are policy disagreements about the extent to which certain policies will in fact produce safety-and-soundness, there is no dispute about the ultimate goals of prudential regulation—only questions about how to implement them.

Monetary policy may be in tension with prudential regulatory goals because monetary policy may seek to "juice" the economy by expanding the monetary base. This involves increased risk-taking with concomitant decreases in sustainability and stability. As long as monetary policy is tied to financial regulation, there will be pressure for regulators to choose to privilege monetary policy concerns at the expense of potentially dissonant prudential regulatory concerns. The institutional entwining of monetary policy and financial regulation can compromise the

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[299] *Annual Report 1982: Are Banks Special?* (Federal Reserve Bank of Minneapolis, Jan 1982), archived at http://perma.cc/39QG-6TSY.

[300] See *How Is the Federal Reserve System Structured?* (Board of Governors of the Federal Reserve System, Aug 7, 2013), archived at http://perma.cc/TQA8-PW4D.

[301] See Ben S. Bernanke, *Implementing a Macroprudential Approach to Supervision and Regulation* (Board of Governors of the Federal Reserve System, May 5, 2011), archived at http://perma.cc/NXF5-NHJZ.

stability goals of financial regulation. Because Pure Reserve Banking would separate monetary policy from banks (all money creation would be done directly by the government), it would have the effect of freeing what little would remain of prudential regulation from monetary policy pressures. Thus, bank regulation would be substantially depoliticized.

Pure Reserve Banking would also leave little room for bank regulatory discretion.[302] Regulatory discretion is of particular concern because financial regulation—formal regulations, their interpretation, and their enforcement—are all highly politically dependent. Following the 2008 financial crisis, the willingness of bank regulators to pursue the prudential regulatory goal of safety-and-soundness, rather than to privilege economic growth, is very much in doubt.[303] Much of the deregulation that contributed to the bubble and collapse was undertaken by regulators, rather than by Congress.[304] Regulators either formally deregulated the banking industry, interpreted regulations so as to relax their impact, failed to enforce regulations, or even prevented other regulators from enforcing them.[305] The result was an economic stimulus in the form of a regulatory subsidy.[306]

4. Increased transparency of monetary politics.

The combination of financial regulation and monetary policy also obscures the politics of monetary policy, which is democratically undesirable and increases the regressivity of monetary policy. Some monetary policy is done more or less transparently, such as when the Federal Open Market Committee directs its agent to buy or sell government bonds. But monetary policy is also done indirectly, through regulators encouraging tighter or

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[302] 100% reserve banking's reduction in regulatory discretion was recognized by Simons, one of its early proponents. See generally Simons, 44 J Polit Econ 1 (cited in note 221). Simons argued for 100% reserve banking as more consistent with the liberal principal of a society of rules, because it reduces regulatory discretion over the economy. Simons was particularly concerned about explicit political direction of investment and price controls. See, for example, id at 20 n 19. Perhaps because of this, his emphasis on the political economy benefits of 100% reserve banking has figured little in subsequent discussions of 100% reserve banking, as government price controls have faded from the scene in the post–World War II years. Yet other forms of less transparent financial repression remain.

[303] See Levitin, 127 Harv L Rev at 2041–49 (cited in note 67).

[304] See id at 2047–49 (detailing deregulation in 1990s and 2000s by regulators).

[305] See id.

[306] See Gerding, *Law, Bubbles, and Financial Regulation* at 64 (cited in note 69) (discussing the "regulatory stimulus").

looser bank lending standards or through the facilitation or frustration of shadow-banking money creation.

Currently, monetary politics are highly obfuscated by the complexity of financial regulation, which makes it harder to see the winners and losers of policy decisions. This obfuscation not only reduces democratic accountability but also makes the politics of financial regulation an insider game that inherently favors market participants who are incentivized to seek a more volatile financial system.[307] Because market participants have unequal upside benefits and downside risks due to privatized gains and socialized losses, they effectively hold a call option on economic growth. Per the Black-Scholes option-pricing theory, the value of this option increases with economic volatility.[308] Accordingly, financial market participants are incentivized to pursue a system that increases volatility. The ability of financial institutions to create money through lending gives them the very tools needed to achieve such volatility. The problem with this system is that such volatility is highly regressive, because those with fewer means are less capable of insuring against shocks to savings and income.[309]

At the same time, the complexity of financial regulation mutes outside political pressure in favor of financial stability,[310] so financial market participants' quest for volatility generally goes uncountered.[311] This asymmetry among interest groups becomes a regulatory problem, because financial market participants are a concentrated interest group that lobbies for favorable regulation.[312] It is further exacerbated because of the

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307 See Levitin, 127 Harv L Rev at 2037 (cited in note 67).

308 See Mark H.A. Davis, *Complete-Market Models of Stochastic Volatility*, 460 Proceedings: Math, Phys & Engineering Sci 11, 11–13 (2004).

309 See generally Jacob S. Hacker, *The Great Risk Shift: The Assault on American Jobs, Families, Health Care, and Retirement and How You Can Fight Back* (Oxford 2006).

310 See Gerding, *Law, Bubbles, and Financial Regulation* at 149 (cited in note 69).

311 The important exception is when there is a symmetric policy contestation between parts of the financial services industry. See Levitin, 127 Harv L Rev at 2058–67 (cited in note 67).

312 See, for example, Eric Lipton and Ben Protess, *Banks' Lobbyists Help in Drafting Financial Bills* (NY Times, May 23, 2013), archived at http://perma.cc/WG8V-3PQ6. See also generally Deniz Igan, Prachi Mishra, and Thierry Tressel, *A Fistful of Dollars: Lobbying and the Financial Crisis* (International Monetary Fund, Dec 2009), archived at http://perma.cc/SD4J-2U9L (finding a correlation between lenders' lobbying activities and their risk-taking during 2000–2007). A crude measure of bank lobbying activity is the total amount spent on lobbying activities by the financial services, insurance, and real estate (FIRE) sector. From 1998 to 2015, the FIRE sector spent over $6.5 billion dollars on lobbying, a total that is only barely surpassed by the health-care industry and

attendant regulatory-capture problems that make regulators inclined to adopt financial market participants' viewpoints.[313] As a result, the specifics of bank regulation are to no small degree shaped by the intensity of lobbying and political pressure brought to bear by the financial services industry.

The obfuscation of monetary policy's politics through its combination with financial regulation is unfortunate, because monetary policy is an issue that should be subject to political control. In contrast to bank regulation, monetary policy does not have clear normative goals. Should the goal of monetary policy be to control inflation, or should it be to maximize employment? There is no consensus on this because different monetary policies have enormously different distributional effects. (Indeed, the Federal Reserve Board is charged with pursuing both goals.) Inflation benefits debtors and hurts creditors, while volatility in interest rates benefits financial market intermediaries by generating more business due to refinancing transactions as rates change.

Monetary policy is an inherently political (although not necessarily partisan) exercise because of its distributional implications.[314] While technocratic expertise informs an understanding of how to influence the money supply, technocratic expertise has no answer to the normative question of what the money supply should be.[315] Accordingly, monetary policy is an area in which transparency should be sought because it increases democratic accountability over a distributional decision.[316]

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miscellaneous businesses. See *Lobbying: Ranked Sectors* (OpenSecrets.org), archived at http://perma.cc/8WX4-UP3H.

313 See Levitin, 127 Harv L Rev at 2041–49 (cited in note 67).

314 See Yanis Varoufakis, *Bitcoin and the Dangerous Fantasy of 'Apolitical' Money* (Yanis Varoufakis, Apr 22, 2013), archived at http://perma.cc/5DXV-GY9K (noting that "apolitical money is a dangerous illusion").

315 Indeed, the Federal Reserve's charge of controlling inflation and maximizing employment is an attempt to have it both ways on the normative question.

316 Blockchain-based digital cryptocurrencies, such as bitcoin, represent an alternative approach to the tension between technocracy and democracy in monetary systems. On the one hand, digital cryptocurrencies appear to be a doubling down on technocracy, as they operate automatically through computer code and thus appear to be immune from whatever biases regulators might have. On the other hand, blockchain-based digital cryptocurrencies defer to the majority of computing power within the blockchain, which is a majoritarian principle (even though a single actor can control that majority of computing power). Blockchain-based digital cryptocurrencies turn out to be vulnerable to both technical flaws in their code as well as monopolistic manipulation. See Mike Hearn, *The Resolution of the Bitcoin Experiment* (Medium, Jan 14, 2016), archived at http://perma.cc/DQ3E-ZLM2 (detailing design flaws in the size of the blocks in the blockchain that severely limit the transaction volume possible in bitcoins and explaining the

Pure Reserve Banking would increase the transparency and hence the democratic accountability of monetary policy. In a Pure Reserve Banking regime, all monetary creation would be governmental, rather than indirect through the bank transmission belt. In Pure Reserve Banking, instead of the government adjusting the privately produced monetary supply to achieve the desired monetary supply, the government would directly determine the entirety of the monetary supply. Direct government monetary creation through government provision of currency and government borrowing and spending is far more transparent than monetary expansion and contraction that are undertaken through a combination of Federal Reserve open-market purchases and financial regulatory policy affecting the scope of private money creation.[317]

Greater transparency of monetary policy decisions would increase the democratic accountability of decision-makers, who are currently insulated not only by the opacity of monetary policy transmission but also by institutional design. The Federal Reserve Board, FDIC, and OCC are all independent regulatory agencies whose members serve their terms subject to removal only for misconduct.[318] All of these regulators have terms that are longer than a single presidential administration.[319] They are also all funded outside the appropriations process. The effect of long terms of office, subject only to for-cause removal, and budgetary independence makes the federal prudential regulators more politically insulated compared to cabinet agencies.

Greater transparency and democratic accountability over monetary policy existed prior to the creation of the Federal

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opposition of major holders of bitcoins to remedying these flaws). These problems underscore the limits of the blockchain technology in eliminating the problems of regulatory incompetence and regulatory bias—problems that merely manifest themselves differently in the blockchain environment.

317 The question of how best to structure the administration of the money supply—whether through an independent actor like the Federal Open Market Committee, through a cabinet agency, or otherwise—is beyond the scope of this Article.

318 See *Humphrey's Executor v United States*, 295 US 602, 629 (1935) (holding that the removal of officers of independent agencies may be restricted to "for cause" removal); 44 USC § 3502(5) (listing the Federal Reserve Board, FDIC, and OCC as "independent regulatory agenc[ies]"). But see 12 USC § 2 (permitting removal of the comptroller "by the President, upon reasons to be communicated by him to the Senate"). The Treasury secretary is specifically forbidden from delaying or preventing the implementation of an OCC regulation or from intervening in any matter or proceeding before the OCC. 12 USC § 1(b)(1).

319 See 12 USC § 241 (setting a fourteen-year term of office for Federal Reserve Board governors); 12 USC § 1812(c)(1) (setting a six-year term of office for FDIC board members); 12 USC § 2 (setting a five-year term of office for the comptroller of the currency).

Reserve System. During the nineteenth and early twentieth centuries, monetary policy was divorced from bank regulation and was at the center of broad public debates and presidential electoral politics.[320] The creation of the Federal Reserve System in 1913 marked the beginning of a process of replacing democratic control over monetary policy with politically insulated technocratic control.[321]

Unfortunately, the events of the early twenty-first century have shown that technocrats are themselves all too political yet not democratically responsive. The idea that economic technocrats are neutral scientists merely applying the inexorable laws of nature has long been discredited.[322]

The recent history of the Federal Reserve is instructive. Under the direction of Chairman Alan Greenspan, as well as during Chairman Ben Bernanke's early tenure, the Federal Reserve was all too willing to look the other way from the signs that a bubble was forming because of its ideological and political priors that favored laissez-faire regulatory policies and limited inflation.

Because monetary policy is inherently political, it is better that it be more democratically accountable than subject to the whims of unaccountable technocrats.[323] Moreover, to the extent that some degree of technocratic involvement is unavoidable in monetary policy, direct government control over the money supply would improve macroeconomic forecasting because there

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[320] See Levitin, 127 Harv L Rev at 2050–51 (cited in note 67).

[321] See Sayre Ellen Dykes, *The Establishment and Evolution of the Federal Reserve Board: 1913–23*, 75 Fed Res Bull 227, 228 (1989).

[322] Part of the attraction of Bitcoin and other algorithmically based cryptocurrencies is that the monetary supply's growth is mathematically regulated and thus beyond the manipulation of central banks. Ironically, such algorithmic currencies are arguably the most extreme technocratic approach to money, as money is simply reduced to an algorithm. This view is also wrong. While the number of actual bitcoins or the like may be mathematically regulated, there is no easy way to control the volume of bitcoin derivatives or bitcoin margin lending by exchanges that functionally expand the bitcoin supply. In short, bitcoin is a re-creation of fractional reserve banking, but without the regulatory overlay—making it perhaps the worst of all worlds. Bitcoin and other blockchain-based cryptocurrencies attempt to control the monetary supply with artificial mathematical regulation. Such attempts are doomed to fail, as erstwhile former–Greek Finance Minister Yanis Varoufakis has observed: "Even when capitalist economies operated under the Gold Standard, banks found ways of creating money by lending increasing quantities against the existing, stable, stock of gold." Varoufakis, *Bitcoin* (cited in note 314).

[323] See id (noting that "a Central Bank that is democratically controlled (as opposed to the indefensible notion of an 'independent' Central Bank) remains our best hope for a form of money that is for the people and by the people").

would be no need to estimate the effectiveness of monetary policy transmission.

The examples of Iceland and Greece underscore the importance of political control over the monetary supply as an essential feature of self-determination for a polity. Iceland's small domestic financial system collapsed in 2008.[324] Icelandic banks, consumers, and businesses had all borrowed heavily from European lenders in pound and euro denominations.[325] Iceland was able to de-lever its economy by devaluing its currency, allowing its banks (which had large foreign debts) to fail, and imposing legal impairments on foreign-denominated debts.[326] Because Iceland maintained control over its own currency and legal system, it was able to manipulate its monetary supply to stabilize its economy.

Whereas Iceland had maintained its own currency but simply engaged in extensive foreign-denominated borrowing, Greece surrendered its own currency when it joined the eurozone in 2001.[327] The Greek government, businesses, and consumers all borrowed in euro-denominated debt.[328] When it became clear that the Greek economy was over-levered, the Greek government could not inflate its way out of debt because it had abdicated control of the monetary supply by virtue of being in a currency union.[329]

The experiences of Iceland and Greece underscore Professor Christine Desan's observation that money is a constitutional project.[330] Control over the monetary system is a fundamental part of the sovereign condition. When that control is outsourced, whether to foreign lenders (as in Iceland), to the collective judgment of the nations of the eurozone (as with Greece), or to private domestic

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[324] See Jenny Anderson and Chad Bray, *Iceland to Lift Capital Controls Imposed after Financial Crisis* (NY Times, June 8, 2015), archived at http://perma.cc/SUP8-XSVR.

[325] See Philipp Bagus and David Howden, *Deep Freeze: Iceland's Economic Collapse* 41–42 (Mises Institute 2011).

[326] See Thorvardur Tjörvi Ólafsson and Karen Áslaug Vignisdóttir, *Households' Position in the Financial Crisis in Iceland* *24 (Central Bank of Iceland, June 2012), archived at http://perma.cc/SC5X-SZPE.

[327] See Barry James, *EU Invites Greece to Join the Single Currency Fold* (NY Times, June 20, 2000), archived at http://perma.cc/YR9A-TZMK.

[328] See Martin Feldstein, *The Failure of the Euro: The Little Currency That Couldn't*, 91 Foreign Aff 105, 107, 115 (2012).

[329] See Will Fleeson, *Deficit of Greece—and Now Spain—Jeopardize Euro and Perhaps Euro Zone* (The European Institute, Feb 2010), archived at http://perma.cc/G3EW-QKH7.

[330] Desan, *Making Money* at 37 (cited in note 27).

lenders (in all fractional-reserve-banking systems), there is an inherent loss of self-determination by the polity. Restoring political control over the monetary supply is a critical part of the democratic project. It should not be surprising, then, that Iceland is the country that has most seriously considered abandoning fractional reserve banking post-crisis.[331]

5. Elimination of the political pressure of "too big to fail."

Pure Reserve Banking would also eliminate bailouts by eliminating the core of the "too big to fail" problem. "Too big to fail" is not a concern about size per se but a concern about any institution's failure being so economically disruptive as to be politically unbearable.[332] Financial failures become politically unbearable when they threaten the money supply, namely, when they threaten the safety and liquidity of deposits and deposit substitutes. The safety and liquidity of deposits are fundamental parts of the modern state's social contract. A state that cannot ensure the safekeeping of its citizens' assets is a failed state, no less than if it allowed barbarian hordes to pillage its citizens' assets. Such a loss of assets is a loss of the state's monopoly on violence, which includes the exclusive (but delegable) power to seize and transfer wealth.

Thus, failures of depositories as well as failures of non-depositories that offer deposit substitutes (repos, MMMFs, and commercial paper) on any scale or that present the danger of triggering an industry-wide panic are likely to be deemed sufficiently disruptive so as to be politically unbearable. The inevitable regulatory responses to such threatened disruptions are bailouts. The perceived possibility of bailouts distorts markets and undermines market discipline, because bailouts protect not only the institutions that are bailed out directly but also their counterparties.

Economic failures that do not threaten the money supply are less likely to result in bailouts: stock investors were not bailed out following the bursting of the 2001 Internet bubble, nor were homeowners rescued in any meaningful way following the collapse of the housing bubble in 2008. Even the GM and Chrysler bankruptcies support this story. GM's and Chrysler's 2009 bankruptcies functioned as bailouts for GM and Chrysler

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331 See Sigurjonsson, *Monetary Reform* at *14 (cited in note 4).

332 See Adam J. Levitin, *In Defense of Bailouts*, 99 Georgetown L J 435, 446–51 (2011).

employees, retirees, and suppliers, whose obligations were assumed by the buyers of the failed firms' assets—but not for capital market investors, who received little or no return in the reorganization of the failed firms.[333] The concern with GM and Chrysler was not about protecting capital markets, because GM and Chrysler did not implicate the money supply. Instead, the GM and Chrysler bailouts, like the post-9/11 federal rescue of the airline industry,[334] were exceptional acts that were motivated by industrial policy concerns about employment and national champions. Thus, it seems unlikely that isolated capital market collapses would trigger bailouts. Further, without reliance on artificially created "safe assets," capital markets are likely to exhibit much better market discipline, thereby limiting systemic exposure. Restricting money creation to the government would protect the money supply from private-market disruptions and therefore greatly reduce the risk of bailouts, particularly for financial firms.

Pure Reserve Banking would decouple the risks of the Lending Function from the socially sacrosanct Deposit Function, which would end the "too big to fail" problem in finance. Capital market investments can go belly-up without undermining the social contract; Deposits cannot. As long as Deposits are exposed to capital markets through their institutional combination with Lending, capital market volatility will result in bailouts, which will undermine market discipline and increase market volatility in a regressive cycle. Prudential regulation attempts to limit this volatility and the extent of deposit exposure—but there will inevitably be imperfections in prudential regulation, and there will also be political pressure on regulators to reduce their oversight because it crimps the privatized upside of market volatility. Thus, if we want to truly end "too big to fail," we need to separate Deposits and Lending.

6. Challenges of innovation.

Even if we were to eliminate regulations that provide legal facilitation for the creation of "safe assets," we would be unlikely to see an end to attempts to create "safe assets." Innovation presents a challenge to any regulatory system. The Civil War–era

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[333] See Adam J. Levitin, *Business Bankruptcy: Financial Restructuring and Modern Commercial Markets* 19–20 (Wolters Kluwer 2015).

[334] See Levitin, 99 Georgetown L J at 460 (cited in note 332).

national bank system ended noteholder runs, but the rise of checking gave rise to depositor runs.[335] FDIC insurance ended (most) depositor runs,[336] but the risk of runs merely migrated to MMMFs, repos, and other forms of "safe assets."

The impetus to create "safe assets" always carries with it the problem of an implicit guaranty. If an asset class becomes sufficiently large such that losses in that asset class create politically unacceptable losses in the economy, we will see an implicit guaranty spring into action.[337] Such was the case with the Treasury's and the Federal Reserve Board's bailouts of the money, commercial paper, and repo markets in 2008. We cannot credibly and conclusively legislate around the inevitability of bailouts, because they are responses to exigent political pressures. Splitting the Deposit and Lending Functions helps guard against this problem by reducing the political pressure on regulators to intervene and bail out "safe assets" that have ceased to be safe.

The problem of implicit guaranties will never completely disappear, even with Pure Reserve Banking. Bailouts will occur in any market whenever the market's failure threatens politically unbearable social consequences.[338] Pure Reserve Banking does not eliminate the risk that certain sectors of capital markets will grow so large or vital that their collapse cannot be politically tolerated. The implicit-guaranty problem is already with us.

In the past, however, bailouts have occurred when the money supply has been threatened, not simply when there are large capital markets downturns, such as with the bursting of the Internet bubble.[339] Similarly, the bursting of the residential and commercial real estate bubbles in 2008 did not result in meaningful government bailouts of homeowners, despite tremendous

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[335] See Charles W. Calomiris, *Deposit Insurance: Lessons from the Record*, 13 Fed Res Bank Chi Econ Persp 10, 20 (1989).

[336] During the savings and loan crisis, there were runs on thrifts that were ensured by private insurance or state insurance funds. See Walker F. Todd, *Lessons from the Collapse of Three State-Chartered Private Deposit Insurance Funds* *1–2 (Federal Reserve Bank of Cleveland, May 1, 1994), archived at http://perma.cc/Z9KX-E587; William B. English, *The Decline of Private Deposit Insurance in the United States*, 38 Carnegie-Rochester Conference Series Pub Pol 57, 62 n 4 (1993). In 2008, there were runs on FDIC-insured institutions by depositors with deposits exceeding the insurance limits. See Levitin, 99 Georgetown L J at 463–64 (cited in note 332).

[337] See Levitin, 99 Georgetown L J at 446–51 (cited in note 332).

[338] See id at 446–47.

[339] See Gerding, *Law, Bubbles, and Financial Regulation* at 94–97 (cited in note 69).

political pressure.[340] By making the money creation entirely a governmental matter, the need to protect the money supply—perhaps the largest single impetus to engage in bailouts—disappears.

F. Effect on the Economy

The choice between fractional reserve banking of any sort versus Pure Reserve Banking is a choice between volatile economic growth versus contraction and economic stability. In a Pure Reserve Banking world, some part of the money supply will remain on the sidelines in deposit accounts rather than being fed into the economy. This money is functionally being placed under a mattress. While Pure Reserve Banking would engender greater financial stability, it would also presumably increase the cost of money for at least some borrowers and thereby possibly dampen economic growth.[341]

But just as Pure Reserve Banking dampens economic growth, so too does fractional reserve banking "juice" the economy. Fractional reserve banking is a subsidy for economic growth, but it is one that is unmanageable absent the bank regulatory apparatus, as has been shown by the United States' pre-1933 experience with depositories, its 1980s experience with private and limited state deposit insurance for thrifts, and its 2008 experience with shadow banking. Therefore, unless we are willing to extend the bank regulatory apparatus of express guaranties and concomitant ex ante regulation to the shadow-banking sector, we will be faced with a juiced but unstable market that will produce spurts of greater economic growth but also much greater volatility.

There is an argument for expanding the express guaranty and concomitant regulation to all deposit substitutes, as Ricks

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340 To be sure, the Obama administration has enacted some de minimis assistance programs—but very little of the 2008 bailout funds went to help homeowners, and many programs were really disguised payments to financial institutions. See Levitin, 127 Harv L Rev at 2004–07, 2021–23 (cited in note 67).

341 See Wolf, *The Shifts and the Shocks* at 344 (cited in note 227) ("A consequence would surely be a decline in global market liquidity."). It is not clear that the cost of funds would in fact rise for all borrowers, and therefore it is not clear what the net effect on growth would be. If investors have discontinuities in their risk tolerances—namely, if there are levels of risk that they will not assume, irrespective of possible returns—then there will be much greater demand for investments with risk below those thresholds, thereby reducing the cost of borrowing for those safer borrowers even while riskier borrowers are cut out of the market. The net effect on economic growth ultimately depends on our assumptions about investors' risk preferences.

has proposed.[342] Doing so would deploy the government's superior ability to credibly commit to deposits that are immediately redeemable at par. Presumably, however, the government would charge for the guaranty. The cost of the "eagle" would offset the subsidy to the shadow-banking sector. (The extent of the offset would depend on the pricing of the guaranty.) Therefore, expanding the regulatory system to encompass shadow banking would eliminate volatile growth, but with the additional cost of expanded regulation as well as the risks that the guaranty would be mispriced or that regulation would otherwise fail. Accordingly, regulatory expansion is the more expensive and risky route of arriving at the same point as Pure Reserve Banking with its combination of 100% reserve banking and the elimination of safe-asset facilitation.

The choice we are faced with, then, is volatile growth versus economic stability.[343] Which regime will produce greater net growth is an unanswered empirical question. It is clear, however, that volatile growth will never be Pareto superior to stability. Not everyone can be made better off in a volatile economy without some being made worse off, because those who have fewer means or who are more highly leveraged cannot easily weather downturns in a volatile economy. It is possible that volatile growth could be Kaldor-Hicks superior, meaning that those made better off could, in theory, compensate those made worse off. But that result would be solely theoretical given our limited system of wealth redistribution. Preventing the regressive distributional consequences of a volatile growth economy would require a significant expansion of the social safety net. The social safety net is currently insufficiently developed to shield against the costs of volatility when market collapses erode savings, be they in pension plans, the stock market, or housing. Thus, the choice between volatile growth and stability is not solely an efficiency question but also a distributional one.

Volatile growth has a price tag, be it in the form of greater social insurance or greater hardship for those of lesser means. We should recognize the distributional choice we are making by sticking with fractional reserve banking and the facilitation of shadow banking. This Article's Pure Reserve Banking proposal aims to force recognition of the policy choice that we implicitly

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342 See Ricks, 65 Vand L Rev at 1290–94 (cited in note 3).

343 See Levitin, 127 Harv L Rev at 2035–36 (cited in note 67).

make by retaining fractional reserve banking and doubling down on regulation.

G. Effect on Regulation Internationally

Any transition to a Pure Reserve Banking system would be complicated by the international dimensions of financial regulation. International regulatory coordination presents a major challenge in modern financial regulation given the ease with which money moves around the globe.[344] Thus, if the United States were to adopt a Pure Reserve Banking regime, one of the concerns would be the flight of US financial institutions to other countries with fractional-reserve-banking systems to take advantage of international regulatory arbitrage.

Such an arbitrage problem seems unlikely, however, at least in response to US adoption of Pure Reserve Banking. Foreign governments will not want to continue fractional reserve banking because, to the extent that fractional reserve banks and shadow-banking markets in their countries finance US firms, they will be subsidizing US markets. For example, if US banks fled to London to escape a US Pure Reserve Banking regime, they would continue to provide financing to US businesses. The cost of that financing would be subsidized by the regulation and guaranties, both explicit and implicit, that are provided by the UK government.

The UK government would not want to subsidize US borrowers, making it difficult for the UK to maintain a fractional-reserve-banking system. Moreover, given the relative size of the financial services industry to the UK economy, it could not credibly guaranty the industry, thus undermining the subsidy benefits from fleeing US regulation. To the extent that either US or UK regulation insisted on a ring-fenced lending business—meaning no international lending—banks would be reluctant to lose access to US markets, thereby reducing the flight risk.[345] Thus, while international regulatory-arbitrage problems normally operate to frustrate increased regulation, the dynamic would be reversed for Pure Reserve Banking.

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[344] See generally Chris Brummer, *Soft Law and the Global Financial System: Rule Making in the 21st Century* (Cambridge 2012).

[345] For a discussion of bank ring-fencing, see Steven L. Schwarcz, *Ring-Fencing*, 87 S Cal L Rev 69, 78–80, 98–104 (2013).

H. So Why Aren't We There Yet?

If Pure Reserve Banking is feasible and is such a good idea, why haven't we adopted it? Much of the answer is path dependence. 100% reserve banking did not exist in the first place because of the historical development of US financial markets. For most of US history, capital markets were quite limited and provided financing solely for large business concerns. Moreover, capital markets were confined to a few very large urban centers. Consumers and smaller businesses that needed retail contacts had to rely on local financial institutions, which were banks. In other words, as the *Depositor's Tale* and the *Banker's Tale* would have it, fractional reserve banking may have been historically the best system possible. Today, that is no longer clearly the case, but we persist in a fractional-reserve-banking system held together with ever more extensive bank regulation because we are so used to the arrangement that it is hard to imagine alternatives.

There are also entrenched interests that like the current system. Banks like having the ability to engage in riskier (and potentially more rewarding) lending behavior using deposits. They like the moral hazard that is created through the government provision of liquidity and deposit insurance facilities to protect the Deposit Function. Similarly, in the capital markets, retail and government MMMFs continue to enjoy the regulatory subsidy of stable-NAV accounting and the implied government guaranty of the money market. And tri-party-repo participants also enjoy the implicit government guaranty of that market through the two megabanks that provide clearing services for the market.

Likewise, financial regulatory experts are invested in the current system. Experts craft regulations, and experts—here, economists and lawyers, including the existing bank regulators—like the current system. Combining the Deposit and Lending Functions requires an enormous amount of regulation. Experts flourish in complex regulatory systems, which render their expertise relevant. The combination of Deposits and Lending provides full employment for experts with deep-pocketed clients. Financial-regulation experts are deeply invested in maintaining the current system that validates and pays for their expertise.[346]

[346] Additionally, transitioning to Pure Reserve Banking would raise some daunting issues. While the transition itself would be fairly simple to accomplish by means of spin-offs and divestments, withdrawal of government support—including tax treatments—for

And more generally, private control of currency is a core part of the interpartisan, neoliberal bargain that recognizes certain roles as appropriate for the state and others for private parties.[347]

CONCLUSION

The institutional combination of the Deposit and Lending Functions of banking through fractional reserve banking likely began opportunistically, but it was relatively efficient compared to other possible alternatives prior to the development of deep, efficient capital markets in the latter half of the twentieth century. Fractional reserve banking's persistence today, however, is a matter of path dependence and of the financial services industry's interest in maintaining a regressively volatile economy.

Today, capital markets are sufficiently developed both in terms of capital and technology that it is possible to split the Deposit and Lending Functions to create a more rational structure for the financial services industry that would produce a more stable financial system and economy. Given that a superior alternative to fractional reserve banking is now possible, there is no longer reason to tolerate the significant costs of fractional reserve banking.

Splitting Deposits and Lending in both traditional-banking and shadow-banking markets would free banking from the problems created by the combination of these fundamentally contradictory functions. Deposits would be safe from the risks of Lending, Lending would be safe from the moral hazard of Deposits, and banking would be safe from the current inefficient, overly complex, and opaquely politicized system of bank regulation.

Deposits would be truly safe without needing massive government support in the form of deposit insurance and liquidity facilities. Thus, much of the current, problematic system of bank regulation could be largely eliminated. There would be no need for the Federal Reserve System, or the FDIC, or most of the structure of prudential bank regulation. Lending institutions would be subject to greater market discipline. This would reduce the risk of credit-fueled asset bubbles, and Lending institutions could be allowed to fail without endangering Deposits. Moreover, separating Deposits from Lending would enable monetary policy

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shadow-banking assets would cause those assets to lose value. A runoff period might be a solution, but the details of a transition are beyond the scope of this Article.

[347] See Pepijn Brandon, *The Trouble with Dijsselbloem* (Jacobin, Feb 21, 2015), archived at http://perma.cc/DTV5-PK67.

to be separated from financial regulation, resulting in better financial regulation and more democratically accountable monetary policy.

Safe banking will require deep structural change in banking, and that will require political change. We can have safe banking, but to do so, we must wean ourselves from the subsidies of a government-supported financial system and disenthrall ourselves from the illusion that we can successfully and continuously regulate banks through market and technological innovations and political cycles.

Safe banking is not likely to become a political reality in the foreseeable future—we seem socially committed to redoubling our efforts to make the Deposit and Lending Functions operate within the same institutions, no matter the cost and complexity, while simultaneously denying the existence of the implicit guaranties of shadow banking that are as obvious as the earth's rotation around the sun. Nonetheless, seeing the possibilities for safe banking helps us to understand why our financial system is rigged for instability and why our regulatory system is headed for ever more unmanageable complexity.