BAD MONEY

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Money is, always and everywhere, a legal phenomenon. In the United States, the vast majority of the money supply consists of monetary liabilities—contractually enforceable promises—issued by commercial banks and money market funds. These private financial institutions are subject to highly sophisticated public regulatory frameworks designed, in part, to enhance the credibility of these promises. These regulatory frameworks thus give banks and money market funds an enormous comparative advantage in the issuance of monetary liabilities, transforming otherwise risky legal claims into so-called "safe assets"—good money. Despite this advantage, recent years have witnessed an explosion in the number and variety of financial institutions seeking to issue monetary liabilities. This new breed of monetary institutions includes peer-to-peer payment platforms such as PayPal and aspiring stablecoin issuers such as Facebook's Libra Association. The defining feature of these new monetary institutions is that they seek to issue money outside the perimeter of conventional bank and money market fund regulation. This Article represents the first comprehensive examination of the antiquated patchwork of state regulatory frameworks that currently, or might soon, govern these new institutions. It finds that these frameworks are characterized by significant heterogeneity and often fail to meaningfully enhance the credibility of the promises that these institutions make to the holders of their monetary liabilities. Put bluntly: these institutions are issuing bad money. This Article therefore proposes a National Money Act designed to strengthen and harmonize the regulatory frameworks governing these new institutions and promote a more level competitive playing field.

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INTRODUCTION

Who *makes* our money? Ask the proverbial man or woman on the street and they will likely tell you that it is the United States government.[1] In at least one sense, they would be absolutely right. In 2018 alone, the U.S. Treasury Department oversaw the printing of over seven billion crisp new bank notes[2] and the minting of over thirteen billion shiny new quarters, dimes, nickels, and pennies.[3] Collectively, the notes and coins currently in circulation are worth over $1.85 *trillion*.[4] That's a lot of money.

Yet it might surprise the man or woman on the street to learn that the lion's share of our money did not roll off the presses at either the Bureau of Engraving and Printing or the U.S. Mint. In fact, over seventy-two percent of the U.S. money supply—roughly $11 trillion—consists not of physical notes or coins, but of demand, savings, time, and other deposits issued

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1 While to my knowledge there has never been a poll asking U.S. citizens this question, there has notably been a poll of Members of Parliament (MPs) in the U.K. Disconcertingly, seventy percent of the MPs polled believed that government has exclusive control over all money creation. *See* David Clarke, *Poll Shows 85% of MPs Don't Know Where Money Comes From*, POSITIVE MONEY (Oct. 27, 2017), https://positivemoney.org/2017/10/mp-poll/ [https://perma.cc/EC6W-PBBF].

2 *See* U.S. DEP'T OF THE TREASURY, BUREAU OF ENGRAVING AND PRINTING, ANNUAL PRODUCTION REPORTS (2020), https://www.moneyfactory.gov/resources/productionannual.html [https://perma.cc/CWZ8-8TT5].

3 *See* U.S. MINT, CIRCULATING COINS PRODUCTION (2019), https://tinyurl.com/y6geutgq [https://perma.cc/H8DW-XBDM].

4 *See Currency Component of M1*, FED. RES. BANK ST. LOUIS: FRED ECON. DATA, (June 2020), https://fred.stlouisfed.org/series/CURRSL [https://perma.cc/Q2Y8-H79F] (not seasonally adjusted).

by commercial banks.[5] Another eighteen percent—over $3 trillion—consists of shares in retail and institutional money market funds (MMFs). Viewed from this perspective, by far and away the largest source of money within the U.S. economy is monetary liabilities—contractually enforceable promises—issued by private financial institutions.

Outsourcing something as important as money creation to the private sector is an inherently risky business.[6] Banks combine short-term, highly liquid deposit funding with investments in long-term, risky, and illiquid loans. This heavy reliance on short-term debt makes bank balance sheets extremely fragile and exposes them to destabilizing runs by depositors and other creditors.[7] Many MMFs similarly combine the issuance of short-term, highly liquid, fixed-value promises to shareholders with investments in potentially risky and illiquid debt instruments.[8] As vividly illustrated during the global financial crisis of 2007-09, when doubts arise about the value of these instruments, MMFs are vulnerable to the same type of destabilizing runs as conventional deposit-taking banks.[9] In theory, this

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5 *See Money Stock and Debt Measures* – H.6 Release, BOARD OF GOVERNORS OF THE FED. RES. SYS., (Sept. 2019), https://www.federalreserve.gov/releases/h6/ [https://perma.cc/EQK8-NLVH] (not seasonally adjusted) (including data for thrift institutions, but excluding central bank reserves).

6 For a more detailed description of this basic outsourcing arrangement, its potential normative implications, and other possible options, see generally Robert C. Hockett & Saule T. Omarova, *The Finance Franchise*, 102 CORNELL L. REV. 1143, 1150–65 (2017) and MORGAN RICKS, THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION (2016).

7 *See generally* Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983) (describing how the credit, liquidity, and maturity mismatches on bank balance sheets can result in destabilizing runs); Douglas W. Diamond & Raghuram G. Rajan, *Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking*, 109 J. POL. ECON. 287 (2001) (describing how the fragility of bank balance sheets enables them to provide valuable financial services to both depositors and borrowers). For a recent survey of the literature on bank runs, see generally Franklin Allen, Elena Carletti, Itay Goldstein, & Agnese Leonello, *Moral Hazard and Government Guarantees in the Banking Industry*, 1 J. FIN. REG. 30 (2015). For a description of how banks can be vulnerable to runs by short-term creditors other than depositors, see generally Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J. FIN. ECON. 425 (2012).

8 Before the global financial crisis, MMFs almost universally combined short-term, liquid, fixed-value liabilities with investments in (potentially risky and illiquid) financial instruments. As described in greater detail in subpart II.B, post-crisis regulatory reforms have split the market into "government," "institutional prime," and "retail" MMFs, each with somewhat different liability and asset profiles.

9 The day after the failure of Lehman Brothers in September 2008, the net asset value (NAV) of the $65 billion Reserve Primary Fund fell to $0.97, triggering a shareholder run. While the Reserve Primary Fund held approximately $785 million in commercial paper issued by Lehman Brothers, the panic quickly spread

vulnerability severely undermines the credibility of the promises that banks and MMFs make to the holders of their monetary liabilities.

So why do we trust banks and MMFs with the vast majority of our hard-earned money? The answer is deeply rooted in the unique and highly sophisticated legal treatment of these institutions. In sharp contrast with almost all other forms of commercial enterprise, the Federal Reserve System—America's central bank—is authorized by statute to provide emergency loans and other forms of assistance to banks in financial distress.[10] Banks and their depositors also benefit from a deposit guarantee scheme administered by the Federal Deposit Insurance Corporation (FDIC),[11] along with a special bankruptcy—or "resolution"—regime designed to ensure that banks can continue to honor their promises to depositors even in the event of their failure.[12] In exchange for these special privileges, banks are then subject to comprehensive prudential regulation and supervision designed to minimize both the probability of their failure and its potential impact on creditors, other financial institutions, and the wider financial system.[13] This regulatory framework thus transforms otherwise risky bank deposits into what are often described as "safe" assets.[14] Put somewhat

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to MMFs with little or no exposure to Lehman, with so-called "prime" MMFs in particular experiencing net redemptions of 14%. *See Fact Sheet: Reforming Money Market Funds*, SEC (June 5, 2013), https://www.sec.gov/opa/Article/press-release-2013-101—-related-materials.html [https://perma.cc/GJ27-TZ38].

10 *See* Federal Reserve Act, Pub. L. No. 63-43, § 10(b), 38 Stat. 260–61 (1913) (codified as amended at 12 U.S.C. § 347b(b) (2018)); id. at § 14, 38 Stat. 264 (codified as amended at 12 U.S.C. 348(a), 353–59 (2018)). See subpart II.A for a more detailed description of the statutory and institutional framework through which this financial assistance is provided.

11 *See Understanding Deposit Insurance*, FDIC, https://www.fdic.gov/deposit/deposits/ [https://perma.cc/ZZJ6-89AH] (last visited Mar. 7, 2020). See subpart II.A for a more detailed description of the FDIC's deposit guarantee scheme.

12 For a detailed overview of the FDIC's special resolution regime for banks, see MICHAEL S. BARR, Howell Jackson, & Margaret Tahyar, FINANCIAL REGULATION: LAW AND POLICY 961–984 (2018). The basic mechanics of this regime are also described in subpart II.A.

13 For a detailed description of this prudential regulation and supervision, see JOHN ARMOUR ET AL., PRINCIPLES OF FINANCIAL REGULATION 275–339 (2016). *See also* BARR ET AL., *supra* note 12, at chapters 2.4-2.7, 8.2.

14 *See* Anna Gelpern & Erik F. Gerding, *Inside Safe Assets*, 33 YALE J. ON REG. 363, 387–404 (2016) (describing the role of law in manufacturing safe assets). For a general discussion of safe assets, see Gary Gorton, Stefan Lewellen, & Andrew Metrick, *The Safe-Asset Share*, 102 AM. ECON. REV. 101 (2012) and Markus Brunnermeier & Valentin Haddad, *Safe Assets*, FED. RES. BANK N.Y. (2014), https://www.newyorkfed.org/medialibrary/media/aboutthefed/pdf/FAR_Oct2014.pdf [https://perma.cc/3MJ8-MY3E].

more prosaically, bank *regulation* is why we think of bank deposits as, fundamentally, *good money*.

Regulation also plays an important role in strengthening the credibility of an MMF's promise to its shareholders to redeem their shares at a stable net asset value (NAV) on demand. As a threshold matter, MMFs are subject to tight portfolio restrictions that limit their ability to invest in many of the most risky debt instruments.[15] They are also required to maintain a stock of highly liquid assets for the purpose of honoring shareholder redemption requests.[16] And perhaps most importantly, MMFs benefit from preferential regulatory treatment—amortized cost accounting and the so-called "penny rounding" rule—that enables them to issue and redeem shares at a fixed price even when the value of their outstanding liabilities technically exceeds the NAV of their investments.[17] Much like bank regulation, this unique regulatory framework transforms what would otherwise be potentially volatile MMF shares into relatively safe monetary liabilities—in short, good money.

This is not to suggest that the regulatory frameworks governing banks and MMFs are somehow perfect. Far from it. The global financial crisis has rightly reignited important debates about the optimal design of bank capital, liquidity, deposit insurance, and resolution frameworks;[18] the function, institutional design, and regulation of MMFs;[19] and, more broadly,

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15 *See* 17 C.F.R. § 270.2a–7 (2020) (as amended). The regulatory framework governing MMFs is described in greater detail in subpart II.B.

16 *Id.*

17 *Id.*

18 For a small sampling of the large and growing body of literature on bank capital requirements, see generally ANAT ADMATI & MARTIN HELLWIG, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT (rev. ed. 2014); Simon Firestone, Amy Lorenc, & Ben Ranish, *An Empirical Economic Assessment of the Costs and Benefits of Bank Capital in the United States*, 101 FED. RES. BANK ST. LOUIS REV. 203 (2019); and David Miles, Jing Yang, & Gilberto Marcheggiano , *Optimal Bank Capital*, 123 ECON. J. 1 (2013). For recent literature on bank liquidity rules, see generally Michael R. King, *The Basel III Net Stable Funding Ratio and Bank Net Interest Margins*, 37 J. BANKING & FIN. 4144 (2013) and Jill Cetina & Katherine Gleason, *The Difficult Business of Measuring Banks' Liquidity: Understanding the Liquidity Coverage Ratio*, (Office of Fin. Research, Working Paper No. 15–20, 2015). For recent literature on the design of bank resolution frameworks, see generally John Armour, *Making Bank Resolution Credible*, *in* THE OXFORD HANDBOOK OF FINANCIAL REGULATION (Niamh Moloney et al. eds., 2015); Jeffrey N. Gordon & Wolf-Georg Ringe, *Bank Resolution in the European Banking Union: A Transatlantic Perspective on What it Would Take*, 115 COLUM. L. REV. 1297 (2015); and Wolf-Georg Ringe, *Bank Bail-in Between Liquidity and Solvency*, 92 AM. BANKR. L. J. 299 (2018).

19 *See generally* Jeffrey N. Gordon & Christopher M. Gandia, *Money Market Funds Run Risk: Will Floating Net Asset Value Fix the Problem?*, 2014 COLUM. BUS. L. REV. 313 (2014) (examining the structure of MMFs, the sources of potential

the socially desirable perimeter of the financial safety net.[20] Nevertheless, these regulatory frameworks play a pivotal role in bolstering the credibility of these institutions' monetary commitments—especially in volatile and uncertain states of the world where other types of commercial enterprise would quickly wither and fold. In so doing, these regulatory frameworks give banks and MMFs an enormous comparative advantage in the issuance of private money.[21]

Despite this advantage, recent years have witnessed an explosion in the number and variety of financial institutions seeking to issue private monetary liabilities. These institutions include the issuers of so-called "stablecoins": cryptocurrencies backed by everyone from J.P. Morgan,[22] to rap stars,[23] to social media platforms such as Facebook.[24] They also include more established peer-to-peer (P2P) payment platforms such as PayPal, AliPay, and TransferWise.[25] These platforms have evolved to perform many of the same core functions as conventional deposit-taking banks: enabling customers to deposit, hold, transfer, and withdraw funds on demand. As of September 2019, for example, PayPal had over 277 million active user

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instability, and various post-crisis proposals for reform); Jonathan R. Macey, *Reducing Systemic Risk: The Role of Money Market Mutual Funds as Substitutes for Federally Insured Bank Deposits* (Yale Law Sch. John M. Olin Ctr. for Studies in Law Econ. & Pub. Policy, Research Paper No. 422, 2011) (arguing that post-crisis reforms targeting MMFs would create, rather than reduce, systemic risk).

20 *See, e.g.*, Dan Awrey, *The Puzzling Divergence of the Lender of Last Resort Regimes in the US and UK*, 45 J. CORP. L. (forthcoming year) (comparing the design of lender of last resort regimes in the U.S. and U.K. and how these regimes changed in the wake of the financial crisis); Kathryn Judge, *The First Year: The Role of a Modern Lender of Last Resort*, 116 COLUM. L. REV. 843 (2016) (evaluating the effectiveness of the Federal Reserve's response to the financial crisis); RICKS, *supra* note 6.

21 Indeed, there is a strong argument that these regulatory frameworks transform the private monetary liabilities of these institutions into *public* (or at least quasi-public) money. *See* Hockett & Omarova, *supra* note 6; RICKS, *supra* note 6; Gelpern & Gerding, *supra* note 14.

22 *See* Press Release, J.P. Morgan, J.P. Morgan Creates Digital Coin for Payments (Feb. 14, 2019), https://www.jpmorgan.com/global/news/digital-coin-payments [https://perma.cc/U7VX-49ME].

23 Perhaps the most linguistically pleasing being "Akoin," a stable coin promoted by rapper Akon. *See* AKOIN, https://www.akoin.io/ [https://perma.cc/5RJ2-6B8B] (last visited June 28, 2020).

24 *See Libra White Paper*, LIBRA ASS'N (June 2019), https://libra.org/en-US/wp-content/uploads/sites/23/2019/06/LibraWhitePaper_en_US.pdf [https://perma.cc/WDS8-G5QX]; *Libra White Paper v.2*, LIBRA ASS'N (Apr. 2020), https://libra.org/en-US/wp-content/uploads/sites/23/2020/04/Libra_WhitePaperV2_April2020.pdf [https://perma.cc/KH6J-3QDY].

25 For a more detailed taxonomy of these platforms, see Dan Awrey & Kristin van Zwieten, *Mapping the Shadow Payment System* 12–22 (SWIFT Institute, Working Paper No. 2019–001, 2019).

accounts that collectively held over $24 billion in idle customer funds.[26] While this may seem like a drop in the bucket when compared with the aggregate U.S. money supply, it also represents the effective *doubling* of PayPal's monetary liabilities in just over three years.[27]

The defining feature of this new breed of monetary institutions is that they issue monetary liabilities outside the perimeter of conventional bank and MMF regulation. As a result, the holders of these liabilities—their customers—do not benefit from the lender of last resort facilities, deposit guarantee schemes, or special resolution regimes available to banks and, by extension, their depositors. Nor do they benefit from the tight portfolio restrictions, special accounting treatment, or other advantages enjoyed by MMFs. This raises a trillion-dollar question: if this new breed of monetary institutions does not enjoy the unique legal privileges of banks and MMFs, how credible are the promises they make to their customers? Can they really be viewed as issuing not just monetary liabilities—but *good* money?

Intuitively, we would expect the answer to this question to hinge on the regulatory frameworks that govern these new monetary institutions. In the United States, most of these institutions are currently subject to state-level regulation targeting so-called "money services businesses" (MSBs). Yet despite the meteoric rise of institutions such as PayPal—to say nothing of the recent media frenzy surrounding Facebook's Libra—scholars and policymakers have thus far paid remarkably little attention to what these regulatory frameworks actually say, how they work, or whether they provide the customers of these institutions with sufficient legal protection.[28] This Article reports the findings of the first comprehensive survey of the regulatory frameworks governing MSBs across all 50 states.

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26 *See* Paypal Holding, Inc., Quarterly Report (Form 10-Q) 4 (Oct. 24, 2019), https://investor.paypal-corp.com/static-files/933504bb-f2ad-42c9-a47b-378796c14882 [https://perma.cc/8UUM-MD5F] (disclosing "[f]unds payable and amounts due to customers"). As described in greater detail in subpart III.C, the accounting treatment of these liabilities means that we can consider them as constituting, in effect, "idle" balances.

27 *See* PayPal's funds payable and amounts due to customers as of September 30, 2019 versus the same figure disclosed in the previous quarter. *Compare id.*, *with* Paypal Holdings, Inc., Quarterly Report (Form 10-Q) 2 (July 25, 2019), https://investor.paypal-corp.com/static-files/dc2b4cc6-f412-4df7-bb8f-f588119ffc47 [https://perma.cc/HR3U-5L6N].

28 Indeed, arguably the most detailed previous treatment of these regulatory frameworks simply observes that they exist, without examining their substance, effectiveness, or how they differ across states. *See* Ronald J. Mann, *Regulating Internet Payment Intermediaries*, 82 TEX. L. REV. 681, 704–06 (2004).

Between the crosshairs of this survey are the core prudential mechanisms that these frameworks employ to reduce the probability of an MSB's bankruptcy or default and to protect customers in the event that an MSB is unable to honor its contractual commitments. These mechanisms typically include minimum net worth requirements, security requirements, and restrictions on the permissible use of customer funds.

The findings of this survey are alarming.[29] First, the minimum net worth and security requirements imposed by these regulatory frameworks are often miniscule when compared with the outstanding monetary liabilities of the largest MSBs. Second, while these regulatory frameworks typically contemplate restrictions on the permissible use of customer funds, these restrictions often explicitly permit investments in a wide range of risky financial instruments including corporate bonds, mortgage-backed securities, publicly traded shares, and even opaque and illiquid intra-group debt. Third, these frameworks often do not require that permissible investments be held in trust for the benefit of customers—thus potentially forcing customers to compete with an MSB's other unsecured creditors in the event that it is forced into bankruptcy. Perhaps even more problematically, these regulatory frameworks vary significantly from state to state: with the result that a customer in Alabama may be entitled to fundamentally different legal protections from one in Wyoming. Collectively, the fragmentation, heterogeneity, and permissiveness of these frameworks undermines the credibility of an MSB's monetary commitments—especially during periods of institutional, market, or broader systemic distress. Put bluntly: these institutions are issuing *bad money*.

The question thus becomes what, if anything, policymakers should do about the problem of bad money. One option is simply to shut it down: making it illegal to issue money outside the regulated banking system and, thereby, forcing these new monetary institutions to obtain conventional banking licenses. However, while this option may possess some intuitive appeal, it nevertheless presents a host of thorny legal and practical challenges. It would also potentially undermine competition and innovation in an industry already characterized by significant barriers to entry. A second option is to import specific mechanisms from the existing regulatory frameworks governing commercial banks. The Conference of State Banking

29 See Appendix A for a more detailed state-by-state summary of the results of this survey.

Supervisors (CSBS), for example, has recently floated possible amendments to its model state MSB law that borrow heavily from post-crisis reforms to bank capital and liquidity regulation.[30] The challenge presented by this option is ensuring that mechanisms designed to address the risks encountered within a specific legal and institutional environment will perform equally well when placed in a different environment.

This Article proposes a fundamentally different approach. At the heart of this approach are two key insights. First, this is not the first time in American history that we have encountered the problem of bad money. In fact, the United States experienced a similar explosion in the number and variety of monetary institutions—combined with fragmented and heterogeneous regulation—during the so-called "free banking" era between 1836 and 1863.[31] This experience spurred Congress to adopt the National Banking Act, create the National Banking System, and establish the Office of the Comptroller of the Currency (OCC) in order to promote the development of a single national currency.[32] Second, from an institutional perspective, PayPal, the Libra Network, and other new monetary institutions typically bear a far closer resemblance to MMFs than conventional-deposit taking banks. The regulatory frameworks that govern MMFs—including tight portfolio restrictions and a prohibition against financial indebtedness—thus provide a useful starting point for designing a regulatory framework that effectively addresses the risks posed by the new bad money. Combining these two observations, this Article lays out a blueprint for a National Money Act designed to strengthen and harmonize the regulatory frameworks governing these new monetary institutions.

This Article proceeds as follows. Part I provides a brief history of the problem of bad money in the United States, looking specifically at the period between independence and the

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30 *See Comments: MSB Model Law*, CSBS (Oct. 1, 2019), https://www.csbs.org/msblawcomments [https://perma.cc/S2PB-GEW9]. The CSBS proposals are described in greater detail in subpart III.B.

31 See subpart I.A for a more detailed description of the free banking era. In a recent article, Professor Robert Hockett draws a similar historical comparison between the free banking era and the current market environment for so-called "crypto-currencies." *See* Robert C. Hockett, *Money's Past Is Fintech's Future: Wildcat Crypto, the Digital Dollar, and Citizen Central Banking*, 2 STANFORD J. OF BLOCKCHAIN L. & POL'Y 4–6 (2019). Beyond this threshold similarity, however, the two articles focus on different types of financial institutions and, partially for this reason, advocate for different policy responses.

32 See subpart I.B for a more detailed description of the National Banking Act, National Banking System, and the OCC.

creation of the Federal Reserve System in 1913. Part II describes how the sophisticated regulatory frameworks governing banks and MMFs have evolved to address this problem: thereby transforming the monetary liabilities of these institutions into good money. Part III then chronicles the recent explosion of new financial institutions seeking to issue monetary liabilities outside the perimeter of conventional bank and MMF regulation. It also reports the findings of a detailed survey of the key prudential mechanisms imposed under the state-level MSB laws that currently govern many of these institutions. This survey finds that, unlike bank and MMF regulation, the regulatory frameworks governing MSBs demonstrably fail to transform the monetary liabilities of these institutions into good money. Part IV concludes by exploring how policymakers might address the risks posed by the new bad money: arguing in favor of a federal regulatory response that is specifically tailored to the institutional characteristics and business models of this new breed of monetary institutions.

I
A BRIEF HISTORY OF BAD MONEY

Few problems would be more familiar to our ancestors than the problem of bad money. In her magisterial history, *Making Money*, Professor Christine Desan traces the evolution of money in England from gold and silver coins, to paper bank notes, to the sophisticated bank-based system of money and payments that it would eventually export to the rest of the world and that—for better or worse—survives largely intact to this very day.[33] Two themes stand out in Desan's origin story. The first is that the emergence, development, decay, and reimagining of our monetary institutions are part of a complex, iterative, and experimental process that, in the case of England, has spanned well over a millennium.[34] The second is the importance of both public and private *law* as essential tools in this process: as the foundations of good money.[35]

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33 *See* CHRISTINE A. DESAN, MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM 1–22 (2015).

34 While there are several ways one might measure this timeframe, the period between the monetary reforms of King Edgar the Peaceful (973 A.D.), which established a uniform currency across England, and the present day suggest that this process has been underway for *at least* a millennium.

35 DESAN, *supra* note 33. For a more broadly articulated view on the role of law in creating money and other forms of capital, see KATHARINA PISTOR, THE CODE OF CAPITAL: HOW THE LAW CREATES WEALTH AND INEQUALITY 87–91, 101–07 (2019).

A. The Free Banking Era

Perhaps nowhere has the problem of bad money been more obvious or pernicious than in the United States. The Founding Fathers were deeply divided over the role of the federal government in steering the economic, financial, and monetary affairs of the nation.[36] This division would greatly delay the creation of what many observers would today take for granted as valuable, if not necessarily essential, monetary institutions.[37] The first was a *central bank*. The creation of the First Bank of the United States in 1791 was one of the most hotly debated issues in the early Republic, pitting Federalists George Washington and Alexander Hamilton against Republicans Thomas Jefferson and James Madison. Despite playing an important role in quelling the Panic of 1792, the Republican-led Senate narrowly voted not to reauthorize the First Bank's charter when it expired in 1811.[38] Almost immediately, however, shifting political winds forced Congress to reconsider, leading to the creation of the Second Bank of the United States in 1816.[39] Yet within two decades, the Second Bank would become a casualty of the same dysfunctional political dynamics as its predecessor: suffering repeated and withering attacks by President Andrew Jackson before losing its quasi-public status upon the expiration of its federal charter in 1836.[40]

The other missing monetary institution was a single *national currency*. While the U.S. Mint began producing coins denominated in U.S. dollars in 1792, the vast majority of the

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36 *See generally* BRAY HAMMOND, BANKS AND POLITICS IN AMERICA FROM THE REVOLUTION TO THE CIVIL WAR 89–14 (1957) (describing the disagreements among the Founding Fathers over the role the federal government should play in the banking system).

37 As George Selgin and others have observed, while we today often take the existence (and importance) of central banks for granted, they are not the only institutional arrangements compatible with the issuance and circulation of sound money. Canada, for example, has historically enjoyed remarkable monetary stability despite not creating a fully-fledged central bank until 1934. *See* George Selgin, *There Was No Place Like Canada*, ALT-M (July 29, 2015), https://www.alt-m.org/2015/07/29/there-was-no-place-like-canada/ [https://perma.cc/V8ZT-Z8VW]; *see also* ROELIFF MORTON BRECKENRIDGE, THE CANADIAN BANKING SYSTEM: 1817–1890 (1895).

38 Technically, the Senate's vote to reauthorize the First Bank resulted in a tie, with the casting vote going to Republican Vice President George Clinton. *See* BRECKENRIDGE, *supra* note 37, at 197–216.

39 For a detailed discussion of the political dynamics leading to the establishment of the Second Bank, see generally Raymond Walters, Jr., *The Origins of the Second Bank of the United States*, 53 J. POL. ECON. 115 (1945); RALPH C. H. CATTERALL, THE SECOND BANK OF THE UNITED STATES (1903).

40 *See* HAMMOND, *supra* note 36, at 369–450 (describing the assault on the Second Bank and its eventual privatization).

nation's money supply nevertheless took the form of paper bank notes.[41] Following the expiration of the Second Bank's charter in 1836, responsibility for regulating the banks that issued these notes fell exclusively to the states. By this point, some states had already adopted relatively tough licensing and prudential regulatory requirements. New York, for example, passed legislation in 1829 requiring banks to contribute a small percentage of their capital to a state-managed fund created for the purpose of compensating the noteholders of failed banks.[42] In Massachusetts, the Suffolk Bank operated a private clearinghouse for notes issued by other New England banks.[43] In exchange for accepting the notes issued by these local and regional banks at face value, the Suffolk Bank required its members to maintain minimum deposits of gold and silver and subjected them to basic prudential supervision.[44] Many other states, meanwhile, adopted so-called "free banking" statutes that contemplated free entry into the business of banking, but then required banks to post government bonds as security against the issuance of new bank notes.[45]

There is some debate amongst scholars about whether the free banking era should be viewed as a triumph of free market capitalism or as a cautionary tale regarding the dangers of

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41 *See* John Thom Holdsworth, *Lessons of State Banking Before the Civil War*, 30 PROC. ACAD. POL. SCI. 23, 24 (1971).

42 For a more detailed description of this "safety fund system," see generally ROBERT E. CHADDOCK, THE SAFETY FUND BANKING SYSTEM IN NEW YORK, 1829–1866 (1910). While the safety fund system was originally designed to protect *all* creditors of a failed bank, the legislation was subsequently amended to limit protection to a bank's *noteholders*. Holdsworth, *supra* note 41, at 30–31.

43 For a more detailed description of the Suffolk Bank system, see generally GEORGE TRIVOLI, THE SUFFOLK BANK: STUDY OF A FREE-ENTERPRISE CLEARING SYSTEM (1979) and Charles W. Calomiris & Charles M. Kahn, *The Efficiency of Self-Regulated Payments Systems: Learning from the Suffolk System*, 28 J. MONEY CREDIT & BANKING 766 (1996).

44 David Whitney, for example, documents several cases where the Suffolk Bank intervened to warn member banks that they were extending too much credit or issuing too much debt. *See* D.R. WHITNEY, THE SUFFOLK BANK 35–38 (1878).

45 States adopting free banking statutes included Michigan (1837), Georgia (1838), New Jersey (1850), Illinois (1851), Ohio (1851), Connecticut (1852), Indiana (1852), Minnesota (1858), and Pennsylvania (1860). Hugh Rockoff, *The Free Banking Era: A Reexamination*, 6 J. MONEY CREDIT & BANKING 141, 150 (1974). While New York (1850) and Massachusetts (1851) also technically adopted free banking statutes, it seems inaccurate to include them in this category given the existence of other public and private regulatory frameworks within these states—e.g., the New York safety fund system and New England Suffolk banking system—that deviated from the free banking model. For a more detailed description of the key features of free banking statutes, see *id.* at 141, 145–49.

laissez faire monetary policy.[46] This Article does not seek to wade into this debate.[47] Nevertheless, there are several notable features of the free banking system that are relevant for the present enquiry and about which scholars on both sides of the debate wholly agree. The first is that the name "free banking" is fundamentally misleading. As referenced above, and described in greater detail below, banks in free banking states were often subject to costly regulatory constraints. The second is that the era was characterized by an explosion in the number and variety of privately issued bank notes. While there exists no definitive record, *Thompson's Bank Note Reporter*, for example, lists thousands of different species of private bank notes in circulation as of February 1846, issued by almost 700 state banks.[48] These notes typically took the form of perpetual, non-interest-bearing debt instruments that legally, if not always practically, entitled noteholders to redeem them on demand in exchange for gold or silver coins or other specie (see Figure 1). Importantly, while these bank notes were all *denominated* in U.S. dollars, their *value* in the hands of noteholders—that is, the amount of goods and services that these notes enabled them to purchase—often varied depending on a number of specific characteristics.

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46 *See* Rockoff, *supra* note 45 (arguing that instability was endemic to many free banking systems). *But see* Arthur J. Rolnick & Warren E. Weber, *The Causes of Free Bank Failures: A Detailed Examination*, 14 J. MONETARY ECON. 267 (1984) (arguing that free bank failures were attributable to falling asset prices); Arthur J. Rolnick & Warren E. Weber, *Free Banking, Wildcat Banking and Shinplasters*, 6 FED. RES. BANK MINNEAPOLIS Q. REV. 10, 10 (1982) (arguing that bank failures in free banking states were due to broader recessions); and Arthur J. Rolnick & Warren E. Weber, *New Evidence on the Free Banking Era*, 73 AM. ECON. REV. 1080 (1983) (arguing that empirical evidence regarding free bank failures is overstated). *See generally* Hugh Rockoff, *New Evidence on Free Banking in the United States*, 76 AM. ECON. REV. 866 (1985).

47 For a detailed comparative assessment of the successes and failures of various free banking regimes in different countries, see generally KEVIN DOWD, THE EXPERIENCE OF FREE BANKING (1992) (describing experiments in free banking in Australia, Canada, Columbia, France, Ireland, Scotland, Switzerland and the United States). *See also*, FREE BANKING (Lawrence H. White ed. 1993).

48 *See* THOMPSON'S BANK NOTE REP., Feb. 19, 1846, at 2–15 (this figure excludes banks listed as either "closed" or "fraud").

FIGURE 1
SAMPLE BANK NOTES FROM "FREE BANKING" ERA
(1836–1863)

The first characteristic was the physical distance between the holder of a bank note and the bank that originally issued it.[49] In a world dominated by a large number of relatively small

49 *See* Gary Gorton, *Pricing Free Bank Notes*, 44 J. MONETARY ECON. 33 (1999) (describing the relevant transportation costs and the impact of new technology—

and geographically dispersed banks, and without reliable and secure long distance communication networks, noteholders would need to actually visit these banks in person in order to redeem their notes. Accordingly, the farther the noteholder found herself from the issuing bank, the higher the cost of redeeming the notes, and the less valuable these notes were likely to be as a medium of exchange in her present location. Indeed, many banks—known as "wildcat banks"—built their business models around locating their offices in remote locations that made it difficult for noteholders to redeem their notes.[50]

Second, the value of a bank note would understandably depend on public perceptions of the creditworthiness of the issuing bank. Specifically, while notes issued by fundamentally solvent banks would trade at or very near their face value, the notes of weaker banks would often trade at a steep discount.[51] This, in turn, points to the important role played by publications such as *Thompson's Bank Note Reporter*, which published a monthly list of banks and their notes—identifying which banks were "broke," "closing" or "closed," or that had been the subject of allegations of "fraud" (see Figure 2).[52] In effect, publications like *Thompson's* were necessary in order to help consumers and merchants differentiate between good and bad bank notes, and thus to determine the value of the money in their pockets.

Finally, the value of bank notes depended on the strength of the regulatory frameworks that governed note issuing banks. Notes issued by banks in New York, or that were members of the Suffolk Banking system, for example, tended to change hands closer to face value than those of banks located in states where the regulatory regimes offered noteholders lower levels of protection against issuer default.[53] Even amongst free banking

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i.e., railroads—on these costs and, correspondingly, on the discounts applied to bank notes).

50 *See* Rockoff, *supra* note 45, at 141–42 (describing the defining features of wildcat banks).

51 *See* Gorton, *supra* note 49, at 47–50. *See generally* Matthew Jaremski, *Bank-Specific Default Risk in the Pricing of Bank Note Discounts*, 71 J. ECON. HIST. 950 (2011) (reporting empirical findings of sensitivity to idiosyncratic credit risk in the secondary market for bank notes).

52 Other similar publications included *Van Court's Counterfeit Detector* and *Bank Note List*. Gorton, *supra* note 49, at 41. As Gary Gorton has observed, it also helps explain the emergence of professional note brokers who served as middlemen in the market for bank notes. *Id.* at 39.

53 Rockoff, *supra* note 45, at 144 (describing discounts on bank notes on a state-by-state basis); Gorton, *supra* note 49, at 42–43, 46 (same). While noteholders in New York suffered significant losses in the late 1830s, losses were reduced

states, the value of bank notes could differ on the basis of subtle but important differences between the relevant requirements to post government bonds as security against the issuance of new bank notes. Economic historian Hugh Rokoff, for example, has documented how lax bond security requirements in states like Michigan, Indiana, and Minnesota were often associated with higher losses for noteholders.[54] In at least some cases, the expectation that noteholders were more likely to suffer losses appears to have then been reflected in the discounts applied to these notes relative to those applied to notes issued by banks in other states.[55]

to close to zero following changes to the safety fund system designed to provide stronger protections to noteholders. *See* Gerald P. Dwyer, Jr., *Wildcat Banking, Banking Panics, and Free Banking in the United States*, FED. RES. BANK ATLANTA ECON. REV., Dec. 1996, at 1, 7.

54 Rockoff, *supra* note 45, at 145–47, 150 (describing differences in state-level bond security requirements, how these requirements may have incentivized wildcat banking and other practices, and state-level losses to noteholders).

55 Rockoff, *supra* note 45, at 144 (describing discounts on bank notes on a state-by-state basis); Gorton, *supra* note 49, at 42–43, 46 (same).

FIGURE 2
EXTRACT FROM *THOMPSON'S BANK NOTE REPORTER*
(FEBRUARY 1846)


THOMPSON'S REPORTER.

INDEX.

MAINE.

NEW-HAMPSHIRE.

Casco Bank, Portland, do
[Eliphalet Greeley, Pres., John Chute, Cash.]
B's, altered from the broken Citiz. Bk. Augusta.
B's, altered from some fraudulent institution.
Central Bank, Hallowell, (n.)
Citizens' Bank, Augusta. (fraud)
City Bank, Portland, (Closed)
Commercial Bank, Bath,
[J. Robinson, Pres., Thos. Agry, Cash.]
Cumberland, Bank of, Portland, do
[Wm. Moulton, Pres., Samuel Small, Cash.]
B's, viz, a ship under full sail; the head of Jackson on the right margin, and that of Van Buren on the left—well done.

This drives home a stark reality: in a world characterized by an almost dizzying array of different types of money—and where the value of this money depended on geography, technology, the creditworthiness of individual banks, and the regulatory frameworks that governed them—noteholders would have been required to spend significant time and energy conducting due diligence to determine the quality of a bank's monetary liabilities. While our ancestors might not have thought about it precisely in these terms, this due diligence was necessitated by

the existence of bank notes of variable quality in the marketplace and the resulting imperative of distinguishing between good and bad money.

B. The National Banking System

The free banking era did not end in a blaze of financial instability. Instead, its demise came at the hands of President Lincoln and his plans for reconstruction in the aftermath of the Civil War. Specifically, it was the adoption of the National Banking Act of 1863[56] that signaled the beginning of the end for this system of privately issued state bank notes.[57] The principal objective of the National Bank Act and subsequent legislation implementing what came to be known as the National Banking System was to substitute private bank notes with a national currency "licensed, manufactured, and guaranteed by the federal government."[58] At the heart of this new system were national banks, licensed and supervised by the newly created Office of the Comptroller of the Currency (OCC). The National Banking Act permitted these national banks to issue notes backed by the full faith and credit of the United State government,[59] while subsequent legislation imposed a ten percent tax on notes issued by existing state and local banks.[60] In exchange, national banks were subject to strict regulation, including limits on their ability to extend loans to the public.[61] The National Bank Act thus effectively unbundled the activities of bank lending and note issuance: with state and local banks making the majority of the loans, and national banks issuing the notes that served as the nation's currency.[62]

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56 National Banking Act of 1863, ch. 58, 12 Stat. 665 [hereinafter National Banking Act].

57 For a detailed history of the composition of the U.S. money supply during the relevant period, see generally MILTON FRIEDMAN & ANNA JACOBSON SCHWARTZ, A MONETARY HISTORY OF THE UNITED STATES 1867–1960 (rev. ed. 1971).

58 Calomiris & Kahn, *supra* note 43, at 780.

59 National Banking Act, *supra* note 56, § 4.

60 For a contemporaneous discussion of the impact of the establishment of the National Banking System, see SIMON NEWCOMB, A CRITICAL EXAMINATION OF OUR FINANCIAL POLICY DURING THE SOUTHERN REBELLION 199–222 (1865). *See also* FRIEDMAN & SCHWARTZ, *supra* note 57, at 18–19.

61 National Banking Act, *supra* note 56 (amended 1865). An earlier two percent tax had proven insufficient to dissuade state and local banks from continuing to issue bank notes.

62 Calomiris & Kahn, *supra* note 43 at 780. Henceforth, the principal monetary liabilities of these state and local banks took the form of checking accounts, with private clearing and settlement systems emerging to facilitate this form of payment instrument. *Id.*

The creation of the National Banking System was an important first step in establishing a national currency. Nevertheless, it fell far short of building the type of solid foundations necessary for the emergence of good money. Specifically, the peculiar structure of the National Banking System made it extremely vulnerable to bouts of pronounced instability. The system envisioned a three-tiered structure: with central reserve city—or "money center"—banks in New York (and later Chicago and St. Louis) at the apex, followed by "reserve city" banks in other major metropolitan areas, and then a large number of relatively small "country" banks. Importantly, money center, reserve city, and country banks were all required to set aside reserves against their deposit liabilities and, originally, their notes in circulation.[63] Reserve city and country banks were then permitted to hold a proportion of these reserves in the form of deposits with banks higher up in the system.[64] The resulting "pyramiding" meant that reserves tended to gravitate toward New York, where money center banks would, amongst other things, use them to finance the extension of margin loans to investors purchasing stocks, bonds, and other securities traded on the New York and other stock exchanges.[65]

The instability of the National Banking System was a function of two principal dynamics.[66] First, many parts of the United States reliant on agriculture experienced predictable spikes in loan and currency demand during the spring and fall planting and harvesting seasons. This localized seasonal demand would often force reserve city and country banks to call in loans or withdraw deposits from other banks, thereby amplifying and transmitting the impact of these spikes in demand throughout the system and potentially triggering more wide-

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63 For a more detailed description of these requirements, see Bruce Champ, *The National Banking System: A Brief History* 8–9 (Fed. Reserve Bank of Cleveland, Working Paper No. 07-23, 2007).

64 Reserve city banks could hold up to fifty percent of their reserves as demand deposits in money center banks. Country banks, meanwhile, could hold up to sixty percent of their reserves as deposits in either reserve city or money center banks. At the time, holding reserves in the form of demand deposits was an attractive option: while vault cash did not bear any interest, banks could earn as much as two percent on reserves held in the form of demand deposits.

65 *See* O. M. W. SPRAGUE, NAT'L MONETARY COMM'N, HISTORY OF CRISES UNDER THE NATIONAL BANKING SYSTEM 5–35 (1910) (describing reserve pyramiding under the National Banking System).

66 The impact of these dynamics was felt all the more strongly due to both the strictures of the National Banking System and the prevalence of "unit" banking in the United States. *See* Selgin, *supra* note 37.

spread banking crises.[67] Second, where these demand spikes reached money center banks in New York, they could force banks to call in their margin loans to investors, necessitating the sale of borrowed securities and putting downward pressure on stock prices.[68]

The absence of a central bank forced private actors to find innovative ways of addressing the frequent panics that gripped the National Banking System throughout the latter half of the nineteenth century. One of the most important innovations was the clearinghouse.[69] Clearinghouses were private firms, owned by member banks, that were established to facilitate interbank clearing and settlement of bank notes, checks, drafts, bills of exchange, and other payment instruments. In order to protect themselves against default, clearinghouses established strict criteria for the admission of new members. They also subjected members to basic capital and liquidity requirements, imposed financial reporting and audit obligations, and placed restrictions on the interest rates that members could charge their customers. The first clearinghouse was established in New York in 1853.[70] Within a few short years, clearinghouses had also sprung up in Boston (1856), Philadelphia (1858), Baltimore (1858), and Chicago (1865).[71]

Clearinghouses came to play a particularly important role in the thick of incipient banking panics.[72] In response to a panic, clearinghouses would authorize the issuance of loan certificates that were designed to serve as a form of emergency

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67 *Id.; see also* Asaf Bernstein, Eric Hughson, & Marc D.Weidenmier, *Identifying the Effects of a Lender of Last Resort on Financial Markets: Lessons from the Founding of the Fed*, 98 J. FIN. ECON. 40, 42 (2010) (describing the drivers of demand during the fall and spring seasons). *See generally* Jeffrey A. Miron, *Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed*, 76 AM. ECON. REV. 125 (1986) (describing the relationship between seasonal demand spikes and financial panics).

68 *See* Bernstein et al., *supra* note 67; Miron, *supra* note 67.

69 *See* Richard H. Timberlake, Jr., *The Central Banking Role of Clearinghouse Associations*, 16 J. MONEY BANKING & CREDIT 1, 2 (1984).

70 *See* Gary Gorton, *Private Clearinghouses and the Origins of Central Banking*, 1984 FED. RES. BANK PHILA. BUS. REV. 3, 4.

71 *Id.* at 5. In addition to major banking and commercial centers, clearinghouses were also established in smaller cities and town across the United States. *Cf. id.* (explaining how "clearinghouses dotted the American banking landscape" by the 1880s").

72 For a detailed description of the crisis management function performed by nineteenth-century U.S. clearinghouses, see generally Gary Gorton, *Clearinghouses and the Origin of Central Banking in the United States*, 45 J. ECON. HIST. 277 (1985). *See generally* Timberlake, *supra* note 69, for a description of the functions and mechanics of clearinghouses.

reserve currency.[73] Member banks facing correlated demands from depositors could apply for these certificates, pledging their portfolio assets as collateral. Banks could then use the certificates to satisfy their obligations to other member banks, thereby freeing up hard currency for the purpose of honoring their commitments to depositors and other creditors. Other banks were willing to accept these certificates not only because they were backed by collateral but also, and perhaps more importantly, because they represented the *joint* obligations of clearinghouse members. Where a clearing member defaulted and the posted collateral was insufficient to cover its outstanding obligations, surviving members would thus be required to cover the residual losses in proportion to their capital in the clearinghouse.[74]

Initially, these loan certificates were only issued in large denominations and circulated exclusively amongst member banks. By the 1890s, however, clearinghouses had begun issuing small denomination certificates that eventually found their way into public circulation.[75] In effect, the issuance of these certificates enabled clearinghouses to expand the money supply during periods of financial instability, thus providing much needed liquidity to the banking system and preventing both widespread bank failures and disruptive contractions in the money supply.[76]

However, while clearinghouses played an important role in managing banking panics, they did little to address the underlying instability of the National Banking System. Indeed, in the 50 years following the establishment of the New York clearinghouse, the United States experienced no fewer than eight major banking crises: in 1857, 1861, 1873, 1884, 1890, 1893, 1896, and 1907.[77] At the same time, the tight entry restrictions,

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73 These certificates carried an interest charge and were typically issued at fixed maturities between one and three months. *Id.*

74 While defaulting banks were typically not permitted to fail during a panic, they were often expelled from the clearinghouse once the panic subsided. The threat of expulsion was thus viewed as a powerful enforcement mechanism. *See* Gorton, *supra* note 72, at 279.

75 During the Panic of 1893, for example, clearinghouses issued approximately $100 million in small denomination certificates (equivalent to approximately 2.5% of the money supply). During the Panic of 1907, this figure jumped to approximately $500 million (or 4.5% percent of the money supply). *See* Gorton, *supra* note 72, at 282.

76 *See* Timberlake, *supra* note 69, at 14. *See also* Gorton, *supra* note 72, at 280–81 (describing the use of loan certificates by clearinghouses).

77 *See* Charles W. Calomiris, Marc Flandreau, & Luc Laeven, *Political Foundations of the Lender of Last Resort: A Global Historical Narrative*, 28 J. FIN. INTERMEDIATION 48, 55 (2016).

onerous capital and liquidity requirements, and strict price controls that clearinghouses imposed on their members had a predictable hydraulic effect: spurring the emergence of new forms of financial intermediation just outside the perimeter of the clearinghouse system.[78]

C. The Creation of the Federal Reserve

It was the Panic of 1907, in which John Pierpont Morgan organized a private bailout of New York trust companies—financial institutions that competed with banks for deposits but operated outside the perimeter of the clearinghouse system[79]—that ultimately spurred Congress to reform the National Banking System. Congress's initial response to the panic was the Aldrich-Vreeland Act of 1908.[80] The Aldrich-Vreeland Act marked a turning point in American banking and monetary policy for a variety of reasons.[81] Most importantly for the present purposes, it called for the establishment of a National Monetary Commission (NMC) to study the U.S. banking system, compare it with the systems in the United Kingdom, Canada, and Continental Europe, and recommend proposals for reform.[82]

The NMC identified three principal defects in the structure of the U.S. banking system. First, at that time, the United States did not have a fully developed and well-functioning money market. As a result, there was no market mechanism by which the excess reserves of one bank could easily be redistributed to other banks in need of liquidity. Second, the highly fragmented U.S. banking system made it difficult to marshal

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78 *See* Hugh Rockoff, *It Is Always the Shadow Banks: The Regulatory Status of the Banks That Failed and Ignited America's Greatest Financial Panics*, *in* COPING WITH FINANCIAL CRISES: SOME LESSONS FROM ECONOMIC HISTORY 77, 79–80, 84–85, 100–01 (Hugh Rockoff & Isao Suto eds., 2018); *see also* ROBERT F. BRUNER & SEAN D. CARR, THE PANIC OF 1907: LESSONS LEARNED FROM THE MARKET'S PERFECT STORM 57–60 (2007).

79 *See* Rockoff, *supra* note 78, at 95–96; BRUNER & CARR, *supra* note 78, at 65–70 (describing the business of trust companies and their relationship with conventional deposit-taking banks and the New York clearinghouse).

80 Aldrich-Vreeland Act of 1908, 12 U.S.C. § 104 (repealed 1994).

81 Amongst other matters, the Act called for the creation of national currency associations that could issue emergency currency backed by both the federal government and the assets of member banks. Unlike clearinghouses, the issuance of this emergency currency was to be under the administration of the U.S. Treasury Secretary. *Id.* § 1.

82 The complete collection of the Commission's publications is available from the Federal Reserve Bank of St. Louis. *Publications of the National Monetary Commission Series*, FED. RES. FEDERAL RESERVE BANK OF ST. LOUIS, https://fraser.stlouisfed.org/series/1493 [https://perma.cc/X8BM-FWJR] (last visited June 6, 2020).

reserves in response to an incipient panic. Paul Warburg, an early advocate for the creation of the Federal Reserve, likened this system to providing each citizen with a few buckets of water instead of establishing a city fire department.[83] Third, and most importantly, the NMC observed that the U.S. money supply was particularly "inelastic."[84] This inelasticity was a function of the National Banking System which, as described above, required federally chartered banks to purchase government bonds as collateral against the issuance of new bank notes. During a panic, banks were unlikely to use their remaining reserves to purchase additional bonds, thereby limiting the ability of the banking system to expand the money supply in response to a crisis. Collectively, these defects rendered the U.S. banking system particularly vulnerable to bouts of paralyzing illiquidity and the resulting contractions in the supply of both money and credit. The NMC's findings would ultimately provide the blueprint for the Federal Reserve Act of 1913[85] and the creation of the Federal Reserve System.

The Preamble to the Federal Reserve Act specifically identifies Congress's ambition to "furnish an elastic currency" as one of the primary rationales for the creation of the Federal Reserve System.[86] The Act then gives the Federal Reserve two principal powers for the purpose of advancing this objective. First, pursuant to what is now Section 10B, the Act authorizes each of the regional federal reserve banks[87] to make short-term collateralized loans—known as "advances"—to commercial banks via their respective discount windows.[88] As originally drafted,

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83 *See* PAUL M. WARBURG, NAT'L MONETARY COMM'N, THE DISCOUNT SYSTEM IN EUROPE 33 (1910).

84 *Id.* at 31–41.

85 Federal Reserve Act 12 U.S.C. §§ 221–522 (2018) [hereinafter Federal Reserve Act].

86 *Id.* Preamble. That the Fed acknowledged this crisis management role from the outset is evident from its first annual report, which states that "its duty plainly is not to await emergencies but by anticipation, to do what it can to prevent them." *See* FED. RESERVE BD., FIRST ANNUAL REPORT OF THE FED. RESERVE BD. FOR THE PERIOD ENDING DEC. 31, 1914, at 17 (1915).

87 Peculiar amongst national central banks, the Federal Reserve System has a highly fragmented structure, with power split between a seven-member Federal Reserve Board and twelve regional reserve banks. For a more detailed description of this fragmented structure and its political origins, see PETER CONTI-BROWN, THE POWER AND INDEPENDENCE OF THE FEDERAL RESERVE 15–39 (2016).

88 Federal Reserve Act, § 10B; *see also id.* §§ 13(2), 13A. Discount windows enable central banks to extend short-term collateralized loans to banks and other eligible financial institutions, typically in order to meet short-term liquidity demands. Like all collateralized loans, discount window lending exposes central banks to fluctuations in the value of posted collateral and the prospect that the borrower might default on its obligations before the loan is repaid. In addition to

the Act only permitted regional reserve banks to make these advances against collateral consisting of "notes, drafts, and bills of exchange arising out of actual commercial transactions" that had been "issued or drawn for agricultural, industrial or commercial purposes."[89] Today, these advances need only be secured to the satisfaction of the relevant reserve bank.[90] Second, pursuant to Section 14, the Federal Reserve Board in Washington, D.C. is authorized to purchase or sell gold and U.S. treasury securities on the open market, along with any cable transfers, bankers' acceptances, or bills of exchange eligible for discounting under Section 10B.[91] Together, these two powers—discount window lending and open market operations—enable the Fed to provide financial support to the banking system during periods of institutional or broader systemic instability.

The founding of the Federal Reserve System had an almost immediate impact on the stability of the U.S. banking system—if not necessarily on the stability of individual banks. Recent empirical research by economists Asaf Bernstein, Eric Hughson, and Marc Weidenmier, for example, has found that the establishment of the Federal Reserve was followed by a significant decrease in the seasonal volatility of both interest rates and stock prices.[92] This suggests that the creation of the Fed successfully eliminated the destabilizing feedback loops between agricultural demand for loans and currency, the withdrawal of liquidity from the banking system, and highly

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charging interest on the loans, central banks will typically seek to manage these risks by applying a discount—hence the name—to the market value of posted collateral. *Regulatory Reform: Discount Window Lending*, BOARD OF GOVERNORS OF THE FED. RES. SYS., (June 2020), https://www.federalreserve.gov/regreform/discount-window.htm [https://perma.cc/DD9A-G9Z9].

89 Federal Reserve Act, § 13(2). The original text also prohibited the Fed from discounting any notes, drafts, or bills covering "merely investments or issued or drawn for the purpose of carrying or trading in stocks, bonds, or other investment securities." *Id.*

90 *Id.* § 10B. The current version of Section 10B then imposes a number of limitations on advances to "undercapitalized" or "critically undercapitalized" depositary institutions. *Id.* § 10B(b).

91 *Id.* § 14.

92 *See* Bernstein et al., *supra* note 67, at 40 (observing a decrease in interest rate and/or stock price volatility after the creation of the Federal Reserve); *see also* Gary Gorton & Andrew Metrick, *The Federal Reserve and Panic Prevention: The Roles of Financial Regulation and Lender of Last Resort*, 27 J. ECON. PERSP. 45, 47–50 (2013) (same); Christopher Hanes & Paul W. Rhode, *Harvests and Financial Crises in Gold Standard America*, 73 J. ECON. HIST. 201, 202–03 (2013) (same); A. Steven Holland & Mark Toma, *The Role of the Federal Reserve as 'Lender of Last Resort' and the Seasonal Fluctuation of Interest Rates*, 23 J. MONEY CREDIT & BANKING 659, 659–60 (1991) (same); Miron, *supra* note 67 (same).

correlated margin loan calls by money center banks in New York, Chicago, and St. Louis that had characterized the National Banking System. After almost 150 years, the United States had at long last established both a single national currency and a credible bulwark against financial instability. The goal of creating good money was finally within reach.

II
THE LEGAL FOUNDATIONS OF GOOD MONEY

In the century since the creation of the Federal Reserve, the United States has made several further strides toward the goal of creating good money. The most significant of these strides stem from the development of the unique and highly sophisticated regulatory frameworks governing commercial banks. These regulatory frameworks include four key mechanisms—lender of last resort facilities, deposit guarantee schemes, special resolution regimes, and prudential regulation and supervision—that together serve to enhance the credibility of a bank's fundamental promise to its depositors to hold, transfer, and withdraw deposited funds on demand. Importantly, the significant regulatory burdens imposed on deposit-taking banks have also spawned the emergence of new monetary institutions: the largest and most successful of which are known as money market funds or MMFs. MMFs, in turn, benefit from their own highly specialized regulatory framework designed to enhance the credibility of their commitments to redeem their investors' shares at a fixed NAV on demand. This section provides an overview of the regulatory frameworks governing both banks and MMFs. More importantly, it describes how these frameworks transform the otherwise risky financial claims issued by these institutions into the very bedrock of our monetary system.

A. Bank Regulation and Supervision

The rationale for modern bank regulation and supervision can be understood through the lens of bank *runs*.[93] The business of banking is based on leverage. Specifically, banks obtain the vast majority of their financing through the issuance of deposits and other short-term debt.[94] Banks then combine

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93 This is not to suggest that bank runs provide the justification for all bank regulation and supervision. Rather, bank runs provide a useful starting point for penetrating the complex morass of bank regulation and supervision today.

94 As of September 2019, for example, over seventy-seven percent of the financing obtained by banks and other depositary institutions insured by the

this heavy reliance on short-term financing with investments in longer-term, risky, and illiquid loans and other debt instruments. The mismatch created by this combination of short-term, highly liquid liabilities with longer-term, risky, and illiquid assets is what ultimately makes banks vulnerable to destabilizing runs by depositors and other short-term creditors.

The vulnerability of banks to destabilizing runs is typically framed in one of two ways. The first account, originally articulated by economists Douglas Diamond and Philip Dybvig, views runs as a coordination problem amongst a bank's dispersed depositors.[95] Pursuant to this account, each depositor's decision about whether to withdraw deposited funds is a function not only of their own idiosyncratic demand for these funds and evaluation of the bank's creditworthiness but also—and crucially—their subjective assessment of whether *other depositors* are likely withdraw their funds as well. Where depositors view other depositors as likely to withdraw, the expectation that the bank will not be able to sell its illiquid loans and other assets fast enough to fully repay all its depositors can drive a "first come, first served" dynamic that, *in extremis*, can force the bank into bankruptcy.

The second account views runs as a product of the realization by depositors and other short-term creditors that the claims they previously believed to represent reliable stores of nominal value—or "moneyness"[96]—are in fact sensitive to the revelation of new information about a bank's creditworthiness, the quality of its underlying assets, or other variables.[97] Pursuant to this second account, rather than investing the time

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FDIC took the form of demand deposits and other short-term debt. *See* FDIC, QUARTERLY BANK PROFILE: THIRD QUARTER 2019 (2019), https://www.fdic.gov/bank/analytical/qbp/2019sep/qbp.pdf#page=1 [https://perma.cc/7DA6-JHRV].

95 *See* Diamond & Dybvig, *supra* note 7, at 401 (discussing "risks which lead to a demand for liquidity" that can lead to bank runs). For a recent survey of the literature on the vulnerability of banks to depositor runs, see generally Allen et al., *supra* note 7.

96 *See* MILTON FRIEDMAN & ANNA J. SCHWARTZ, MONETARY STATISTICS OF THE UNITED STATES: ESTIMATES, SOURCES, METHODS 151–52 (1970) (utilizing the term "moneyness" in relation to assets that are viewed as a reliable store of nominal value); J. R. HICKS, VALUE AND CAPITAL: AN INQUIRY INTO SOME FUNDAMENTAL PRINCIPLES OF ECONOMIC THEORY 163 (2d ed. 1946) (same).

97 *See, e.g.*, Gorton & Metrick, supra note 7; GARY B. GORTON, SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007 (2010); Bengt Holmstrom, *Understanding the Role of Debt in the Financial System* (Bank for Int'l Settlements, Working Paper No. 479, 2015), https://www.bis.org/publ/work479.pdf [https://perma.cc/9P8E-3882]. The key difference between this account and that of Diamond and Dybvig is that it does not rely on the existence of coordination problems between short-term creditors as the principal driver of run-like behavior.

and energy necessary to incorporate this new information, depositors and other short-term creditors may simply prefer to shift their funds into less informationally sensitive substitutes—such as U.S. Treasury securities or cash—that, in effect, are viewed as possessing a higher degree of moneyness.

Bank regulation seeks to reduce the probability and impact of bank runs in two principal ways. First, as we have already seen, the Federal Reserve stands ready to provide financial assistance to banks through both its discount window and open market operations. These "lender of last resort"[98] facilities enable fundamentally solvent banks that are facing an incipient run to shift longer-term, less liquid assets to the Fed in exchange for more liquid assets—typically in the form of central bank reserves[99]—that can then be used by banks to pay their ongoing liabilities to depositors and other creditors.[100] In effect, these lender of last resort facilities serve to relax a bank's liquidity constraint: thus avoiding the fire sale of illiquid loans or other assets, and enabling banks to remain open for business under conditions where almost any other type of firm would be forced into bankruptcy.

The second mechanism that bank regulation employs to address the problem of bank runs is deposit insurance. The first federal deposit insurance program was introduced in the midst of the Great Depression pursuant to the Banking Act of 1933.[101] The Banking Act created the Federal Deposit Insur-

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98 The term "lender of last resort" was likely coined by Sir Francis Baring in 1797. FRANCIS BARING, OBSERVATIONS ON THE ESTABLISHMENT OF THE BANK OF ENGLAND AND ON THE PAPER CIRCULATION IN THE COUNTRY 22 (1797). For the foundational theoretical work on the role of central banks as lenders of last resort, see HENRY THORNTON, AN ENQUIRY INTO THE NATURE AND EFFECTS OF THE PAPER CREDIT OF GREAT BRITAIN 123–25 (F. A. Hayek, ed., 1939) and WALTER BAGEHOT, LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET (1873). For more recent work describing the post-crisis evolution of these facilities, see generally Awrey, *supra* note 20.

99 Central bank reserves represent short-term liabilities of the Federal Reserve to its member banks. Because the Federal Reserve System does not face a bankruptcy constraint, central bank reserves are generally viewed as the most credible form of credit money in the financial system.

100 In the case of discount window lending, this "shifting" is facilitated by way of a loan collateralized against a bank's (illiquid) assets. In the case of open market operations, it is facilitated by way of the sale of these assets to the central bank. While originally created for the purpose of providing banks with assistance during periods of financial distress, today open market operations are more commonly viewed as a monetary policy tool.

101 *See* Banking Act of 1933, Pub. L. No. 73–66, § 8, 48 Stat. 162 [hereinafter Banking Act of 1933]. As we have already seen, many states had previously experimented with forms of deposit insurance, like the New York "safety fund" system of the mid-nineteenth century. For a more detailed history of these state-level deposit guarantee schemes, see FDIC, *A Brief History of Deposit Insurance in*

ance Corporation (FDIC) and established a guarantee scheme that provided the depositors of failed banks with compensation of up to $2,500.[102] Today, the FDIC insures 100 percent of covered deposits up to a maximum of $250,000 per depositor per bank.[103] Importantly, the FDIC commits to compensate depositors of failed banks within an extremely short timeframe—typically in as little as one business day.[104] The FDIC thus effectively steps into the shoes of a failed bank: honoring its commitment to return depositors' money on demand. In order to make this commitment credible, this compensation is provided by a deposit insurance fund that, in the normal course, is financed by ex ante contributions from banks and other insured depositary institutions.[105] In theory, the existence of the FDIC's deposit insurance scheme thus reduces the incentives of depositors to engage in destabilizing runs.[106] More importantly for the present purposes, this insurance serves to insulate covered depositors from the risks of bank failure.

The same New Deal reforms that created the FDIC and introduced federal deposit insurance also established a special bankruptcy—or "resolution"—regime for failing banks.[107] Between 1865 and 1933, the standard bankruptcy practice was to treat the depositors of a failed bank in the same fashion as its other creditors.[108] Depositors would thus have to wait until the conclusion of any bankruptcy process before getting their money back.[109] This process would typically take several years.[110] Even then, where the eventual liquidation of a failed bank did not generate enough cash to fully repay its creditors,

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the United States (1998), https://www.fdic.gov/bank/historical/brief/brhist.pdf [https://perma.cc/7Y9D-4N9C].

102 Banking Act of 1933, § 8.

103 *See* Federal Deposit Insurance Act, Pub. L. No. 81–797, § 11, 64 Stat. 873 [hereinafter FDIA].

104 *See* FDIC, *FDIC Consumer News* (Dec. 22, 2014), https://www.fdic.gov/consumers/consumer/news/cnfall14/misconceptions.html [https://perma.cc/7HLX-FC8R].

105 *See* FDIA, § 7, 11(4).

106 *See* Diamond & Dybvig, *supra* note 7, at 413 (describing how deposit insurance eliminates coordination problems amongst depositors by rendering them indifferent to the effects of bank failure); Allen et al., *supra* note 7 (same).

107 Banking Act of 1933, § 8.

108 *See* FDIC, RESOLUTIONS HANDBOOK 24–25 (2014), https://www.fdic.gov/about/freedom/drr_handbook.pdf [https://perma.cc/K5DU-JDQV].

109 *Id.*

110 Between 1865 and 1933, the FDIC has estimated that this process took an average of six years. *Id.*

depositors would often only receive pennies on the dollar.[111] Understandably, this prospect only served to reinforce the incentives of depositors to run at the first sign of trouble.

The Banking Act of 1933 circumvented standard bankruptcy practice by mandating the appointment of the FDIC as the receiver for all national banks. Today, the FDIC is also the receiver for the state-chartered banks, thrifts, and other depository institutions for which it provides deposit insurance. In this capacity, the FDIC has a duty to maximize the value of the assets of a failed bank, whilst simultaneously minimizing any compensation that must be paid by the deposit insurance fund.[112] The FDIC has been given several powerful tools in pursuit of these objectives, including the ability to write-down a bank's liabilities, convert its outstanding debt into equity, repudiate its contracts, and transfer some or all of its assets to either a private sector purchaser or public sector bridge bank.[113] Armed with these tools, the expectation is that the FDIC will trigger the resolution process after the close of business on Friday, with the newly restructured or acquired bank then able to open its doors for business as usual on Monday morning. Accordingly, while the resolution process can unfold in a variety of different ways, the result in all cases is to insulate depositors from the economic consequences of bank failure.

Intuitively, we might expect the financial safety net provided by lender of last resort facilities, deposit insurance schemes, and special resolution regimes to reduce the incentives of depositors and other creditors to monitor bank risk-taking.[114] In theory, the resulting lack of market discipline can give bank shareholders and managers the scope to take socially excessive risks. Modern bank regulation seeks to ad-

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111 Between 1921 and 1930, the United States experienced over 1,200 bank failures. With respect to those failures, depositors of state-chartered banks were on average able to recover sixty two percent of their deposits. For national banks, the equivalent figure was fifty eight percent. *Id.*

112 *See* FDIA, § 11(d)(13)(E) (requiring the FDIC to maximize the net present value, or minimize any loss, from the sale of a failed bank's assets); 12 C.F.R. § 360.1 (requiring the FDIC to pursue the resolution option that would impose the lowest costs on the deposit insurance fund).

113 *See* FDIA, § 8, 11 (describing in full the FDIC's powers as receiver). In practice, most failed banks are sold via a process known as "purchase and assumption." *See* BARR ET AL., *supra* note 12, at 966–68 (describing the purchase and assumption process). For a more detailed examination of the development and evolution of special resolution regimes, see Armour, *supra* note 18.

114 *See* ARMOUR ET AL., *supra* note 13, at 370–90 (identifying various reasons—including the financial safety net—why bank depositors and other creditors have limited incentives to play an active role in bank governance).

dress this potential moral hazard problem in three principal ways. The first is liquidity regulation. The oldest and most ubiquitous form of liquidity regulation are reserve ratios designed to ensure that banks hold a sufficient stock of vault cash or central bank reserves to self-insure against potential runs—thereby minimizing their reliance on lender of last resort facilities.[115] More recently, these reserve ratios have been supplemented by more sophisticated mechanisms such the Basel III liquidity coverage ratio (LCR) designed to ensure that banks hold enough cash and other high-quality liquid assets to survive a hypothetical stress test scenario.[116]

The second is minimum capital requirements. These requirements demand that banks finance their operations using a minimum amount of retained earnings, common equity, and other capital instruments that are capable of absorbing losses without triggering bankruptcy: that is, while the bank is still a going concern.[117] At present, U.S. banks are subject to a minimum capital requirement of at least eight percent of their risk-weighted assets, subject to potential increase on the basis of a bank's idiosyncratic risk profile, systemic importance, prevailing macroeconomic conditions, and other factors.[118] As of June 2019, the average common equity tier one (CET1) capital ratio of U.S. banks was approximately twelve percent.[119] Whereas liquidity requirements reduce the temptation of bank shareholders and managers to operate with an insufficient stock of liquid assets, minimum capital requirements reduce the temptation to maximize bank leverage as a means of increasing a bank's return on equity.[120]

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115 The Federal Reserve's current reserve ratio requirements are published at https://www.federalreserve.gov/monetarypolicy/reservereq.htm [https://perma.cc/LUV2-Q5FX].

116 For a more detailed description of the rationale and design of the liquidity coverage ratio, see generally BASEL COMM. ON BANKING SUPERVISION, *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools* (2013), https://www.bis.org/publ/bcbs238.pdf [https://perma.cc/H9KR-7SF3].

117 For a detailed explanation of why common equity in particular is capable of absorbing losses while a bank is a going concern, see ADMATI & HELLWIG, *supra* note 18, at 81–99.

118 For a more detailed description of the various components of minimum capital requirements, see ARMOUR ET AL., *supra* note 13, at chapter 290–313 (describing the definition of capital and the basic requirements, along with various mandatory and discretionary capital buffers).

119 *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., FINANCIAL STABILITY REPORT 29 (2019), https://www.federalreserve.gov/publications/files/financial-stability-report-20191115.pdf [https://perma.cc/S3QV-QCQH].

120 This temptation arises from the fact that, for any given amount of revenue, increasing the amount of debt on a bank's balance sheet will mechanically increase its return on equity. A simple numerical example will illustrate this point.

Finally, in order to ensure compliance with capital, liquidity, and other regulatory requirements, banks are subject to intensive prudential supervision.[121] The basic building blocks of bank supervision include comprehensive reporting requirements, onsite examinations by supervisory personnel, and a composite rating process designed to evaluate the safety and soundness of individual institutions.[122] In the aftermath of the financial crisis, banks have also been subjected to periodic "stress testing" designed to evaluate the resilience of their balance sheets in the face of a hypothetical set of adverse financial and macroeconomic conditions.[123] The results of these stress tests are then fed back into the supervisory process, helping supervisors identify and address potential weaknesses in a bank's capital or liquidity positions. Where these stress tests reveal material weaknesses, banks may then be prohibited from making distributions to shareholders or required to raise additional capital. The net effect of the supervisory and stress testing processes is to buttress the financial safety net: further reducing the risk of bank failure and enhancing the credibility of the promises that banks make to their depositors.

These regulatory frameworks are far from perfect. Nevertheless, they combine to play an extremely important role in bolstering the credibility of a bank's core promise to its depositors to hold, transfer, and return deposited funds on demand. In the absence of a lender of last resort facility, the liquidity

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Imagine a bank with $100 of assets that generates income of $5 per year. With a capital ratio of 10 percent ($10 of equity and $90 of debt), this bank will have a return on equity of 50% ($5 revenue/$10 equity). However, if the bank reduces its capital cushion to 5% (thereby increasing its debt to $95), this increases its return on equity to 100% ($5 revenue/$5 equity).

121 The OCC is the primary federal supervisor for all national banks. The Federal Reserve is the primary federal supervisor for state-chartered banks that are members of the Federal Reserve System. The FDIC, meanwhile, is the primary federal supervisor for state-chartered banks that are not members of the Federal Reserve System. State-chartered banks are also subject to supervision by state banking supervisors.

122 *See* BARR ET AL., *supra* note 12, at 898–903 (describing these reporting requirements, onsite examinations, and the CAMELS rating process).

123 In the United States, these stress tests involve two separate but complementary processes: the Dodd–Frank Act mandated stress tests (DFAST) and the Comprehensive Capital Analysis and Review (CCAR). For the results of the 2019 DFAST stress tests, see generally BD. OF GOVERNORS OF THE FED. RESERVE SYS., DODD-FRANK ACT STRESS TEST 2019: SUPERVISORY STRESS TEST RESULTS (2019), https://www.federalreserve.gov/publications/files/2019-dfast-results-20190621.pdf [https://perma.cc/6RML-3H7A]. For the results of the 2019 CCAR stress tests, see generally BD. OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW 2019: ASSESSMENT FRAMEWORK AND RESULTS (2019), https://www.federalreserve.gov/publications/files/2019-ccar-assessment-framework-results-20190627.pdf [https://perma.cc/CN3F-5ZRT].

problems created by an incipient bank run could quickly evolve into more fundamental solvency problems—thereby triggering the failure of otherwise healthy banks.[124] In the absence of a deposit insurance scheme and special resolution regime, meanwhile, depositors would be subject to the harsh strictures of general corporate bankruptcy law. The U.S. Bankruptcy Code has two important features that make it particularly undesirable from the perspective of bank depositors. The first is a procedural requirement—an automatic stay—suspending enforcement action against the assets of a bankrupt firm until the conclusion of the bankruptcy process.[125] The second is a substantive requirement—the *pari passu* rule—dictating that unsecured creditors share in any subsequent distribution of the bankrupt firm's assets on a *pro rata* basis.[126] Together, the application of these procedural and substantive rules would thus transform the deposit contract from a safe and highly liquid instrument into a longer term, risky, and illiquid claim on a failed bank. In effect, subjecting bank deposits to general corporate bankruptcy law would serve to rob them of their very essence—they would cease to be good money.

The impact of these regulatory frameworks on the transformation of bank deposits from risky promises into good money is evident from the market that no longer exists. Figure 3 provides summary data of the short-term credit ratings of the 110 U.S. banks currently covered by Fitch Ratings, a global ratings agency. The credit ratings of these banks fall into one of five categories, ranging from F1+ ("exceptionally strong") to B ("speculative"). These different ratings reflect underlying differences in the creditworthiness of the short-term debt obligations issued by these banks.[127]

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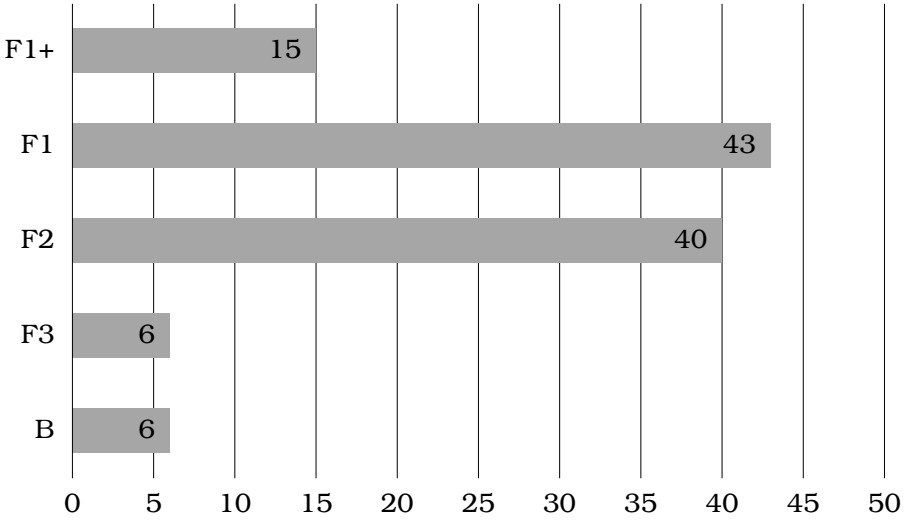
124 Specifically, where a bank's reserves were insufficient to meet the liquidity demands stemming from an incipient bank run, banks would be forced to sell other (less liquid) assets in order to satisfy depositor withdrawals. Where selling these assets quickly forced the bank to sell them at a steep discount—a so-called "fire sale"—the resulting balance sheet losses could be large enough to exhaust the bank's capital, thereby rendering the bank balance sheet insolvent.

125 11 U.S.C. § 362 (2018).

126 11 U.S.C. § 726(b) (2018).

127 As described by Fitch: "A short-term issuer or obligation rating is based in all cases on the short-term vulnerability to default of the rated entity and relates to the capacity to meet financial obligations in accordance with the documentation governing the relevant obligation." *See* FITCH RATINGS, RATING DEFINITIONS 20 (2020), https://assets.fitchratings.com/pdf/web/viewer.html?file=/downloadFile/RPT/2020-06/10123698.pdf [https://perma.cc/4YDR-K7W8].

FIGURE 3
FITCH SHORT-TERM CREDIT RATINGS OF U.S. BANKS
(2019)



The range of different ratings raises a series of fundamental questions: why do we not see these differences reflected in the *value* of these banks' deposit contracts? Why do we treat a dollar worth of deposits at Bank of America, N.A. (F1+) the same as a dollar deposited at Cathay General Bancorp (B)? Any why don't we see publications like *Thompson's Bank Note Reporter* providing us with real-time market information about the value of these deposits relative to those of other banks? By this point, the answer should be obvious. The unique and highly sophisticated regulatory frameworks governing banks enhance both the credibility of a bank's promises to its depositors and all but eliminate differences in the credibility of these promises across different banks. In short, bank *regulation* is what makes bank deposits good money.

B. Money Market Fund Regulation

Perhaps not surprisingly, the burdensome regulatory frameworks imposed on banks have spurred a great deal of financial innovation. One of the most enduring innovations has been money market funds or MMFs. The origins of MMFs can be traced back to the Banking Act of 1933, which paved the way for the introduction of Federal Reserve Regulation Q.[128]

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[128] Banking Act of 1933, § 11; 12 U.S.C. § 371a (repealed 2010). For a description of the history of Regulation Q, see generally R. Alton Gilbert, *Requiem for Regulation Q: What It Did and Why It Passed Away*, 68 FED. RES. BANK ST. LOUIS

Regulation Q prohibited banks from paying interest on demand deposit and checking accounts and imposed strict caps on the amount of interest that they could pay on savings accounts. The rationale for Regulation Q appears to have been that paying high interest rates on deposits could incentivize banks to make riskier, higher-yielding loans and other investments—thereby increasing the probability of their failure.[129] The constraints imposed under Regulation Q were thus viewed as especially important in light of the introduction of federal deposit insurance and the prospect that at least some of the costs of bank failure would eventually fall on the deposit insurance fund.

The impact of Regulation Q from the perspective of bank depositors was relatively modest during the benign macroeconomic environment that prevailed in the decades following the Great Depression and World War II. Specifically, given relatively low levels of inflation, the opportunity costs associated with depositing funds in bank checking and savings accounts were relatively low. During the inflationary spiral of the late 1970s, however, the nominal interest rate caps under Regulation Q had the effect of imposing negative real returns on bank depositors—making banks an unattractive place for these depositors to park their money. This, in turn, generated demand for financial instruments that promised the safety and liquidity of bank deposits, but that were issued by financial institutions that—because they were not banks—were not subject to the interest rate constraints imposed by Regulation Q. MMFs emerged to satisfy this demand.

MMFs are structured as investment funds pursuant to the Investment Company Act of 1940.[130] Like other investment funds, MMFs raise investment capital by issuing shares to their investors. Unlike most investment funds, however, the value of MMF shares does not fluctuate along with changes in the net asset value—or NAV—of the underlying investment portfolio. Instead, MMFs promise that investors can redeem their shares at any time at the same price they purchased them for: typically a fixed NAV of one dollar per share.[131] Many

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REV. 22 (1986), http://research.stlouisfed.org/publications/86/02/Requiem_Feb1986.pdf [https://perma.cc/G639-M56U].

129 *See* ARMOUR ET AL., *supra* note 13, at 482.

130 Investment Company Act of 1940, 15 U.S.C. § 80a-1–64 (2018) [hereinafter ICA].

131 Accordingly, there are no capital gains associated with investments in MMF shares. Any interest income generally accrues to investors by way of the issuance of new MMF shares.

MMFs have also evolved to offer their investors the ability to write checks payable from the proceeds of redeeming their MMF shares. From the perspective of investors, it is this combination of a fixed NAV, the promise to redeem investors' shares on demand, and potential access to the payment system that make MMF shares such close and attractive substitutes for conventional bank deposits. MMFs are thus a classic example of what Professors Jonathan Macey and Geoffrey Miller have called a "nondeposit deposit".[132]

How can MMFs credibly promise to return a fixed amount of money to shareholders on demand? As a preliminary matter, unlike other investment funds, MMFs are subject to tight portfolio restrictions that limit the range of financial instruments in which they can invest. Pursuant to SEC Rule 2a-7, MMFs must restrict their investments to so-called "money market" instruments: government securities, shares of MMFs, and other investments with less than 397 days to maturity that present minimal credit risk to the fund.[133] In practice, these instruments include short-term U.S. Treasury bills, privately issued commercial paper, and repurchase (or "repo") agreements.[134] Under normal market conditions, these instruments are highly liquid and unlikely to fluctuate wildly in value.[135] This makes it relatively easy for MMFs to sell them for the purpose of meeting shareholder redemption requests.[136]

The ability of MMFs to meet shareholder redemption requests is further enhanced by strict liquidity rules. Specifically, SEC rules require MMFs to hold investments that are sufficiently liquid to meet reasonably foreseeable shareholder redemption requests in light of the fund's outstanding obliga-

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132 *See* Jonathan R. Macey & Geoffrey P. Miller, *Nondeposit Deposits and the Future of Bank Regulation*, 91 MICH. L. REV. 237, 245 (1992).

133 17 C.F.R. § 270.2a-7(a) (2020) (defining "eligible securities"); *id.* at (d)(2) (limiting MMF portfolio investments to "eligible securities").

134 Although, as described below, post-crisis reforms have further restricted what type of money market instruments specific types of MMFs are permitted to invest in.

135 Different money market securities are unlikely to fluctuate wildly in value for different reasons. U.S. government securities are unlikely to fluctuate in value because of the credibility of the government's promise to repay them. Commercial paper is unlikely to fluctuate in value because it is generally structured as a zero-coupon bond that is already issued at a discount to its face value. Repo agreements, meanwhile, are unlikely to fluctuate in value because of their relatively short (often overnight) maturity.

136 Where MMFs were unable to sell portfolio assets sufficient to meet shareholder redemption requests, some MMF sponsors would also agree to exchange (or "swap out") illiquid assets for cash. *See* Gordon & Gandia, *supra* note 19, at 361–62.

tions and any commitments it has made to its shareholders.[137] In order to comply with these liquidity rules, an MMF must not have more than five percent of its total portfolio in investments that cannot be sold within seven calendar days at or near their full value.[138] An MMF must also ensure that no less than ten percent of its portfolio is invested in cash, government securities, or instruments maturing or payable within one business day,[139] and that no less than thirty percent of its portfolio is invested in cash, zero coupon government securities with a remaining maturity of less than sixty days, or other instruments maturing or payable within five business days.[140]

Ultimately, of course, even the safest financial instruments can still fluctuate in value—especially in the thick of a crisis. In these circumstances, MMFs benefit from two additional regulatory mechanisms that bolster the credibility of their commitments to redeem investors' shares at a fixed NAV on demand. The first is amortized cost accounting. SEC Rule 2a-7 permits MMFs to value financial instruments at their acquisition cost rather than their current market value,[141] with any interest payable to an MMF accruing uniformly over the remaining term of the instrument.[142] The accrued interest is then declared as a dividend to the fund's shareholders on a daily basis, thereby enabling the fund to maintain a fixed NAV of one dollar per share. The rationale for allowing amortized cost accounting is based on two assumptions. The first is that MMFs can only invest in extremely safe money market instruments, the acquisition cost of which should never deviate too far from their current market value. The second is that, even if the acquisition cost and market value of these instruments do diverge at some point over the life of the investment, MMFs will generally hold these instruments until maturity—at which point their market value will, by definition, equal their amortized cost.[143]

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137 17 C.F.R. § 270.2a-7(d)(4).

138 *Id.* § 270.2a-7(d)(4)(i).

139 *Id.* § 270.2a-7(d)(4)(ii).

140 *Id.* § 270.2a-7(d)(4)(iii).

141 Technically, MMFs are permitted to value an instrument at its acquisition cost *plus* the amortization of any premium or accumulation of any discount. *See id.* § 270.2a-7(a) (definition of "amortized cost method of valuation"); *id.* § 270.2a-7(c)(1)(i) (describing the methodology of share price valuation).

142 *Id.* § 270.2a-7.

143 A third assumption, embedded in the second, is that the issuer of the instrument will not enter bankruptcy proceedings or otherwise default over the life of the investment.

The second regulatory mechanism is known as the "penny rounding" rule. The penny rounding rule permits an MMF to value its shares by rounding the NAV per share of the fund to the nearest penny on the dollar.[144] Thus, for example, if an MMF has a NAV per share of $0.995, the penny rounding rule would permit it to issue and redeem its shares at a NAV of $1 per share. In effect, so long as an MMF can ensure that its assets are worth at least 99.5% of its liabilities to investors, the penny rounding rule will permit it to conduct its business as usual. Put slightly differently: the penny rounding rule enables MMFs to continue to honor their commitments to redeem investors' shares at a fixed NAV even when they are, technically speaking, balance sheet insolvent.

The interest rate caps on savings accounts imposed under Regulation Q were eliminated in 1986.[145] Nevertheless, MMFs continued to grow in both size and importance. In particular, MMFs became the primary purchasers of the repo agreements, commercial paper, and other short-term debt issued by banks, securities dealers, and structured finance vehicles.[146] The resulting interconnections between MMFs and the other components of the so-called "shadow" banking system would be exposed by the collapse of Lehman Brothers in September 2008. Lehman's failure triggered one of the oldest and largest MMFs, the Reserve Primary Fund, to "break the buck": forcing it to redeem its shares for less than one dollar.[147] By the end of the following week, investors had withdrawn approximately $300 billion from non-government—or "institutional prime"—MMFs, leading to massive disruptions within short-term wholesale funding markets.[148] The run on MMFs was finally halted when the U.S. Treasury Department and Federal Reserve intervened to provide guarantees to MMF investors and created a number of ad hoc lender of last resort facilities.[149]

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144 17 C.F.R. § 270.2a-7(c)(1)(i).

145 Regulation Q was itself repealed in 2011 pursuant to § 627 of the Dodd-Frank Act. Dodd-Frank Act, Pub. L. No. 111–203, § 627, 124 Stat. 1376, 1640 (2010).

146 *See* Jeffrey N. Gordon, *Letter to the SEC on Money Market Fund Reform* 8–10 (Columbia Law & Econ., Working Paper No. 352, 2009), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1473275 [https://perma.cc/5LAA-U93K].

147 Of the almost $65 billion in portfolio assets held by the Reserve Primary Fund, approximately $785 million was invested in short-term commercial paper issued by Lehman Brothers.

148 *See* ARMOUR ET AL., *supra* note 13, at 484.

149 For a more detailed description of these interventions, see Kathryn Judge, *Guarantor of Last Resort*, 97 TEX. L. REV. 707, 713–27 (2019) and Gordon & Gandia, *supra* note 19, at 316–18.

The crisis was followed by a series of significant regulatory reforms targeting MMFs.[150] The primary thrust of these reforms was to split MMFs into three distinct categories: "institutional," "retail," and "government" funds. Institutional and retail MMFs can continue to invest in the full range of financial instruments envisioned by SEC Rule 2a-7. However, while retail funds can still issue and redeem shares at a fixed NAV, institutional funds are required to use a floating NAV that reflects changes in the market value of their investment portfolios.[151] Government funds, meanwhile, can continue to offer a fixed NAV, but are strictly limited to investments in short-term government securities. Importantly, these reforms also give MMFs the ability—and, in some cases, the obligation—to impose liquidity fees or redemption gates on investors seeking to redeem their shares.[152] In effect, these mechanisms act as a safety valve: relaxing the commitment of MMFs to redeem their investors' shares on demand during periods of institutional or market turmoil.

The SEC's money market reforms went into effect in October 2016. The response from investors was as immediate as it was illuminating. Indeed, even before these reforms came into force, MMFs experienced a highly correlated shift out of institutional prime funds of the variety that would be required to offer and redeem their shares at a floating NAV and into relatively safe, fixed-NAV government funds.[153] This pronounced shift drives home the view that MMFs are substitutes for bank deposits and highlights the pivotal role of regulation in trans-

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150 *See* generally SEC, MONEY MARKET REFORM: AMENDMENTS TO FORM PF (2014), https://www.sec.gov/rules/final/2014/33-9616.pdf [https://perma.cc/GBU5-4SJV].

151 For a critique of these rules, specifically the distinction between "institutional," "retail," and "government" funds, see ARMOUR ET AL., *supra* note 13, at 485.

152 Liquidity fees enable MMFs to impose a fee, currently capped at two percent, on investors seeking to redeem their shares. Redemption gates enable MMFs to temporarily suspend all redemptions. Both retail and institutional prime MMFs are permitted to impose liquidity fees or redemption gates where their liquid assets fall below thirty percent of a fund's NAV, and are required to impose liquidity fees where liquid assets fall below ten percent. The boards of directors of government MMFs, meanwhile, may voluntarily impose liquidity fees or redemption gates.

153 *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., FINANCIAL STABILITY REPORT, 33 fig. 4-4 (2018), https://www.federalreserve.gov/publications/files/financial-stability-report-201811.pdf [https://perma.cc/6DAE-F8TP]; Nellie Liang, *Why Congress Shouldn't Roll Back the SEC's Money Market Rules*, BROOKINGS INSTITUTION (Jan. 12, 2018), https://www.brookings.edu/blog/up-front/2018/01/12/why-congress-shouldnt-roll-back-the-secs-money-market-rules/ [https://perma.cc/2MU8-6AAA].

forming the otherwise risky liabilities issued by MMFs into good money.

This Part has demonstrated how the unique and highly sophisticated regulatory frameworks governing both banks and MMFs transform their risky, short-term liabilities into good money. The observation that the law plays an important role in the construction of money and other safe assets is hardly new, with legal scholars such as Saule Omarova and Bob Hockett, Anna Gelpern and Erik Gerding, Morgan Ricks, and Katharina Pistor, amongst others, having already laid important theoretical and conceptual foundations.[154] This Article has built on these foundations by describing precisely how financial regulation enhances the credibility of the monetary liabilities issued by banks and MMFs. It has done so for the very specific purpose of then *comparing* these regulatory frameworks with those that apply to the new breed of monetary institutions that has recently emerged just outside the perimeter of conventional bank and MMF regulation. In the next Part, we describe these new institutions, examine the regulatory frameworks that currently govern them, and chronicle the emergence of the new bad money.

III
THE NEW BAD MONEY

For most of the twentieth century, banks enjoyed a virtual monopoly over private money creation. While MMFs have made significant inroads in recent decades, they do not pose a fundamental threat to the historical and highly entrenched status of banks at the apex of our current system of money and payments. But things are changing—*fast*. Recent technological shifts—including increases in computing power, the development of the Internet, and advances in cryptography—have

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154 *See* Hockett & Omarova, *supra* note 6; Gelpern & Gerding, *supra* note 14; RICKS, *supra* note 6; PISTOR, *supra* note 35, at 87–91, 101–107; *see also* Margaret M. Blair, *Making Money: Leverage and Private Sector Money Creation*, 36 SEATTLE U. L. REV. 417, 441–53 (2013) (observing the important role of legal tools in creating leverage within the financial sector and, specifically, the so-called "shadow" banking system); Adam J. Levitin, *Safe Banking: Finance and Democracy*, 83 U. CHI. L. REV. 357, 360–65 (2016) (observing the essential role of the law and regulation in the structure and business of banking); Chrystin Ondersma, *Shadow Banking and Financial Distress: The Treatment of "Money-Claims" in Bankruptcy*, 2013 COLUM. BUS. L. REV. 79, 81–88 (2013) (observing the role of bankruptcy rules in supporting the creation and transfer of money-claims within the shadow banking system).

made it far easier for firms to compete with banks for loans, other financial services and, most importantly, deposits. This Part begins by describing the key features of these new monetary institutions. It then examines the patchwork of antiquated state-level regulatory frameworks that currently, or might in future, govern them. The key insight is that, while these firms may issue liabilities with characteristics that make them look like money in good times, these same characteristics are very likely to evaporate during periods of institutional or broader financial instability.

A. The New Breed of Monetary Institutions

One of the most noteworthy developments in global finance over the past decade has been the emergence and proliferation of firms seeking to issue monetary liabilities outside the perimeter of the conventional banking system.[155] While there exists significant heterogeneity within this rapidly evolving financial ecosystem, the most important of these new monetary institutions generally fall into one of two categories. The first consists of proprietary peer-to-peer (P2P) payment platforms that facilitate payments between individuals, households, businesses, and government.[156] The second consists of firms that issue a specific type of cryptocurrency—so-called "stablecoins"—that purport to anchor their value to an external reference currency such as the U.S. dollar.

For most of us, the vast majority of our interactions with these new monetary institutions are likely to be with proprietary P2P payment platforms such as PayPal, Alipay, WeChat Pay, or Transferwise. These platforms utilize the Internet to communicate payment instructions and execute electronic fund transfers. For customers, these platforms offer two dis-

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155 This development is separate and apart from the so-called "shadow banking" system, forms of which have existed for centuries. *See* generally Zoltan Pozsar et al., *Shadow Banking*, FED. RESERVE BANK N.Y. STAFF REPORT NO. 458 (2010), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr458.pdf [https://perma.cc/5C3C-M6VR]; Perry Mehrling, Zoltan Pozsar, James Sweeney, & Daniel H. Neilson, *Bagehot Was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance* (Dec. 6, 2013) (unpublished manuscript), https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=1930453 [https://perma.cc/BX5V-T9FL].

156 For the distinction between "proprietary" P2P payment platforms (such as PayPal) and "bank-based" P2P payment platforms (such as Apple Pay), see Awrey & van Zwieten, *supra* note 25, at 15–17.

tinct advantages.[157] First, unlike the conventional bank-based payment system, payors can initiate a transfer using a secure app or website without having to provide the payee with sensitive financial information. Second, especially for small business customers, these platforms are far less costly than more conventional merchant banking services that would enable them to accept debit or credit card payments. For these reasons, proprietary P2P payment platforms are often viewed as offering a relatively fast, easy, secure, and affordable way of making and receiving retail payments.

The defining feature of proprietary P2P payment platforms is that they facilitate payments via book entry transfers between customer accounts held and administered by the platform itself. Before using the platform, each customer is required to open an account. These accounts can be funded using a bank transfer, debit or credit card, or from the proceeds of inbound fund transfers from other platform customers. Customers can then either transfer paid-in funds to their bank account or, crucially, maintain a positive balance on the platform's proprietary accounts. These platforms thus not only facilitate the immediate transfer of funds from payors to payees, but also enable customers to *hold* funds in their account for an indefinite period of time in anticipation of making *future* payments.

Importantly, the intertwined promises that proprietary P2P payment platforms make to hold customer funds and transfer them immediately upon demand effectively replicates the core promises that banks make to their depositors.[158] In theory, this combination of payment and custodial functions then introduces the risk that, in the event of a platform's bankruptcy, the application of the automatic stay will prevent customers from accessing their money during the bankruptcy process. Thereafter, insofar as the bankruptcy process characterizes these customers as unsecured creditors, the application of the *pari passu* rule may also expose them to potentially significant losses.

It is against this backdrop that proprietary P2P payment platforms have undergone a quiet metamorphosis. Specifi-

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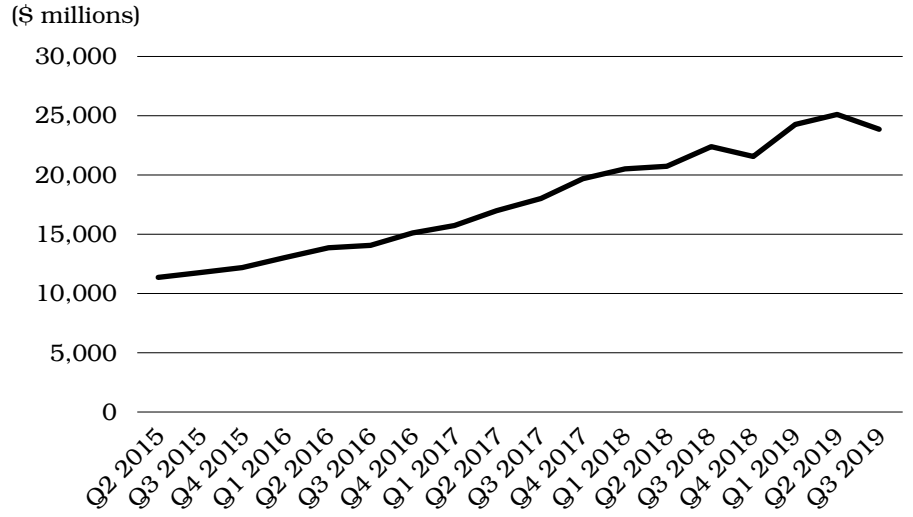
157 For a more detailed description of these benefits, see Kenneth N. Kuttner & James J. McAndrews, *Personal On-Line Payments*, 7 FED. RES. BANK N.Y. ECON. POL'Y REV. 35, 37 (2001) and Mann, *supra* note 28, at 681–82.

158 The one obvious difference being that proprietary P2P payment platforms cannot payout customer deposits in cash. Arguably, however, this difference is becoming less and less important as we continue to move away from cash and toward electronic payment methods.

cally, while originally designed to facilitate immediate payments between customers, many platforms have started to accumulate significant positive balances of longer-term deposits. PayPal is perhaps the best example of this trend.[159] In the first nine months of 2019, PayPal processed approximately $179 billion in global payments—up twenty-seven percent from the previous year.[160] Notably, however, rather than simply serving as a conduit for real-time payments between its 277 million customers, a significant and growing proportion of customer funds remain in its proprietary accounts for days, months, and even years.[161] Indeed, since its spin-off from eBay in July 2015, PayPal's longer term deposits have more than *doubled*: from just under $11.4 billion to more than $24.0 billion (see Figure 4).

FIGURE 4
GROWTH IN PAYPAL'S FUNDS PAYABLE AND AMOUNTS OWING TO CUSTOMERS (2015–2019)



Source: PayPal, Inc. SEC Forms 10-K and 10-Q (June 2015-September 2019)

159 While, given their larger size, both Alipay and WeChat Pay are very likely to have more longer-term customer deposits than PayPal, this information is not publicly available.

160 Press Release, PayPal, PayPal Reports Third Quarter 2019 Results (Oct. 23, 2019), https://investor.paypal-corp.com/news-releases/news-release-details/paypal-reports-third-quarter-2019-results [https://perma.cc/4MAA-V6Q6].

161 U.S. Generally Accepted Accounting Principles define "amounts owing to customers" as liabilities owed to customers for which there has not been a request (i.e., a bill) for payment. *See* Financial Accounting Standards Board, Accounting Standards Codification (2020), https://asc.fasb.org/ [https://perma.cc/X3KG-BHAP]. In the context of PayPal's business, this means that there is no pending request by the customer to transfer money in their PayPal account to either (i) a payee or (ii) their own bank account.

While we do not know precisely what is driving this evolution, anecdotal evidence suggests that PayPal's customers may derive several benefits from maintaining positive balances in their PayPal accounts. Individuals may be using PayPal as a convenient way of pooling money from friends and family for the purpose of, for example, paying the accommodation and travel expenses for a destination wedding.[162] Small and medium-size enterprises, meanwhile—especially those buying and selling goods and services on eBay, Amazon, Etsy, or other similar online platforms—may be using PayPal as their de facto working capital account. And, of course, this trend may just reflect the fact that, as the number of PayPal customers increases, so too will the number who simply forget to transfer money out of their PayPal accounts.

While we might not fully understand precisely what is driving this evolution, we do know that PayPal promises both to *hold* customer funds and immediately *transfer* them at the customer's instruction. In these important respects, the positive balances held within PayPal's customer accounts are essentially indistinguishable from demand deposits held with commercial banks. Crucially, however, PayPal does not have a U.S. banking license. Nor are these balances protected by FDIC deposit insurance. Commendably, PayPal's U.S. User Agreement makes this abundantly clear: explicitly stating that customer funds represent an unsecured claim against the firm and are not protected by FDIC deposit insurance.[163] Yet the mere fact that PayPal feels compelled to disclose this information serves to highlight the fact that these platforms are increasingly being viewed as *substitutes* for conventional bank accounts.

While PayPal and other P2P payment platforms have clearly entered the financial mainstream, another new breed of monetary institutions has recently appeared on the horizon. These institutions aspire to issue a specific type of cryptocurrency known as a stablecoin. In a nutshell, stablecoins are financial instruments the value of which is contractually pegged to the value of another currency. Thus, one unit of any stablecoin should be worth one unit (e.g., dollar, pound, yen) of the underlying currency. The most popular stablecoin is currently issued by Tether, which offers a stablecoin—known as

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162 I am indebted to a colleague, who shall remain anonymous, for providing me with this particular example. The wedding went off without a hitch.

163 *See* PayPal U.S. User Agreement 4 (Sept. 2019), https://www.paypal.com/us/webapps/mpp/ua/useragreement-full [https://perma.cc/ESC8-DVKA].

USDT—pegged to the U.S. dollar that has an aggregate market capitalization of over $4 billion.[164] In theory, Tether and other stablecoin issuers attempt to maintain their pegs by investing customer funds in a portfolio of relatively low risk reserve assets.[165] Tether, for example, proports to "fully back" its USDT liabilities by investing customer funds in a combination of "cash," "cash equivalents," and "receivables."[166] In practice, however, Tether and other stablecoin issuers are typically not contractually obligated to pursue this type of low-risk investment strategy.[167]

By far the most high-profile proposed stablecoin is Facebook's Libra. In June 2019, Facebook announced the establishment of the Libra Association and its intention to launch a low volatility cryptocurrency built on a decentralized blockchain network.[168] Once operational, this network will enable units of Libra to be transferred instantaneously between user accounts on the Libra blockchain—thus combining the functionality of both a stablecoin and a proprietary P2P payment platform.[169] Like Tether and other stablecoins, Libra will be backed by a portfolio of reserve assets including cash, bank deposits, and short-term government debt securities.[170]

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164 *See* Tether (USDT), COINMARKETCAP, https://coinmarketcap.com/currencies/tether/ [https://perma.cc/WRQ3-STJG].

165 A notable exception being JPMorgan, which has issued a stablecoin—JPM Coin—that is not backed by a portfolio of reserve assets. This is itself telling: unlike other stablecoin issuers, the credibility of JPM Coin is backed by the fact that, as a bank, JPMorgan has access to the Federal Reserve's discount window and other lender of last resort facilities. For further details regarding JPM Coin, see https://www.jpmorgan.com/global/news/digital-coin-payments [https://perma.cc/Y6PQ-LVQX].

166 *See* Nikhilesh De, *Tether Says Its Stablecoin is "Fully Backed" Again*, COINDESK (Nov. 8, 2019), https://www.coindesk.com/tether-says-its-stablecoin-is-fully-backed-again [https://perma.cc/SL7G-7MWT].

167 *See* Awrey & van Zwieten, *supra* note 25, at 29–34 (describing the contractual architecture of cryptocurrency exchanges, including several stablecoin issuers).

168 *See* Mike Isaac & Nathaniel Popper, *Facebook Plans Global Financial System Based on Cryptocurrency*, N.Y. TIMES (June 18, 2019), https://www.nytimes.com/2019/06/18/technology/facebook-cryptocurrency-libra.html [https://perma.cc/4BPR-48CA].

169 *See* Libra Association, *The Life of a Transaction* (2019), https://developers.libra.org/docs/life-of-a-transaction [https://perma.cc/AJV5-7SX8].

170 *See* LIBRA ASS'N, LIBRA WHITE PAPER OCTOBER 2 (2019), https://libra.org/en-US/wp-content/uploads/sites/23/2019/06/LibraWhitePaper_en_US.pdf [https://perma.cc/WDS8-G5QX]; *see also* LIBRA ASS'N, ECONOMICS AND THE LIBRA RESERVE 1 (2020), https://libra.org/en-US/wp-content/uploads/sites/23/2020/04/EconomicsAndTheReserveDD_US_April2020.pdf [https://perma.cc/6JVD-2GSM] [hereinafter LIBRA WHITE PAPER]; LIBRA ASS'N, LIBRA WHITE PAPER V.2, at 2 (2020), https://libra.org/en-US/wp-content/uploads/sites/23/2020/04/Libra_WhitePaperV2_April2020.pdf [https://perma.cc/KH6J-3QDY] [hereinafter LI-

As of writing, Libra is still in its initial design phase. While the Libra Association's original goal was to create a "global currency and financial infrastructure"[171] that rivaled the conventional banking system, it released a more modest proposal in April 2020 that closely resembles more conventional proprietary P2P payment platform.[172] Even then, Facebook and Libra still face significant regulatory headwinds.[173] Ultimately, in order to effectively complete with banks, Libra will need not only to offer users the ability to execute real-time payments, but also to ensure that users can rapidly convert fiat currencies into and out of Libra—especially during periods of pronounced institutional or broader financial distress. Crucially, however, without the unique privileges and protections of bank regulation, Libra and other stablecoins will be forced to perform these functions in the shadow of general corporate bankruptcy law.

The emergence of proprietary P2P payment platforms and stablecoins raise two important questions. First, what are regulatory frameworks that currently govern these new monetary institutions? Second, to what extent do these regulatory frameworks enhance the credibility of the monetary liabilities issued by these institutions? These questions are vital to understanding whether these liabilities should be viewed as good money and, hence, whether these new institutions can effectively compete with banks and MMFs. It is to these questions that we now turn.

B. The Antiquated Regulatory Frameworks That Govern Them

Long before the invention of the internet, it was another breakthrough in long distance telecommunications that promised to revolutionize finance. That breakthrough was the telegraph. Like the Internet, firms such as Western Union were quick to capitalize on this new technology in order to offer their customers the ability to transfer money rapidly and across long distances. Customers would deliver money to a branch of Western Union in one location, which would then telegraph a

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BRA WHITE PAPER 2.0] (describing the composition of the proposed Libra reserve as consisting of cash, bank deposits, and short-term sovereign debt instruments).

171 LIBRA WHITE PAPER, *supra* note 170, at 3.

172 LIBRA WHITE PAPER 2.0, *supra* note 170.

173 *See* Kiran Stacey & Hannah Murphy, *Facebook Admits Digital Currency Doubts as Regulatory Hurdles Loom*, FIN. TIMES (Oct. 14, 2019), https://www.ft.com/content/be6a7756-eea2-11e9-ad1e-4367d8281195 [https://perma.cc/AY28-PBRQ].

coded message to a branch at another location instructing it to deliver payment to the designated recipient. While the underlying technology would eventually move from the telegraph, to the telephone, and ultimately to the Internet, these money services businesses—or MSBs[174]—remain an important part of the domestic and international payment system.

In the United States, these MSBs are subject to regulation at both the federal and state level. At the federal level, it is illegal for any person to conduct, control, manage, supervise, direct, or own an unlicensed money transmitting business.[175] For these purposes, the definition of an unlicensed money transmitting business includes any business that "affects interstate or foreign commerce" and is involved in "transferring funds on behalf of the public by any and all means including but not limited to transfers . . . by wire, check, draft, facsimile, or courier."[176] The use of the language "*by any and all means*" casts an extremely broad net: capturing not only the likes of Western Union, but also—and crucially—major P2P payment platforms such as PayPal.[177] While much has been made of the regulatory uncertainty surrounding Libra, on its face this definition would also appear to squarely capture Facebook's long term vision for its embryonic stablecoin.

Federal law requires all MSBs to register with the U.S. Secretary of the Treasury.[178] This registration requirement serves to bring these firms within the perimeter of the Treasury

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174 The precise term varies across regulatory frameworks: with some calling these firms "money services business," others "money transmission businesses," and others "money remittance businesses." As used here, the term MSB encompasses all of these other terms.

175 18 U.S.C. § 1960 (2018).

176 18 U.S.C. § 1960(b)(1)–(B)(2). The registration requirements themselves define money transmitting business slightly differently: as any business other than a depositary institution that "provides check cashing, currency exchange, or money transmitting or remittance services, or issues or redeems money orders, travelers' checks, and other similar instruments or any other person who engages as a business in the transmission of funds, including any person who engages as a business in an informal money transfer system or any network of people who engage as a business in facilitating the transfer of money domestically or internationally outside of the conventional financial institutions system." 31 U.S.C. § 5330(d)(1)(A) (2020).

177 *See PayPal State Licenses*, PAYPAL, https://www.paypal.com/us/webapps/mpp/licenses?locale.x=en_US [https://perma.cc/PR8F-9L9D] (last visited Mar. 17, 2020) (identifying the state-level MSB statutes to which PayPal is subject); *see also TransferWise State Licenses*, TRANSFERWISE (June 20, 2018), https://transferwise.com/us/state-licenses [https://perma.cc/4S7B-C872] (identifying the state-level MSB statutes to which TransferWise, another major proprietary P2P payment platform, is subject).

178 31 U.S.C. §?5330 (2018).

Department's Financial Crimes Enforcement Network (FinCEN). Registered MSBs are then subject to a very basic form of consumer protection regulation. Specifically, MSBs must comply with rudimentary disclosure obligations: requiring, amongst other things, that customers are provided with information regarding applicable fees, taxes, and exchange rates, the expected timeframe for the delivery of transferred funds, and the process for payment cancellation and error resolution.[179]

Beyond this skeletal federal regulatory framework, the bulk of the prudential regulation to which MSBs are subject is written, monitored, and enforced at the state level. These state regulatory frameworks employ three primary mechanisms—sometimes referred to as a "three-legged stool"[180]—to ensure the safety and soundness of MSBs. These mechanisms include minimum net worth requirements, surety bond and other security requirements, and restrictions on permissible investments. Together, these mechanisms are explicitly designed to protect customer funds, ensure that MSBs can meet their customer obligations and, more generally, preserve confidence in both the money services business and the broader financial services industry.[181] At least in theory, these mechanisms can thus be viewed as functionally equivalent to the core features of conventional bank and MMF regulation.

Yet upon closer inspection, each of these mechanisms falls far short of the high standards set by these more sophisticated regulatory frameworks. Let's start with minimum net worth requirements. Like bank capital requirements, net worth requirements are designed to ensure that an MSB holds sufficient retained earnings and equity capital to absorb a threshold level of losses without triggering its bankruptcy.[182] By reducing the probability of bankruptcy, these requirements thus

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179 12 C.F.R. § 1005.31(b) (2020).

180 *See* CONFERENCE OF STATE BANK SUPERVISORS, MSB MODEL LAW: EXECUTIVE SUMMARY 5 (2019), https://www.csbs.org/sites/default/files/2019-10/Executive%20Summary%20-%20Draft%20Model%20Law%20%28Sept%202019%29.pdf [https://perma.cc/CHM2-F8ZL].

181 *See* UNIFORM MONEY SERVICES ACT § 204 CMT. (UNIF. LAW COMM'N 2004) (surety bond requirements); *id.* § 207 (net worth requirements); *id.* § 701–02 (permissible investment restrictions), https://tinyurl.com/yzuj9ukf [https://perma.cc/YR5T-585M]; *see also* CONFERENCE OF STATE BANK SUPERVISORS, *supra* note 180, at 2 (explaining that the model law is designed to protect consumers from harm, prevent bad actors from entering the money services industry, and preserve public confidence in the financial services sector).

182 *See* discussion of bank capital requirements, *supra* note 18.

serve to provide an MSB's customers with a degree of protection against the deleterious application of both the automatic stay and *pari passu* rule. Figure 5 summarizes a survey of these net worth requirements across all fifty states.

Three things stand out from this survey. The first is the incredible heterogeneity of MSB minimum net worth requirements: ranging from zero dollars in four states, to up to $3 million in Washington and Oklahoma. Similarly, while some states only impose *minimum* net worth requirements, others combine minimum requirements with a hard *cap* on the amount of equity and retained earnings that MSBs must hold. In fact, the survey revealed no less than twenty-five different permutations of minimum and/or maximum net worth requirements. Second, harkening back to the golden age of the telegram and Western Union, many states still calculate these requirements based on the number of physical locations—that is, branches—that an MSB has within a given state.

Third, and perhaps most importantly, these requirements typically contemplate a relatively thin layer of protection in comparison with bank capital requirements. In this respect, it is important to note that these requirements are not cumulative: meaning that a single MSB operating across all fifty states can theoretically satisfy its net worth requirements in each state by simply complying with the requirements in the state with the most burdensome regulatory framework. Thus, for example, PayPal can comply with its net worth requirements *in all states* by holding the $3 million in retained earnings and equity required in both Washington and Oklahoma.[183] Given that PayPal reported total assets of just over $50 billion in its most recent financial statements,[184] this translates into an effective minimum capital requirement of just under 0.006%.[185] To put this figure into perspective, as of June 30, 2019, the average CET1 capital level for U.S. bank holding companies

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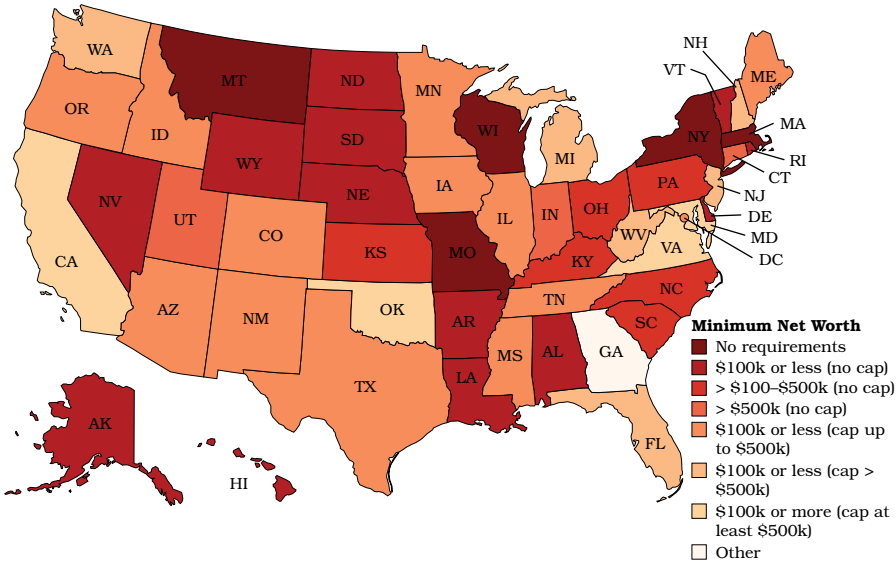
183 In some cases, of course, this will create de facto harmonization of net worth requirements across states. This, however, highlights the deadweight losses generated by the duplication of regulation, supervision, and enforcement of state-level MSB laws.

184 *See* Press Release, PayPal, PayPal Reports Third Quarter 2019 Results 4 (Oct. 23, 2019), https://investor.paypal-corp.com/node/10571/pdf [https://perma.cc/8NX2-ZTWH] (reporting total assets of $50,223,000,000 as of September 30, 2019).

185 Calculated as $3,000,000/$50,223,000,000 = 0.005973358819664300 00%.

was over twelve percent of risk-weighted assets.[186] While one might object to this comparison on the basis that banks take more risks, this is ultimately an empirical question that, as we shall see, cannot simply be taken for granted.[187]

FIGURE 5
STATE MSB LAWS—MINIMUM NET WORTH REQUIREMENTS



The second prudential mechanism imposed under state MSB laws consists of surety bond, letter of credit, collateral deposit, insurance, or other security requirements. These security requirements are designed to ensure that an MSB puts aside or otherwise makes available a minimum amount of money or other highly liquid assets for distribution to its customers in the event of the firm's bankruptcy.[188] Like net worth requirements, these security requirements vary significantly

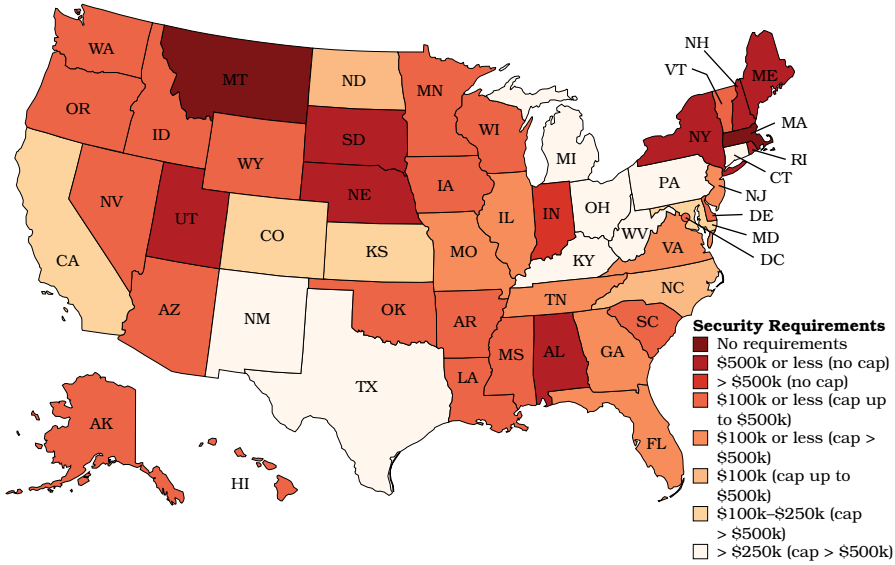
186 *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., FINANCIAL STABILITY REPORT 29 (2019), https://www.federalreserve.gov/publications/files/financial-stability-report-20191115.pdf [https://perma.cc/ZMZ2-FR68].

187 A technically more valid criticism is that, while the calculations for PayPal are based on its *total* assets, bank capital requirements are typically based on *risk-weighted* assets. Ultimately, however, this divergence is nowhere near large enough to account for the more than 2,000 times difference between these figures.

188 Whereas surety bond and bank account requirements envision that an MSB will put aside liquid assets, letters of credit envision that an MSB will arrange (and pay for) a guarantee from a bank pursuant to which the bank agrees to pay the specified amount to customers in the event of the MSB's bankruptcy.

from state to state (see Figure 6).[189] Whereas several states—including Hawaii, Idaho, Nevada, Washington, and Wisconsin—have minimum security requirements as low as $10,000, Michigan and Kentucky require a minimum of $500,000, and Pennsylvania requires a cool $1 million. In many cases, these minimums are then supplemented by additional amounts calibrated on the basis of either the volume of payments processed by an MSB or the number of physical locations within the relevant state. Many states also impose a cap on these requirements, ranging from to $125,000 in Alaska to $7 million in California.

FIGURE 6
STATE MSB LAWS—SECURITY REQUIREMENTS



Unlike net worth requirements, these security requirements are typically cumulative. As a result, MSBs are required to satisfy the minimum-security requirement, plus any supplemental amounts, in each state. For this reason, these requirements will often provide customers with marginally more protection than net worth requirements.[190] For example, assuming that PayPal was subject to the maximum security re-

189 Several states impose additional security requirements on MSBs whose financial condition is impaired. These additional security requirements are not reflected in Figure 6.

190 Of course, net worth and security requirements also provide customers with different *types* of protection. Whereas net worth requirements are designed to reduce the probability of bankruptcy, security requirements are designed to provide compensation to customers in the event of bankruptcy.

quirement in each state, it would be required to set aside (or otherwise make available) somewhere in excess of $42 million in security against its monetary liabilities to U.S. customers.[191] While this is a significant sum, it obviously pales in comparison to the tens of billions of dollars currently sitting in PayPal's customer accounts.[192] Moreover, these security requirements provide customers in different states with very different levels of protection against an MSB's bankruptcy. Perhaps most importantly, insofar as these requirements are expressed as fixed amounts, or are based on the number of physical locations or the volume of payment flows, they may not reflect the aggregate size of the positive account balances held by customers within each state. This can result in state-by-state mismatches between the amount of available security and the number and value of potential customer claims against a bankrupt MSB. Compounding matters, the regulatory frameworks in many states contemplate the relaxation or removal of these security requirements after the expiry of a specified timeframe.

The third and arguably most important leg of the stool are restrictions on the types of financial instruments in which MSBs are permitted to invest customer funds. We have already encountered permissible investment restrictions in the context of MMF regulation. Specifically, the portfolio restrictions imposed under SEC Rule 2a-7 limit MMFs to investments in cash, cash equivalents, and other highly liquid money market instruments.[193] As we have seen, these restrictions are necessary to ensure that MMFs can commit to continuously redeem investor funds at a fixed NAV on demand. Measured against this benchmark, perhaps the most remarkable feature of state MSB laws is that—despite making a fundamentally similar commitment—MSBs are typically permitted to invest customer funds in a wide range of far more risky financial instruments (see Figure 7).

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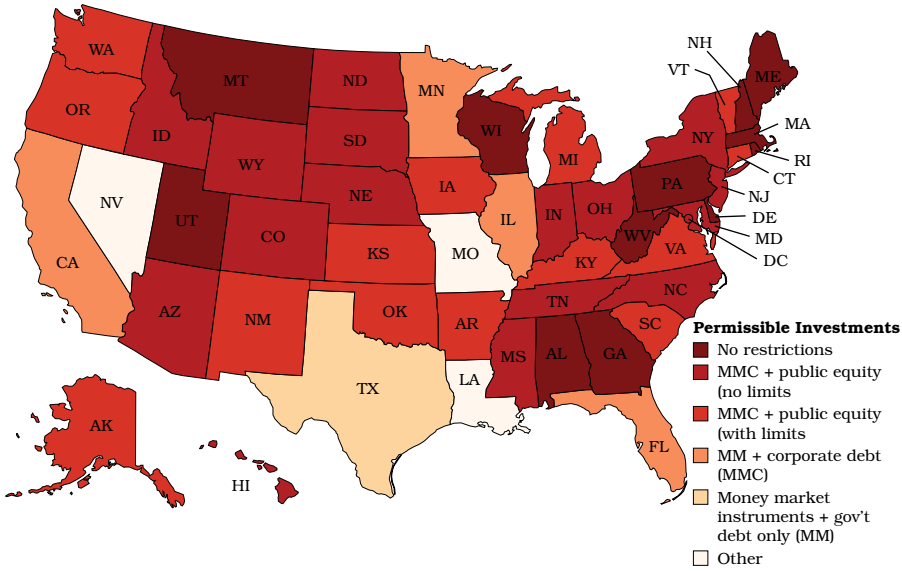
191 Assuming that PayPal is not in a compromised financial position, in which case many states would require additional security. Regrettably, without more detailed state-by-state information regarding PayPal's payment volumes, it is not possible to provide a more accurate estimate.

192 Unfortunately, PayPal does not disclose granular information regarding the geographic location of its customers or payment flows. However, if we (conservatively) assume that the United States accounts for ten percent of PayPal's outstanding customer balances, the estimated aggregate security requirements ($42 million) would amount to less than two percent of these balances as of September 30, 2019.

193 *See* description, *supra* notes 25, 26.

FIGURE 7
STATE MSB LAWS—PERMISSIBLE INVESTMENT RESTRICTIONS



While there is once again an enormous degree of heterogeneity, these permissible investment restrictions can be grouped into five broad categories or "tiers." The first tier consists of states that—essentially mirroring SEC Rule 2a-7—restrict MSBs to investments in money market instruments and relatively safe government debt. The second tier then modestly expands the list of permissible investments to include highly rated corporate bonds. It is the third tier, however, where we can start to see a marked departure from the relatively tight portfolio restrictions imposed under SEC Rule 2a-7. This third tier includes sixteen states that permit MSBs to invest in the preference and/or common shares of publicly traded corporations such as Apple (AAPL), Facebook (FB), Tesla (TSLA), and Goldman Sachs (GS). Whereas states in the third tier then impose caps and/or concentration limits on these investments, those in the fourth tier give MSBs unfettered discretion to invest customer funds in risky equity securities.[194] The fifth and final tier consists of no less than twelve states that do not impose any restrictions whatsoever on how MSBs invest customer funds.

194 In a nutshell, a "cap" sets the maximum percentage of an MSB's portfolio that can be invested in any given class of financial instrument. A "concentration limit" sets the maximum percentage of an MSB's portfolio that can be invested in any single issuer and/or instrument within each class.

Perhaps equally concerning, of the thirty-eight states that currently impose investment restrictions on MSBs, thirty-one permit them to invest customer funds in "accounts receivable"—including the accounts receivable of an MSB's own affiliates, delegates, or authorized agents.[195] Distilled to their essence, accounts receivable simply represent money that is *owed* to a firm by a third party. Economically speaking, an "investment" in accounts receivable is therefore more accurately characterized as a *loan*. Viewed from this perspective, the permissible investment restrictions in more than half of all states permit MSBs to use customer funds for the purpose of extending loans to other legal entities within their broader corporate groups. In theory, this would include the ability of PayPal, for example, to lend customer funds to its own consumer finance subsidiary. This exposes MSBs—and by extension their customers—to the risk that these entities will be unable to pay their debts as they fall due. These exposures will be particularly problematic where these loans are not repayable on demand, or where the entities receiving these loans are engaged in business activities that are fundamentally more risky than those of the relevant MSB.

Importantly, the risks posed by permitting MSBs to invest in such a broad range of risky and exotic financial instruments are not simply hypothetical. In 2008, one of the country's largest MSBs—MoneyGram—held a significant percentage of its permissible investments in risky mortgage-backed securities. As the market value of these securities plummeted during the financial crisis, MoneyGram experienced a severe liquidity crisis.[196] On the verge of bankruptcy, MoneyGram was eventually bailed out by a consortium, led by Thomas H. Lee Partners and Goldman Sachs, that collectively injected over $1.5 billion in new equity and debt.[197] Had it not received this sizable and

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195 These states include Alaska, Arizona, Arkansas, Connecticut, the District of Columbia, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Maryland, Michigan, Minnesota, Mississippi, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Virginia, Washington, and Wyoming. See Appendix A for complete list.

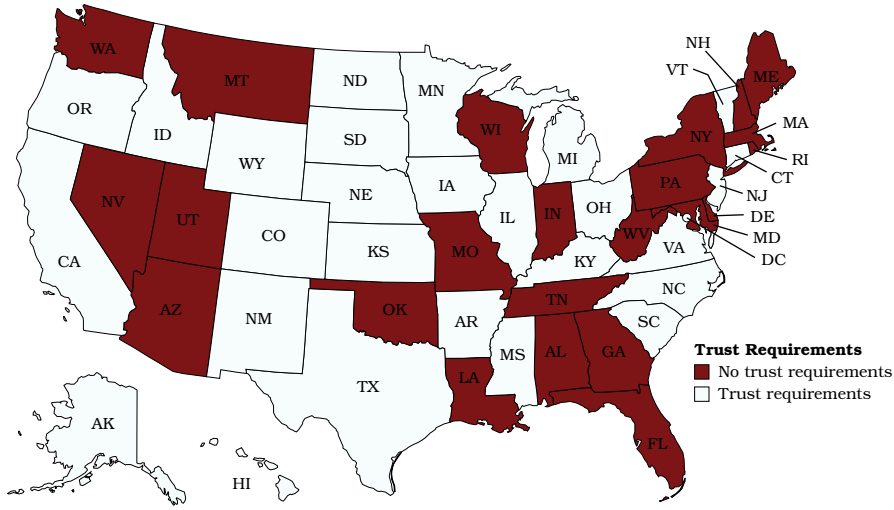
196 *See* MoneyGram International, Inc., Annual Report (Form 10-K) 9 (Mar. 25, 2008), http://ir.moneygram.com/static-files/5090f7d4-214b-484d-92bf-becc053403da [https://perma.cc/3CZM-9YMZ] (reporting that it was forced to sell certain investments at a realized loss of $260.6 million).

197 *See* Press Release, MoneyGram Completes Comprehensive Recapitalization with Investor Group Led by Thomas H. Lee Partners, L.P. and Goldman Sachs (Mar. 25, 2008), http://www.thl.com/newsroom/press-release?year=2008&id=1442 [https://perma.cc/23PH-XLHK].

timely bailout, MoneyGram's customers would have in all likelihood lost hundreds of millions of dollars.

Further compounding matters, even where an MSB refrains from investing in risky or exotic financial instruments, there is often no guarantee that customers will get their money back in the event of its bankruptcy. Instead, customers may be forced to compete with the MSB's other unsecured creditors over its remaining assets. In this respect, it is worth pointing out that—in addition to over $24 billion in monetary liabilities to its customers—PayPal currently owes almost $10 billion to its other creditors.[198] As clearly disclosed in its U.S. User Agreement, these other creditors will have valid claims on PayPal's assets, including customer funds, in the event of its bankruptcy.[199] Were PayPal's customers to rank *pari passu* with these other creditors, customers would thus receive somewhere in the neighborhood of seventy cents on the dollar before the deduction of any bankruptcy expenses.[200] Perhaps equally important, customers would be unlikely to see this money until the conclusion of the bankruptcy process.

FIGURE 8
STATE MSB LAWS—TRUST REQUIREMENTS



One relatively straightforward way of minimizing this problem is by ringfencing customer funds from an MSB's other

198 *See* Paypal Form 10–Q, *supra* note 26.
199 *PayPal U.S. User Agreement*, *supra* note 163.
200 Of course, this figure would be even lower in the event that any of these other creditors were deemed to have priority over customers in terms of the distribution of PayPal's assets.

assets. This can be achieved using a variety of different legal mechanisms: including trusts and structural subordination.[201] Using a trust, for example, an MSB could expressly identify customers as the beneficial owners of customer funds—thereby preventing the distribution of these assets to the firm's other creditors in the context of any bankruptcy proceeding. Using structural subordination, meanwhile, an MSB could place customer funds in a special purpose bankruptcy remote subsidiary that could then continue to honor its obligations to customers in the event of the parent firm's bankruptcy. Yet despite the existence of these and other mechanisms, only twenty-eight states currently require MSBs to place customer funds in trust (see Figure 8) and no states require structural subordination. Moreover, while in theory MSBs can voluntarily elect to use trusts or structural separation, recent empirical work by Dan Awrey and Kristin van Zwieten suggests that only a small fraction of proprietary P2P payment platforms actually use these mechanisms to ringfence customer funds.[202]

This survey of state MSB laws paints a bleak picture. MSBs do not benefit from the robust prudential regulation, deposit guarantee schemes, lender of last resort facilities, or special resolution regimes enjoyed by conventional deposit-taking banks. Nor are they subject to the same type of tight investment restrictions or favorable regulatory or accounting treatment as MMFs. Most importantly, the regulatory frameworks to which these institutions actually are subject are extremely heterogeneous and often fail to provide customers with a fundamentally credible promise to hold, transfer, or return customer funds on demand. The historical parallels with the free banking era could hardly be more obvious: this is the new bad money. This is clearly bad news for customers. It is also bad news for those who think that society would benefit from more vigorous competition for the delivery of money, payments, and other essential financial services.

Ultimately, state MSB laws are the product of a bygone era when firms like Western Union would only hold customer funds for a very brief period of time: typically only as long as it took for the intended recipient to get to the nearest branch.

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201 For a more detailed discussion of the utility and, importantly, limits of these mechanisms, see Awrey & van Zwieten, *supra* note 25, at 26–32. An important limit of trusts, for example, is that customers may not get their money back until the bankruptcy court is satisfied that the trust is validly constituted.

202 *Id.* at 31 (reporting that only five of the twenty-nine proprietary P2P payments platforms, including money remittance platforms, in their sample currently employ customer trusts and that none employ structural separation).

The fleeting nature of these holdings meant that MSBs were not in a position to invest customer funds in risky financial instruments, and that customers were only briefly exposed to the risk that an MSB might default on its obligations. But times have changed. Today, some of the largest MSBs are using customer funds to accumulate vast pools of longer-term capital. Existing state laws then permit these MSBs to invest this capital in potentially risky financial instruments while continuing to promise customers that they can transfer or withdraw their funds on demand. While this combination of longer term, risky, and potentially illiquid assets with short-term and highly liquid monetary liabilities presents familiar risks, they are not the risks that state MSB laws are currently designed to address. The question thus becomes how we should update our regulatory frameworks to respond to the risks posed by the emergence of this new breed of monetary institutions.

IV
TOWARD A NATIONAL MONEY ACT

The problem of bad money is as old as money itself. For many, so is the universe of available policy options. These options range from the complete elimination of private money, to a prohibition against the issuance of monetary liabilities outside the conventional banking system, to the targeted importation of specific elements of bank regulation into the current regulatory frameworks governing MSBs. Yet every so often it is possible to find new and potentially more desirable policy options in unexpected places: including in the dustbin of history. This final Part surveys the range of existing policy options and—inspired by the logic and structure of the National Banking Act of 1863—lays out a blueprint for a National Money Act designed to strengthen and harmonize the regulatory frameworks governing the new breed of monetary institutions.

The first and most interventionist policy option would be to eliminate all private money creation and replace it with a purely public infrastructure for money and payments. This option is reflected in a myriad of recent proposals calling for either the creation of central bank digital currencies[203] or the expansion of access to central bank reserve accounts—currently often only available to commercial banks—to the general

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203 For a recent discussion of various proposals for central bank digital currencies, see generally Ulrich Bindseil, *Tiered CBDC and the Financial System*, (European Cent. Bank, Working Paper No. 2351, 2020).

public.[204] Proponents of these proposals argue that they would improve the speed and efficiency of payments, promote financial inclusion, and reduce interchange and other fees.[205] By replacing private monetary liabilities with nondefaultable liabilities issued by a central bank, they would also eliminate the fragility at the heart of our current monetary system.[206] Even in the absence of a strict legal prohibition against the issuance of private money, the likely effect of these proposals—and in many cases the stated aim—would thus be to "crowd out" the monetary liabilities issued by banks, MSBs, and other monetary institutions.[207]

This option would entail a number of potentially significant risks.[208] Two in particular stand out for the present purposes. First, by crowding out private financial institutions, this option would eliminate a potentially valuable source of competition and innovation. While there may be a strong theoretical argument for public provision of money and payments, the federal government has at best a mixed record of success in building and maintaining vital infrastructure. Forcing central banks to compete with banks and other monetary institutions would potentially compel them to make the investments necessary to stay at the cutting edge of technological, institutional, and other developments.[209] Second, because this option would effectively destroy the existing business model of commercial banks, it would almost certainly unleash significant, difficult to predict, and potentially destabilizing structural changes to the wider financial system.[210] While these risks should not be viewed as dispositive, they nevertheless beg the question of whether it might be possible to generate some or all of the expected benefits of these proposals using a less interventionist approach.

A second, and marginally less interventionist, option would be to impose a ban on the issuance of monetary liabilities by financial institutions other than conventional deposit-taking banks. This is the essence of existing federal law prohibiting

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204 *See* Morgan Ricks, John Crawford & Lev Menand, *Digital Dollars* GEO. WASH. L. REV. (forthcoming) (manuscript at 4), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3192162 [https://perma.cc/2RD5-RPM8].

205 *Id.* at 5–16.

206 *Id.* at 10–12.

207 *Id.* at 13.

208 *See* Bindseil, *supra* note 203, at 9–18 (discussing these risks).

209 Conversely, forcing commercial banks to compete with the central bank could have similar salutary effects on competition and innovation.

210 *See* Bindseil, *supra* note 203, at 8–13 (discussing these possible structural changes).

firms other than banks from accepting customer "deposits."[211] At present, however, the definition of a deposit is cast so narrowly that it fails to capture a wide variety of monetary liabilities—including those issued by PayPal, the Libra Association, and other aspiring monetary institutions.[212] Observing the limited scope of the current prohibition, Professor Morgan Ricks has proposed a more comprehensive ban pursuant to which banks would be licensed as the *exclusive* issuers of deposits, short-term liabilities, and other "money-claims."[213] In theory, a comprehensive ban would ensure that monetary liabilities were issued by firms subject to uniform and (relatively) robust prudential regulation and supervision: thereby eliminating the problem of good money circulating alongside bad. In practice, of course, the effectiveness of any ban would potentially be undercut by the hydraulic effects of bank regulation and the relentless forces of regulatory arbitrage.[214]

The practical impact of a truly effective ban—if one were possible—would be to force aspiring monetary institutions to obtain a conventional banking license. Intuitively, however, we might expect the highly sophisticated and bespoke regulatory frameworks governing banks to be a poor fit for the business models of many of these new institutions. This raises the prospect of importing specific mechanisms from conventional bank regulation into the regulatory frameworks governing MSBs. For its part, the CSBS has recently proposed updating its model MSB law to incorporate a mechanism ostensibly based on a combination of bank capital requirements and the Basel III liquidity coverage ratio.[215] Known as the "suspension bridge," this mechanism would use an MSB's loss absorbing capacity as the basis for determining the scope of applicable permissible investment restrictions.[216] In effect, the larger an

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211 12 U.S.C. § 378(a)(2) (2018).

212 The definition being restricted to commercial, checking, savings, time, or thrift accounts held *with a bank or savings association*. 12 U.S.C. § 1813(l) (2018) (emphasis added).

213 RICKS, *supra* note 6, at 226, 235. Notably, Ricks's proposal is specifically designed to target short-term repurchase agreements and other components of the so-called "shadow" banking system rather than the new breed of monetary institutions that are the focus of this paper.

214 In this respect, Professor Ricks constructively offers some draft statutory language around the definition of a "money-claim." *Id.* While Ricks is optimistic that this language would limit opportunities for regulatory arbitrage, this is ultimately open to debate.

215 CONFERENCE OF STATE BANK SUPERVISORS, *supra* note 180, at 7–9.

216 *Id.* The proposal contemplates that an MSB's loss absorbing capital would be calculated by subtracting its total liabilities from its tangible net assets. *Id.*

MSB's capital cushion, the broader the range of financial instruments in which it would be permitted to invest.

There is no doubt that the CSBS proposal possesses a degree of practical appeal. As we have seen, the current MSB net worth requirements are extremely antiquated. There is also a certain crude economic logic to permitting firms with larger capital cushions to take more risks.[217] By the same token, however, the proposal can also be viewed as simply acquiescing to the recent shift in the business models of at least some MSBs from relatively safe payment platforms into more risky pooled investment vehicles. Whether public policy should be actively accommodating this shift is open to debate. Furthermore, importing specific mechanisms from bank regulation without regard to the role they currently play in the broader regulatory framework—or, conversely, how they are likely to work in isolation—raises a host of important and as yet unanswered questions. Do MSBs have the internal expertise and resources needed to effectively manage the market, liquidity, and other risks associated with their investment portfolios? Do the banking supervisors in all fifty states have the expertise and resources needed to supervise ongoing compliance with these proposed new requirements? And perhaps most importantly, what happens if an MSB—faced with a severe liquidity crisis—is no longer able to comply with these requirements?

There are two even more fundamental objections to the prospect of simply importing elements of bank regulation into the existing state-level regulatory frameworks governing MSB. The first objection is that introducing the new suspension bridge or other prudential mechanisms through the CSBS's model MSB law would not address the incredible heterogeneity that we currently observe across states. Indeed, it may very well exacerbate it. Despite its valiant efforts, the CSBS has thus far been unable to ensure harmonization across a relatively basic set of net worth, security, permissible investment, or trust requirements. Attempting to promote a harmonized approach to an even more sophisticated regulatory framework like the suspension bridge would likely prove even more challenging—especially where the success of this framework

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217 Although a more nuanced economic view might be that these requirements would likely result in pronounced procyclicality. Specifically, where the market value of risky assets in an MSB's portfolio fell, this would *by design* trigger the obligation to sell these assets. The MSB would then be forced to sell risky assets into a market that was already falling, potentially generating or accelerating fire sale dynamics.

hinged on both robust internal risk management by MSBs and consistent and effective oversight by state banking supervisors.

The second objection is that PayPal, Libra, and the new breed of aspiring monetary institutions simply do not look like banks. MSBs are essentially financial *intermediaries*: aggregating funds from their customers and then using these funds to make investments.[218] They do not "create" money in the same way that banks do when they extend loans to their customers;[219] nor is there compelling evidence to suggest that their portfolios are concentrated in the type of longer term, risky, and illiquid loans that have historically been the staple of conventional deposit-taking banks.[220] Accordingly, despite their core functional similarities, there remain obvious and important institutional differences between banks and other monetary institutions. These differences should be taken into account in the design of any new regulatory framework.

So what existing financial institutions, if any, do these new monetary institutions actually resemble? The answer is MMFs. While MSBs technically do not qualify as MMFs,[221] they nevertheless share a number of important institutional and functional similarities. As a preliminary matter, both MSBs and MMFs issue monetary liabilities: accepting funds from customers in exchange for a contractual promise to return these funds at a fixed value on demand. Both MSBs and MMFs then use the proceeds raised through the issuance of these monetary

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218 ARMOUR ET AL., *supra* note 13, at 478–504 (describing investment funds, insurance companies, and other financial institutions that perform this type of intermediation function).

219 *See, e.g.*, Michael McLeay, Amar Radia & Ryland Thomas, *Money Creation in the Modern Economy*, 2014 BANK ENG. Q. BULL. 14, 16 (2014), https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/money-creation-in-the-modern-economy.pdf [https://perma.cc/Z4UD-2KLL] (describing how the issuance of loans creates new money).

220 Although at present there is little publicly available information regarding the composition of MSB investment portfolios. The introduction of reporting or (lagged) disclosure requirements designed to enhance the transparency of these portfolios is discussed below.

221 The monetary liabilities issued by MSBs are not explicitly identified as "securities" pursuant to the Securities Act of 1933, 15 U.S.C. § 77a (2018). Nor do an MSB's monetary liabilities fall into the catch-all category of an "investment contract" owing to the fact that the holders of these liabilities are not entitled to any interest or profit generated by an MSB's investment portfolio. *See SEC* v. *W.J. Howey Co.*, 328 U.S. 293, 298–99 (1946) (defining an investment contract as involving an investment of money in a common enterprise *with a reasonable expectation of profits* to be derived from the efforts of others) (emphasis added). While there is a chance than an MSB may be deemed by a court to constitute an "investment company" for the purposes of the ICA, I am aware of no case law considering this question.

liabilities to invest in a range of financial instruments. This combination of monetary and intermediation functions exposes MSBs and MMFs to the same fundamental risk: that any material decrease in the market value of their investment portfolios will expose them to potential liquidity problems, that these liquidity problems will escalate into more fundamental bankruptcy problems, and that—faced with bankruptcy—they will be unable to honor their contractual commitments. Finally, in terms of mitigating this risk, neither MSBs nor MMFs have ex ante access to the lender of last resort facilities, deposit guarantee schemes, or special resolution regimes available to conventional deposit-taking banks.[222]

In theory, therefore, the regulatory framework that currently governs MMFs might provide us with some useful insights into how better regulation can transform the monetary liabilities of MSBs into good money. As a starting point, in order to bring permissible investment restrictions more squarely in line with the relatively tight portfolio constraints imposed under SEC Rule 2a-7, MSBs should at the very least be restricted to investments in cash, cash equivalents, and other money market instruments.[223] Indeed, given the recent history of instability within the MMF market, along with the Federal Reserve's apparent reluctance to force MMFs to impose liquidity fees and redemption gates during periods of stress, there is a strong argument for limiting the investment portfolios of MSBs to cash, bank deposits, or central bank reserves. These investment restrictions could then be supplemented by a prohibition against MSBs incurring any financial debts other than those stemming from their contractual obligations to customers.[224] This combination of tight investment restrictions and a prohibition against financial indebtedness would serve to reduce the risk that fluctuations in the market value of an MSB's portfolio might eventually lead to its bankruptcy and—in the event that an MSB did file for bankruptcy—eliminate the

222 In the midst of an incipient financial crisis, of course, policymakers have often expanded the scope of this financial safety net to encompass non-bank financial institutions—including, in the context of the financial crisis of 2007–09, MMFs. *See supra* note 26.

223 Along the same vein, MSBs could potentially be subject to the same liquidity management rules as MMFs. To facilitate investment in money market instruments, assuming this was desirable, they could also be given permission to use similar accounting techniques.

224 Alternatively, any financial indebtedness could be explicitly subordinated to customer claims. Ultimately, the purposes of this prohibition are simply to ensure that investors are the most senior claimants on an MSB's assets in the event of its bankruptcy.

prospect that customers would be forced to compete with the firm's other creditors over its remaining assets. Lastly, in order to ensure strict compliance with these new requirements, MSBs should be required to provide their supervisors with periodic reports detailing both the nature of their investments and a narrative description of how they measure and manage the associated market, liquidity, and other risks.

Having sketched out the broad contours of this new regulatory framework, the next question is how to ensure its harmonized application across all fifty states. As we have seen, state-level regulation has largely failed to achieve meaningful harmonization of the laws governing MSBs. There is also no evidence to suggest that the stark differences in these laws across states have provided a laboratory for financial innovation. And perhaps most importantly, existing state-level MSB laws have exposed customers to serious and often hidden risks. What we need is a single regulatory authority that has both the power and expertise to strengthen and harmonize the regulatory framework governing MSBs and other new monetary institutions. In this respect, it is worth pointing out that there is already a federal regulator with over 150 years of experience supervising the safety and soundness of monetary institutions and a historical mandate to promote the development a single national currency. That regulator is the OCC.

FIGURE 9
A TRIPARTITE LICENSING REGIME FOR THE OCC

Licensing Category	Functional Description	Regulatory Treatment
Commercial banks	• Combine the issuance of monetary liabilities with investments in longer-term, risky, and illiquid loans and other financial instruments	• Existing prudential regulation and supervision • Existing FDIC deposit insurance, lender of last resort facilities, and special resolution regime
Monetary institutions	• Issue monetary liabilities in exchange for customer funds • Customer funds not invested in longer-term, risky, and illiquid loans and other investments	• Tight portfolio restrictions • Prohibition on financial indebtedness • Periodic portfolio and risk management reporting requirements
Lending institutions	• Make investments in longer-term, risky, and illiquid loans and other investments • Investments financed using only equity and long-term debt	• Prohibition against the issuance of monetary liabilities • Bespoke prudential regulation and supervision based on underlying risks

We can envision restructuring the OCC's current regulatory framework to create a new licensing regime based on up to three distinct categories of financial institutions (see Figure 9). The first category would remain conventional deposit-taking banks.[225] The second category—let's call them *monetary institutions*—would include firms such as PayPal that issued monetary liabilities but did not otherwise "create" money and were prohibited from investing in longer-term, risky, or illiquid loans or other financial instruments.[226] Conversely, the third cate-

225 Reflecting existing licensing categories, this category would then be subdivided into national banks, federal savings associations, and the federal branches and agencies of foreign banks.

226 Several scholars have proposed splitting up the monetary and lending functions of banks. *See, e.g.*, Levitin, *supra* note 154. The crucial difference between this and previous proposals is that financial institutions would retain the *choice* of obtaining a license as either a bank or a monetary institution (but not both).

gory—*lending institutions*—would be permitted to make loans and invest in risky financial instruments but expressly prohibited from financing these investments through the issuance of monetary liabilities. While beyond the scope of this Article, this category could provide a federal licensing regime for emerging "fintech" lenders such as SoFi and Quicken Loans.[227] Each of these three categories of financial institutions could then be subject to bespoke regulatory and supervisory frameworks that reflected the specific risks posed by their respective business models.[228]

Centralizing the regulation and supervision of MSBs and other monetary institutions under the jurisdiction of the OCC would potentially yield a number of significant benefits. First, and most obviously, centralization would enable the OCC to develop, monitor, and enforce a consistent regulatory and supervisory framework governing all monetary institutions operating in the United States. Just as the National Banking Act of 1863 brought an end to the regulatory and monetary divergence of the free banking era by establishing the OCC to oversee the National Banking System, expanding the OCC's mandate to encompass these new monetary institutions would bring an end to the significant and highly dangerous legal heterogeneity at the heart of the new bad money. Indeed, in many respects, this new mandate would reflect a return to the OCC's historical monetary roots.[229]

Expanding the scope of the OCC's mandate to include these new monetary institutions would also enhance its ability to fulfill its current mandate. Perhaps most importantly, bringing the regulation and supervision of these institutions under the same umbrella as conventional bank regulation would provide the OCC with a wealth of new and valuable information.

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227 The question of whether this new federal licensing regime should exist alongside or altogether replace existing state regimes is also beyond the scope of this paper. Ultimately, answering this question would demand the type of comparative and functional analysis of the state-level laws that currently apply to these lending institutions that this paper has undertaken for monetary institutions.

228 I am indebted to my colleague Saule Omarova for pointing out that this proposal would necessitate the fundamental rethinking (and restructuring) of current federal law relating to bank holding companies. While this rethinking is beyond the scope of this project, it would nevertheless represent an important technical challenge in connection with any eventual implementation of this proposal.

229 For a more detailed description of these roots, see Lev Menand, *The Monetary Basis of Bank Supervision*, VAND. L. REV. (forthcoming 2020) (manuscript at 54–60), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3421232 [https://perma.cc/EFY8-7YY6].

As a preliminary matter, the OCC would be able to consolidate information collected from different types of financial institutions to construct a more accurate and complete map of the monetary system, along with the important—and too often opaque—interconnections between banks, MSBs, and other financial institutions. Armed with this information, the OCC would then be in a better position to monitor ongoing industry developments (including the growth and evolution of the PayPal and Libra ecosystems) and take action in response to the emergence of new risks. Along the same vein, the expansion of the OCC's mandate would enable it to more effectively police the regulatory perimeter separating banks from other monetary institutions: ensuring that each firm obtained the federal license that was most appropriate for its business model. Lastly, relative to the highly fragmented regulatory architecture that exists at present, the centralization of regulatory authority would arguably make the OCC more accountable for future regulatory failures.

Ultimately, subjecting MSBs and other monetary institutions to strong and consistent regulation, enforced by a single, well-informed, and highly accountable regulatory authority, would likely generate significant benefits for customers. The tight portfolio restrictions and prohibition against financial indebtedness at the heart of this new framework would serve to dramatically reduce—although not necessarily eliminate[230]—the exposure of customers to both fluctuations in the market value of these institutions' investment portfolios and, more fundamentally, the failure of these institutions to live up to their contractual commitments. Federal oversight would also make it far easier to ensure the coordinated tightening of these restrictions where warranted: including but not limited to forcing MSBs to hold customer funds in the form central bank reserves. The harmonized application, supervision, and enforcement of this framework at the federal level would also eliminate any differences in the quality of customer protection across states. Viewed from this perspective, this new regula-

230 Specifically, customers would be exposed to any residual liquidity risk associated with the portfolio investments. As demonstrated during the 2007–09 financial crisis, even the markets for ostensibly "safe" money market instruments can be prone to bouts of illiquidity. The most straightforward way of eliminating this risk would be to give MSBs and other monetary institutions access to central bank lender of last resort facilities. While this paper does not necessarily advocate this approach, centralizing responsibility for the regulation and supervision of these institutions within the jurisdiction of the OCC at the very least opens up this possibility.

tory framework would thus transform the monetary liabilities issued by MSBs and other monetary institutions from heterogeneous and inherently risky legal claims into far safer and more standardized assets. With a few strokes of a lawmaker's pen, they would become good money.

Importantly, the introduction of this new regulatory framework would also help promote greater financial stability. In this respect, it is worth noting that many people and businesses actually run *toward* banks in response to an incipient financial crisis.[231] While the reasons for this "flight to safety" are complicated, this behavior is consistent with the observation that, for most of us, bank deposits are the safest source of money available to us other than cash.[232] Given the level of protection that customers currently enjoy under many state MSB laws, it is thus not difficult to envision that at least some of these customers might decide to transfer their funds out of MSBs and into bank accounts in the thick of the next crisis. In the event that these transfer decisions became highly correlated, MSBs could theoretically experience something resembling a conventional bank run. By enhancing the credibility of an MSB's monetary commitments, a stronger and more consistent regulatory framework would render these commitments closer functional substitutes to conventional bank deposits, thereby reducing the probability that an MSB will experience this type of destabilizing customer run.

The final, and perhaps somewhat underappreciated, benefit of this new regulatory framework would be to promote a more level competitive playing field. We have already seen how the unique and highly sophisticated regulatory frameworks governing banks give them a comparative advantage in connection with the issuance of monetary liabilities. At present, banks also benefit from at least two other competitive advan-

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231 For a more detailed discussion of this phenomenon, see generally Viral V. Acharya & Nada Mora, *Are Banks Passive Liquidity Backstops? Deposit Rates and Flows During the 2007–2009 Crisis*, (Nat'l Bureau of Econ. Research Working Paper No. 17838, 2012), https://www.nber.org/papers/w17838 [https://perma.cc/PQG7-VSD3] and Evan Gatev & Philip E. Strahan, *Banks' Advantage in Hedging Liquidity Risk: Theory and Evidence from the Commercial Paper Market*, 61 J. FIN. 867 (2006).

232 In theory, the safest form of money is central bank reserves. In practice, however, only commercial banks—and, in some countries, a limited range of other firms—have access to this form of money. For a recent paper arguing in favor of giving the broader public access to central bank reserve accounts, see generally, Morgan Ricks, John Crawford & Lev Menand, *Digital Dollars*, GEO. WASH. L. REV. (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3192162 [https://perma.cc/2RD5-RPM8].

tages. First, banks are the only monetary institutions in the United States with direct access to the Federal Reserve's wholesale payment system, known as "Fedwire."[233] This forces MSBs and other non-bank monetary institutions to hold their own money with, and process payments through, their most powerful competitors. Second, the central role of banks in the current system of money and payments has contributed to the "too-big-too-fail" problem: reducing the funding costs of banks relative to their peers, and thus further consolidating their comparative advantage.[234]

A strengthened and harmonized regulatory framework would help address all three of these competitive distortions. As described above, this framework would make the monetary liabilities issued by MSBs and other monetary institutions closer functional substitutes for conventional bank deposits. Over the longer term, making these monetary liabilities closer substitutes would provide the legal foundations necessary for the development of one or more viable non-bank payment systems. The eventual development of these systems as an alternative to the current bank-based system would then drive further competition and innovation and, importantly, help ameliorate the too-big-to-fail problem. Lastly, the introduction of prudential regulation and supervision by the OCC would go along way toward alleviating concerns about the impact of granting these non-bank monetary institutions access to Fedwire and, perhaps eventually, even pave the way for their incorporation into the financial safety net. Rather than simply viewing this new regulatory framework as a burden, MSBs and other monetary institutions should therefore welcome it as providing an important boost to their long-term competitiveness and stability.

A strengthened and harmonized regulatory framework would also enhance the competitive position of the United States at the international level. In his recent book, economist

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233 For a description of Fedwire and the institutional mechanics of the current wholesale payment system, see ARMOUR ET AL., *supra* note 13, at 393–98. For this reason, they are also ineligible to obtain direct access to the major private payment systems such as CHIPS, EPN, and RTP.

234 For recent empirical work measuring this too-big-to-fail subsidy, see generally Viral V. Acharya, Deniz Anginer & A. Joseph Warburton, *The End of Market Discipline? Investor Expectations of Implicit Government Guarantees*, (Working Paper, 2016), https://tinyurl.com/uq3h2ma [https://perma.cc/T3KP-JKJQ], Kenichi Ueda & B. Weder Di Mauro, *Quantifying Structural Subsidy Values for Systemically Important Financial Institutions*, 37 J. BANKING & FIN. 3830 (2013), and Priyank Gandhi & Hanno Lustig, *Size Anomalies in U.S. Bank Stock Returns*, 70 J. FIN. 733 (2015).

Thomas Philippon argues that the concentration of corporate power in the United States in recent decades has resulted in a marked decrease in competition across a wide range of industries.[235] A similar phenomenon can be observed in the current bank-based system of money and payments, where the United States has long been recognized as a laggard amongst developed countries in the adoption of new technologies.[236] Crucially, the United States has also been a laggard in updating its legal frameworks governing money and payments. In 2018, for example, the European Union updated its Payment Services Directive to specifically address the risks posed by non-bank payment institutions.[237] The Peoples Bank of China, meanwhile, has recently taken the unprecedented step of forcing the largest institutions within its burgeoning shadow payment system—AliPay and WeChat Pay—to deposit customer funds in a ringfenced reserve account with the central bank.[238] If the United States fails to update its legal frameworks to reflect new challenges, it risks falling even further behind on the technological curve.

Inevitably, of course, these proposals are not without their own questions and controversies. Many of them revolve around the choice of the OCC as the most desirable regulator for this new role. The OCC has often been criticized for its allegedly "cozy" relationship with many of the banks under its supervision[239] and for implementing policies that benefit incumbent banks at the expense of competition.[240] And while the OCC has a wealth of expertise regulating and supervising deposit-taking institutions, it is not entirely clear how well this expertise will translate to new business models—especially fintech

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235 *See* THOMAS PHILIPPON, THE GREAT REVERSAL: HOW AMERICA GAVE UP ON FREE MARKETS (2019).

236 The most obvious example is the continued and widespread use of checks in the United States long after the rest of the world abandoned this antiquated payment instrument. However, the United States is also a laggard in the implementation of real-time wholesale payments and various retail payments advances such as "tap-and-pay" technology.

237 *See* Council Directive 2015/2366, 2018 O.J. (L 337). For a description of the key provisions of the new Payment Services Directive relating to non-bank payment institutions, see Awrey & van Zwieten, *supra* note 25, at 41–43.

238 *See* Gabriel Wildau & Yizhen Jia, *Chinese Merchants Refuse Cash as Mobile Payments Take Off*, FIN. TIMES (Jan. 1, 2019), https://www.ft.com/content/a97d76de-035e-11e9-99df-6183d3002ee1 [https://perma.cc/3LG9-4XTQ].

239 *See, e.g.*, Andrew Martin, *Does This Bank Watchdog Have a Bite?*, N.Y. TIMES (Mar. 27, 2010), https://www.nytimes.com/2010/03/28/business/28dugan.html [https://perma.cc/P4KN-ACU8].

240 *See* Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. REV. 232, 257–60 (2018).

lending. By the same token, insofar as the objective of these proposals is ultimately to promote consumer protection, one might reasonably argue that the federal regulator with the most relevant expertise is actually the Consumer Financial Protection Bureau (CFPB). Yet the CFPB comes with its own baggage, much of it stemming from its politically contentious creation in the immediate aftermath of the last financial crisis. As always, there will be tradeoffs in designing a new regulatory framework. The key question is whether this framework is *better* than the one—or in this case fifty—that preceded it.

Looking ahead, the scale and scope of the changes envisioned by these proposals should not be underestimated. They contemplate the substantial harmonization and strengthening of existing regulatory frameworks, a significant shift in power to the federal government, and a dramatic expansion in the mandate and responsibilities of the OCC. They would also require Congress to adopt new legislation: a National Money Act.[241] While such sweeping regulatory reforms may seem unrealistic in the current political environment, the technological revolution that is currently reshaping our monetary institutions is not going to stop simply because our lawmakers are consumed by partisan rancor. When push comes to shove, we must either address the dangers posed by the emergence of the new bad money or resign ourselves to the significant—and growing—vulnerability at the very heart of our financial and economic system.

CONCLUSION

Money is, always and everywhere, a legal phenomenon. This is not to suggest that money is *only* a legal phenomenon. Yet it is impossible to deny that the law plays a myriad of important and often poorly understood roles that either enhance or undercut the credibility of the promises that we call money. In the case of banks and MMFs, the law goes to great lengths to transform their monetary liabilities into good money. In the case of proprietary P2P payment platforms, stablecoin issuers, and other aspiring monetary institutions, the antiquated, fragmented, and heterogenous regulatory frameworks that currently, or might in future, govern them do far, far less to support the credibility of their commitments. This state of

241 The necessity of expanding the OCC's legal mandate via statute was recently driven home in Vullo v. Office of Comptroller of Currency, 378 F. Supp. 3d 271 (S.D.N.Y. 2019) (rejecting the OCC's motion to dismiss a case challenging its proposed "Fintech Charter").

affairs—with good money increasingly circulating alongside bad—poses significant dangers for the customers of these new monetary institutions. In time, it may also undermine the integrity and stability of the wider financial system. Together, these dangers provide a compelling rationale for adopting a new approach to the regulation of private money: one that strengthens and harmonizes the regulatory frameworks governing monetary institutions and supports the development of a more level competitive playing field.

APPENDIX A
KEY PROVISIONS OF STATE MSB LAWS
LEGEND

BA: bankers' acceptance eligible for purchase by FRS	**CP**: commercial paper	**MMF**: money market fund
BE: bill of exchange eligible for purchase by FRS	**FRS**: Federal Reserve System	**NRSRO**: Nationally Recognized Statistical Rating Org.
CD: certificate of deposit	**IDI**: Insured Depository Institution	**PLC**: publicly listed corporation

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
Alabama	Alabama Money Transmission Act [MTA]	Minimum of at least $25,000 in accordance with GAAP [MTA, §8-7A-10]	Surety bond, letter of credit, or other similar security of at least $100,000 or average daily obligations for money received in state plus 50% of the average daily outstanding instrument and stored value obligations in state, whichever is greater [MTA, §8-7A-7]	No restrictions	No requirements
Alaska	Alaska Uniform Money Services Act [MSA]	Minimum of at least $25,000 [MSA, §06.55.107]	Surety bond, letter of credit, or another similar security of $25,000 plus $5,000 for each location in state, not exceeding a total addition of $125,000 [MSA, §06.55.104]	Permissible investments: (i) cash, CDs, senior debt of IDIs; (ii) BA/BE; (iii) investments bearing a top 3 rating from NRSRO; (iv) US government, state, or agency debt; (v) good receivables payable to licensee from an authorized delegates [20% cap; 10% concentration limit]; (vi) MMF shares; (vii) shares, debt, or demand borrowing agreements of	Permissible investments held in trust for the benefit of customers [MSA, §06.55.501(c)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				PLCs [each with 20% cap; 10% concentration limit; 50% aggregate cap] [MSA, §06.55.502]	
Arizona	Arizona Revised Statutes, chapter 12 [ARS]	Minimum of at least $100,000, plus $50,000 for each additional location to a maximum of $500,000 [ARS, §6-1205.01]	Bond of at least $25,000 to maximum of $500,000 depending on the number of locations in state [ARS, §6-1205]	Permissible investments: (i) money on hand or deposit in name of licensee; (ii) CD or other debt instruments of an IDI; (iii) BA/BE; (iv) CP bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) stocks, bonds or other obligations of US companies with top 3 rating from NRSRO [with 5 year minimum rating history]; receivables due from authorized delegates [90% must be good receivables] [ARS, §6-1201 and 6-1212]	No requirements
Arkansas	Arkansas Money Services Act [MSA]	Minimum of at least $250,000 [MSA, §23-55-207]	Bond of at least $50,000 plus $10,000 per location in state to a maximum of $300,000; can be increased to $1M on the basis of financial condition [MSA, §23-55-204]	Permissible investments: (i) cash, CDs, senior debt of IDIs; (ii) BA/BE; (iii) investments bearing a top 3 rating from NRSRO; (iv) US government, state, or agency debt; (v) good receivables payable to licensee from authorized delegates [20% cap; 10% concentration limit]; (vi) MMF shares; (vii) shares, debt, or demand borrowing agreements of PLCs [each with 20% cap; 10% concentration limit; 50% aggregate cap] [MSA, §23-55-701 and 23-55-702]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment obligations [MSA, §23-55-701]
California	California Money Transmission Act [MTA]	Tangible shareholder equity of at least $250,000 to a maximum of $500,000 based on:	For licensees that sell or issue payment instruments or stored value obligations: deposit or surety bond of not	Eligible securities: (i) cash; (ii) deposits with IDIs; (iii) US government, state, or agency debt; (iv) BA/BE; (v) CP with eligible	Permissible investments held in trust for the benefit of purchasers and holders of

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
		transaction volumes; number of locations; amount, nature, and quality of eligible securities, and other factors [MTA, §2040]	less than $500,000 or 50% of average daily outstanding payment instrument or stored value obligations, whichever is greater to a maximum of $2M [MTA, §2037(d)] For licensees that receive money for transmission: deposit or surety bond of at least $250,000 to a maximum of $7M [MTA, §2037(e)]	rating [20% cap]; (vi) investments bearing an eligible rating from an NRSRO [20% cap]; (v) MMF shares [20% cap for all non-government MMFs]; (vi) good accounts receivable due from agents [25% cap; 10% concentration limit]; (vii) receivables owed from clearinghouse, debit, or credit funded transmission; (viii) shares of investment funds that invest in eligible securities [MTA, §2082-2083] Eligible securities invested in a single issuer not to exceed 10% (other than cash, bank deposits or government securities); 50% aggregate cap on investments in (v)-(vii) [MTA, §2083]	outstanding payment obligations [MTA, §2081(2)(c)]
Colorado	Colorado Money Transmitters' Act [MTA] Code of Colorado Regulations, Money Transmitters [CCR]	At least $50,000, plus $25,000 per additional location in state to a maximum of $100,000 [CCR, MO4, §4(a)]	Corporate surety bond in the amount of $1M; can be reduced by banking board to minimum of $250,000; can be increased to maximum of $2M on the basis of financial condition [MTA, §11-110-108]	Permissible investments: (i) cash; (ii) deposits or other debts of IDIs; (iii) BE and time drafts drawn on or accepted by federal IDIs; (iv) CP bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs [MTA, §11-110-108]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment obligations [MTA, §11-110-108]
Connecticut	Connecticut Money Transmission Act [MTA]	At least $1M or higher if determined by the commissioner [MTA, §36a-604(c)]	Bond of at least $300,000 to maximum of $1M depending on the weekly volume of payments [MTA, §36a-602(a)]	Permissible investments: (i) cash; (ii) time deposits or other debt in a bank; (iii) BA/BE; (iv) prime quality CP; (v) US government, state, or agency debt; (vi) bills, notes, bonds, debentures, or preferred stock of PLCs if "'prime quality";	Permissible investments held in trust for the benefit of "claimants of the licensee's money transmission business" [MTA, §36a-603(c)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				(vii) good receivables due from authorized delegates [30% cap; 10% concentration limit]; (viii) gold [MTA, §36a-596(11) and 36a-603(a)]	
Delaware	Delaware Sale of Checks Act [SCA]	Minimum of $100,000 [SCA, §2305(1)]	Surety bond or irrevocable letter of credit of at least $25,000 plus $5,000 for each additional location in state to a maximum of $250,000 [SCA, §2309(a)]	No restrictions	No requirements
District of Columbia	D.C. Code, Chapter 10 – Money Transmissions (DCC)	Minimum of $100,000 plus $50,000 per additional location to a maximum of $500,000 [DCC, §26-1004]	Surety bond, irrevocable letter of credit, deposit, or other similar security devise of at least $50,000 plus $10,000 per location to a maximum of $250,000 [DCC, §26-1007(a)-(b)]	Permissible investments: (i) cash; (ii) CD or other obligations of a foreign or domestic financial institution; (iii) BA/BE; (iv) CP bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs; (viii) mutual funds composed of one or more permissible investments; (ix) demand borrowing agreements of PLCs; (x) good receivables from authorized delegates [DCC, §26-1001(13) and 26-1005(a)]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [DCC, §26-1005(b)]
Florida	Florida Money Services Businesses Act [MSBA]	Minimum of $100,000 plus $10,000 per additional location in state to a maximum of $2M [MSBA, §560-209(1)]	Surety bond or collateral deposit of at least $50,000 to maximum of $2M based on financial condition, number of locations, and anticipated payment volumes [MSBA, §560-209(3)]	Permissible investments: (i) cash; (ii) CD or other deposit liabilities of domestic or foreign financial institutions; (iii) BA; (iv) CP bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) demand borrowing agreements of PLCs; (viii) good receivables from	No requirements

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				licensee's authorized vendors [MSBA, §560-210]	
Georgia	Georgia State Code [GSC] Georgia State Rule 80-3-1-.01 Payment Instrument Sellers and Money Transmitters [GSR]	Licensee must have "sufficient" working capital and net tangible assets [GSR, 80-3-1-.01(3)]	Surety bond of at least $100,000 to maximum of $2M on the basis of average daily balances/orders of transactions originating in state [GSC, §7-1-683.2]	No restrictions	No requirements
Hawaii	Hawaii Money Transmitters Act [MTA]	Minimum of $1,000 [MTA, §489D-6]	Surety bond, irrevocable letter of credit, collateral deposit, or other similar security device of at least $10,000 ($5,000 after first year if annual money transmissions less than $10,000,000) to a maximum of $500,000 on the basis of impaired financial condition [MTA, §489D-7]	Permissible investments: (i) cash; (ii) CD or other deposit liabilities of domestic or foreign financial institutions; (iii) BE/BA; (iv) corporate debt bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs; (viii) mutual funds composed of one or more permissible investments; (ix) demand borrowing agreements of PLCs; (x) good receivables from authorized delegates [MTA, §489D-4 and 489D-8]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTA, §489D-8]
Idaho	Idaho Money Transmitters Act [MTA]	Minimum of $50,000 plus $25,000 per additional location in state to a maximum of $250,000 [MTA, §26-2905]	Surety bond, irrevocable letter of credit, collateral or other similar credit device of at least $10,000 plus $5,000 per location in state to a maximum of $500,000 [MTA, §26-2908]	Permissible investments: : (i) cash; (ii) CD or other deposit liabilities of domestic or foreign financial institutions; (iii) BE/BA; (iv) corporate debt bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds,	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTA, §26-2906]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				debentures, or stock of PLCs; (viii)) demand borrowing agreements of PLCs; (ix) good receivables from authorized delegates [MTA, §26-2902(14) and 26-2906]	
Illinois	Illinois Transmitters of Money Act [TMA]	Minimum of $35,000 to maximum of $500,000 based on the number of locations in state [TMA, §20]	Surety bond of $50,000 or 1% of Illinois-based activity, whichever is greater, to a maximum of $2M [TMA, §30]	Permissible investments: (i) cash; (ii) CD of a bank, savings and loan association, or credit union; (iii) BE/BA; (iv) CP bearing top 3 rating from NRSRO; (v) US government, state, or agency debt with top 3 rating from Moody's or S&P; (vi) good receivables from authorized sellers [TMA, §50]	Permissible investments held in trust for the benefit of purchasers of outstanding payment instruments [TMA, §50]
Indiana	Indiana Money Transmitters Act [MTA]	Minimum of $600,000 [MTA, §24(12)]	Surety bond of at least $300,000 plus insurance in the amount of the bond [MTA, §27 and 33(b)]	Permissible investments: (i) cash; (ii) CDs or other debt obligations of foreign or domestic financial institutions; (iii) BA/BE; (iv) investments with top 3 rating from an NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs; (viii) mutual funds comprised primarily of (vii); (ix) demand borrowing agreements with PLCs; (x) good receivables from authorized delegates [MTA, §13 and 33(c)]	No requirements
Iowa	Iowa Uniform Money Services Act [UMSA]	Minimum of $100,000 plus $10,000 per authorized delegate to a maximum of $500,000 [UMSA, §533C.206]	Surety bond, letter of credit, or other similar security of at least $50,000 plus $10,000 per location in state to a maximum of $300,000 [UMSA, §533C.203]	Permissible investments: (i) cash; (ii) CD or other senior debt obligation of an IDI; (iii) BA/BE; (iv) investments with top 3 rating from an NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments and stored value obligations [UMSA,

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				authorized delegates [20% cap; 10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds or debentures of PLC [20% cap; 10% concentration limit; (ix) shares of PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) a demand borrowing agreement with a PLC [20% cap; 10% concentration limit] [UMSA, §533C.601 and 533C.602]	§533C.601]
Kansas	ansas Money Transmitter Act [MTA]	Tangible net worth of not less than $250,000 [MTA, §9-509(e)(1)]	Surety bond or collateral deposit of at least $200,000 to a maximum of $1M on the basis of transaction volumes and financial condition [MTA, §9-509(e)(2)]	Permissible investments: (i) cash; (ii) deposits, CDs and debt obligation with a domestic IDI; (iii) investments with top 3 rating from an NRSRO; (iv) investment grade US government, state, or agency debt; (v) MMF shares; (vi) bills, notes, bonds, debentures or stock of PLCs; (vii) mutual funds composed of permissible investments; (viii) good receivables [40% cap] [MTA, §9-508(k) and 9-513b(a)]	Permissible investments held in trust for the benefit of all persons whose money or monetary value is considered outstanding [MTA, §9-513b(b)]
Kentucky	Kentucky Financial Services Code [KFSC]	Minimum of $500,000 [KFSC, §11-011]	Surety bond or other similar security of at least $500,000 to a maximum of $5M on the basis of financial condition as evidenced by net worth, transaction volume, or other relevant criteria [KFSC, §11-013]	Permissible investments: (i) cash; (ii) deposits, CDs and senior debt obligations of IDIs; (iii) BA/BE; (iv) investments with top 3 rating from an NRSRO; (v) investment grade US government, state, or agency debt; (vi) good receivables [10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds, or debentures of a PLC [20% cap; 10% concentration limit]; (ix)	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [KFSC, §11-015(6)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				shares in a PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) demand borrowing agreement [20% cap; 10% concentration limit] [50% aggregate cap on (viii)-(x)] [KFSC, §11-015(1)-(3)]	
Louisiana	Louisiana Sale of Checks and Money Transmission Act [SCMTA]	Minimum of $100,000 [SCMTA, §1035(2)]	Surety bond or collateral deposit of at least $25,000. For renewals, 1% of annual volumes to a maximum of $500,000 (with a $25,000 minimum); can be increased to $1M on the basis of financial condition [SCMTA, §1037(A)(3)]	Permissible investments: (i) cash; (ii) US government, state, agency, and municipal debt [SCMTA, §1037(G)]	No requirements
Maine	Maine Money Transmitters and Check Cashers Act [MTCCA]	Minimum of $100,000 plus $50,000 per additional location in state to a maximum of $500,000 [MTCCA, §6105]	Surety bond, irrevocable letter of credit, collateral deposit, or similar security device of at least $100,000 [MTCCA, §6107]	No restrictions	No requirements
Maryland	Maryland Money Transmission Act [MTA]	Minimum of $150,000 plus $10,000 per additional location or authorized delegate in state to a maximum of $500,000 [MTA, §12-406(b)]	As *substitute* for permissible investments: surety bond of at least $150,000 to a maximum of $1M on the basis of financial position, outstanding payment instruments, and potential losses [MTA, §12-412]	Permissible investments: (i) cash; (ii) CD or other debt obligation, except a capital note, of state or federally chartered financial institutions, other state bank, or foreign bank that is located or maintains a branch in state and is authorized to maintain deposit or share accounts; (iii) US government, state, or agency debt; (iv) any investment securities, money market mutual fund, bills, notes, debentures or stock of a	Commissioner *may* place permissible investments with a qualified trust company [MTA, §12-412(c)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				PLC bearing a top 3 rating by NRSRO [sic]; (v) demand borrowing agreement with a PLC; (vi) good receivables from authorized delegates [MTA, §12-401(q)]	
Massachusetts	209 CMR 45.00: Licensing and Regulation of Money Services Businesses [MSBR]	Minimum of $25,000 [MSBR, §45.03(2)]; only applies to *foreign* money transmitters	Bond in an amount determined by the commissioner [MSBR, §45.03(3)]; only applies to *foreign* money transmitters	All client funds held in federally insured bank or credit union [MSBR, §45.13(1)]; only applies to *foreign* money transmitters	Client funds must be held in "client fund account" at bank or credit union [MSBR, §45.13(1)]; only applies to *foreign* money transmitters
Michigan	Michigan Money Transmission Services Act MTSA]	Minimum of $100,000 plus $25,000 per additional location in state to a maximum of $1M [MTSA, §13(1)]	A surety bond of at least $500,000 and not more than $1.5M [MTSA, §13(5)]	Permissible investments: (i) cash; (ii) CD or other senior debt obligation of an IDI; (iii) BA/BE; (iv) investment with a top 3 rating from an NRSRO; (v) US government, state, or agency debt; (vi) good receivables [20% cap; 10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds, or debentures of a PLC [20% cap; 10% concentration limit]; (ix) shares of a PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) demand borrowing agreement with a PLC [20% ap; 10% concentration limit] [aggregate investment in (viii)-(x) not to exceed 50%] [MTSA, §32(1)]	Permissible investments held in trust for the purchasers and holders of outstanding payment instruments [MTSA, §13(3)]
Minnesota	Minnesota Money Transmitters Act [MTA]	Minimum of $25,000 to a maximum of $500,000 based on the number of locations in state [MTA, §53B.05]	Surety bond, irrevocable letter of credit, collateral deposit, or other similar security of at least $25,000 to a maximum of $250,000 based on the	Permissible investments: (i) cash; (ii) CD or other senior debt obligation of an IDI; (iii) BA/BE; (iv) investment with a top 3 rating from an NRSRO; (v) US	Permissible investments held in trust for the purchasers and holders of outstanding payment instruments [MTA,

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
			number of locations in state [MTA, §53B.08]	government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, or debentures or fund composed of one or more permissible investments; (viii) demand borrowing agreement with a PLC; (ix) good receivables of authorized delegates [MTA, §53B.03 and 53B.06]	§53B.06]
Mississippi	Mississippi Money Transmitters Act [MTA]	Minimum of $25,000 plus $15,000 for each additional location in state to a maximum of $250,000 [MTA, §77-15-9(e)]	Surety bond or collateral deposit of at least $25,000 or an amount equal to outstanding payment transmissions in state, whichever is greater, to a maximum of $500,000 [MTA, §77-15-11(b) and 75-15-29]	Permissible investments: (i) cash; (ii) CD or other obligation of a foreign or domestic financial institution; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures or stock of a PLC; (viii) mutual funds composed of one or more permissible investments; (ix) demand borrowing agreement with a PLC; (x) good receivables due from agents [MTA, §77-15-12]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding money for transmission [MTA, §77-15-12]
Missouri	Missouri Sale of Checks – Money Order Regulations [SC-MOR]	No requirements	Bond or irrevocable letter of credit in the amount of 5x highest daily volume in previous year to a maximum of $1M; $100,000 minimum [SC-MOR, §361.711]	Permissible investments: cash, demand deposits with a bank, or "readily marketable securities" [SC-MOR, §361.718]	No requirements
Montana	Not applicable	No requirements	No requirements	No restrictions	No requirements
Nebraska	Nebraska Money Transmitters Act [MTA]	Minimum of $50,000 [MTA, §8-2726(1)]	Surety bond or collateral deposit of at least $100,000; can be increased to a maximum of $250,000 based	Permissible investments: (i) cash; (ii) CDs or other debt obligations of domestic or foreign financial institutions; (iii) BA/BE; (iv)	Permissible investments held in trust for the benefit of purchasers and holders of

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
			on amount of transactions or for good cause [MTA, §8-2727(1)-(2)]	investment bearing top 3 rating of NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs; (viii) mutual funds composed of permissible investments; (ix) demand borrowing agreement with a PLC; (x) good receivables due from authorized delegates [MTA, §8-2720 and 2728(1)]	outstanding payment instruments [MTA, §8-2728(2)]
Nevada	Nevada Issuers of Instruments for Transmission or Payment of Money Act [IITPMA]	Minimum of $100,000; can be reduced where security requirements at least 2x minimum [IITPMA, §671.050(2)(b)]	Surety bond or collateral deposit of at least $10,000 plus $5,000 for each additional location in state to a maximum of $250,000 [IITPMA, §671.100]	Permissible investments: liquid assets, government or municipal securities, or other marketable securities [IITPMA, §671.150(4)]	No requirements
New Hampshire	New Hampshire Licensing of Money Transmitters Act [LMTA]	Lesser of average daily outstanding money transmissions or $1M [LMTA, §399-G:5II(c)]	Surety bond of $100,000 [LMTA, §399-G:5II(c)]	No restrictions	No requirements
New Jersey	New Jersey Code, Title 17 [NJC]	For money transmitters: minimum of $100,000 plus $25,000 for each additional location or delegate in state to a maximum of $1M [NJC, §17:15C-5] For foreign money transmitters: minimum of $50,000 plus $10,000 for each additional location or delegate in state to a maximum of	For money transmitters: surety bond, irrevocable letter of credit, or other similar security device of not less than $100,000 to a maximum of $1M [NJC, §17:15C-8] For foreign money transmitters: surety bond, irrevocable letter of credit, or other similar security device of not less than $25,000 to a maximum of $900,000 on the basis of payment volumes	Permissible investments: (i) cash; (ii) CDs or other debt obligations of domestic or foreign banks, savings banks, savings and loan associations, or credit unions; (iii) BA/BE; (iv) investment bearing top 3 rating of NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs; (viii) mutual funds composed of permissible investments; (ix) demand borrowing agreement with a PLC; (x) good receivables due	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [NJC, §17:15C-6]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
		$400,000 [NJC, §17:15C-5]	[NJC, §17:15C-8]	from authorized delegates volumes [NJC, §17:15C-2 and 17:15C-6]	
New Mexico	New Mexico Uniform Money Services Act [UMSA]	Minimum of $100,000 to maximum of $500,000 on the basis of the number of locations [USMA, §58-32-206]	Surety bond, letter of credit, or other similar security of $300,000 or 1% of annual payment volumes, whichever is greater to a maximum of $2M; may be increased up to $5M on the basis of financial condition [USMA, §58-32-203]	Permissible investments: (i) cash; (ii) CD or other senior obligation of an IDI; (iii) BA/BE; (iv) investment bearing top 3 rating of NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from authorized delegates [50% cap; 10% concentration restriction]; (vii) MMF shares; (viii) bills, notes, bonds, debentures of a PLC [20% cap; 10% concentration limit]; (ix) share of a PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) demand borrowing agreement with a PLC [20% cap; 10% concentration limit] [aggregate cap of 50% on investments in (viii)-(x)] [USMA, §58-32-702]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments and stored value obligations [USMA, §58-32-701]
New York	New York Transmitters of Money Act [TMA]	No requirements	Surety bond or collateral deposit of $500,000 [TMA, §643]	Permissible investments: (i) cash; (ii) CD or other debt instruments of commercial banks; (iii) BA/BE; (iv) prime quality CP as determined by NRSRO; (v) US government, state, or agency debt with top 3 rating from NRSRO; (vi) bills, notes, bond, debentures or preferred stock of PLC with top 3 rating from NRSRO [TMA, §640 and 651]	Surety bond (but not permissible investments) held in trust for purchasers and holders [TMA, §643]
North Carolina	North Carolina Money Transmitters Act [MTA]	Minimum of $250,000; can be increased at discretion of the commissioner to ensure safety and soundness	Surety bond or collateral deposit of at least $150,000 to a maximum of $250,000 on the basis of transmission volumes [MTA, §53-208.47]	Permissible investments: (i) cash; (ii) CD or other debt obligation of a foreign or domestic depository institution; (iii) BA/BE; (iv) investment bearing top 3 rating	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
		[MTA, §53-208.46]		from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bond, debentures, or preferred stock of PLCs; (vii) mutual funds composed of one or more permissible investments; (viii) demand borrowing agreement with a PLC; (ix) good receivables; (x) virtual currency but only to extent of outstanding transmission obligations received in like kind virtual currency [MTA, §53-208.42(17) and 53-208.48]	instruments and stored value obligations [MTA, §53-208.48]
North Dakota	Money Transmitter Act [MTA]	Minimum of $100,000 [MTA, §13-09-04(1)]	Surety bond, irrevocable letter of credit, collateral deposit, or other similar security device of at least $150,000 to a maximum of $500,000 for good cause [MTA, §13-09-05(1)]	Permissible investments: (i) cash; (ii) CD or other debt obligations of a foreign or domestic financial institution; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, debentures, or stock of PLCs; (viii) investment funds composed of one or more permissible investments; (ix) demand borrowing agreement of PLC; (x) good receivables due from authorized delegates [MTA, §13-09-02(16) and 13-09-06(1)]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTA, §13-09-06(2)]
Ohio	Ohio Uniform Commercial Code, chapter 1315 [OUCC]	Minimum of $500,000 [OUCC, §1315.04(C)(2) and 1315.05(B)]	Surety bond or collateral pledge of at least $300,000 to a maximum of $2M [OUCC, §1315.07(A)(1)(B)]	Permissible investments: (i) cash; (ii) CD or other debt instruments of domestic or foreign depository institutions; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government,	Permissible investments held in trust for the benefit of persons for which the licensee holds money for transmission [OUCC,

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures or preferred stock of PLCs; (viii) mutual funds composed primarily of (i)-(vi); (ix) demand borrowing agreement with a PLC; (x) good receivables due from authorized delegates [OUCC, §1315.06(B)]	§1315.06(A)(1)(B)]
Oklahoma	Oklahoma Money Service Business Regulations [MSBR]	Minimum of $275,000 to a maximum of $3M based on the number of locations in state [MSBR, §85:15-3-16]	Surety bond, letter of credit or other similar security device of at least $50,000 plus $10,000 for additional location in state to a maximum of $500,000; can be increased to $1M on the basis of financial condition [MSBR, §85:15-3-3]	Permissible investments: (i) cash; (ii) CD or senior debt obligation of an IDI; (iii) BA/BE; investment bearing top 3 rating from NRSRO; (iv) US government, state or agency debt; (v) good receivables due from authorized delegates [20% cap; 10% concentration limit]; (vi) MMF shares; (vii) bills, notes, bonds, or indentures of PLC [20% cap; 10% concentration limit]; (viii) shares of PLC or equity mutual funds [20% cap; 10% concentration limit]; (ix) demand borrowing agreement with a PLC [20% cap; 10% concentration limit] [aggregate 50% cap on investments in (vii)-(ix)] [MSBR, §85:15-9-1 and 85:15-9-2]	No requirements
Oregon	Oregon Money Transmission Regulations, chapter 717 [MTR]	Minimum of $100,000 plus $25,000 for each additional location in state to a maximum of $500,000 [MTR, §717.215(1)]	Security device or collateral deposit with a insured institution of at least $25,000 plus $5,000 per location in state to a maximum of $150,000 [MTR, §717.225(1)-(2)]	Permissible investments: (i) cash; (ii) CD or other debt obligation of a domestic or foreign financial institution; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, or	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTR, §717.215(4)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				debentures, or stock of PLC; (viii) mutual funds composed of one or more permissible investments; (ix) demand borrowing agreement; (x) good receivables due from authorized delegates [MTR, §717.200(15) and 717.215(3)]	
Pennsylvania	Pennsylvania Money Transmission Business Licensing Law [MTBLL]	Minimum of tangible net worth $500,000 [MTBLL, §4(a)(1)]	Bond or deposit of securities of $1M; can be increased to 110% of average daily outstanding balance [MTBLL, §6(a) and 6(b)(1)]	No restrictions	No requirements
Rhode Island	Rhode Island Act Relating to Financial Institutions – Licensed Activities – Currency Transmissions [CTA]	Minimum of $50,000 [CTA, §19-14-5(4)]	Bond of at least $50,000 [CTA, §19-14-6(a)(4)]	No restrictions	No requirements
South Carolina	South Carolina Anti-Money Laundering Act [AMLA]	Minimum of $250,000 [AMLA, §35-11-230]	Surety bond, letter of credit or other similar security of at least $50,000 plus $10,000 per additional location in state to a maximum of $250,000; can be increased to $1M on the basis of financial condition [AMLA, §35-11-215]	Permissible investments: (i) Cash; (ii) CD or other senior debt obligation of an IDI; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) good receivables dur from authorized delegates [20% cap; 10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds, or debentures of PLC [20% cap; 10% concentration limit]; (ix) shares of PLC or equity mutual fund [20% cap; 10% concentration limit]; (x)	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments and stored value obligations [AMLA, §35-11-600(C)]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				demand borrowing agreement with PLC [20% cap; 10% concentration limit] [aggregate cap of 50% on investments in (viii)-(x)] [AMLA, §35-11-600 and 605]	
South Dakota	South Dakota Money Transmission Act [MTA]	Minimum of $100,000 [MTA, §51-A-17-6]	Security device or deposit of $100,000; can be increased to $500,000 on the basis of impaired financial condition [MTA, §51-A-17-8]	Permissible investments: (i) cash; (ii) CD or other debt obligations of a foreign or domestic financial institution; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures or stock of PLCs; (viii) mutual funds composed of one or more permissible investments; (ix) demand borrowing agreement with a PLC; (x) good receivables due from authorized delegates [MTA, §51-A-17-2 and 51-A-17-10]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTA, §51-A-17-10]
Tennessee	Tennessee State Code, Title 45, chapter 17 [TSC]	Minimum net worth of $100,000 plus $25,000 for each additional location in state to a maximum of $500,000 condition [TSC, §45-A-7-205]	Surety bond, irrevocable letter of credit or other similar security of at least $50,000 plus $10,000 for each additional location in state to a maximum of $800,000 [TSC, §45-A-7-208]	Permissible investments: (i) cash; (ii) CD or other debt obligations of a foreign or domestic financial institution; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from authorized agents; (vii) bills, notes, bonds, debentures or stock of traded on national over-the-counter market; (viii) mutual funds the assets of which constitute permissible investments; (ix) demand borrowing agreement with PLC	No requirements

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				[TSC, §45-A-7-206 and 45-A-7-206]	
Texas	Texas Finance Code, chapter 151, Regulation of Money Services Business [MSBR]	Minimum net worth of at least $100,000 to a maximum of $500,000 based on the number of locations in state [MSBR, §151.307]	Surety bond, irrevocable letter of credit or deposit of the greater of $300,000 or 1% of annual dollar volume of money transmission business in state to a maximum of $2M [MSBR, §151.308]	Permissible investments: (i) good receivables [capped at 40% of good receivables owed to licensee]; (ii) cash or CDs in demand or interest bearing accounts with IDI; (iii) readily marketable CDs or senior debt obligations of IDIs that are themselves federally insured; (iv) US government, state or agency debt; (v) government MMF shares; (vi) security provided pursuant to licensee's obligations under chapter 151 For licensees with a net worth of less $5M: 100% of average outstanding transmission obligations in the US For licensees with a net worth of $5M or more: 50% of average outstanding transmission obligations in the US [MSBR, §151.309]	Permissible investments held in trust "for the benefit of any individual to whom an obligation arising under this chapter is owed" [MSBR, §151.309(e)]
Utah	Utah Money Transmitter Act [MTA]	Minimum of $1M [MTA, §7-25-203]	Surety bond of $50,000 [MTA, §7-25-204(3)]	Commissioner *may* require deposits if it believes licensee is unsafe or unsound [MTA, §7-25-407]	No requirements
Vermont	Vermont Statutes, Title 8, chapter 79 [VSA]	Minimum of $100,000 [8 VSA, §2510]	Surety bond, letter of credit or other similar security of at least $100,000 plus $10,000 per additional location in state to a maximum of $500,000;	Permissible investments: (i) cash; (ii) CD or other senior debt obligation of a depositary institution; (iii) BA/BE; (iv) investment bearing top 3 rating	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
			can be increased to $2M on the basis of financial condition [8 VSA, §2507]	from NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from authorized delegates [20% cap; 10% concentration limit]; (vii) MMF shares; (viii) virtual currency to the extent outstanding transmission obligations received in identical denomination of virtual currency; (viii) bills, notes, bonds or debentures of PLC [20% cap; 10% concentration limit]; (ix) shares of PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) a demand borrowing agreement with a PLC [20% cap; 10% concentration limit] [aggregate cap of 50% on investments in (viii)-(x)] [8 VSA, §2540 and 2541]	instruments and prepaid access obligations [8 VSA, §2540]
Virginia	Code of Virginia, Title 6.2, chapter 19 [CVA]	Minimum of $200,000 to maximum of $1M to be determined by commissioner [VSA, §6.2-1906]	Surety bond or collateral deposit of at least $25,000 to a maximum of $1M [VSA, §6.2-1904]	Permissible investments: (i) cash; (ii) CD or senior debt obligation of an insured depository institution; (iii) BA/BE; (iv) investment bearing top 3 rating from an NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from authorized delegates [10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds, or debentures of a PLC [20% cap; 10% concentration limit]; (ix) shares of PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) demand borrowing agreement from PLC [20% cap;	Permissible investments held in trust for purchasers and holders of outstanding money orders or money transmission services [VSA, §6.2-1918]

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
				10% concentration limit]] [aggregate cap of 50% on investments in (viii)-(x)] [VSA, §6.2-1918 and 1919]	
Washington	Washington Uniform Money Services Act [UMSA]	Minimum of $10,000 and maximum of $3M to be determined by director [USMA, §19.230.060]	Surety bond of at least $10,000 to a maximum of $500,000 on the basis of transmission volumes; can be increased to maximum of $1M on the basis of the nature and volume of business activities or financial health [USMA, §19.230.060]	Permissible investments: (i) cash; (ii) time deposits, savings deposits, demand deposits, CDs, or other senior debt obligations of an IDI; (iii) BA/BE; (iv) investment bearing top 3 rating from NRSRO; (v) US government, state, or agency debt; (vi) good receivables due from authorized delegates [30% cap; 10% concentration limit]; (vii) MMF shares; (viii) bills, notes, bonds, or debentures of PLC [20% cap; 10% concentration limit]; (viii) shares in a PLC or equity mutual fund [20% cap; 10% concentration limit]; (x) demand borrowing agreement from PLC [20% cap; 10% concentration limit] [aggregate cap of 50% on investments in (viii)-(x)] [USMA, §19.230.200 and 19.230.210]	No requirements
West Virginia	West Virginia Code, chapter 32A [WVC]	Minimum of $50,000 plus $25,000 for each additional office or location in state to a maximum of $1M [WVC, §32A-2-8(d)(5)]	Bond of $300,000 to a maximum of $1M based on volume of business [WVC, §32A-2-10(a)]	No restrictions	No requirements
Wisconsin	Wisconsin Seller of Checks Law [SCL]	No requirements	Surety bond or collateral deposit of $10,000 plus $5,000 for each additional location in state to a maximum of $300,000 [SCL,	No restrictions	No requirements

State	Relevant Statutes & Regulations	Net Worth Requirements	Security Requirements	Permissible Investment Restrictions	Trust Requirements
			§217.06(3)(a)]		
Wyoming	Wyoming Money Transmitters Act [MTA]	Minimum of $25,000 [MTA, §40-22-105]	Surety bond, irrevocable letter of credit, or other similar security device of at least $10,000 or 2.5x outstanding payment instruments, whichever is greater; can be increased to a maximum of $500,000 on the basis of impaired financial condition [MTA, §40-22-106]	Permissible investments: (i) cash; (ii) CD or other debt obligations of domestic or foreign financial institutions; (iii) BA/BE; (iv) investment securities bearing top 4 rating from NRSRO; (v) US government, state, or agency debt; (vi) MMF shares; (vii) bills, notes, bonds, debentures, or stock of PLCs or equity mutual funds; (viii) demand borrowing agreement with a PLC; (ix) good receivables due from authorized delegates or subdelegates [MTA, §40-22-102((xvi)]	Permissible investments held in trust for the benefit of purchasers and holders of outstanding payment instruments [MTA, §40-22-107(b)]