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Citation: 19 Stan. J.L. Bus. & Fin. 63 2013



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Untangling the Money Market Fund Problem: A Public-Private Liquidity Fund Proposal

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The 2008 Financial Crisis dramatically highlighted the systemic vulnerabilities of the multi-trillion dollar Money Market Mutual Fund (MMF) industry, which developed over the last 40 years as a vital part of the U.S. financial system. Yet, more than 5 years on, the problem of what to do with MMFs remains unsolved, with no broad consensus in development regarding the best way to address the systemic risks posed by these funds. This Article develops a three-part framework to assess the efficacy of existing reform proposals, in the hope of pointing to new directions. First, I analyze the structural susceptibility of MMFs to “runs,” as well their role as a vector for systemic risk via contagion. Concluding that MMFs’ run-fragility and contagion risks derive from maturity mismatch, coupled with the behavioral dynamics of short-term investors, I argue for the necessity of public support measures for effective reform. Furthermore, any MMF regulation must aim to avoid or limit moral hazard, especially if public support is necessary. I argue that this should be done by internalizing systemic risk costs through ex-ante private payments that are risk-assessed. Finally, I argue that MMF structural reform must take into account meaningful differences between such funds and bank deposits. To the extent MMFs play a conceptually distinct role in the modern financial system that cannot be perfectly substituted by bank deposits, modifying the structural attributes of MMFs that compromise their ability to perform that role would have unintended economic costs and real migration risks.

Applying this framework, this Article shows how recent proposals by the SEC and FSOC are fundamentally flawed, as they fail to address the structural weakness created by maturity mismatch and, thus, cannot effectively prevent runs of the scale experienced in 2008. On the other hand, alternative proposals such as deposit-style insurance and “narrow purpose banks” address both the run and contagion problems but have considerable difficulty mitigating moral hazard costs and migration risk. Given these constraints, this Article concludes with a unique proposal for a Public-Private Liquidity Fund (PPLF) as an optimal paradigm of reform.

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Introduction

“You never want a serious crisis to go to waste. And what I mean by that is an opportunity to do things that you think you could not do before.”¹

Money Market Mutual Funds (MMFs)² have developed over the last 40 years as an important part of the U.S. financial system. As redeemable mutual funds with a stable net asset value (NAV) of \$1.00,³ MMFs have served and continue to serve a vital cash-management function for individual investors, institutions, and governments. In turn, MMFs invest in short maturity and low-risk credit instruments and are themselves a crucial source of short-term credit and liquidity in the U.S. economy. MMFs thus make up an essential component of short-term funding markets, as a stable alternative source of funding to banks. As an indication of their systemic importance, MMFs had about \$3.8 trillion in assets under management (AUM) as of the end of 2008, representing nearly a quarter of all U.S. mutual fund assets.⁴

The 2008 financial crisis dramatically highlighted the structural vulnerability of the MMF industry to systemic risk in the form of “runs.” At the onset of the crisis in 2007, dozens of MMFs were faced with substantial losses due to holdings of asset-backed commercial paper (ABCP), which had significant exposure to the U.S. sub-prime mortgage market. The consequent downturn in the financial markets placed further strains on the short-term debt markets in which MMFs operate. As the financial crisis reached its zenith with the bankruptcy of Lehman Brothers Holdings, Inc. (Lehman) in September 2008, Reserve Primary Fund, a \$62 billion MMF holding \$785 million in exposure to Lehman commercial paper (CP), was subject to a run by investors, with redemptions totaling \$40 billion in just two days.⁵ This contagion soon spread horizontally to other prime MMFs, with heavy investor redemptions totaling more than \$100 billion. The stress on prime MMFs led to rapid divestments of money market instruments, especially CP, placing further strains on an already dis-

¹ Rahm Emanuel, White House Chief of Staff, Address at the Wall Street Journal’s 2008 CEO Council Conference (Nov. 19, 2008).

² These are sometimes interchangeably referred to as Money Market Funds. This Article will use the term “MMF” throughout. Note, however, that there is a difference between “MMFs” and “Money Market Deposit Accounts.” See *infra* Part II(A).

³ See *infra* Part II(A).

⁴ See FIN. STABILITY OVERSIGHT COUNCIL, PROPOSED RECOMMENDATIONS REGARDING MONEY MARKET MUTUAL FUND REFORM 8 (2012), available at <http://www.treasury.gov/initiatives/fsoc/Documents/Proposed%20Recommendations%20Regarding%20Money%20Market%20Mutual%20Fund%20Reform%20-%20November%202013,%202012.pdf>.

⁵ See INV. CO. INST., REPORT OF THE MONEY MARKET WORKING GROUP REPORT 59-60 (2009). For further details, see *infra* Part II.

tressed short-term funding market. Eventually, unprecedented interventions by the Treasury and the Federal Reserve were needed to stem runs on MMFs and stabilize the short-term debt markets.⁶

The financial crisis thus exposed, for the first time, the serious systemic risks posed by MMFs to the global financial system. As then U.S. Chief of Staff Rahm Emmanuel famously remarked in November 2008, “[y]ou never want a serious crisis go to waste.”⁷ As the most serious crisis the U.S. had faced since the Great Depression, the 2008 financial crisis presents a tremendous opportunity for well thought-out and meaningful, structural MMF reform. Regrettably, despite an early impetus to investigate the issue of MMF structural reforms in 2009, no real consensus has yet emerged on the best way to address the systemic risks MMFs pose. Indeed, no MMF regulatory proposal has yet been finalized or implemented as of present, over five years after the fall of Lehman. On the regulatory front, the Securities Exchange Commission (SEC), which is the principal funds regulator in the United States, has not successfully pushed through any substantive MMF reforms yet. The SEC did propose rules in June 2013 for comment, but the format of the proposal was tentative, consisting of two alternative reform tracks, which could be adopted either alone or in combination. Confidence in the Agency’s ability to deliver effective MMF reform was also undermined by a public debacle in August 2012, when then SEC Chairman Mary Schapiro’s proposed vote on reform proposals was deferred in response to declarations by three SEC Commissioners that they would vote against them.⁸ This impasse prompted the intervention of the Financial Stability Oversight Council (FSOC), which submitted its own proposed recommendations for MMF reform in November 2012, creating unnecessary confusion at the time regarding how the FSOC proposal would interface with the SEC’s jurisdiction on funds.⁹ While the SEC has since been nudged out of inaction, its current proposals have received widespread criticism, both from the financial industry as well as from other financial regulators.¹⁰ Indeed, while

⁶ See, e.g., PRESIDENT’S WORKING GRP. ON FIN. MKTS., MONEY MARKET FUND REFORM OPTIONS (2010) [hereinafter “2010 PWG REPORT”].

⁷ Emanuel, *supra* note 1.

⁸ See Alex Padalka, *Industry Claims Victory in US Battle*, FIN. TIMES (Aug. 26, 2012), <http://www.ft.com/intl/cms/s/0/02235d76-cdef-11e1-a9d7-00144feab49a.html>; see also *The SEC’s Dereliction of Duty*, ECONOMIST (Sep. 7, 2012, 4:28 PM), www.economist.com/blogs/freexchange/2012/09/money-market-mutual-funds/print.

⁹ See Victoria McGrane, *Money Funds Test Effectiveness of Dodd-Frank*, WALL ST. J. (Sept. 4, 2012, 12:56 PM), <http://blogs.wsj.com/economics/2012/09/04/money-funds-test-effectiveness-of-dodd-frank>.

¹⁰ See Floyd Norris, *Money Market Funds are Circling the Wagons on Rules*, N.Y. TIMES (Sept. 19, 2013), <http://www.nytimes.com/2013/09/20/business/money-market-funds-circle-the-wagons.html>; see also Emily Chasan, *Money Market Funds Ready for Battle with Regulators*, WALL ST. J. (Sept. 18, 2013, 5:29 PM), <http://blogs.wsj.com/cfo/2013/09/18/money-market-funds-ready-for-battle-with-regulators>.

there is broad consensus regarding the need for reform, there is very little agreement regarding what kind of reform is desirable and how to implement it.

While gridlock over MMF reform is often cast in political terms, this Article hypothesizes that the root cause of stasis on structural reform is *conceptual* rather than *political*: the existing reform proposals suffer from theoretic flaws. Thus, I develop a three-part conceptual framework for analyzing and evaluating the available reform options from a cost-benefit standpoint.¹¹ My aim is to render more transparent the policy trade-offs implicated by the available MMF reform options.

First, effective MMF reform needs to eliminate the structural vulnerability of MMFs to “runs” through the use of public support measures. In contrast to the theory of MMF runs underlying the SEC and FSOC proposals, this Article analyzes the run-potentiality of a single MMF as deriving from maturity mismatch in funds’ funding structures, as well as from the behavioral dynamics of short-term creditors. I will demonstrate that such individual runs have the potential to channel systemic risk throughout short-term funding markets via horizontal and vertical contagion. Following from this, I argue that the only way to address MMF runs and their spread through contagion is through public support measures. Both the history of bank runs and the success of federal interventions during the 2008 crisis demonstrate that public backstop measures are the only proven way to stem MMF runs and prevent contagion. I further theorize that this is due to the state’s inherent advantage over the private sector in counteracting informational problems and its unique ability to “complete” markets in times of liquidity shock.

Second, effective MMF reform must aim to avoid or reduce moral hazard. This concern becomes particularly salient when public support measures are implicated, as they may distort the incentives of private actors. I argue that this should be done by internalizing the costs of systemic risk through ex ante risk-adjusted private payments, as far as this is possible, while structuring public support measures to address liquidity shocks without propping up insolvent MMFs.

Third, effective MMF reform must also consider any relevant differences between MMFs and bank deposits, despite their functional similarities. I argue that MMFs play a conceptually distinct role in the modern financial system that cannot be perfectly substituted by deposits and have been supported in this role through differential regulation. It follows that modifying structural attributes of MMFs so as to

¹¹ This framework is inspired by a different framework proposed in Morgan Ricks, *Shadow Banking and Financial Regulation* (Columbia L. and Econ., Working Paper No. 370, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1571290. That framework was applied to analyze more generalizable functional categories of what Ricks terms “money claims.” I borrow the structure of the analysis but apply it differently to the consideration of the special problem of MMFs.

compromise their ability to perform this unique role would have unintended consequences, which should be considered in assessing proposals for MMF reform. Importantly, such considerations militate against blanket extensions of bank-like regulation to MMFs. Because deposits are imperfect substitutes for MMFs, such extensions would entail unintended costs and migration risks, which would have a negative impact on the stability of the U.S. financial system.

Against this conceptual backdrop, I proceed to classify and evaluate the existing MMF reform proposals of financial regulators, academics and industry groups — concluding that none of the existing options satisfies the three aforementioned criteria. In particular, I argue that recent regulatory proposals by the SEC and the FSOC to implement floating NAV and redemption restrictions are fundamentally flawed, as they flout the first criteria, even though they satisfy the second and third. As such, these proposals are inadequate to prevent runs of the scale experienced in the 2008 crisis and impose significant costs on market actors without achieving stated regulatory objectives. Alternative proposals that fail to address the structural problem of maturity mismatch through public liquidity are similarly flawed. On the other hand, although insurance and “narrow bank” proposals address the run problem, they score poorly on preventing moral hazard, and fail to take relevant differences between bank deposits and MMFs into account — which, as I will argue, negatively impacts the stability of the U.S. financial system. Furthermore, I conclude that dual-sector proposals are similarly flawed. In addition to ineffectively addressing runs and contagion problems, the creation of a dualist industry might be practically impossible and would promote regulatory arbitrage. I summarize these conclusions in the following Table 1:

Table 1: Overview and Evaluation of Existing MMF Proposals

<u>MMF REFORM PROPOSALS</u>	(1) Effectively Addresses Runs and Contagion Effects?	(2) Limits (or Eliminates) Moral Hazard?	(3) Minimizes Migration Risk and Transaction Costs by Considering Differences between MMFs and Banks?
A Floating NAV	x	✓	x
B Redemption Restrictions	x	x	x
C Capital Buffers	x	-	-
D Private Liquidity Facility	x	✓	✓
E. Insurance Program	✓	x	x
F. Dual-Sector Model	x	-	-
	<i>Same flaws as underlying proposal. In addition, implementation may be impractical; dualism promotes regulatory arbitrage.</i>		

Given the shortcomings of the available options, this Article proposes a novel Private-Public Liquidity Fund (PPLF) as an optimal solution to the MMF problem. Such a hybrid fund has two components: first, an emergency liquidity system funded by private industry-paid premiums, which will absorb sudden losses during systemic events as a first-loss position and second, publicly administration, with ultimate resort to a public liquidity backstop supplied by the Federal Reserve (an ex ante put option for a non-discretionary discount window facility, with costs to be assessed ex post). The inspiration for this proposal is a combination of the 2008 ABCP Liquidity Facility, which helped stem contagion during the crisis, along with the private emer-

agency liquidity facility proposed by the President's Working Group (PWG) in 2010, which enjoyed the support of various industry groups. In such a combination, the fund's private facility internalizes the cost of liquidity protection and creates market discipline incentives that insulate against participants' moral hazard, while the public liquidity backstop ensures the prevention and containment of runs in crisis scenarios. Furthermore, the PPLF preserves the structure and utility of MMFs for investors, thereby minimizing migration risks. Finally, the PPLF may be politically feasible, as various industry groups have indicated that they might support a private liquidity facility, which is a key component of the proposed PPLF.

This Article is organized as follows. Part I contains relevant theoretical background regarding the structure and operation of MMFs. Part II recounts how MMFs were affected during the 2008 crisis, details how the government responded both during and shortly after the crisis, and summarizes the MMF reform proposals advanced by regulators, academics and industry groups to date. Parts III through V develop this Article's three-prong framework for evaluating and conceptualizing proposals for MMF reform, from a cost-benefit standpoint. Part VI utilizes this framework to critically analyze MMF reform proposals that have been tabled to date, and Part VII argues for the PPLF as an optimal solution that best satisfies all three objectives. Basic design features and advantages of the PPLF are discussed, as well as potential issues regarding its practical implementation.

I. Background To Money Market Funds

MMFs are a type of mutual fund,¹² but a type that exhibits unique characteristics. Like all mutual funds, MMFs offer a collective investment vehicle and collect management fees. However, MMFs are distinguishable from other mutual funds due to special regulatory and commercial features, as discussed in the following Part. In addition, MMFs should not be confused with Money Market Deposit Accounts, which are a type of bank deposit account held with Insured Depository Institutions.¹³ Although there are functional similarities between MMFs and deposits, bank deposits have structural differences from MMFs. Such differences include, significantly, the

¹² Mutual funds are investment companies that are registered and regulated under the Investment Company Act of 1940. Generally speaking, they are investment vehicles that allow investors to purchase interests representing pro rata shares of the net assets of a pool of securities and other assets. For more information, see HAL SCOTT & ANNA GELPERN, *INTERNATIONAL FINANCE: TRANSACTIONS, POLICY AND REGULATION* 1054 (19th ed. 2012).

¹³ See OFFICE OF INVESTOR EDUC. & ADVOCACY, SEC, *MUTUAL FUNDS: A GUIDE FOR INVESTORS* 24 (2008) [hereinafter "SEC MUTUAL FUNDS GUIDE"], available at <http://www.sec.gov/investor/pubs/sec-guide-to-mutual-funds.pdf>.

availability of direct public guarantees to deposit-holders in the form of government insurance. These differences will be discussed further in Part IV, in relation to their implications for MMF regulatory reform.

A. Definition and Characteristics

MMFs are defined by the following operational characteristics, which together make them a unique cash-management investment product. First, MMFs are open-ended funds that issue shares that are “redeemable,”¹⁴ and investors may purchase and redeem MMF shares without a sales charge.¹⁵ Thus, MMFs contract with investors¹⁶ to buy back their own shares on any regular business day, at the price to be next determined (as set out in a prospectus). This characteristic gives rise to “redemption rights,” permitting MMF investors to receive the cash-equivalent of their MMF shares on demand.¹⁷ Significantly, this mimics the short-term borrowing feature of banks, which traditionally “borrow in the form of deposits that can be redeemed on relatively short notice.”¹⁸ However, unlike a deposit-holder, an MMF shareholder has no legal right to a fixed sum but rather is legally entitled to redeem the value of his shares at the time of redemption, which may fluctuate and deviate from his initial investment.

Second, MMFs are allowed to maintain a stable NAV of \$1.00 per share. This structural feature distinguishes them from other mutual funds. The NAV is essentially the total value of a mutual fund’s assets less its liabilities, divided by the number of shares outstanding.¹⁹ MMFs maintain a stable NAV with the benefit of Rule 2a-7 of the Investment Company Act, which allows them to use the “amortized cost” method of portfolio-valuation, as well as the penny-rounding method to price redemptions.²⁰

The amortized cost method allows MMFs to value their portfolio securities at acquisition cost rather than present market value, accruing interest or amortizing premium payments *uniformly* over the remaining maturity of the purchase, by way of

¹⁴ *Id.* at 6.

¹⁵ Timothy Q. Cook & Jeremy G. Duffield, *Money Market Mutual Funds: A Reaction to Government Regulations Or a Lasting Financial Innovation?* 65 FED RES. BANK RICHMOND ECON. REV. 4, 15 (1979).

¹⁶ Such agreements are usually found in or constituted by the funds’ prospectuses. *See, e.g.*, JOHN HANCOCK MONEY MKT. FUND, PROSPECTUS 14-16 (2013), available at <http://www.jhinvestments.com/CMS/DownloadableItems/Funds/Prospectuses/JH440PN.pdf>.

¹⁷ Jonathan Macey, *Reducing Systemic Risk: The Role of Money Market Mutual Funds as Substitutes for Federally Insured Deposits*, 17 STAN. J.L. BUS. & FIN. 131, 134 (2011).

¹⁸ CARMEN M. REINHART & KENNETH ROGOFF, *THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY XL* (2009).

¹⁹ SEC MUTUAL FUNDS GUIDE, *supra* note 13, at 27.

²⁰ *See, e.g.*, FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 9.

incremental adjustments.²¹ Because of this predictable rate of interest accrual, an MMF is able to maintain a stable NAV by declaring a daily dividend to fund shareholders that is equal to the accrued interest on the fund's portfolio, less accrued expenses.²² The original justification for permitting MMFs to use the amortized cost method was that MMFs can only hold high-quality, short-term, and highly liquid debt securities that will eventually return to amortized cost value on maturity, despite any fluctuations in mark-to-market value in the interim.²³

Under penny rounding, MMF per-share NAVs are rounded to the nearest penny, which allows a variation buffer of 0.50 cents from \$1.00 per-share NAV before an MMF loses its stable \$1.00 NAV per share. Unlike MMFs, other mutual funds must value their NAVs based on the market value of their portfolio securities and are required to meet redemptions at that NAV without penny rounding. Such funds do not, however, build their business model on the maintenance of stable \$1.00 NAV – in contrast, their NAVs are said to be “floating.” Stable \$1.00 NAVs are thus a distinctive design feature of MMFs, one that some reform proposals have sought to abolish

Third, MMFs are required by Rule 2a-7 of the Investment Company Act to regularly calculate their “shadow NAV” and to monitor that price in relation to the stable \$1.00 NAV. An MMF's shadow NAV is its market per-share NAV (i.e., the total market value of its securities as of the close of business on a given day, less any liabilities based on available market prices and/or fair value pricing models, divided by the shares outstanding).²⁴ The MMF's board of directors is required to adopt and approve methods for computation of such shadow prices, as well as determine “appropriate” intervals for the calculation of such prices.²⁵

In the event that the shadow NAV deviates from the stable \$1.00 NAV by more than 50 basis points (that is, the shadow price falls below \$0.9950 or rises above \$1.0050), the MMF's board of directors is triggered to promptly consider what action it should initiate in response. The board of directors could then undertake one

²¹ Macey, *supra* note 17, at 136; *see also* INV. CO. INST., PRICING OF U.S. MONEY MARKET FUNDS 8 (2011). It is also useful to note that MMFs typically invest in “discount securities,” which are sold at a discount of face value and accrue interest implicitly rather than explicitly. This makes MMFs particularly well-suited for amortized cost accounting.

²² *See* INV. CO. INST., *supra* note 21.

²³ *See Valuation of Debt Instruments and Computation of Current Price Per Share by Certain Open-End Investment Companies (Money Market Funds)*, Investment Company Act Release No. 13,380, 48 Fed. Reg. 32,555 (July 18, 1983).

²⁴ INV. CO. INST., *supra* note 21, at 1; *see also* DIV. RISK, STRATEGY, & FIN. INNOVATION, SEC, RESPONSE TO QUESTIONS POSED BY COMMISSIONERS AGUILAR, PAREDES AND GALLAGHER 2 (2012) [hereinafter SEC NOV 2012 MEMO], available at <http://www.sec.gov/news/studies/2012/money-market-funds-memo-2012.pdf>.

²⁵ INV. CO. INST., *supra* note 21, at 2.

of several courses of action, namely: (1) take action to maintain stable \$1.00 NAV; (2) make a decision to suspend redemptions and liquidate the fund; or (3) make the decision to discontinue the use of amortized cost method of valuation and re-price the fund's portfolio below or above \$1.00 per share.²⁶ The latter course of action would lead to a loss of stable \$1.00 NAV: an event known as "breaking the buck."

Fourth, MMFs only invest in diversified "money market" instruments, which are debt securities with short-term maturities and comparatively low credit risk. Such instruments include CP, short-term state and local government debt, Treasury bills, and repurchase agreements (repos). This aspect of MMFs is a direct consequence of regulation. In exchange for valuation rules that help MMFs maintain a stable NAV, they are subject to specific rules that govern their portfolio make-up and restrict the types of investments they can make.²⁷ These include diversification rules and rules that require MMFs' investments to have short weighted average maturity (WAM), as well as high credit quality.²⁸ These strict guidelines complement MMFs' ability to maintain a stable per-share NAV of \$1.00, by ensuring that amortized-cost will not diverge significantly from market value – in other words, they ensure that shadow prices are less volatile.

Together, these structural features allow MMFs to offer a cash-like product with market-sensitive yields²⁹ for investors "whose primary goal is the preservation of principal" – that is, investors who want to trade off the possibility of higher returns for greater safety and liquidity.³⁰ MMFs typically have a lower yield than stocks and bonds due to their relative safety and stability, which often approximates short-term interest rates. MMFs thus offer a product with comparable stability and liquidity to bank deposits, by maintaining a stable \$1.00 NAV and offering investors the possibility of redemptions. In contrast, other mutual funds with floating NAVs offer long-term investment opportunities with greater risk but potentially higher yields. This cash-like function of MMFs is useful to a variety of actors in the financial system, including individual investors, institutions, and governments.³¹ Such actors, whether individual or institutional, find it useful to invest in MMFs, either because they have

²⁶ *Id.* at 9.

²⁷ Robert C. Pozen, *Make 2013 the Year to Resolve the Money Market Fund Debate*, BROOKINGS INST. (Dec. 20, 2012, 9:00 AM), www.brookings.edu/blogs/up-front/posts/2012/12/20-money-market-reform-pozen.

²⁸ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 10.

²⁹ The yields MMFs pay to investors are a function of their portfolios' value. See INV. CO. INST., *supra* note 21; see also SEC NOV 2012 MEMO, *supra* note 24.

³⁰ Macey, *supra* note 17, at 135.

³¹ Macey, *supra* note 17, at 137 ("[M]any corporate treasurers . . . have essentially outsourced their cash management operations to MMFs.").

excess cash or because they need a temporary investment vehicle that preserves its value during their divestiture of riskier investments.³²

B. Industry Profile and Composition

The MMF industry has become a sizeable and important component of the U.S. financial system. As an indication of size, the MMF industry had approximately \$2.7 trillion in AUM as of January 9, 2014, down from approximately \$3.8 trillion at the end of 2008.³³ MMFs are an important part of the capital markets because they provide a substantial portion of short-term financing to issuers of money market instruments. At the same time, as described above, MMFs offer individuals, corporations, financial institutions, and governments the benefits of investing in diversified pools of money market instruments. MMFs, therefore, perform a vital credit intermediation role in the money markets, by matching sources of liquid capital to short-term borrowers.

The MMF industry may be segmented into four main categories, based on investment strategy.³⁴ First, there are Treasury MMFs, which invest primarily in U.S. Treasury obligations and repos that are collateralized with U.S. Treasury securities. Next, there are Government MMFs, which invest primarily in U.S. Treasury obligations and securities that are issued by government entities, such as the Federal Home Loan Mortgage Corporation or the Federal National Mortgage Association, as well as repos that are collateralized by such securities. Third, there are Tax-exempt MMFs, which invest in short-term municipal securities and pay interest that is generally exempt from income tax. Finally, there are Prime MMFs, which invest more substantially in private debt instruments, such as CP and certificates of deposit. Prime MMFs account for the largest segment of the MMF industry and generally pay higher yields, commensurate with their greater portfolio risk.

We may also classify MMF investors broadly into two main classes: institutional investors and individual or retail investors. Institutional investors include corporations, bank trust departments, pension funds, securities lending operations, and state and local governments. A dominant trend in the last forty years of MMF history has been the increasing preponderance of institutional investors in the marketplace.

³² *Perspectives: Hearing Before S. Com. On Banking, Hous. & Urban Affairs*, 112th Cong. 3 (2012) (statement of Jeffrey Gordon, Professor of Law at Columbia Law Sch.), [hereinafter *Perspectives*]; see also FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 8-9.

³³ See *Release: Money Market Mutual Fund Assets*, INV. CO. INST. (January 9, 2014), http://www.ici.org/research/stats/mmf/mm_01_09_14; see also FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4.

³⁴ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 8-9.

Part of the reason for this development has been the outsourcing of cash management operations by corporate treasurers of large businesses.³⁵ Indeed, a special category of institutional MMFs has now evolved as a class of products marketed primarily to institutional investors. Based on data as of January 9, 2014, institutional MMFs now account for almost two-thirds of total industry assets.³⁶ However, MMFs are still an important part of the retail investor landscape. According to data from the Investment Company Institute (ICI), 66% of mutual-fund owning households had investments in MMFs.³⁷ The dualism of the MMF industry – that is, the existence of two different classes of MMF investors – is significant for thinking about MMF reform, as will become apparent in the discussion of dual-sector models in Part VII.

II. Money Market Funds in Crisis

A. The 2008 Global Financial Crisis

The events during the peak of the 2008 financial crisis underscored the susceptibility of MMFs to runs by short-term investors and highlighted how such MMF runs could spread via contagion to other types of institutions throughout the financial system. The extreme conditions and turmoil of the 2008 crisis – the most severe crisis the United States has faced since the Great Depression – were caused by a multitude of factors. Though the crisis was not caused by MMFs, it demonstrated the potential for MMFs to act as a conduit or even amplifier of systemic risk in the U.S. financial system.

The onset of the crisis occurred in late 2007, when dozens of MMFs were faced with substantial losses due to holdings of ABCP with significant exposures to sub-prime mortgages. During this downturn, the markets saw the failure of two Bear Stearns hedge funds, the freezing of two variable-NAV European money funds, and the failure of a number of commodity cash pools, enhanced cash funds, and municipality-run liquidity pools.³⁸ Despite facing significant pressures with the financial markets in further turmoil, no U.S. MMF broke the buck or experienced runs in 2007.³⁹

However, on September 16, 2008 – the day after Lehman filed for Chapter 11 bankruptcy protection – the Reserve Primary Fund (RPF), a \$62 billion mid-sized

³⁵ Macey, *supra* note 17.

³⁶ See Release: *Money Market Mutual Fund Assets*, *supra* note 33.

³⁷ See INV. CO. INST., PROFILE OF MUTUAL FUND SHAREHOLDERS, 2012 6 (2013), available at http://www.ici.org/pdf/rpt_13_profiles.pdf.

³⁸ These are alternative or substitute investment vehicles to MMFs. See *infra* Part VI.

³⁹ See INV. CO. INST., *supra* note 5, at 48-49.

MMF that was part of the Reserve Fund complex, announced it would break the buck due to losses on its exposure to Lehman CP. The RPF's Lehman CP holdings were only \$785 million, or approximately 1.2 percent of its total assets,⁴⁰ and yet it faced redemption requests for approximately \$60 billion over the next four days.⁴¹

This run on the RPF began on September 15, when investors placed redemption requests at \$1.00 NAV totaling \$25 billion, of which about \$10.7 billion was actually redeemed.⁴² The sheer volume of redemptions, along with the money market freeze at the time, put immense pressure on the RPF to sell its less liquid assets to meet redemption requests. The RPF continued to accept redemptions at \$1.00 NAV until four o'clock in the afternoon on September 16, when it re-priced its shares at \$0.97,⁴³ with about 1.2 cents of the three cent drop due to valuing its Lehman holdings at zero, and the rest of the NAV drop attributable to investor redemptions. Based on these numbers, there were approximately \$40 billion in investor redemptions from the RPF as of four o'clock on September 16.⁴⁴ In other words, due to a 1.2% portfolio loss on Lehman CP, the \$62 billion RPF experienced a classic run by its shareholders, with investor redemptions of \$40 billion within two days. On September 19, the RPF filed an application with the SEC to suspend redemptions, after receiving a total of \$60 billion in redemption requests in just the four days following Lehman's bankruptcy. The fund was granted an order taking effect as of September 17, 2008.⁴⁵ It was subsequently liquidated in a process the SEC managed.⁴⁶

After the RPF broke the buck, runs quickly spread to other prime MMFs as they too became "suspect."⁴⁷ Indeed, the day immediately after the RPF announced it was breaking the buck, aggregate daily outflows from other prime MMFs tripled.⁴⁸

⁴⁰ Note that this is well below the 5% regulatory limit set by the SEC.

⁴¹ INV. CO. INST., *supra* note 5, at 59-60.

⁴² *Id.*

⁴³ *Id.*

⁴⁴ See Macey, *supra* note 17.

⁴⁵ The SEC granted the order, effective as of September 17, on September 22. This was the first such order the SEC ever granted to an MMF. See *The Reserve Fund*, Investment Company Act Release No. 28,386, 73 Fed. Reg. 55,572 (Sept. 25, 2008). Several other reserve funds also obtained an order from the SEC on October 24, 2008, permitting them to suspend redemptions to allow for orderly liquidation. See *Reserve Mun. Money-Mkt. Trust*, Investment Company Act Release No. 28,466, 73 Fed. Reg. 64,993 (Oct. 31, 2008).

⁴⁶ See Macey, *supra* note 17. As of 2010, the RPF had distributed the bulk of its assets, with investors eventually receiving more than \$0.98 on the dollar. See Press Release, SEC, Reserve Primary Fund Distributes Assets to Investors (Jan. 29, 2010), available at <http://www.sec.gov/news/press/2010/2010-16.htm>.

⁴⁷ Mark Roe, *Money-Market Resistance*, PROJECT SYNDICATE (Oct. 17, 2012), <http://www.project-syndicate.org/commentary/why-the-sec-rejected-new-rules-for-mutual-funds-by-mark-roe> ("[A]fter [the] RPF broke the buck, all money-market funds then became suspect and many investors fled, withdrawing one-third of a trillion dollars in a single week.").

⁴⁸ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 25 (analyzing data from iMoneyNet).

Investor withdrawals on prime MMFs were massive and totaled approximately \$300 billion during the week of September 15, 2008, amounting to about 14% of the total assets held by such funds.⁴⁹ In response to substantial redemption requests, many funds either had to be rescued by their sponsors or had to be liquidated.⁵⁰ At the same time, in contrast to prime MMFs, government MMFs faced substantial inflows of \$192 billion in the week following the Lehman bankruptcy. Also of interest is the observation that these run dynamics were most prevalent among more sophisticated institutional investors, with institutional funds accounting for 95% of the net redemptions from prime funds.⁵¹

The runs on prime MMFs had a wide systemic impact as it spread quickly to other parts of the financial system, with under-stress MMFs rapidly divesting their holdings in short-term instruments, especially CP holdings. This severely aggravated the already strained money markets, and particularly so because MMFs were a major market player. In the three weeks following Lehman's bankruptcy, prime MMFs reduced their holdings of CP by \$202 billion (a 29% reduction), accounting for \$206 billion of the decline in total CP outstanding over that period. This led to a sharp rise in borrowing costs for CP issuers.⁵²

B. Interventions by the U.S. Federal Government

On September 19, 2008, in response to the unfolding crisis, the Treasury Department (Treasury) and the Board of the Governors of the Federal Reserve System (Federal Reserve) announced a number of unprecedented interventions, with the aim of stabilizing MMFs and supplying liquidity to short-term funding markets. First, the Federal Reserve expanded its emergency lending program via the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), extending credit to U.S. banks and bank holding companies in order to finance purchases of ABCP from MMFs.⁵³ This was an unconventional intervention by the Federal Re-

⁴⁹ See INV. CO. INST., *supra* note 5, at 48-49 (analyzing data from iMoneyNet).

⁵⁰ See Macey, *supra* note 17, at 148. (“[E]vergreen Investments . . . experienced losses and was bailed out by its parent, Wachovia. Like Reserve Primary, Putnam Investments, one of the oldest names in the MMF industry, liquidated its Putnam Prime Money Market Fund, a \$12.3 billion fund.”).

⁵¹ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 25 (analyzing data from iMoneyNet for the week following the Lehman bankruptcy).

⁵² See Press Release, Fed. Open Mkt. Comm., Minutes of the Federal Open Market Committee (Oct. 28-29, 2008), *available at* <http://www.federalreserve.gov/monetarypolicy/fomcminutes20081029.htm>.

⁵³ Press Release, Bd. of Governors of the Fed. Reserve Sys., Board Announces Final Rules Pertaining to the Asset-Backed Commercial Paper Money Market Fund Liquidity Facility, Regulations H, W, and Y, (Jan. 30, 2009), *available at* <http://www.federalreserve.gov/monetarypolicy/20090130a.htm>. The AMLF expired on February 1, 2010.

serve; unlike a typical discount window loan, the Federal Reserve neither charged a penalty rate for AMLF loans, nor required a haircut on ABCP pledged as collateral. This approach was based on the assumption that the market value of ABCP primarily reflected liquidity risk, not credit risk.⁵⁴ In addition, the Federal Reserve established the Money Market Investor Funding Facility (MMIFF), which provided a credit facility for qualifying Special Purpose Vehicles (SPVs) to purchase securities from MMFs.

Furthermore, on the same day the AMLF was set up, the Treasury announced a Temporary Guarantee Program for Money Market Funds (TGP), which was set up to insure the holdings of any publicly-offered, eligible MMF that paid a fee to participate in the program.⁵⁵ The stated aim of this intervention was to “enhance market confidence and alleviate investors’ concerns about the ability for money market mutual funds to absorb a loss.”⁵⁶ This guarantee program took its cue from the Federal Deposit Insurance Corporation (FDIC) insurance for bank deposits.⁵⁷ The guarantee would be made from the assets of the Exchange Stabilization Fund (ESF),⁵⁸ justified by an unconventional interpretation of a Depression-era statute, the Gold Reserve Act of 1934.⁵⁹

The TGP was established on September 29, 2008, with the ESF-funded guarantee triggered if a participating MMF’s NAV fell below \$0.995.⁶⁰ The coverage of the program was limited to MMFs whose NAV was at least \$0.995 at the close of business on September 19, 2008.⁶¹ As for the mechanics of participation in the TGP, MMFs with a NAV greater or equal to \$0.9975 at the close of business on September 19 would pay an upfront fee of one basis point (or 0.01%), based on the number of shares outstanding on that date. Funds with an NAV of greater than or equal to

⁵⁴ Burcu Duygan-Bump et al., *How Effective were the Federal Reserve Emergency Liquidity Facilities? Evidence from the Asset-Backed Commercial Paper Money Market Fund Liquidity Facility*, 68 J. FIN. 715, 724 (2013).

⁵⁵ See Press Release, U.S. Dep’t of Treasury, Treasury Announces Guaranty Program for Money Market Funds (Sept. 19, 2008) [hereinafter Sept. 19 Treasury Press Release], available at <http://www.treasury.gov/press-center/press-releases/Pages/hp1147.aspx>; see also Press Release, U.S. Dep’t of Treasury, Treasury Provides Further Clarity For Guaranty Program for Money Market Funds (Sept. 21, 2008), available at <http://www.treasury.gov/press-center/press-releases/Pages/hp1151.aspx>.

⁵⁶ Sept. 19 Treasury Press Release, *supra* note 55.

⁵⁷ Macey, *supra* note 17, at 149; see also 2010 PWG REPORT, *supra* note 6, at 26.

⁵⁸ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4.

⁵⁹ See Steven M. Davidoff & David Zaring, *Regulation By Deal: The Government’s Response to the Financial Crisis*, 61 ADMIN. L. REV. 463, 508 (2009) (characterizing the TGP as “[a]d hoc, marked by a rapid response to unprecedented financial market chaos, and authorized by an unconventional interpretation of a Depression-era statute that created a program meant to do something else.”).

⁶⁰ See Press Release, U.S. Dep’t of Treasury, Treasury Announces Temporary Guarantee Program for Money Market Funds (Sept. 29, 2008), available at <http://www.treasury.gov/press-center/press-releases/Pages/hp1161.aspx>.

⁶¹ *Id.*

\$0.995 and below \$0.9975, as of the same date, would pay an upfront fee of 1.5 basis points (or 0.015%).⁶² Most of the MMFs took advantage of the program by October 1, 2008, including the largest funds: Charles Schwab, Federated, Fidelity, Morgan Stanley, Putnam Investments, BlackRock, and JPMorgan Chase.⁶³

The announcements of these programs substantially slowed runs on prime MMFs. In the week following the interventions, outflows from prime MMFs diminished to about \$65 billion, and those MMFs began attracting net inflows by mid-October.⁶⁴ MMFs in general saw total assets approaching \$3.8 trillion at the end of 2008, a more than \$400 billion increase from mid-September 2008.⁶⁵ However, while MMFs paid about a total of approximately \$1.2 billion in participating premiums under the TGP, the Treasury was not called on to pay out any guarantee claims by the time of the program's expiration on September 18, 2009.⁶⁶

C. 2010 Enhancements to SEC Rules on MMFs

In response to the events of the 2008 crisis, the SEC adopted new rules in January 2010 to increase resiliency of MMFs to market disruptions and facilitate the orderly liquidation of MMFs that broke the buck. Briefly, these new measures included:⁶⁷

- *Enhanced Rules on Quality of Portfolio Securities.* The 2010 changes reduced the investment limit for second-tier securities from 5% to 3% of a fund's total assets and limited the exposure of MMFs to a single, second-tier issuer to 0.5%. In addition, the 2010 changes reduce the maximum allowable WAM of fund portfolios from ninety to sixty days.
- *Minimum Liquidity Buffers.* The 2010 rules introduced a new requirement that each MMF maintain both daily liquidity (10%) and weekly liquidity (30%) asset buffers.⁶⁸

⁶² *Id.*

⁶³ Diana B. Henriques, *As Cash Leaves Money Funds, Financial Firms Sign Up for U.S. Protection*, N.Y. TIMES DEALBOOK (Oct 2, 2008), <http://dealbook.nytimes.com/2008/10/02/as-cash-leaves-money-funds-sign-up-for-us-protection/>.

⁶⁴ 2010 PWG REPORT, *supra* note 6, at 13.

⁶⁵ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4.

⁶⁶ See Press Release, U.S. Dep't of Treasury, Treasury Announces Expiration of Guaranty Program for Money Market Funds (Sept. 18, 2009), available at <http://www.treasury.gov/press-center/press-releases/Pages/tg293.aspx>; see also Shefali Anand, *Treasury Pads Coffers in Bailout*, WALL ST. J. (Feb. 17, 2009), <http://online.wsj.com/article/SB123483112001495707.html>.

⁶⁷ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 9-12.

⁶⁸ See *id.* Daily liquid assets are cash, U.S. Treasury obligations, and securities that convert to cash within one business day. Weekly liquid assets include daily liquid assets; they also include other securi-

- *Transparency and Disclosure Requirements.* The 2010 changes introduced new reporting and disclosure obligations, requiring MMFs to post portfolio information on their websites within five business days after the end of each month. Under these obligations, funds were also required to provide monthly submissions to the SEC describing various portfolio holdings information, including the portfolio's shadow price. This information need to be made available to the public within sixty days after the end of the month.
- *Stress Testing Requirements.* The 2010 amendments require MMFs' boards of directors to periodically conduct stress tests, in order to gauge their funds' ability to maintain a stable per-share NAV in times of crisis.
- *New Procedures for Orderly Liquidations.* The 2010 changes introduced a new rule under the Investment Company Act, Rule 22e-3, which allowed an MMF in danger of breaking the buck to promptly suspend redemptions and liquidate its portfolio in an orderly manner.⁶⁹ This was designed to allow quick liquidations in periods of stress, thereby minimizing losses incurred by shareholders.

Despite making significant improvements to the management of portfolio risk and the orderly resolution of MMFs, it is generally agreed amongst both regulators and academics that the 2010 enhancements did *not* address the fundamental structural vulnerability of MMFs to runs.⁷⁰ Although there is outlier dissent from industry groups, most commentators are in agreement that further structural reforms are necessary in order to prevent runs on MMFs in the future.⁷¹

D. The Road to MMF Reform

The 2008 financial crisis exposed the weaknesses of federal regulation of the MMF industry in a sobering way. Prior to the crisis, MMFs were viewed as extremely safe investments; the systemic risks of MMFs had attracted little attention in the academic literature, with most of the attention focused on MMF portfolio risks,

ties of a U.S. government entity that have a remaining maturity of sixty days or less and securities that convert into cash within five business days.

⁶⁹ See 2010 PWG REPORT, *supra* note 6, at 15-16.

⁷⁰ See *Perspectives*, *supra* note 32; see also 2010 PWG REPORT, *supra* note 6; FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4; HAL S. SCOTT, COMM. OF CAPITAL MKT. REGULATION, INTERCONNECTEDNESS AND CONTAGION (2012), available at http://www.aei.org/files/2013/01/08/-interconnectedness-and-contagion-by-hal-scott_153927406281.pdf.

⁷¹ See *e.g.* Macey, *supra* note 17.

which were considered to be quite negligible.⁷² Shortly after the crisis, there began an impetus for regulatory and structural reform in the MMF industry. In its roadmap for financial reform, published in June 2009, the Treasury proposed to “[r]educe the [s]usceptibility of [MMFs] to [r]uns”.⁷³ The Treasury called for the SEC to complete its near-term reform efforts (the 2010 enhancements), while calling on the PWG to evaluate the need for more “fundamental changes” to reduce the MMF industry’s susceptibility to runs. It referred to a “short time-frame,” calling for the report to be ready within three months.

And yet, U.S. financial regulators have so far been unsuccessful in pushing through any consistent or clear directions for MMF reform. The SEC, which is the primary funds regulator in the United States, has only recently proposed rules for comment – announced in June 2013, almost five years after the events of 2008. The earlier efforts of the SEC’s MMF reform agenda were stalled by a publicized internal disagreement in August 2012, when then Chairman Mary Schapiro’s proposed vote on reform proposals was delayed because three (out of five) SEC Commissioners declared they would vote against them.⁷⁴ In response, then Treasury Secretary Timothy Geithner wrote a letter addressed to FSOC, dated September 27, 2012, requesting that the Council use its yet-untested authority under section 120 of the Dodd-Frank Act to recommend that the SEC proceed with MMF reform.⁷⁵ In November 2012, the FSOC unanimously voted to propose recommendations for MMF structural reform, which were also made available for public comment. Eventually, the SEC, under the new leadership of Chairman Mary Jo White, voted in June 2013 to propose rules to reform the way MMFs operate.⁷⁶ However, the latest proposed rules merely rehash earlier proposals by the FSOC and SEC and have been subject to heavy criticism on multiple fronts: for not going far enough to address systemic risks, as well as for actually making the system more vulnerable in times of crisis.⁷⁷

⁷² Patrick McCabe, *The Cross Section of Money Market Fund Risks and Financial Crises* 6 (Fed. Reserve Bd. Fin. & Econ. Discussion Series, Working Paper No. 2010-51, 2010), available at <http://www.federalreserve.gov/pubs/feds/2010/201051/201051pap.pdf>.

⁷³ DEP’T OF TREASURY, A NEW FOUNDATION: REBUILDING FINANCIAL SUPERVISION AND REGULATION 12 (2009), available at http://www.treasury.gov/initiatives/Documents/FinalReport_web.pdf.

⁷⁴ See Padalka, *supra* note 8; see also *The SEC’s Dereliction of Duty*, *supra* note 8.

⁷⁵ Letter from Timothy Geithner, Sec. of Treasury, to the Members of the Financial Stability Oversight Commission (Sept. 27, 2012); Peter Eavis, *Geithner Urges an Overhaul of Rules on Money Market Funds*, N.Y. TIMES DEALBOOK (Sept. 27, 2012), <http://dealbook.nytimes.com/2012/09/27/geithner-urges-changes-to-strengthen-mutual-funds>.

⁷⁶ *Money Market Fund Reform; Amendments to Form PF*, Investment Company Act Release No. 30,551, 78 Fed. Reg. 36,834 (proposed June 19, 2013) [hereinafter *Proposed Rule*].

⁷⁷ See Ricks, *supra* note 11.

What is clear is that, while there is consensus on the need for structural reform to address systemic risks posed by MMFs, there is little agreement on how such reform should be accomplished. Instead, a multiplicity of proposals have been mooted by various stakeholders, including industry groups, regulators, and academics. It is possible to functionally classify those proposals as follows: (1) floating NAV requirements; (2) redemption restrictions in the form of minimum-balance-at-risk rules, or liquidity “gates”; (3) capital buffers; (4) private emergency liquidity facilities; (5) public guarantee or insurance programs; and (6) dual-sector models, based on combinations of the above.

While disagreement over MMF reform is often seen as a product of political considerations and factionalism,⁷⁸ this Article argues that structural reform is stalling in part due to conceptual difficulties underlying the question of what to do about MMF regulation. Indeed, although it is true that the reform process has been politically fraught, the deeper and more fundamental problem is that existing reform proposals suffer from theoretic flaws. Thus, in Parts III to V, I develop a three-part framework to address the conceptual complexities involved in MMF reform, which I use to analyze and critique existing MMF reform proposals in Part VI. This framework and critique sets the stage for my concluding PPLF proposal in Part VIII.

III. Systemic Risk in MMFs: the Necessity of Public Support Measures

Reducing or eliminating systemic risk is the *raison d'être* of MMF reform.⁷⁹ It is the stated purpose of all structural reform proposals and is the only justification for imposing additional costs on the MMF industry, fund investors, and (potentially) taxpayers. However, the differences between the various MMF reform proposals reflect fundamentally divergent views on the sources of systemic risk in MMFs. For instance, the FSOC proposals are based on the view that the structural vulnerability of MMFs originates from their lack of an “explicit loss-absorption capacity” and the “first-mover advantage” created by fixed NAV and redeemable shares.⁸⁰ This assumption underlies FSOC’s recommendation of floating NAV requirements and capital buffers. On the other hand, other commentators, such as Hal Scott, characterize MMFs’ structural vulnerability as deriving from their reliance on short-term funding, as well as their potential to channel contagion effects.⁸¹ Different diagnoses of the problem result in different proposed solutions. The FSOC proposals aim to create

⁷⁸ See, e.g., Pozen, *supra* note 27 (describing the process of MMF reform as “politically arduous”).

⁷⁹ See, e.g., 2010 PWG REPORT, *supra* note 6 (“[I]n formulating reforms for MMFs, policymakers should aim primarily at mitigating systemic risk . . .”).

⁸⁰ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 17-20.

⁸¹ See SCOTT, *supra* note 70.

“loss-absorption capacity” through internal capital buffers; proposals following Scott’s lead, however, look to insurance and other public support measures to address contagion effects.

Thus, developing a clear understanding of exactly how MMFs bring about systemic risks is an essential first step towards designing smart reform; misdiagnosis of the structural problem leads to ineffective solutions, with dire consequences. In this respect, the breaking of the buck by the RPF in 2008 provides a useful case study for analyzing systemic risk in the MMF industry. Before 2008, such an event had only occurred once in the history of the industry, and it involved the liquidation of a small \$82.2 million MMF in 1994, with no knock-on effects on other funds.⁸² In contrast, the breaking of the buck by the RPF in 2008 had a far more devastating systemic impact. The near collapse of the \$62 billion RPF in 2008 highlighted a latent structural fragility in MMFs, their susceptibility to run behavior, as well as their capacity to propagate systemic risk via contagion.

These vulnerabilities are the subject and focus of Part III. In Parts III(A) and III(B), I argue that the systemic risks posed by MMFs derive from three interrelated elements: first, the susceptibility of individual MMFs to runs due to both the liquidity mismatch in their funding structure and the behavioral characteristics of short-term investors; second, the possibility of such runs to spread via “horizontal” contagion to similarly situated MMFs; and third, the propensity of such runs to propagate throughout the financial system via “vertical” contagion to other institutions, due to what the literature terms “liability interconnectedness”. Finally, in Part III(C), I conclude that the only way to address these risks is through the use of public support or backstop measures.

A. Structural Susceptibility to Runs

“If all those creditors demand all that money at once, they cannot have it, for that which their debtors have use, is for the time employed, and not to be obtained. With the advantages of credit we must take the disadvantages too.”⁸³

Run behavior is generally well understood in the context of banks. Diamond and Dvovig have analyzed such behavior as an equilibrium problem, concluding that the vulnerability of banks to runs results from the fact that banks perform *liquidity* transformation services. The term “transformation” refers to banks’ ability to trans-

⁸² See Macey, *supra* note 17, at 141.

⁸³ WALTER BAGEHOT, LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET 55 (1919).

form depositors' illiquid assets into liquid ones – and in exchange, depositors receive a “smoother pattern of returns over time,” or in other words, an interest rate.⁸⁴ As the Diamond-Dybvig model shows, this is an efficient risk-sharing equilibrium in non-crisis conditions. Another mode of analysis focuses on the bank's role in *maturity* transformation (i.e., the conversion of short-term liquidity needs of depositors into long-term funding commitments for borrowers).⁸⁵ Banks build their business around charging long-term rates to borrowers, while paying short-term rates to their depositors; thus, banks customarily retain only “fractional reserves” to cover depositor withdrawals in a normal-functioning equilibrium (i.e., market conditions when there are no bank runs).⁸⁶ In this situation, there is efficient risk-sharing. However, such financial intermediation by banks also creates a “maturity mismatch” in bank intermediation (i.e., bank money for short-term transactions is backed by long-term investments).⁸⁷ In other words, intermediaries are vulnerable to run behavior from their short-term creditors because they borrow *short* to lend *long*.

It is, therefore, this *structural* mismatch between both the liquidity and maturity profiles of the bank's funding structure and business model that creates the run problem: if all short-term creditors want to withdraw at the same time, the bank cannot satisfy all demands. This liquidity and maturity mismatch creates the potential for runs because it creates a first-mover advantage for the short-term creditors. Thus, any shift in expectations creates a potential for runs and a concomitant shift to a bank-run equilibrium (i.e., what Diamond-Dybvig term an “undesirable” or “inferior” Nash equilibrium, where it becomes rational for individual depositors to make withdrawals even though this results in a worst-case collective outcome for all depositors).⁸⁸

What might cause a run in the first place? According to the Diamond-Dybvig model, the shift in expectations of depositors “could depend on almost anything.”⁸⁹ They refer to this first cause as an “observed random variable,” exogenous to their model, which includes anything from privately produced information about weak financials (such as a poor earnings report) to government forecasts, or even

⁸⁴ Douglas W. Diamond & Phillip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401, 404 (1983); see also Gary Gorton, *Some Reflections on the Recent Financial Crisis* 11-12 (Nat'l Bureau of Econ. Research, Working Paper No. 18397, 2012).

⁸⁵ Jeffrey Gordon, *Confronting Financial Crisis: Dodd-Frank's Dangers and the Case for a Systemic Emergency Insurance Fund* 8 (Columbia Law Sch., Working Paper No. 374, 2010).

⁸⁶ See Tim Worstall, *What Caused the Great Financial Crash: Gary Gorton is Right*, FORBES (Oct. 8, 2012), <http://www.forbes.com/sites/timworstall/2012/10/08/what-caused-the-great-financial-crash-gary-gorton-is-right>; see also GARY GORTON, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM COMING 8 (2012).

⁸⁷ GORTON, *supra* note 86, at 12.

⁸⁸ Diamond & Dybvig, *supra* note 84, at 401, 409.

⁸⁹ *Id.* at 404.

“sunspots.”⁹⁰ Even irrational anticipations of a run can cause a run.⁹¹ No matter the explanation for the initial withdrawals by the first-movers, it is clear that once the run begins, it is then *rational* for other creditors to follow suit – thus, the run becomes self-fulfilling. As some commentators have noticed, this takes the form of a prisoner’s dilemma: “if you think others will [run], you want to run first.”⁹²

This self-sustaining run dynamic can also be analyzed as an information problem. Bikchandani, Hischleifer, and Welch attribute the run dynamic to the costs of obtaining good information and argue that run behavior may be attributable to a crowd-dynamic known as “informational cascades,” in which individual agents defer to peer-action as “surrogates” for actual data because such data may be expensive to obtain.⁹³ Runs thus result from the behavioral dynamics of short-term creditors, caused by the absence of good information during a financial or bank crisis. This is a classic market failure problem, and this analysis becomes especially crucial as I argue for the necessity of public measures to address bank runs in Part III.C.

The applicability of the above analysis is not limited to banks. Susceptibility to the run-dynamic is a structural problem that is endemic to *all* financial intermediaries with short-term creditors – the archetype example being banks. As Diamond and Dybvig explicitly state in their seminal paper, while they model run-risk within a simplified economy containing a single bank, their conclusions apply more broadly to run-risk in the entire financial intermediation industry.⁹⁴ This is because financial intermediaries necessarily build their businesses around transforming asset liquidity and maturity, and it is precisely this transformation that creates the susceptibility to runs. This point is stated clearly by Diamond and Dybvig: “a demand deposit which is not subject to runs provides no liquidity services.”⁹⁵ Intermediation activity, whether conducted in the depository banking system or in the non-bank (or “shadow bank”) intermediation sector, thus comes with an inherent fragility.⁹⁶ As Federal Re-

⁹⁰ *Id.* at 410.

⁹¹ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 17; *see also* GORTON, *supra* note 86, at 9.

⁹² RICHARD S. CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* 31 (4th ed. 2008).

⁹³ Sushil Bikchandani et al., *A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades*, 100 J. POL. ECON. 992, 1012-13 (1992) (comparing the initiation of a bank run to “a cascade in which small depositors fear for the solvency of a bank and act by observing the withdrawal behavior of other depositors”).

⁹⁴ Diamond & Dybvig, *supra* note 84, at 416 (“We analyze an economy with a single bank. The interpretation is that it represents the financial intermediary industry, and withdrawals represent net withdrawals from the system.”).

⁹⁵ *Id.* at 409.

⁹⁶ *See* Gorton, *supra* note 84, at 12 (“An essential feature of the model is that the interest rate offered on the demand deposits to achieve this smoothing is such that if all agents want to consume early (by withdrawing from the bank), then the bank cannot satisfy these demands. This is the critical fragility in the economy.”).

serve Chairman Ben Bernanke pointed out, the 2008 financial crisis took on the shape and dynamic of a traditional bank run, except that the “run on the bank” occurred in the non-bank intermediation sector.⁹⁷

From the foregoing, it follows that MMFs’ susceptibility to runs derives from: (1) the structural feature of maturity mismatch that is endemic to *all* financial intermediaries and (2) the behavioral and informational dynamics of MMF investors as short-term investors. That MMFs are financial intermediaries is quite clear.⁹⁸ They invest in money market instruments on behalf of individuals, corporations, financial institutions, and governments. MMFs perform maturity mismatch and are able to invest in money market instruments of up to sixty days WAM (and before 2010, of even longer maturities). Similar to bank depositors as short-term creditors, MMF investors are short-term investors, who expect to be able to redeem shares on-demand from MMFs.

In addition, an examination of the events of September 2008 makes it clear that the run on the RPF was a classic Diamond-Dybvig style run. After the Lehman bankruptcy on September 15, 2008, there were approximately \$40 billion in investor redemption requests from the \$62 billion RPF over the next two days, in response to the portfolio’s \$785 million loss resulting from its exposure to Lehman CP (which totaled approximately 1.2% of the RPF’s assets). This was a textbook self-fulfilling bank run, which fits the theoretic model described in the foregoing analysis. Indeed, in the space of another two days, the \$62 billion RPF faced a total of \$60 billion in redemption requests.⁹⁹

It is also relevant to note that the run on the RPF began on September 15, even before the RPF broke the buck. \$25 billion in redemption requests were made on that first day alone.¹⁰⁰ In fact, \$40 billion in investor redemption requests had been made as of the RPF’s announcement to re-price its shares at four o’clock on September 16. This is relevant because a key premise of many reform proposals is that stable NAV and the impression of safety is the source of the first-mover advantage whenever an MMF breaks the buck.¹⁰¹ However, the fact that the bulk of the run in 2008 occurred *before* the RPF broke the buck contradicts this theory. Furthermore, floating NAV funds in Europe also experienced runs, suggesting that stable NAV is neither a distinctive nor a salient feature in explaining MMFs runs. To the contrary, the above

⁹⁷ Ben S. Bernanke, Chairman, Board of Governors of Fed. Reserve Sys., Statement before Financial Crisis Inquiry Commission: Causes of the Recent Financial and Economic Crisis (Sept. 2, 2010).

⁹⁸ ZOLTAN POZSAR ET. AL., FED. RESERVE BANK N.Y., SHADOW BANKING 51 (2010), available at http://www.ny.frb.org/research/staff_reports/sr458.pdf.

⁹⁹ INV. CO. INST., *supra* note 5, at 59-60.

¹⁰⁰ *Id.* at 60.

¹⁰¹ See, e.g., FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4.

analysis based on maturity mismatch and short-term creditor behavior provides a better explanation for the structural susceptibility of MMFs to runs. The structural defect identified by this Part is something that the FSOC reform proposals for redemption restrictions and floating NAV fail to address; for this reason, such proposals are neither necessary nor sufficient to deal with the problem of runs on MMFs. This critique will be developed further in Part VI.

B. Propagation of Systemic Risk Through Contagion

While the above structural characteristics of MMFs that make individually susceptible to runs, an isolated run on a single institution is not *of itself* a systemic concern. However, individual runs have the potential to generate systemic effects through the phenomenon described in the literature as “contagion.” Financial contagion has been defined as the “spread of run-like behavior,” indiscriminately and independent of any direct interconnections or relations.¹⁰² The problem of contagion is that the run behavior becomes indiscriminate and afflicts even financially healthy or well-capitalized institutions. This is precisely the systemic risk that MMFs pose, as demonstrated in this Part. It should be noted that my argument is not that MMFs are a *source* of systemic risks, but rather that MMFs are a *vector* or channel for systemic risk through contagion effects, due to their role in the financial system as well as their funding structure.

I describe two ways in which MMFs propagate systemic risk via contagion: (1) horizontally, through withdrawals in similarly situated institutions and (2) vertically, through “upstream” withdrawals by MMFs that are experiencing stress. Both of these features were prominent in the 2008 crisis.

First, a run on a single MMF may spark runs in other MMFs, and this I refer to as “horizontal” contagion. During the week following the RPF’s breaking of the buck, the run on the RPF spread very quickly to other prime MMFs. By September 18, in the span of only two days, \$169 billion had been withdrawn. Investors withdrew approximately \$300 billion during that week from prime MMFs. According to Moody’s, thirty-six of the one hundred largest prime MMFs faced the prospect of breaking the buck and only averted it due to financial backing from fund sponsors.¹⁰³

¹⁰² See SCOTT, *supra* note 70, at 6.

¹⁰³ Eleanor Laise, ‘Breaking the Buck’ Was Close for Many Money Funds, WALL ST. J. (Aug. 10, 2010), <http://online.wsj.com/news/articles/SB10001424052748703428604575419812292841830>.

Other MMFs in the Reserve Fund family also faced significant withdrawals, including government MMFs whose solvency was unaffected by Lehman.¹⁰⁴

This widespread run on other MMFs after the RPF run demonstrates the potential for MMFs to propagate systemic risk through horizontal vectors of contagion. This was not just an isolated run on a single institution; the single RPF run caused short-term creditors of other similarly situated MMFs to also run, even from institutions that had no exposure to Lehman and were not in danger of breaking the buck.¹⁰⁵ The same self-fulfilling behavioral dynamics described above in relation to runs on single MMFs may explain runs by short-term creditors. As Scott demonstrates, such horizontal runs occur because runs at one institution cause “short-term creditors of other firms to develop symmetrical concerns and incentives,” resulting in a chain reaction of fire-sale asset-liquidations.¹⁰⁶ This can be attributed to the fact that MMFs are required to hold certain safe and liquid asset classes under Rule 2a-7 of the Investment Company Act, which results in similarly situated MMFs holding similar portfolio assets. The systemic set of horizontal runs becomes self-fulfilling because, in order to meet ever-growing redemption requests, MMFs are forced to liquidate portfolios at distressed prices, pushing down asset prices and placing other MMFs at risk; this in turn triggers further runs on similarly situated MMFs.¹⁰⁷

The second vector of contagion is “vertical” in the sense that it is a function of “liability interconnectedness” or the interrelated risk of firm failure due to liability-side funding interdependence between MMFs and other financial intermediaries.¹⁰⁸ Vertical contagion involves the spread of contagion up or down a chain of intermediation, as opposed to horizontal contagion, which involves a spread across similarly situated institutions. MMFs can act as a vertical vector for contagion because of their holdings of short-term institutional debt and other money market instruments. The runs on MMFs in September 2008 spread to other parts of the financial system by precisely this mechanism. With prime MMFs coming under stress,

¹⁰⁴ SCOTT, *supra* note 70, at 127; *see also* Naohiko Baba et al., *U.S. Dollar Money Market Funds and Non-U.S. Banks*, BIS Q. REV., Mar. 2009, at 65, 72, available at http://www.bis.org/publ/qtrpdf/r_qt0903g.pdf.

¹⁰⁵ SCOTT, *supra* note 70, at 116.

¹⁰⁶ *Id.* at 117.

¹⁰⁷ *Id.* at 127.

¹⁰⁸ *See id.* at 1 (“Interconnectedness can relate to assets or liabilities, and generally refers to the phenomenon in which the failure of, or large losses borne by, one firm precipitates the failure of, or large losses borne by, a second firm because the second has an exposure to the first failed institution that exceeds its capital. These exposures may be through direct credit relationships, which we refer to herein as ‘asset interconnectedness,’ where one firm with credit risk to another fails, and sets off a chain reaction of further failures, i.e., the failure of a third firm with credit exposure to the second firm. Or connectedness may be a funding problem, where the failure of a firm providing funding to others, e.g., clearing banks, deprives many other financial institutions of funding, which we refer to as ‘liability interconnectedness.’”).

they initiated massive divestments in CP holdings. In the three weeks following Lehman's bankruptcy, prime MMFs reduced their CP holdings by \$202 billion, which accounted for 98% of the decline in overall CP holdings in the financial system during that period. This withdrawal led to dramatic increases in borrowing costs for CP issuers, and overnight spreads between CP and federal funds leapt to unprecedented highs.¹⁰⁹ This also reinforced a downward spiral in asset prices, as the market value of such money market instruments dropped dramatically, placing other MMFs at risk of run-like behavior, as their portfolios also came under stress.¹¹⁰ Besides placing pressure on asset prices, another form of vertical contagion occurs when runs on single MMFs lead to up-stream runs. Professor Jeffrey Gordon has termed this a "two-sided run problem."¹¹¹ In other words, runs on MMFs create a knock-on run problem for all parties who depend on MMF financing.

In conclusion, the cascading series of runs during September 2008 – both vertically and horizontally – demonstrate how MMFs can be a channel for financial contagion and systemic risk due to their significant intermediation role in the money markets. This is a serious problem because sudden demands for liquidity by MMF investors on a single MMF can trigger fire sales, rapidly depress asset prices, and freeze lending activity in short-term funding markets.

C. The Necessity of A Public Backstop

As the foregoing Parts demonstrate, the systemic risks MMFs pose are a function of their structural vulnerability to individual runs, as well as the propensity for those runs to spread throughout the financial system via contagion. I argue in this Part that public backstop structures are the only way to address such systemic risks. Furthermore, it is on this ground that many proposals for reform by both regulators and the industry have fallen short. By avoiding the provision of a public backstop, proposals such as those tabled by the SEC and FSOC fail to address both the structural vulnerability of MMFs to runs, as well as their propensity to channel risk via contagion. Noting also that commentators have made more general argument for the necessity of public support in financial regulation on the basis of contagion risks,¹¹² I argue for the necessity of public support measures specifically in relation to MMF reform and explain how such measures could minimize both individual runs on

¹⁰⁹ *Id.* at 129.

¹¹⁰ *Id.* at 125.

¹¹¹ *Perspectives*, *supra* note 32, at 1.

¹¹² *See generally* SCOTT, *supra* note 70.

MMFs and contagion effects. I thus show that the absence of a public backstop will inevitably leave MMF run risk unaddressed.

My argument centers on the necessity of a *public*, as opposed to a *private*, backstop as a structural feature to address MMF runs and contagion problems. However, there are a variety of different ways to structure such a public backstop. Broadly speaking, it is possible to distinguish between two basic types of public support measures: (1) *liquidity* measures, such as lender-of-last-resort functionalities, which provide public liquidity to financial institutions directly in the form of loans and (2) *guarantee* measures, such as the federal deposit insurance system, which ensures public financial guarantees directly to short-term creditors of financial institutions. Furthermore, a public backstop can be structured as either: (1) an *ex ante* facility or (2) an *ex post* intervention measure. The relative benefits of these different modes of providing public support are a separate issue from the necessity of a public backstop; these will be discussed in relation to specific proposals in Part VI. Irrespective of that comparative analysis, this Part focuses on the necessity of a public rather than private backstop facility and argues that public support is the *only* way of solving the run and contagion problems in MMFs. Once the necessity of providing a public backstop to effectively address MMF systemic risks has been addressed, the debate then shifts to a cost-benefit analysis of the different types of public support measures that are possible.

This argument is developed in three stages, drawing from a combination of historical, empirical, and economic insights. First, I argue that financial history demonstrates that public backstops are the *only* proven way of combating runs and containing systemic contagion effects in the banking system. Second, I examine the development of the MMF industry as part of the “shadow banking” system and describe how it had never been publicly backstopped, that is, until the *ex post* interventions during the 2008 crisis. MMFs have relied instead on private discretionary backstops in the form of “sponsor support,” which failed to stabilize the system during the 2008 crisis. I also draw on the empirical record of effective government intervention in MMFs during the 2008 crisis to argue that the absence of a public backstop is the primary source of systemic fragility in MMFs. I conclude by explaining how public backstops are, in theory, able to neutralize or prevent MMF runs, due to the state’s unique capacity to counter informational problems and create confidence, as well as the state’s ability to “complete markets” during periods of liquidity shock.

1. Financial History and Success of Recent Interventions

U.S. financial history demonstrates that banking crises, as characterized by contagious rashes of bank runs and massive bank failures, were contained with rea-

sonable success only after the introduction of federal lender-of-last-resort facilities and federal deposit insurance as public backstops to the banking system. History has seen the financial system continually expand and evolve through financial innovation and the creation of new bank products, along with the parallel development of public support measures to backstop and stabilize the financial system as a whole. Indeed, MMFs and the shadow banking system are but another step in this development, and insofar as they continue to play a part in the financial system as bank-like intermediaries, serious thought must be given to the use of ex ante public support measures to backstop MMFs.

It is easy to forget that demand deposits and checking accounts were an innovation when they first emerged in the period after the National Bank Acts of 1863-1864.¹¹³ This was at the close of the Free Banking Era, when federal issuances displaced private production of banknotes, and paper money traded at par for the first time.¹¹⁴ The amount of money in demand deposits and checking accounts had grown to be very large; initially, was privately regulated by a clearinghouse system, without any public backstop.¹¹⁵ This development was not well understood at the time, and indeed, some commentators have referred to it as the shadow banking system of that period.¹¹⁶

It turned out that these private bank accounts were subject to runs by depositors demanding paper money in times of serious stress, and thus with time, it became clear that the bank run problem was a systemic issue. For instance, the Panics of 1857 and 1873 were widespread runs by depositors on banks, who, in response, were forced to suspend the conversion of bank notes into currency.¹¹⁷ Since then, the U.S. banking system has experienced many other runs on demand deposits in banks. A total of five more banking panics occurred between 1873 and 1914,¹¹⁸ of which the 1907 panic was among the worst.¹¹⁹ During the Great Depression, from 1929 to 1933, there were massive depositor runs again, resulting in failures of over 9,000 banks in total.¹²⁰

In response to these banking crises, the U.S. financial regulatory system developed a series of public backstop institutions designed to stabilize the banking sec-

¹¹³ GORTON, *supra* note 86, at 17.

¹¹⁴ *Id.* at 19.

¹¹⁵ *Id.* at 21.

¹¹⁶ *Id.* at 22.

¹¹⁷ *Id.*

¹¹⁸ REINHART & ROGOFF, *supra* note 18, at 390. The recent data-related controversy regarding the Reinhart-Rogoff paper and its conclusions did not affect these statistics.

¹¹⁹ See generally ROBERT F. BRUNER, *THE PANIC OF 1907: LESSONS LEARNED FROM THE MARKET'S PERFECT STORM* (2007).

¹²⁰ David C. Wheelock, *Regulation, Market Structure, and the Bank Failures of the Great Depression*, Federal Reserve Bank of St Louis Review (1995), at 27.

tor. These backstops – which in the modern system include both lender-of-last-resort facilities and federal deposit insurance – were conceived to both prevent bank panics from arising in the first place and limit any damage from banking crises that did in fact occur. Furthermore, these backstops and their constitutive institutions did not arrive as finished monoliths but evolved incrementally over time, as regulators reacted and learned from one crisis to another.

The United States established a lender-of-last-resort system for the first time in 1914 with the founding of the U.S. Federal Reserve. This was set up primarily in response to the Panic of 1907, after which consensus on the need for a government mechanism to issue currency during banking crises began to grow.¹²¹ The absence of a public backstop was seen as a defect leading to the periodic crises in the system that needed to be addressed. Comparison was made to the European system, which, at the time, had a central bank capable of acting in deep and liquid money markets.¹²² Before that, ad hoc and unsystematic interventions by both bankers and Treasury secretaries had proved fruitless in reducing either the frequency or magnitude of banking crises. A previous experiment with a private clearinghouse system also failed to safeguard the industry from runs, demonstrating that privately created collateral was not sufficient to backstop the financial system effectively during periods of stress. The founders of the Federal Reserve thus turned to the European central banking model. They believed the Federal Reserve’s very presence in “furnish[ing] an elastic currency” would prevent bank panics from occurring in the first place, by eliminating seasonal fluctuations in money market interest rates.¹²³ This was initially successful in eliminating bank panics from 1914 to 1929.¹²⁴

The design features of the Federal Reserve as lender-of-last-resort were further improved after the Great Depression, which revealed that the problem of banking panics had not yet been solved.¹²⁵ The Depression era saw a massive number of bank failures, and the Federal Reserve was forced to take unusual and ad hoc measures to deal with the unusually large strains in financial markets.¹²⁶ This highlighted the design shortcomings of the Federal Reserve System at the time, including excessively narrow mandates, restrictive definitions of allowable collateral, and a geographically

¹²¹ Mark A. Carlson & David C. Wheelock, *The Lender of Last Resort: Lessons from the Fed’s First 100 Years* 3 (Fed. Reserve Bank of St. Louis, Working Paper No. 2012-056B, 2012), available at <http://research.stlouisfed.org/wp/2012/2012-056.pdf>.

¹²² PAUL M. WARBURG, NAT’L MONETARY COMM’N, THE DISCOUNT SYSTEM IN EUROPE, S DOC. NO. 402, at 41-42 (2d Sess. 1910), available at https://fraser.stlouisfed.org/docs/historical/nmc/nmc_402_1910.pdf.

¹²³ Carlson & Wheelock, *supra* note 121, at 3.

¹²⁴ *Id.* at 3-4.

¹²⁵ *Id.* at 4.

¹²⁶ *Id.* at 6.

fragmented unit banking system. The regulatory response was to strengthen the Federal Reserve's lender-of-last-resort functionality. This included easing collateral requirements, widening access to the Federal Reserve's discount window, and creating new emergency lending powers enacted in sections 13(3) and 13(13) of the Federal Reserve Act.¹²⁷ In other words, steps were taken to improve the Federal Reserve's efficacy as a public backstop.

Another Depression-era reform was the introduction of the federal deposit insurance system, which augmented the public backstop to the banking system. This public guarantee program, administered by the FDIC, was structured such that bank depositors received an *ex ante* government guarantee of up to a specified level of coverage. This was \$100,000 at the time of the 2008 crisis and has increased to \$250,000 post-crisis. Most commentators generally consider the deposit insurance system as a success.¹²⁸ Together with the Federal Reserve acting as a lender-of-last-resort, deposit insurance largely contained bank runs from 1934 to 2007 – what some commentators term the “Quiet Period” – when no runs occurred on FDIC-insured depository institutions.¹²⁹

Financial history thus demonstrates that systemic fragilities in the banking system were stabilized through the use of public support measures or backstops, which developed incrementally over time to address the run problem. The next runs and crises occurred outside of the backstopped banking sector, in the non-bank financial intermediation sector – often referred to as the shadow banking system.¹³⁰

¹²⁷ *Id.* at 11-12.

¹²⁸ SCOTT, *supra* note 70, at 234-35; *see also* Morgan Ricks, *Regulating Money Creation After the Crisis*, 1 HARV. BUS. L. REV. 75, 119 (2011).

¹²⁹ GORTON, *supra* note 86, at 26-27. Note that this diagnosis does not consider the Savings & Loans failures in the 1980s and 1990s, which were limited to the thrift industry and whose failures did not result in runs on FDIC-insured institutions.

¹³⁰ The term “shadow banking” can be attributed to Paul Culley, the former managing director of PIMCO, during his 2007 speech at the annual financial symposium hosted by the Kansas City Federal Reserve Bank in Jackson Hole. *See, e.g.*, PAUL McCULLEY, PACIFIC INV. MGMT. CO., THE SHADOW BANKING SYSTEM AND HYMAN MINSKY'S ECONOMIC JOURNEY 1 (2009), *available at* <http://media.pimco.com/Documents/GCB%20Focus%20May%2009.pdf> (“[U]nregulated shadow banks fund themselves with uninsured commercial paper, which may or may not be backstopped by liquidity lines from real banks. Thus, the shadow banking system is particularly vulnerable to runs—commercial paper investors refusing to re-up when their paper matures, leaving the shadow banks with a liquidity crisis—a need to tap their back-up lines of credit with real banks and/or to liquidate assets at fire sale prices.”).

2. The MMF Industry: Shadow Banking and Private Sponsor Support as an Insufficient Backstop

MMFs emerged as part of a sea of change in the financial landscape that started in the 1980s, which saw the rise of the shadow banking system. Shadow banks may be defined as “financial intermediaries that conduct maturity, credit, and liquidity transformation without access to central bank liquidity or public sector credit guarantees.”¹³¹ To put it another way, these are firms that perform financial intermediation services but do not benefit from official public backstops. MMFs are a key part of this shadow banking system, acting as the entry-point for short-term funding into the chain of credit intermediation.¹³²

Instead of public sector liquidity and credit protection, MMFs were privately backstopped through liquidity and credit protection, in the form of MMF sponsor support. Sponsor support refers to the purchase of fund securities by a fund’s sponsor during periods of stress, particularly when there is a substantial risk of a decline in the MMF’s NAV. As of September 30, 2012, MMFs sponsored by subsidiaries of either bank holding companies or thrift holding companies accounted for a total of 52% of industry assets.¹³³ Sponsor support is entirely discretionary – it is not mandated, leaving it a matter of judgment for individual private firms. For instance, twenty-five MMF sponsors intervened to support their funds in 1994, when a jump in short-term interest rates threatened the stable \$1.00 NAV. Those sponsors were not required to make such a move but voluntarily backstopped their funds for reasons of reputation and franchise preservation.¹³⁴ Research reveals well over 200 cases of sponsor support from 1989 to 2011.¹³⁵

However, this system of discretionary private backstops was not effective to deal with or prevent contagious MMF runs during the 2008 crisis, just as the private clearinghouse system was inadequate to handle bank runs before the inception of the Federal Reserve. Ultimately, public intervention through both liquidity and credit provision – in the form of lender-of-last-resort facilities and federal guarantees – was necessary to contain these MMF runs. These novel and unprecedented interventions,

¹³¹ POZSAR, ET AL., *supra* note 98, at 19.

¹³² *Id.* at 14.

¹³³ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 23.

¹³⁴ INV. CO. INST., *supra* note 5, at 175-176

¹³⁵ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 20. Moody’s found 146 cases in which U.S. MMFs “would have ‘broken the buck’ but for the intervention of their fund sponsor/investment management firm” from 1989 to 2003. See MOODY’S INVESTORS SERV., SPONSOR SUPPORT KEY TO MONEY MARKET FUNDS 3 (2010). Separately, other researchers document 123 instances of support for 78 different MMFs between 2007 and 2011. See Steffanie A. Brady, Ken E. Anadu, & Nathaniel R. Cooper, *The Stability of Prime Money Market Mutual Funds: Sponsor Support from 2007 to 2011* (Fed. Reserve Bank of Boston, Risk and Policy Analysis Unit, Working Paper No. RPA 12-3, 2012).

included: (1) the AMLF, with an atypical discount-window loan, in the form of a penalty rate or a haircut on ABCP as collateral; (2) the MMIFF, which provided a credit facility to qualifying SPVs to purchase MMFs' securities; and (3) the TGP, which was an opt-in insurance program for contributing MMFs. These were widely regarded as a success in containing the MMF runs and contagion effects,¹³⁶ in the week after the announcements of these programs, outflows from prime MMFs significantly diminished, and by mid-October, prime MMFs were again attracting net inflows. The success of these public interventions during the 2008 run on MMFs strongly suggests that the absence of public backstops is a source of the MMF industry's vulnerability to contagious runs.

3. Public Measures are Credible and Can Complete Markets

The historical evidence demonstrates a compelling record of the success of public backstop measures in both quelling runs and containing their contagion effects. I proceed to investigate how and why this is the case. In theory, the structural problem of maturity mismatch and liquidity transformation cannot be "regulated away" because it is inherent in any economy that creates private money through financial intermediaries.¹³⁷ However, instead of targeting that structural feature, regulatory intervention can and does address the behavioral dynamics of short-term creditors within that structure, as well as specific informational problems.

Diamond and Dybvig provide an illuminating analysis of how public deposit insurance works to rule out runs on individual institutions.¹³⁸ They argue that public insurance works because it is a credible guarantee of the "promised" sum – in contrast to private insurance, which is less credible.¹³⁹ A private company is "constrained by its reserves in the scale of unconditional guarantees which it can offer," while the state's power of taxation gives it a natural advantage; thus government deposit insurance can improve on the best allocations that private markets provide.¹⁴⁰ Diamond and Dybvig further argue that the theoretical possibility of imposing a tax (however distortionary) to make good on the insurance removes the incentives for creditors to run, and therefore, the tax need never be imposed.¹⁴¹ They further argue that government insurance has a "preventive function," in that, because the creditors trust in the

¹³⁶ POZSAR ET AL., *supra* note 98, at 64; *see also* SCOTT, *supra* note 70, at 261.

¹³⁷ Diamond & Dybvig, *supra* note 84. ("[I]lliquidity of assets provides the rationale both for the existence of banks and for their vulnerability to runs . . .").

¹³⁸ *Id.* at 413.

¹³⁹ *Id.*

¹⁴⁰ *Id.* at 416.

¹⁴¹ *Id.*

government's promise, the run is averted and the tax need not be imposed.¹⁴² In other words, the fact that the government can be trusted to make good on its promise to pay out affects short-term creditor behavior in a way that addresses the run problem.

Extrapolating from this analysis, I argue that both the remedial and preventive functions of deposit insurance operate through a combination of two factors: (1) a public assurance to make good on the (ex ante) terms of the private contract, which isolates the decision-making of an individual agent from the observed behavior of other agents and (2) the credibility of the public guarantee, which resolves some of the informational issues associated with a run.

First, public assurance works by offering to make good the terms of the original contract, removing the incentive for non-first-movers to run by ensuring that "it never pays to participate" in a run.¹⁴³ While the deposit insurance contract offers to make good on the depositor's legal expectation to a promised sum, it is noteworthy that MMFs don't involve a legal promise to pay on par to their shareholders, a point that this Article develops further in Part V. Regardless of what the public assurance involves, what is important is that the assurance to the short-term creditor is equivalent to the terms of the original contract. What this accomplishes is to make other agents' decisions irrelevant to an individual's analysis of the costs and benefits of his own position. This is crucial because, by insulating a participant's decision-making process from the observed withdrawal behavior of others in his position, the prisoner's dilemma problem (and the "undesirable equilibrium" of a bank run scenario) is addressed. An ex ante public assurance offers a competing source of information, which dislocates the run dynamic. This works, provided that the ex ante information (the assurance to make good) is credible.

Second, focusing on the credibility of the assurance, Diamond and Dybvig point out that private guarantees would be less credible than public ones, simply because insurance companies are constrained by their reserves. In contrast, public guarantees are more believable because the government has the power of taxation and can, in theory, raise the money to fund the promise using some form of tax.¹⁴⁴ This, therefore, addresses the "informational cascades" problem as described by Bikchandani, Hirschleifer, and Welch, where an individual with poor information will disregard his own private information and imitate others due to real-world information asymmetries.¹⁴⁵ As described in Part III.A, the problem in a run is that individual agents have no good, cost-effective information sources to counteract the observable

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ Bikchandani et al., *supra* note 93.

run behavior of other creditors. If an assurance to make good on the original contract by a third party is credible, or at least more credible than the observable run behavior of other creditors, second-movers have no rational incentive to run in response to first-mover withdrawals.

Public backstop measures therefore work to address and prevent runs through a credible assurance to make good on the *ex ante* contract. Although the private sector can theoretically convey good information via derivatives trading and short-bets, it holds true only in normal and well functioning market equilibrium scenarios. In a bank-run scenario, many of the necessary conditions for well-functioning private information markets are absent, as the Diamond-Dybvig model illustrates. Normal market incentives become distorted in a crisis situation, and it becomes rational for investors to withdraw, even though it produces the worst-case collective outcome. Furthermore, good information is expensive in a crisis scenario because those who have the incentives to produce private information about the value of assets in a crisis are also those who have incentives to distort that information for private gain. This is exacerbated by the problem of informational cascades – in a crisis environment, information is expensive, and individual agents defer to peer-action instead of getting their own data. As Diamond and Dybvig explain, in relation to addressing such informational problems, the government has a natural credibility advantage in comparison to the private sector because its power to raise money through taxes is an objectively verifiable fact, confirming that its assurance of support is credible. Just as the example of the deposit-insurance contract illustrates, an assurance of public support creates an equilibrium that prevents a run from happening in the first place by removing the incentives causing runs to become self-fulfilling. From this perspective, public measures are thus necessary, given that the private market cannot overcome the information asymmetries.

Finally, in addition to preventing individual runs, public backstops are the only effective way to “combat contagion.”¹⁴⁶ They are able to do this because public sources of liquidity (whether through a guarantee or liquidity facility) provide immediate relief, which counteracts the fire-sale asset-liquidation problem by enabling MMFs to meet their withdrawals. In other words, MMFs can meet large withdrawal requests by drawing on public sources, which reduces the pressure on their asset prices. A crisis scenario involves liquidity shocks, which drive down asset prices rapidly. As Allen and Gale demonstrate, as a result of liquidity shocks, asset pricing in a crisis situation depends largely on the amount of liquidity.¹⁴⁷ Likewise, Jeffrey Gor-

¹⁴⁶ SCOTT, *supra* note 70, at 13.

¹⁴⁷ Frank Allen & Douglas Gale, *Financial Contagion*, 108 J. POL. ECON. 1, 3 (2000).

don concludes that the fire-sale discount phenomenon during a crisis is driven by a “congestion effect” from short-term inelasticity in the supply of liquidity.¹⁴⁸

Thus, public support measures can act to address liquidity congestion and reduce pressure on prices. As Diamond and Dybvig argue, “what is crucial” about deposit insurance is that it “frees the asset liquidation policy from strict dependence on the volume of withdrawals.”¹⁴⁹ Public support thus liberates MMFs from the liquidity constraints in a crisis situation that would otherwise force them to sell assets at fire-sale prices. This enables MMFs to pursue asset liquidation policies free from contagion effects. This function could be equally performed by channeling public funds to institutions directly through a lender-of-last-resort functionality or by making direct guarantees to creditors.¹⁵⁰

Another way of analyzing this is to say that public support measures address contagion issues by completing markets and correcting for market failure. Allen and Gale show that when markets are incomplete, small shocks can be amplified and multiplied through liability interconnectedness between institutions to generate systemic effects because “a liquidity shortage in one region can lead to crisis in [all regions].”¹⁵¹ They conclude their analysis by suggesting that their “analysis of contagion suggests one way of thinking about the role of a central bank is to complete markets.”¹⁵² They further argue that the absence of a private market for insuring liquidity shocks, coupled with incomplete markets for aggregate risk, leads to market failure.¹⁵³ This suggests that a role for government intervention through public support becomes *necessary* because real-world private markets are not complete and are, therefore, susceptible to contagion without public interventions in the market.

IV. Limitation of Moral Hazard

The use of public support measures in addressing MMF systemic risk raises the issue of moral hazard. The notion of moral hazard originates from the literature on insurance and refers to the phenomenon where individuals and firms engage in riskier behavior when someone else bears the cost of their risk-taking.¹⁵⁴ In the context of financial institutions, this means that firms may have incentives to take more risks, and creditors may have less incentive to monitor firms’ risk taking, because

¹⁴⁸ Gordon, *supra* note 85, at 9.

¹⁴⁹ Diamond & Dybvig, *supra* note 94, at 404.

¹⁵⁰ *Id.*

¹⁵¹ Allen & Gale, *supra* note 147, at 30.

¹⁵² *Id.* at 32.

¹⁵³ *Id.* at 25.

¹⁵⁴ *See generally*, Mark S. Dorfman, INTRODUCTION TO RISK MANAGEMENT AND INSURANCE (10th ed. 2012).

these actors do not bear losses when those risks materialize. Put another way, insulating actors from the results of their risks (through some variation of insurance) distorts incentives.¹⁵⁵ Moral hazard is also an externality problem because it imposes costs on third parties external to the contractual framework.

All public support measures involve some specter of moral hazard, so one way to avoid the creation of moral hazard would be to avoid using public support measures altogether. However, as the foregoing analysis in Part IV argues – anything short of public support measures would not address MMF systemic risk problem effectively. The government has a unique ability to address informational problems, ease liquidity pressures, and complete markets. Once we confront the necessity of public support, it becomes useful to think about moral hazard as a basis for comparing various forms of public support proposals (i.e., based on the extent to which they limit moral hazard). In this Part, I suggest three basic guidelines for assessing the extent to which moral hazard is minimized.

First, moral hazard would be minimized if stakeholders' internalized costs in accordance with their risk contributions. This extrapolates from the insight that moral hazard is an externality cost, which can be spread amongst stakeholders. Internalization can be done either through risk-based premiums for an ex ante public support structure or through risk-based recovery of public costs in an ex post structure. The efficacy of cost-internalization, however, depends on the ability to *price* risk accurately. Commentators have doubted whether risk-based pricing can be perfected.¹⁵⁶ It is well recognized, for example, that the pricing of FDIC insurance premiums has been poorly sensitive to risk, however efficacious the insurance itself has been in stemming runs and contagion.¹⁵⁷

Second, moral hazard would be minimized if public support measures could be structured such that MMFs would bear the costs of their own portfolio risks. This is the principle that “bad” MMFs should be allowed to fail, rather than artificially propped up by a public support scheme. A distinction should be made between situations where there is a capital loss on the fund and situations where there is a liquidity shock and MMFs are illiquid but not insolvent. Public support measures should target the latter and not the former, providing liquidity to MMFs that are solvent but subject to contagious runs. Such a strategy would also avoid problem of pricing portfolio risk, since it could be isolated from the risk assessment process.

¹⁵⁵ Lawrence Summers, Op-Ed, *Beware Moral Hazard Fundamentalists*, FIN. TIMES (Sep. 3, 2007), available at <http://www.ft.com/intl/cms/s/0/5ffd2606-69e8-11dc-a571-0000779fd2ac.html#axzz2RXcvdTSc>.

¹⁵⁶ See REINHART & ROGOFF, *supra* note 18, at 234.

¹⁵⁷ MILTON FRIEDMAN & ANNA J. SCHWARTZ, *A MONETARY HISTORY OF THE UNITED STATES 1867-1960*, at 434-442 (1963); see also REINHART & ROGOFF, *supra* note 18, at 251-52.

Third, assuming optimal risk pricing, ex ante rather than ex post measures work better to align the incentives of MMFs to avoid risks. Support measures that are priced on an ex post basis are not ideal from a moral hazard standpoint because the existence of liquidity and credit create “well-known incentives for excessive leverage and risk-taking” when options are not priced ex ante.¹⁵⁸ On the other hand, ex ante private payments at regular intervals can provide a continual incentive for MMFs to behave prudently to avoid and reduce systemic risks. Under an ex post assessment system, because they do not bear any cost until the public support is disbursed, stakeholders will not know the exact cost of risk-taking at the outset.¹⁵⁹ This creates uncertainty risks and leaves a lingering potential for moral hazard and distorted incentives. However, it may be possible to develop ex ante principles for ex post pricing assessments, or even some combination of ex ante and ex post pricing; such measures may mitigate moral hazard, to the extent there is a clear ex ante allocation of risk.

V. “Exceptionalism:” A Differentiated Regime for Meaningful and Relevant Differences

MMFs have evolved to perform an important function in the short-term funding markets. They first developed in the 1970s as a historical accident, due to a combination of three forces: a historically high interest rate environment, Regulation Q interest-rate ceilings, and private industry innovations giving individuals and institutions access to higher interest rates. But MMFs have shown remarkable staying power, even after the phasing out of interest rate ceilings, and saw prominent and sustained growth from the 1990s onwards. As of the end of 2008, MMFs had \$3.8 trillion in AUM, up from \$1.4 trillion at the end of 1998.¹⁶⁰ That figure included assets in 783 MMFs, holding a total of about 38,000,000 shareholder accounts.¹⁶¹

The question of whether MMFs are a staying innovation to be kept, or an unbeneficial product of regulatory arbitrage, or a combination of both, is a background question that underlies reform efforts.¹⁶² This difficult question also engages underly-

¹⁵⁸ POZSAR ET AL., *supra* note 98, at 1.

¹⁵⁹ REINHART & ROGOFF, *supra* note 18, at 258-59.

¹⁶⁰ INV. CO. INST., 2012 INVESTMENT COMPANY FACT BOOK (2012), at 136.

¹⁶¹ *Id.* at 138-139.

¹⁶² See, for example, Remarks at the SEC Roundtable on Money Market Funds and Systemic Risk (May 10, 2011) [hereinafter “SEC Remarks”], available at <http://www.sec.gov/spotlight/mmf-risk/mmf-risk-transcript-051011.htm>, where the following exchange took place:

Eileen P. Rominger: Many would view money market funds as having played an important role in the growth of short-term markets. They have a role in allocating capital among short-term borrowers. They provide investors diversified access to these markets. Others, however, view money market funds as part of a shadow

ing policy attitudes towards the design of short-term funding markets in their totality.¹⁶³ However, such issues are beyond the scope of this Article, which assumes that MMF structural reform is designed to reduce systemic risk while *simultaneously* avoiding the imposition of unnecessary and unintended economic costs.

As Federal Reserve Chairman Bernanke put it, MMFs play a “crucial role” in the CP market as a “key source of funding for many businesses;” therefore, “policy-makers should consider how to increase the resiliency of those funds that are susceptible to runs.”¹⁶⁴ This Part thus focuses on the industry’s economic functions and systemic role from the standpoint of evaluating the costs and benefits of reform efforts to reduce systemic risk. Since it is assumed that MMFs have a beneficial, economic function, the question becomes whether and how changing that function would impose significant transaction costs on agents, in addition to inflicting any other unintended economic consequences. In other words, since we already have MMFs and they already perform a significant economic function in the system, what is the least costly way to stabilize the MMF industry?

At the heart of this issue is the conceptual puzzle underlying attitudes towards MMF reform – that is, the extent to which MMFs should be treated as a conceptually distinct category, for regulatory purposes, from both banks and other mutual funds. This is a central difficulty in conceptualizing MMF reform and stems from the fact that MMFs exhibit bank-like functionality, yet do so from within a mutual fund equity structure, albeit with certain modifications. This has posed significant challenges to traditional regulatory paradigms, and there is a tendency among regulators to argue in favor of simply extending the banking regulatory paradigm to MMFs.

banking system, and they view them as perhaps primarily designed to circumvent banking laws. Which of these views is the right one?

Robert E. Plaze: Or are they both?

...

Paul A. Volcker: All of the above.

...

John D. Hawke Jr.: [T]he prohibition against payment of interest on demand deposits had been around for many, many years before under Chairman Volcker. Interest rates were run up to close to 20 percent, and it was Reg. Q -- it was the Reg. Q ceiling on bank deposits that encouraged the creation of money market funds. Since that time, money market funds have been enormously successful. There are 30 million people who have money market investments. We're up to almost three trillion dollars in money market funds. Chairman Volcker asked, “What's the public good?” A lot of people out there think money market funds are very good for them, and they find them enormously useful for cash management, for liquidity, for diversification.

¹⁶³ See Ricks, *supra* note 11.

¹⁶⁴ Ben S. Bernanke, Chairman, Fed. Reserve Bd., Speech Before the Council on Foreign Relations: Financial Reform to Address Systemic Risk (Mar. 10, 2009).

In response, the industry argues that this would unjustifiably regulate MMFs out of existence, since MMFs may offer a competitive business model, which plays a valuable economic role by distributing risk and allocating credit efficiently.¹⁶⁵ These differences play out in the different proposed models for MMF reform.

In this Part, I advance an argument for MMF “exceptionalism” as an ideal approach to reform that minimizes both systemic risk and transaction costs. I first use exceptionalism to denote how MMF regulations should take into account relevant differentiations between MMFs and banks; MMFs have unique characteristics and economic functions that justify their differentiated regulatory treatment. Next, I show how MMFs uniquely meet a demand gap that the bank depository system cannot. Finally, given the above, I argue that transplanting bank-like regulation wholesale (deposit insurance and prudential regulation) is ill-suited for MMFs. Modifying the structural attributes of MMFs that allow them to perform their systemic role would create real risks of migration to even less regulated sectors, where systemic risks would remain. This would lead to substantial and unintended economic costs.

A. MMFs are Not Banks

It is a widely held view that MMFs and banks are perfect substitutes for each other. Paul Volcker famously remarked of MMFs: “If they are going to talk like a bank and squawk like a bank, they ought to be regulated like a bank.”¹⁶⁶ There are many other prominent proponents of this view.¹⁶⁷ The term shadow banking also reflects this view, the implicit assumption being that specific functional similarities to the banks require that an identical regulatory structure apply to non-bank financial intermediaries, such as MMFs. This has obvious implications in terms of MMF reform and is reflected in the shape and ethos of specific proposals. For instance, certain proposals, such as the G-30 proposal for converting MMFs to “Special-Purpose Banks,” or Gorton’s proposal for “Narrow Savings Banks,” take this assumption of equality to its conclusion.¹⁶⁸ A weaker version of this tendency is the proposal for insurance programs, without requiring bank-style, prudential regulation.¹⁶⁹ The latter

¹⁶⁵ See, e.g., INV. CO. INST., MONEY MARKET FUNDS IN 2012: MONEY MARKET FUNDS ARE NOT BANKS (2012), available at http://www.ici.org/pdf/12_mmf_mmfs_are_not_banks.pdf.

¹⁶⁶ Shefali Anand, *Treasury Pads Coffers in Bailout*, WALL ST. J. (Feb. 17, 2009), <http://online.wsj.com/article/SB123483112001495707.html>.

¹⁶⁷ See, e.g., Mark Roe, *Money-Market Resistance*, PROJECT SYNDICATE (Oct. 23, 2013), <http://www.project-syndicate.org/commentary/why-the-sec-rejected-new-rules-for-mutual-funds-by-mark-roe>; see also *Perspectives*, *supra* note 32.

¹⁶⁸ Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS INST. PAPERS ON ECON. ACTIVITY, Fall 2010, at 261, 265.

¹⁶⁹ SCOTT, *supra* note 70, at 231.

proposals conceptually dislocate the concept of insurance from prudential regulation, recognizing some differentiation for MMFs. But the concept of insuring short-term creditors at par is still borrowed from the history of deposit insurance.

In this Part, I question both the completeness and utility of this view and argue that there are relevant differences between MMFs and banks that should inform MMF structural reform. Despite functional similarities between bank deposits and MMFs, there are important differences of legal form and institutional structure that should be taken into account when thinking about MMF reform. As Charles Whitehead points out, focusing only on functions is an “incomplete” regulatory approach because it “fails to take into account of differences in the institutions performing them,” including differences in agency costs and institutional structure.¹⁷⁰ In the context of the shadow banking system, this means that applying bank regulation wholesale to differently structured institutions that perform bank-functions may not be appropriate and may, in fact, curtail some of the useful features of such institutions, while failing to address new idiosyncratic risks. Therefore, for effective MMF reform, relevant and meaningfully differences between MMFs and banks should be accommodated. These are detailed below.

1. Legal Differences: No Legal Right to Fixed Par or Assumption of Risk

Economists have described the service that banks provide to depositors as a form of insurance. In their seminal paper, Diamond and Dybvig state: “[B]anks can be viewed as providing insurance that allows agents to consume when they need to most.”¹⁷¹ In the same vein, Allen and Gale also observe that “the role of banks is to make investments on the behalf of consumers and to insure them against liquidity shocks.”¹⁷² Since MMFs compete with depository institutions for investors seeking stability and safety, they too offer a form of liquidity insurance for such investors. However, as I explore below, MMFs offer insurance to investors of a qualitatively different kind from deposits.

Unlike bank-deposits, MMFs do not offer their investors a contractual right to a fixed deposit amount.¹⁷³ Within the contractual structure of a mutual fund, MMFs promise to redeem shares from investors at an ex ante unspecified, and therefore potentially fluctuating, price. This price depends on the value of the MMF’s in-

¹⁷⁰ Charles K. Whitehead, *Reframing Financial Regulation*, 90 B. U. L. REV 1, 41-42 (2010).

¹⁷¹ Diamond & Dybvig, *supra* note 84, at 405.

¹⁷² Allen & Gale, *supra* note 147, at 10.

¹⁷³ E. Gerald Corrigan, *Are Banks Special? A Revisitation*, REGION, Mar. 2000, at 14, at 2.

vestments (i.e., a redeeming price that may or may not be \$1.00 NAV). In contrast, a bank depositor is given an ex ante assurance of redeeming at a fixed par value through a deposit contract. This distinction is a fine one, since, in non-crisis economic conditions, MMF investors will generally redeem at par. Yet it is a significant difference. If a bank pays its depositors an amount less than par, the depositor is still strictly and legally entitled to the remaining sum and remains a creditor with legal rights upon the bank's failure. On the other hand, an MMF could pay less than the principal invested and not be in breach of contract; upon liquidation, it would not owe any residual legal obligations towards its investors.

The stability of principal held in a bank is thus assured for depositors through a clearly defined ex ante legal structure that guarantees a fixed sum. This is true for both normal and distressed scenarios, due to the deposit insurance regime (up to a defined regulatory limit).¹⁷⁴ In a distressed or crisis situation, the bank-depositor contract is supplemented by the deposit insurance contract, where the public sector effectively guarantees the par value of the principal as a fixed sum. Bank depositors, therefore, do not generally have to consider the riskiness of a bank's assets in assessing the stability of their principal investment, as they have received a legally enforceable promise to receive a fixed par value in a withdrawal.

In contrast, however, the stability of principal that is MMFs offer is not a function of a legal structure that guarantees the principal sum invested; rather, it is a function of access to a diversified pool of investments, regulations requiring investment in high quality investments, scale economies, and professional fund managers' abilities to maintain a stable NAV.¹⁷⁵ Instead of relying on a legal structure that guarantees the principal sum, MMF investors are assured that their share values will remain stable through a system of incentives (fund managers), regulation (credit quality), and risk-diversification. It is also worth noting that MMFs are under no "legal or regulatory requirement to maintain their NAV" at a stable \$1.00 per share.¹⁷⁶ There is no guaranteed stable NAV; rather, it is a function of market forces and the private decisions of MMFs, within a regulated sphere of action. MMFs are pass-through investments with an element of risk in exchange for yield and other benefits; they are not guaranteed-outcome principal safety products.

Thus there is a crucial difference between MMFs and banks as forms of liquidity insurance for a capital sum: as a strictly legal matter, MMF investors assume

¹⁷⁴ This limit was \$100,000 at the time of crisis, but has since been increased to \$250,000. See generally Nathaniel Popper and Jessica Silver-Greenberg, *Big Depositors Seek a New Safety Net*, N.Y. TIMES (Dec. 30, 2012), <http://www.nytimes.com/2012/12/31/business/a-rush-to-split-up-big-bank-deposits-to-keep-them-safe.html>.

¹⁷⁵ See Cook & Duffield, *supra* note 15, at 1.

¹⁷⁶ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 21.

the risk of redeeming below par. An MMF's prospectus is required to state: "An investment in the Fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Although the Fund seeks to preserve the value of your investment at \$1.00 per share, it is possible to lose money by investing in the Fund."¹⁷⁷ MMF investors are thus well aware that there is a risk of redeeming the investment at less than \$1.00 per share, legally speaking.¹⁷⁸ Furthermore, there is precedent. In 1984 and during the thrift crisis, the Community Bankers Mutual Fund (CBMF) was unable to make up portfolio losses of \$35.5 million out of \$82.2 million in assets and was forced to liquidate its assets to redeem shares.¹⁷⁹ This was a highly public event, and then SEC Chairman Arthur Levitt Jr. gave a statement referring to the CBMF incident as a "warning" and noting that "[t]he moral [was] that any fund can lose money."¹⁸⁰ The potential for MMF investments to be redeemed below par is a risk that investors are presumed to have assumed.

This assumption of legal risk (the absence of a legal guarantee of par) is a trade-off for other benefits that MMF investors enjoy.¹⁸¹ MMFs are generally a sophisticated marketplace, and MMF investors may forego a legal guarantee of par value, trading the risk for safety through diversification and highly rated investments, or in search of better yields.¹⁸² Investors' incentives are complex, and the depository system may be inadequate for a variety of reasons, differing from investor to inves-

¹⁷⁷ See SEC Form N-1A, Item 4(b)(1)(ii).

¹⁷⁸ See, e.g., SEC Remarks, *supra* note 162, where the following statement was made:

Kathryn L. Hewitt: As a public fund investor, I'm well aware that a money market mutual fund is not guaranteed. I'm aware that I'm investing in an investment product, and that is not a guaranteed return or a guaranteed \$1 net asset value. But I do rely on the fact that the investment management company who is running the fund is managing it for 2a-7 guidelines. And that those guidelines make it more stable, and they manage to keep it at the \$1, with a slight fluctuation above or below that's permitted within those guidelines. That's what I'm relying on -- that that investment company is going to manage to the rules that exist. Now, sometimes there are problems in the market. And then we saw the breaking of the buck. But I've always known, from the time I went into a money market fund, that could happen. But it's not the everyday occurrence.

¹⁷⁹ See Leslie Wayne, *Investors Lose Money in "Safe" Fund*, N.Y. TIMES, Sept. 28, 1994, at D1 (displaying a chart entitled "Pumping Money Into their Funds").

¹⁸⁰ *Id.*

¹⁸¹ For instance, in a Fidelity market survey, only 38% of investors surveyed cited safety as a key reason for investing in MMFs. See FIDELITY INVS., THE INVESTOR'S PERSPECTIVE: WHAT INDIVIDUAL INVESTORS KNOW ABOUT THE RISKS OF MONEY MARKET MUTUAL FUNDS 3 (2012), available at <http://www.sec.gov/comments/4-619/4619-170.pdf>.

¹⁸² See *id.* (indicating that, according to a recent Fidelity market survey, only 10% of investors believe government would step in to prevent MMFs from breaking the buck, while 47% believe MMFs pose risks identical to banking products).

tor. These may include tax benefits¹⁸³ or access to market-sensitive yields.¹⁸⁴ Indeed, commentators observe that the search for higher yields was a driving factor for investment in MMFs from the mid 1970s to early 1980s, a time of rapid expansion of the MMF industry.¹⁸⁵ Investors were able to access higher yields through diversified investment in MMFs, but the trade-off was that they assumed the risk of lacking the legal protections that depositors gained under the depository system. Consider also the categories of MMFs (i.e., government, prime, tax-exempt), which are differentiated by portfolio-risk profiles, with yields corresponding inversely to risk. MMF investors pick funds that correspond to the risk-yield ratio they are willing to assume. In contrast, bank depositors do not have the same capacity to see through to the bank's investments and do not choose between deposit accounts based on the riskiness of bank portfolios or the quality of its loans, which may be difficult to assess.

In sum, there is a difference between MMF *investors* and bank *depositors*: investors have investment options based on their specific calibrations of needs for stability, risk exposure, return, disclosure, etc.¹⁸⁶ Some investors may not prioritize safety absolutely and may trade it off for gains. For investors primarily seeking safety, MMFs also offer a safety profile through a combination of private credit, liquidity, and put options sponsor banks or fund advisers provide.¹⁸⁷ This offers safety of a qualitatively different kind from that of a deposit, involving deposit insurance as a public put. Additionally, in a failure scenario, historical figures show that losses from MMF investments are low. For instance, the run on the RPF in 2008 was the most dramatic run on MMFs seen in the history of the industry, with \$40 billion in redemption requests on the \$62 billion fund in just two days. In that scenario, investors ultimately recovered slightly over 99% of the fund's assets during liquidation, as of the last distribution in 2010.¹⁸⁸ This high rate of recovery is also a function of the fact that, unlike banks, MMFs do not have other creditors to whom they distribute assets, aside from their shareholders.

¹⁸³ See INV. CO. INST., *supra* note 21, at 7 (“[B]ecause a money market fund generally pays out all of its return as an income dividend to shareholders, investors need not track capital gains and losses.”).

¹⁸⁴ Arthur Wilmarth Jr., *The Transformation of the U.S. Financial Services Industry*, 2002 U. ILL. L. REV. 216, 239, n.95 (2002).

¹⁸⁵ *Id.* (“[U]nlike bank deposits, MMMFs are not federally insured. However, MMMFs offer considerably higher yields to investors along with many of the liquidity and transactional advantages of bank accounts.”).

¹⁸⁶ See SEC NOV 2012 MEMO, *supra* note 24, at 38.

¹⁸⁷ Zoltan Pozsar, *Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System* 10 (Int'l Monetary Fund, Working Paper No. 11/190, 2011), available at <http://www.imf.org/external/pubs/ft/wp/2011/wp11190.pdf>.

¹⁸⁸ See Press Release, The Primary Fund, Reserve Primary Fund to Distribute \$215 Million (July 15, 2010), available at http://www.primary-yieldplus-inliquidation.com/pdf/PrimaryDistribution_71510.pdf.

To sum up, investors have a real choice in the current marketplace between MMFs and banks as differentiated modes of insurance or investment. Although MMFs and banks both offer their investors/depositors an expectation of stability, they do so through different structures, involving different risks and rewards. Banks insure their depositors with a legal structure that guarantees the fixed par sum. In contrast, MMF investors are not *ex ante* entitled to the return of par value. That legal risk is assumed but traded for a mix of other benefits that MMFs offer, including diversification, market-sensitive or higher yields, scale economies, and professional fund management.

2. Structural and Risk-Profile Differences

There are also a number of structural and risk-profile differences between MMFs and banks relevant to MMF reform. First, MMFs have only one class of shareholder-investors, and do not have the same depositor-shareholder agency problems as banks.¹⁸⁹ Such agency problems are the principal justification for bank prudential regulation. Because of depositors' limited access to information and inability to control bank shareholder behavior, bank regulation is necessary to limit a bank's risk-taking incentives.¹⁹⁰ The force of this justification is far weaker in the case of MMFs, since short-term investors are also shareholders. Furthermore, any agency problems are mitigated by the fact that MMF managers have different incentive structures from bank managers. While bank managers generally have fixed salaries, fund managers are rewarded for investment returns and increases in total AUM.¹⁹¹ Additionally, MMFs are already subject to restrictive limitations on the types of investments they can hold, as well as diversification requirements. In contrast, banks are permitted wider discretion to take on greater risk-taking.

Second, MMFs are generally safer, more stable institutions than banks for uninsured cash flows because they are more transparent and their assets (debt securities) are more liquid and are marked-to-market. That is, leaving aside for the purposes of analysis the existence of public backstops in the form of insurance or lender-of-last-resort access, MMFs are far more resilient to investor panics than banks are to depositor panics. Indeed, transparency of portfolios is a key difference between

¹⁸⁹ Whitehead, *supra* note 170, at 41.

¹⁹⁰ *Id.*; see also Macey, *supra* note 17, at 157.

¹⁹¹ Whitehead, *supra* note 170, at 41; see also Raghuram G. Rajan, *Has Financial Development Made the World Riskier?* 2, 18-20 (Nat'l Bureau Econ. Research, Working Paper No. 11728, 2005), available at <http://www.nber.org/papers/w11728.pdf>.

MMFs and banks. A bank's asset portfolio strategy is usually opaque to depositors.¹⁹² In contrast, MMFs are far more transparent because of mandatory and voluntary disclosures of fund NAV. In fact, even though MMFs are required by the 2010 SEC rules to disclose actual NAVs on a monthly basis, a number of prominent MMFs – including Goldman Sachs, JP Morgan, BlackRock – decided in January 2013 to voluntarily disclose their shadow NAVs on a daily basis.¹⁹³

B. Demand-side Gap: Institutional Cash Pools

In this Part, I build on the earlier analysis of relevant differences between MMFs and banks and develop a consequentialist argument in favor of MMF exceptionalism; because MMFs uniquely meet a particular demand gap in institutional cash pools, regulating MMFs like banks (or fundamentally changing their business model) creates a real risk that institutional assets currently in MMFs will migrate out of regulatory oversight, thereby increasing systemic risk.

A dominant driver of growth for the MMF industry in the last fourteen years has been the emergence of institutional investors. Indeed, from the late 1990s and leading up to the 2008 crisis, the MMF industry experienced a dramatic increase in the number of institutional investors. According to data from ICI, from the end of 1998 to the end of 2008, retail MMFs grew a total of 63% from managing approximately \$835 billion in funds to \$1.36 trillion in funds. In contrast, over the same ten-year period, institutional money market fund assets grew an incredible 380%, from approximately \$516 billion to \$2.48 trillion.¹⁹⁴ While institutional investors made up a minority constituency of investors in 1998, accounting for about one-third of all MMF assets, they now account for two-thirds of all MMF assets. The increased participation of institutional investors also led to dramatic overall growth in total MMF assets, from approximately \$1.4 trillion at the end of 1998 to approximately \$3.8 trillion at the end of 2008.¹⁹⁵

¹⁹² See ZHAO YANG, FINANCIAL OPACITY AND BANK'S ASSET PORTFOLIO STRATEGY (2012), available at [http://www.tsinghua.edu.cn/publish/pbcsfen/7855/20130117095545547169925/JMP_Yang.Zhao\[1\].pdf](http://www.tsinghua.edu.cn/publish/pbcsfen/7855/20130117095545547169925/JMP_Yang.Zhao[1].pdf); see also FABRIZIO SPARGOLI, BANK'S OPTIMAL INFORMATION DISCLOSURE AND BANKS' OPACITY I (2012), available at <http://www.econ.upf.edu/eng/graduates/gpen/jm/pdf/paper/Banks%20optimal%20information%20disclosure%20and%20bank%20opacityi.pdf> (“[I]nability of the market to judge banks' solvency has been seen as a determinant of financial crises.”).

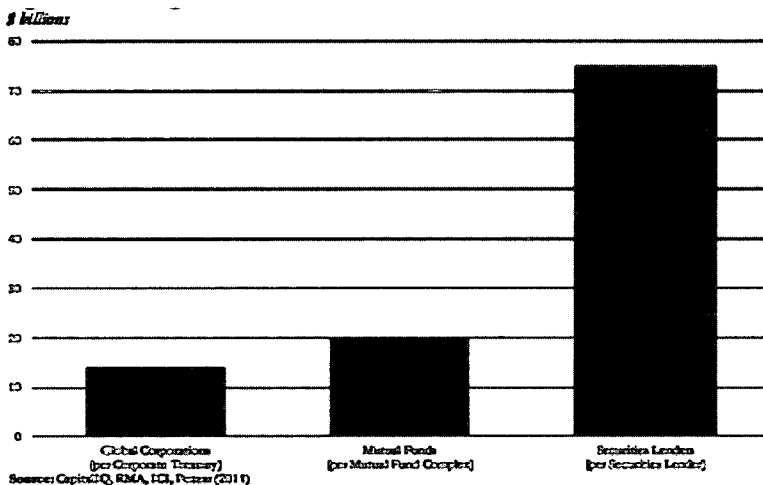
¹⁹³ See, e.g., Janet Paskin, *Goldman Sachs Adopts a Money-market Reform*, BUS. WK. (Jan. 9, 2013), <http://www.businessweek.com/articles/2013-01-09/goldman-sachs-adopts-a-money-market-reform>; see also Kirsten Grind, *More Money Funds to Report Daily*, WALL ST. J. (Jan. 9, 2013), <http://online.wsj.com/news/articles/SB10001424127887324081704578231753210355718>.

¹⁹⁴ Macey, *supra* note 17, at 142.

¹⁹⁵ See INV. CO. INST., 2010 INVESTMENT COMPANY FACT BOOK (2010), at 126.

In a recent study on the phenomenon of “institutional cash pools,” Pozsar concludes that these pools prefer to avoid insured deposits, or “unsecured exposures to banks.”¹⁹⁶ This is primarily because the safety and liquidity needs of such institutional pools are not adequately met in the depository system, due to the FDIC’s insurance ceiling (\$100,000 before the crisis and now \$250,000). Institutional cash pools are very large, with asset sizes anywhere from \$1 billion to over \$100 billion. Focusing on 2007 peak figures (as displayed in Figure 1) of aggregate pool sizes, corporate treasury pools averaged \$15 billion each, mutual fund complexes averaged \$20 billion, and securities lenders averaged \$75 billion.¹⁹⁷ Given the average sizes of these pools, and the fact that there were not enough banks to distribute pools out into insured \$100,000 parcels, institutional cash pools and their safety needs became ill-fitted for intermediation through the traditional depository banking system.

Figure 1



A key feature of institutional cash pools and their growth has thus been the secular and persistent surge in demand for “insured deposit alternatives.” This demand arose due to several factors. First, for large institutional cash pools, the amount that has to be set aside and allocated to a “safe” asset class is also extremely large, far exceeding the \$250,000 that can currently be insured in a deposit account. The second reason is that there are not enough safe non-deposit assets – in other words, U.S.

¹⁹⁶ See Pozsar, *supra* note 187, at 2.

¹⁹⁷ *Id.* at 6-7.

Treasuries – for these institutional pools to hold for cash management purposes. As Bernanke explained in a 2005 paper, the scarcity of U.S. Treasury bills is due, in part, to the global savings glut, which led to large numbers of U.S. Treasuries being held abroad.¹⁹⁸ As a result, between 2003 and 2008, institutional pools' demand for insured deposit alternatives exceeded the outstanding amount of short-term government guaranteed instruments not held by foreign official investors by a cumulative amount of at least \$1.5 trillion.¹⁹⁹

In Pozsar's analysis, the shadow banking system arose to fill this demand gap for "insured deposit alternatives."²⁰⁰ This work was done to a large extent by the MMF industry. Given the institutional cash pools' needs for safety and liquidity, MMF investments provide an attractive service as instruments with relative stability – although that stability is ensured differently than it is in the depository system. MMFs offer stability through diversification, investment in high quality instruments, private sponsor puts, and professional commitment by managers and analysts to stable NAVs. As a result, MMFs catering to institutional investors grew rapidly between 1998 and 2008, from approximately \$516 billion to \$2.48 trillion in total assets.²⁰¹

After the financial crisis, however, there has been an increase in demand for bank deposits. Allocations of institutional pools to bank deposits have been increasing and, according to a May 2013 survey by the Association for Financial Professionals (AFP), stands at about 50% of total short-term investments.²⁰² According to Pozsar, the recent shift to bank deposits has largely been driven by the increase in the FDIC's insurance ceiling from \$100,000 to \$250,000, along with the temporary provision of unlimited insurance to non-interest bearing transaction accounts.²⁰³ The recent near-zero yield environment has also played a part in making such deposit accounts viable alternatives for institutional cash pools.²⁰⁴ The FDIC's unlimited insurance coverage has since expired, however, and is no longer available on non-interest bearing accounts as of January 1, 2013.²⁰⁵ With the expiry of unlimited de-

¹⁹⁸ Governor Ben S. Bernanke, Remarks at the Sandridge Lecture, Virginia Association of Economists (Mar. 10, 2005).

¹⁹⁹ Pozsar, *supra* note 187, at 2.

²⁰⁰ *Id.*

²⁰¹ See INV. CO. INST., *supra* note 195.

²⁰² ASS'N FOR FIN. PROF., 2013 AFP LIQUIDITY SURVEY 1 (2013).

²⁰³ Pozsar, *supra* note 187, at 23.

²⁰⁴ See ASS'N FOR FIN. PROF., *supra* note 202.

²⁰⁵ Letter from Fed. Deposit Ins. Co., Notice of Expiration: Temporary Unlimited Coverage for Non Interest-Bearing Transaction Account (Nov. 5, 2012), available at <http://fdic.gov/news/news/financial/2012/fil12045.pdf>.

posit insurance, money held in institutional deposit accounts is likely to decrease in the long term.²⁰⁶

What is most significant about these figures and trends is that, even in a low yield environment and with ongoing uncertainty about the future of MMFs, approximately half of these large institutional cash pools still do not choose to park their cash in deposit accounts. This represents a significant number of institutional cash pools, for which the depository system still proves inadequate. One possible explanation for this is that, unlike retail investors, institutional cash investors primarily use their cash for investment, liquidity, and collateral management, and not for transaction purposes. These purposes are best served by non-M2 instruments, such as Treasury bills, repurchase agreements, and MMF shares – not bank deposits.²⁰⁷ Crucially, this means that for such cash pools, structural changes to MMFs that compromise MMFs' ability to provide safety and liquidity will likely drive these pools further out of regulatory oversight, rather than into the depository system. This point is developed in the next Part.

C. Differentiated Regulatory Regime for MMFs

MMFs are currently regulated under a separate regime, which is different from the regulatory regime for both banks and mutual funds. To be clear, MMFs are under no “requirement,” whether legal or regulatory, to maintain a stable \$1.00 NAV.²⁰⁸ Rule 2a-7 of the Investment Company Act works instead as a kind of regulatory compact. It provides that, in exchange for availing itself to the stable NAV accounting methodologies (amortized cost accounting and penny-rounding), a registered fund will be subject to certain regulations on credit quality and portfolio diversification.²⁰⁹ As of 1991, the SEC promulgated a new rule making it illegal for a mutual fund to describe itself as a “money market” fund unless it met the requirements of Rule 2a-7.²¹⁰ MMFs thus became a defined and special category of mutual

²⁰⁶ Note however, that according to ASS'N FOR FIN. PROF., *supra* note 202, cash held in corporate deposit accounts only barely dropped. A possible explanation is the ongoing uncertainty about regulatory changes to the MMF industry, with corporate treasurers taking a wait-and-see approach. This is substantiated by the fact that the data from the 2012 AFP Liquidity Survey shows the same proportion of cash in MMFs, Treasuries and/or Deposits as 2013. *Cf.* ASS'N FOR FIN. PROF., 2012 AFP LIQUIDITY SURVEY (2012).

²⁰⁷ Pozsar, *supra* note 187, at 15-16.

²⁰⁸ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 21.

²⁰⁹ Macey, *supra* note 17, at 140; *see also* Timothy Q. Cook & Jeremy G. Duffield, *Money Market Mutual Funds and Other Short-term Investment Pools*, in INSTRUMENTS OF THE MONEY MARKET 156, 164 (Timothy Q. Cook & Rovert K. Laroche eds., 7th ed., 1998).

²¹⁰ *Id.* at 166.

funds, subject to their own regime.²¹¹ Ricks describes this as a “risk-constraint” regime (i.e., one that is designed to reduce MMFs’ portfolio risks).²¹² However, as discussed in Parts III and IV, the design of this regulatory regime is deficient from the perspective of dealing with systemic risk because it lacks the availability of public support measures to stem runs and combat contagion.

This Article argues that the optimal design of MMF reform should retain the spirit of MMF exceptionalism. That is, MMF regulation should accommodate relevant differences between MMFs and banks, as outlined above, and avoid simplistically extending bank-like regulation to MMFs, which would involve significant and unintended costs. Such exceptionalism is justified by the differences, as outlined above, between MMFs and banks. From the point of view of a bank regulator, Corrigan argues that MMFs should not be treated as banks and, therefore, not have access to the “full-scale public safety net” that banks enjoy because MMFs “do not meet the test of being payable on demand at par.”²¹³ With respect to MMF regulation, this distinction is important for fashioning appropriate safety nets, since MMFs allocate risks differently between investors and funds than do banks. Given the structural differences between MMFs and banks, it is not necessary to extend to the MMF industry the full public safety net available to the banking industry (i.e., access to a public liquidity backstop, federal deposit insurance, and prudential regulation). These three components of the bank safety net can and should be decoupled when conceptualizing appropriate MMF regulation.

Considering also the demand-gap that institutional cash pools present, and how MMFs uniquely satisfy that demand, fundamental changes to the MMFs’ business structure are likely to have significant costs and externalities. Crucially, there is a real risk that MMFs assets will migrate out of regulatory oversight, rather than into the depository system. Recent data shows that, despite regulatory uncertainty about MMFs, about half of all institutional cash pools still do not choose to park their cash in deposit accounts.²¹⁴ This is understandable because, for such large institutional pools with assets far exceeding the deposit insurance limit, insured deposits still represent a direct, unsecured exposure to banks. As Pozsar explains, “the preferred habitat of institutional cash pools is in safe, short-term and liquid, but non-M2 types of instruments”.²¹⁵ Thus MMF proposals that do not take into account MMF exceptionalism not only fail to mitigate systemic risk but may, in fact, amplify such risk, given that bank-like regulation will likely cause a significant proportion of institutional

²¹¹ See Ricks, *supra* note 11 (analyzing MMFs as falling under a “special regime”).

²¹² *Id.*

²¹³ See Corrigan, *supra* note 173, at 2.

²¹⁴ ASS’N FOR FIN. PROF., *supra* note 202.

²¹⁵ Pozsar, *supra* note 187, at 16.

cash to migrate to other short-term investment options that provide principal safety and portfolio diversification.

If MMFs were to become unviable investment products for their current end-users, the range of alternative short-term investment options would include the following:²¹⁶ (1) off-shore MMFs, mostly European and including both stable and floating NAV MMFs; (2) exempted enhanced cash private funds,²¹⁷ generally offering stable NAV; (3) floating NAV ultra-short bond funds; (4) collective investment funds; (5) short-term investment funds (“STIFs”) offering stable NAV; (5) local government investment pools offering stable NAVs; (6) short-duration exchange-traded funds; and (7) direct investment in money market instruments. None of these options are subject to bank-like oversight and regulation, and each suffers from the same structural vulnerability to systemic risk as MMFs because of similar unavailability of public support.

The migration of MMF assets into these alternative investment vehicles is a real risk, particularly in relation to institutional cash pools. As seen from the statistics above, a substantial number of institutional investors have a strong preference against deposits because they are ill-fitted for their individual investment needs and are practically uninsured for the purposes of institutional investors, given the large sums involved. These investors are thus likely to move their assets to alternative short-term investment options with symmetrical services to MMFs (fund investments with stable NAV). Among the alternatives listed above, offshore MMFs, enhanced cash private funds, and STIFs are notable. From a systemic risk perspective, migration to those investment vehicles would be a worrying development, given the weakened regulatory oversight over those institutions. Furthermore, the risk of runs and their propagation through contagion is equally present in such funds, which are susceptible to the same systemic fragilities as MMFs.

Setting aside migration into alternative investment vehicles, the movement of MMF assets into the deposit-banking system is not a source of comfort either. Indeed, the large-scale migration of institutional cash to bank deposits would be highly destabilizing and pose systemic concerns, since such cash flows would not be insured under the current depository insurance system. To the extent that such cash pools include deposits above the \$250,000 FDIC limit, they are equally susceptible to initiating bank runs within the depository system since they would be effectively uninsured. Furthermore, commentators raise concerns about such migration resulting in

²¹⁶ See SEC Nov 2012 MEMO, *supra* note 24, at 44.

²¹⁷ These are exempted from investment company regulation by the SEC under one of two exclusions: first, Investment Company Act of 1940 § 3(c)(1), 15 U.S.C. § 80a-3(c)(1) (2012), which exempts funds beneficially owned by not more than 100 persons, and second, § 80a-3(c)(7), which exempts funds beneficially owned by “qualified persons.”

increased reliance on the FDIC deposit insurance fund, as well as increased concentration of risk in the banking system.²¹⁸

VI. Critique of Existing Reform Proposals

In Parts III to V of this Article, I have developed three-principle framework that sketch out the design features of an ideal MMF reform proposal. First, *public support measures* are necessary to address the vulnerability of MMFs to systemic risks in the form of contagious runs. Second, *moral hazard* should be limited by internalizing systemic risk costs through ex ante private payments. Third, regulation should aim to preserve the *unique structural features* of the MMF product that allow it to meet specific demand-side needs, so as to mitigate transaction costs, migration risk, and other potentially negative economic effects of structural change.

Together, these principles provide a coherent theoretical framework for critiquing the available MMF reform proposals from a cost-benefit standpoint. Under the Investment Company Act, the SEC is required to consider whether an action will promote “efficiency, competition, and capital formation” in its rulemaking.²¹⁹ Likewise, the FSOC is required under section 120 of Dodd-Frank Act to take “costs to long-term economic growth” into account in proposing standards.²²⁰ In my framework, the first evaluative principle addresses the “benefit” side of the cost-benefit calculus that both the SEC and FSOC are required to undertake,²²¹ while the second and third principles address the comparative costs of various modes of reducing systemic risk. The weighing of the three considerations highlights what is at stake with each proposed MMF reform and clarifies the tradeoffs involved. Crucially, since the stated objective of regulators’ MMF reform proposals is to reduce systemic risk, if proposals fail to reduce systemic risk, they impose costs without creating benefits – in effect resulting in a deadweight social loss.

Given this framework, I now consider and critique the following categories of MMF reform proposals: (1) floating NAV requirements; (2) redemption restrictions; (3) capital buffers; (4) private emergency liquidity facilities; (5) public guarantee or insurance programs; and (6) dual-sector models with different rules for different MMFs, based on combinations of the above. I aim to show that the existing MMF reform options all have theoretic flaws, based on the three evaluative principles developed in this Article.

²¹⁸ SEC Nov 2012 MEMO, *supra* note 24, at 45.

²¹⁹ 15 U.S.C. §§ 80a-1–80a-64.

²²⁰ Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010).

²²¹ Indeed, reducing runs in MMFs is the stated objective of all the reform proposals.

A. Floating NAV Requirement

Several regulators, including the SEC and the FSOC, have tabled proposals for floating NAV requirements. The idea is for the per-share NAV to “float” (i.e., to fluctuate according to changes in market value of the MMFs’ portfolios). This means removing the Rule 2a-7 regime that facilitates stable \$1.00 NAVs by accommodating the amortized cost and penny-rounding methods. The SEC’s argument to support its floating NAV proposal is that it will “address the incentive of money market fund shareholders to redeem shares in times of fund and market stress based on the fund’s valuation and pricing methods.”²²² The assumption is that, under a floating NAV, “investors would not have had the incentive to redeem money market fund shares.”²²³ Likewise, the FSOC justifies the floating NAV proposal on the basis that it would make investors “less likely to redeem *en masse* when faced with the prospect of even modest losses by eliminating the ‘cliff effect’ associated with breaking the buck.”²²⁴ Key assumption underlying this idea of a cliff effect (sudden mass redemptions only upon the breaking of the buck) are that stable NAV creates a “first-mover advantage”²²⁵ and that eliminating stable NAV will thus remove investors’ incentives to arbitrage between the stable \$1.00 NAV and the shadow NAV in a distressed crisis situation.²²⁶

I show in this Part how the floating NAV proposal is fundamentally misguided and fails to address systemic risk, while imposing significant costs. First, this proposal is based on erroneous understandings of how MMFs contribute to systemic risk and why they are susceptible to runs. The notion of a cliff effect caused by breaking the buck in the FSOC report is entirely speculative. There was no cliff effect caused by the RPF’s announcement in 2008. Instead, the evidence shows that approximately \$40 billion (out of a total of \$62 billion) in redemption requests from the RPF came by the time it announced it was breaking the buck. Investors did not run in 2008 because of the pricing structure (fixed or floating); the run started in response to concerns about underlying assets. It then took on the dynamics of a Diamond-Dybvig style bank run, which became self-fulfilling and contagious.

The notion that stable NAV creates a first-mover advantage thus misses the point entirely. As shown in Part IV, MMFs are susceptible to runs because of liquidi-

²²² *Proposed Rule*, *supra* note 76, at 47.

²²³ *Id.* at 50.

²²⁴ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 30.

²²⁵ *Id.* at 19.

²²⁶ Jeffrey N. Gordon & Christopher M. Gandia, *Money Market Funds Run Risk: Will Floating Net Asset Value Fix the Problem?* 6 (Columbia Univ., Center for Law & Econ. Studies, Working Paper No. 426, 2013), available at <http://ssrn.com/abstract=2134995>.

ty and maturity mismatch in their funding structure. This is significant because it means that, even after switching to floating NAV, MMFs remain equally susceptible to runs, as long as such structural mismatch remains. So long as MMF investors are still short-term investors seeking stability and liquidity, they will be equally risk-averse, even in floating NAV funds. MMF investors will still have a first-mover incentive to redeem in such funds, and the potential for self-fulfilling runs via the prisoner's dilemma dynamic will remain, even with a mandated floating NAV.

Additionally, there is strong empirical evidence that MMFs would still be vulnerable to runs, even after floating their NAVs. The experience of European floating NAV MMFs demonstrates that floating NAV funds are equally susceptible to runs during a distressed period. For instance, the ICI cites the example of the French floating NAV "dynamic money funds," which faced substantial outflows in 2007 at the beginning of the global financial crisis.²²⁷ A study by Gordon comparing the performance of stable and "accumulating"²²⁸ NAV funds in Europe during the week after the Lehman bankruptcy shows that there was no difference in "run propensity" between both funds.²²⁹ The data demonstrates that floating and fixed NAV funds are equally likely to be the subject of runs. This squares with this Article's theory of runs: MMFs' systemic risks lie within a more fundamental, structural weakness. Run-potentiality results from the liquidity and maturity mismatch of MMFs' funding structure. Even with floating NAV, this susceptibility remains, and thus MMFs would still have the potential to channel systemic risk via contagion to other institutions and other parts of the financial system. As Part VII argues, the run and contagion problem can only be effectively addressed through public support measures. Such measures constitute the only proven way to effectively address runs and are effective precisely because state action is uniquely positioned to counter informational asymmetry issues and complete markets, thus counteracting the threat of downward asset-price spirals and self-fulfilling herd behavior.

The proposal for floating NAV requirements thus fails this Article's first principle, as it does not address the deeper causes of the systemic risks MMFs pose. It will thus be ineffective to stem runs of the scale experienced in 2008 or to contain the damage such runs might cause to the financial system through contagion. On this ground alone, it is fundamentally misconceived and dissatisfactory; it creates costs without providing the countervailing benefit of reducing systemic risk. Costs include operational and transitional expenses involved in switching to floating NAV,²³⁰ as

²²⁷ INV. CO. INST., *supra* note 5.

²²⁸ *Id.* (such accumulating NAV funds can be treated as a proxy for floating NAV).

²²⁹ Gordon & Gandia, *supra* note 226, at 8.

²³⁰ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 34.

well as private costs for MMF investors imposed because floating NAV negates the tax, accounting, and recordkeeping benefits that stable NAV currently affords.²³¹

Furthermore, the floating NAV proposal fails this Article's third principle, by changing the MMF business structure in a way that disrupts its utility for investors seeking stability of principal. By negating the feature that allows MMFs to provide the cash management function they currently provide, there is a real risk of migration to alternative short-term investment vehicles. According to the AFP's 2013 Liquidity survey, 65% of respondent financial professionals indicated their organizations would stop investing in MMFs and reduce or fully liquidate holdings, if MMFs were to switch to floating NAV.²³² If these investments were to migrate out of MMFs into other less-regulated alternatives, it could have significant and negative, unintended consequences. That, in turn, could have a further impact on financing in short-term capital markets and, in particular, on institutions that rely to a large extent on MMFs for financing.²³³

B. Redemption Restrictions

Both regulators and academics have considered a variety of redemption restrictions proposals designed to reduce investors' incentives to make withdrawals from MMFs when the funds are under stress. The FSOC's Minimum Balance at Risk ("MBR") is one version, under which 3% of an investor's highest account value in excess of \$100,000 during the thirty days prior to withdrawal would be held back and available for redemption only after a thirty-day delay.²³⁴ The 3% holdback – the MBR – would then be subordinated and take a first loss before other shares. The FSOC's view is that such a restriction would discourage preemptive redemptions.

Another type of redemption restriction proposal involves liquidity "fees" or redemption "gates."²³⁵ Unlike the MBR, which operate during non-crisis as well as crisis conditions, liquidity fees or gates would be triggered only during times of stress. The SEC tabled this as an alternative proposal to floating NAV in its June

²³¹ INV. CO. INST., *supra* note 5; *see also* BLACKROCK, MONEY MARKET FUND REFORM: DISCUSSION OF THE REFORM PROPOSALS 4 (2011), *available at* https://www2.blackrock.com/webcore/litService/search/getDocument.seam?venue=PUB_IND&source=GLOBAL&contentId=1111128669.

²³² ASS'N FOR FIN. PROF., *supra* note 202.

²³³ BLACKROCK, *supra* note 231.

²³⁴ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 41.

²³⁵ *See id.* at 62. This idea was first proposed by BlackRock. *See generally* BLACKROCK, MONEY MARKET FUNDS: THE DEBATE CONTINUES (2012), *available at* https://www2.blackrock.com/webcore/litService/search/getDocument.seam?venue=PUB_IND&source=GLOBAL&contentId=1111160117.

2013 proposed rulemaking.²³⁶ Standby liquidity fees would directly charge shareholders for withdrawals, while redemption gates would prohibit investors from redeeming, in order to provide MMFs with enough time to restore their financial health. Under the SEC proposal, if an MMF's weekly liquid assets fell below a liquidity threshold of 15% of its total assets, the fund would be required to impose a liquidity fee of 2% on all redemptions, unless its board of directors determined that imposing such a fee would not be in the fund's best interests. Additionally, if the 15% threshold were surpassed, the proposal would grant MMF's board of directors the ability to impose a gate and temporarily suspend redemptions.²³⁷ According to the proposed rule, any gate would have to be lifted within thirty days, and no fund could institute a gate for more than thirty days during a ninety-day period.²³⁸

The problem with redemption restriction proposals is that, although they mitigate the risk of MMF runs to some extent, they are ultimately inadequate to stop runs of the scale experienced in 2008. As the FSOC itself recognizes in its report, even the combination of the 3% MBR *and* a capital buffer (discussed separately in Part VI(C)) "likely would not be sufficient to stop a run if investors anticipate very large losses in that fund."²³⁹ Redemption restrictions thus do not adequately mitigate systemic risk in crisis situations, which is precisely what the structural reform proposals are intended to accomplish. They suffer from both theoretic and design flaws.

First, the attention to reducing incentives for investors to redeem is misguided. Under the MBR proposal, the disincentive to redeem only works if the investor's expected loss is less than the MBR (i.e., 3% of [assets less \$100,000]). This is ultimately useless in a true systemic distress scenario, such as in 2008, when MMFs face widespread and massive redemptions. Furthermore, the idea of changing incentives to redeem fails to consider the possibility that investors may miscalculate their position due to informational problems or behave irrationally in the absence of complete information. This tends to be the case in a Diamond-Dybvig style run, where informational cascades can result in individual agents deferring to peer behavior instead of their own calculations and information about underlying fundamentals. As the 2008 financial crisis demonstrated and was analyzed in Part III(A), MMFs are susceptible to precisely this sort of run dynamic. The proposal for redemption restrictions is thus not only speculative and untested but also fundamentally misguided. As shown in Part III(C), only public support measures can effectively stop run behavior and bring market confidence; this has proven to be the case historically.

²³⁶ *Proposed Rule*, *supra* note 76, at 153.

²³⁷ *Id.*

²³⁸ *Id.*

²³⁹ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note, at 43.

Furthermore, the proposed redemption restrictions will be insufficient to stop any runs or contagion in a systemic crisis, even if the theory behind the restrictions is sound. The Diamond-Dybvig analysis is also useful in showing that a bank run occurs on a completely different equilibrium. That is, the rules of the game are completely changed. It is a panic scenario, and “incentives are distorted” when there is a run on banks.²⁴⁰ As Gorton explains, in this model, there is no such thing as a “small” crisis: “[T]here are [only] two outcomes: crisis and no crisis.”²⁴¹ Since a crisis is a singular and fundamentally different state of affairs, putting in place 3% redemption restrictions or liquidity fees is like trying to stop a Level 10²⁴² tsunami with a wooden fence.²⁴³ While such fences would work to deal with minor floods, the real problem, for which robust protections are needed to address, is an event of tsunami proportions. Redemption restriction proposals thus fail to achieve their most essential purpose – addressing the tail-risk instances of MMF runs during a crisis.

Another objection to redemption restrictions is that they may in fact amplify, rather than reduce, the risk of investor runs on MMFs. With regard to MBR-style holdbacks, BlackRock client research shows that clients would be “more likely to redeem, if they invested at all, and they would do so sooner to secure their investment before market stresses took hold.”²⁴⁴ The FSOC also recognizes this risk in relation to the MBR proposal: “The MBR may also . . . caus[e] MMF investors to monitor more carefully . . . and redeem shares from a poorly run MMF well in advance” of the thirty-day period.²⁴⁵ It seems likely therefore that, rather than protecting against preemptive runs, the MBR proposal might in fact create or accelerate the incentives for such runs. Liquidity fees or gates also have the risk of incentivizing run-like behavior. As a gate, or even if the expectation of a gate, approaches, investors will have a strong incentive to redeem in order to avoid impending redemption fees or prohibitions.²⁴⁶

²⁴⁰ Diamond & Dybvig, *supra* note 84, at 403.

²⁴¹ Gary Gorton, *Some Reflections on the Recent Financial Crisis* 13 (Nat’l Bureau of Econ. Research, Working Paper No. 18397, 2012).

²⁴² This twelve-point scale of tsunami intensity was proposed in 2001 and is meant to correspond to current earthquake intensity scales like the EMS or Mercalli scales. *See generally* GERASSIMOS A. PAPADOPOULOS & FUMIHIKO IMAMURA, A PROPOSAL FOR A NEW TSUNAMI INTENSITY SCALE (2001), available at http://nthmp-history.pmel.noaa.gov/its2001/Separate_Papers/5-01_Papadopoulos.pdf.

²⁴³ *See* Katie Cannon, *Thai Attempt to Protect Popular Beach from Future Tsunami with Wooden Fence*, NBC NEWS (Jun. 12, 2011, 12:12 AM), available at http://photoblog.nbcnews.com/_news/2011/06/12/6839150-thai-attempt-to-protect-popular-beach-from-future-tsunami-with-wooden-fence.

²⁴⁴ BLACKROCK, MONEY MARKET FUNDS: A PATH FORWARD 2 (2012), available at https://www2.blackrock.com/webcore/litService/search/getDocument.seam?venue=PUB_IND&source=GLOBAL&contentId=1111160117.

²⁴⁵ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 43.

²⁴⁶ REINHART & ROGOFF, *supra* note 18, at 221; *see also* FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 62.

For the foregoing reasons, redemption restrictions would be ineffective in stopping or preventing MMF runs. They fail the first evaluative principle because they will be ineffective to stem runs of the scale experienced in 2008 and cannot contain the damage such runs might cause to the financial system through contagion. In relation to the second evaluative principle, redemption restrictions may have the unintended consequence of weakening market discipline, since redemptions help impose market discipline on MMFs by allowing investors to react to information about bad underlying investments. Additionally, such restrictions also impose significant transaction costs on withdrawals during non-crisis market conditions and weaken the liquidity-function of MMFs as cash management vehicles.²⁴⁷ Redemption restrictions would thus have a negative impact on the demand for MMFs as an investment product.²⁴⁸ By changing the nature of the product, redemption restrictions also fail this Article's third evaluative principle and create significant migration risk.

C. Capital Buffers

Capital buffer proposals involve requiring MMFs to hold a minimum loss-absorption buffer of capital. The FSOC has proposed either a standalone risk-based NAV buffer of 3%, or an NAV buffer of 1% coupled with MBR redemption restrictions.²⁴⁹ The purpose of the buffer is to provide MMFs with the capacity to absorb portfolio losses, on the assumption that MMFs' systemic risks and their vulnerability to runs stems from the absence of an "explicit loss-absorption buffer."²⁵⁰

The problem with capital buffer requirements is that, while they go some way to make MMFs more resilient, they do not go far enough to address the run problem.²⁵¹ The calibration of the capital buffer at 3% reflects the FSOC's attempt to mitigate the risks in *most* "potential loss scenarios," but not *all*.²⁵² Critically, it would not cover tail-risk crisis scenarios. Indeed, then SEC Chairman Schapiro commented in congressional testimony that such capital buffers "would not necessarily be big enough to absorb losses from all credit events . . . [but] would absorb the relatively small mark-to-market losses that occur in a fund's portfolio day to day, including when a fund is under stress."²⁵³

²⁴⁷ See ASS'N FOR FIN. PROF, *supra* note 202 (indicating that 23% of institutions choose MMFs for liquidity reasons).

²⁴⁸ See BLACKROCK, *supra* note 244, at 1.

²⁴⁹ See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4.

²⁵⁰ *Id.*

²⁵¹ See BLACKROCK, *supra* note 244, at 3.

²⁵² See FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 43.

²⁵³ *Perspectives*, *supra* note 32 (statement of Mary L. Schapiro, SEC).

Indeed, there are two mistaken assumptions underlying capital buffer proposals: (1) that runs on MMFs correspond directly and proportionately to underlying portfolio losses and (2) that investors run in response to a fund's loss of stable NAV. The former proved untrue during the 2008 crisis, as demonstrated above, since the run on the RPF (\$40 billion of \$62 billion) was not proportionate to the fund's original portfolio losses on Lehman CP, which amounted to only \$785 million. The magnitude of crisis scenario runs is not necessarily proportionate to portfolio or NAV signals; MMF runs operate under a completely different dynamic in crisis scenarios. The latter assumption is also untrue, as demonstrated when the \$40 billion run on the RPF began on September 15, even before the RPF lost its \$1.00 NAV. Capital buffer proposals thus fundamentally misunderstand MMF runs. As I show in Part III(A), MMFs are susceptible to runs because of an inherent structural maturity mismatch. Despite capital buffers that correspond to portfolio losses, this structural feature of MMFs means they remain subject to runs starting in relation to a shift in expectations, which could then take on a self-sustaining herd dynamic.

Capital buffers are therefore subject to the same fundamental criticism outlined above in relation to redemption restrictions: they are simply too small to effectively prevent runs or contagion effects in a crisis scenario. While the FSOC report states that its proposed buffer reduces some possibility of losses, it also indicates that the buffer is unlikely to eliminate vulnerability to runs. It specifically mentions that the buffer "is unlikely to be large enough to absorb all possible losses and may not be sufficient to prevent investors from redeeming when they expect possible losses in excess of the NAV buffer."²⁵⁴ The FSOC further recognizes that capital buffers are insufficient to prevent contagion effects from spreading to other MMFs and resulting in "multiple MMF portfolio losses."²⁵⁵

To sum up, capital buffers are an inadequate reform option because they fail the first evaluative principle, by failing to prevent runs and contain contagion, particularly of the scale experienced in the 2008 crisis. At the same time, they are costly. Costs imposed by capital requirements include the additional costs of raising the capital and building the buffer, which may be passed on to investors.²⁵⁶ Just like the redemption restriction and floating NAV proposals, they impose additional costs on investors and MMFs but without creating the corresponding benefit of systemic risk reduction. This only creates a deadweight loss outcome.

²⁵⁴ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 54.

²⁵⁵ *Id.*

²⁵⁶ *Id.* at 53.

D. Private Emergency Liquidity Facilities

The 2010 PWG Report had tabled for consideration the option of a private emergency liquidity facility as a solution to MMF structural reform. This proposal was mooted on the basis that “liquidity risk” was a major contribution to MMFs’ structural vulnerability to runs²⁵⁷ and that enhanced liquidity protection would be an integral part of any reform. It operates on the premise that liquidity need not be provided by the government and instead could be provided by a “private facility, adequately capitalized and financed by the MMF industry.”²⁵⁸ The PWG Report did not go into the design details of such a facility but discussed some of the general design considerations that may be involved. A crucial aspect of the private facility is that it would “internalize the cost of liquidity protection” to the MMF industry, thus limiting moral hazard risks.²⁵⁹ In response, and building on this, the ICI developed and tabled a proposal for a private emergency liquidity facility.²⁶⁰ BlackRock has followed up with a variation on this – a proposal for a Special Purpose Entity (SPE) system.

The proposed ICI model is for a liquidity exchange facility (LF), which would act as an industry-sponsored liquidity backstop for prime MMFs during high-stress situations. The LF would be set up as a chartered bank or trust company, and it would be capitalized through: initial contributions from fund sponsors followed by ongoing payments by member funds.²⁶¹ The LF would provide liquidity support by purchasing high quality and short-term securities from prime MMFs at amortized cost, thereby allowing funds to meet redemptions and preventing distressed asset sales. The LF proposal addresses moral hazard because funds would bear the losses of bad portfolio investments, as liquidity support would only be provided to meet redemptions and prevent funds from having to carry out forced sales of good assets.

The general thrust of the proposals for a private emergency liquidity program is correct. Such proposals rightly identify liquidity support as an efficacious strategy for containing runs and preventing the spread of financial contagion. Liquidity enables funds to meet redemption requests, which frees their liquidation or recapitalization strategies from redemption pressures. Liquidity also counteracts the fire-sale asset-liquidation problem and prevents the spread of contagion to other MMFs created by stresses on their shadow NAVs. During the 2008 crisis, the injection of liquidity through the AMLF worked well to stem outflows and deal with contagion.

²⁵⁷ 2010 PWG REPORT, *supra* note 6, at 23.

²⁵⁸ *Id.*

²⁵⁹ *Id.* at 24.

²⁶⁰ Comment Letter from Inv. Co. Inst., to Elizabeth M. Murphy, Secretary, SEC 23 (Jan. 10, 2011), available at http://www.ici.org/pdf/11_sec_pwg_com.pdf [hereinafter “ICI Comment Letter”].

²⁶¹ *Id.* at 23-24.

The main problem with a private liquidity program is that it is unlikely to have sufficient capitalization to resolve a widespread systemic threat and boost confidence during a crisis situation. The adequate capacity of the liquidity facility is crucial because such a facility would need to be substantially capitalized in order to meet the liquidity needs of the MMF industry during a crisis. For instance, outflows from prime MMFs totaled about \$200 billion in the two days prior to the Treasury and Federal Reserve interventions.²⁶² In contrast, the ICI proposal contemplates that the LF could generate about \$55 billion in support over a period of ten years.²⁶³ Without adequate capacity, a private facility would not be able to solve the run or contagion problems. Worse, it could even create further systemic risk. As the PWG Report points out, inadequate capacity may “create an incentive for MMF advisers to tap the facility before others do and thus make the facility itself vulnerable to runs.”²⁶⁴

The problems with adequate capacity of private facilities also point towards a deeper defect – their credibility-deficit during a crisis situation. As explained in Part IV, Diamond and Dybvig point out that privately made guarantees would be less credible than public ones, simply because private firms are constrained by their reserves.²⁶⁵ Credibility is at the heart of stopping runs, since it counteracts the incentives for non-first-movers to join a run, by addressing informational asymmetries in a run-dynamic and insulating individual agents’ decisions from the observed behavior of others. If the point of a liquidity backstop is to provide a theoretically unlimited (or at least very large) put option to restore confidence in markets during a crisis, then private facilities will have considerable difficulty. As analyzed in Part III(C), a liquidity facility needs to have access to some public backstop, in order to be credible to market actors during a crisis scenario.

The ICI and BlackRock proposals attempt to address these problems by including some mode of structured access to the Federal Reserve discount window. The ICI proposal involves a state bank or trust company structure, which would have access to the discount window.²⁶⁶ BlackRock’s proposed SPE structure would also have access to the discount window but as a new type of entity and in exchange for regulatory oversight and capital requirements (although lower than those of a commercial bank).²⁶⁷

However, these attempts face two major hurdles. First, the Federal Reserve has indicated an unwillingness to extend discount window access in the ways pro-

²⁶² FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 25, fn. 48.

²⁶³ *Id.* at 26.

²⁶⁴ 2010 PWG REPORT, *supra* note 6, at 24.

²⁶⁵ Diamond & Dybvig, *supra* note 84, at 46.

²⁶⁶ ICI Comment Letter, *supra* note 260.

²⁶⁷ BLACKROCK, *supra* note 231, at 5.

posed.²⁶⁸ Second, to the extent that the proposed SPE or LF would be privately run entities, there would be substantial difficulties in structuring the liquidity facilities' independence in an appropriate corporate governance structure. As such, potential conflicts of interest and unfair access issues may threaten to overwhelm any market confidence in the facility (especially if capacity is limited) and completely paralyze its ability to provide substantial liquidity protection during a crisis situation.

In sum, the theory of providing crisis-situation liquidity support, with the cost of such liquidity internalized to the industry through private payments from MMFs, is sound. But the problem is that any privately administered and privately funded facility will struggle to provide credible support during a crisis. This means that, from a feasibility point of view, the proposals for a private emergency liquidity facility fail this Article's first principle. In failing to contain systemic risk in the forms of run-potentiality and financial contagion, a private facility is therefore an insufficient and suboptimal proposal for structural reform. However, I consider such proposals a step in the right direction for focusing on liquidity support, also because they score well on the second and third principles. I build on some of these underlying principles to construct a more theoretically satisfying and feasible mode of reform in Part VII of this Article.

E. Public Guarantee or Insurance Programs

Another tabled proposal is for a public insurance program in the form of direct guarantees to MMF investors. The insurance proposal builds on the idea of deposit insurance and its considerable success in dealing with bank runs in the United States since 1933. This possibility was first discussed in detail by the 2010 PWG Report, and is a solution that is supported by some academics, although there are differences in opinion as to whether such insurance should be coupled with bank-style prudential regulation.²⁶⁹ Gorton suggests that MMFs should be insured but also subject to prudential regulation as Special Purpose Banks.²⁷⁰ Ricks offers a different version of this proposal, purporting to subject all private money institutions (including banks and MMFs) to a unified regime of licensing, insurance, and oversight.²⁷¹ Scott, on the other hand, argues that there is no reason why bank-like capital regulation should

²⁶⁸ BLACKROCK, *supra* note 244, at n.3 (stating its view that "regulators rejected the idea that MMFs should have access to the discount window").

²⁶⁹ 2010 PWG REPORT, *supra* note 6; *see also* SCOTT, *supra* note 70; Gorton & Metrick, *supra* note 168; Ricks, *supra* note 11.

²⁷⁰ *See* Gorton & Metrick, *supra* note 168.

²⁷¹ *See generally* Morgan Ricks, *A Regulatory Design for Financial Stability* (Harvard John M. Olin Discussion Paper, Paper No. 706, 2011).

necessarily follow from insurance, since MMFs by definition have more liquid short-term assets.²⁷²

The design and implementation of an MMF insurance program would present many difficulties. First, there is the question of whether insurance programs should be fully private, fully public, or some combination of private and public. There are doubts whether there is a feasible private model for insuring MMF risks, given the potential scope of coverage and the complexity of risk-pricing problems.²⁷³ Private insurance would ultimately be impractical because the nature of the MMF industry means that insurers would not be insuring a range of small loss-causing events but large and infrequent tail-risk events.²⁷⁴ Furthermore, for the same reasons as those discussed above with respect to private liquidity facilities, an insurance program would need to have a public element to credibly and successfully address the systemic risks MMF runs pose during a crisis.

A public insurance program a la FDIC deposit-insurance would likely be effective in containing runs and stem contagion, satisfying this Article's first evaluative principle. If investors knew that they would be legally guaranteed their \$1.00 NAV from a credible public source, the run-dynamic and contagion problems would be addressed effectively. As explained in Part III(C), this would remove the incentives for non-first-movers to mimic the behavior of the first-movers because their reasons for withdrawal would be insulated from the observed behavior of other investors: it would no longer pay to participate in a run. This works to stop runs, which would prevent vertical contagion money market issuers withdrawals cause. It would also prevent horizontal contagion because it would relieve the redemption-pressure on MMFs to conduct distressed asset sales. Given that an insurance program satisfies the first principle of reducing systemic risk, the key issue then becomes whether it would impose significant countervailing costs.

I argue that an MMF insurance program does pose potentially insurmountable costs, which would outweigh its benefits and make it an undesirable reform option. To begin, a public insurance program poses significant moral hazard costs that system design may not be able to mitigate. Insurance poses serious moral hazard concerns because such a program would insulate funds from the natural consequences of bad portfolio decisions and portfolio losses. Insurance programs are ill-equipped to make fine distinctions between liquidity and insolvency problems individual MMFs face. Such programs would thus insulate funds from the market-discipline dynamic of shareholder redemptions; since shareholders would get \$1.00

²⁷² REINHART & ROGOFF, *supra* note 18, at 243.

²⁷³ 2010 PWG REPORT, *supra* note 6, at 27.

²⁷⁴ *Id.* at 240.

NAV in any case and would have no incentive to redeem in response to information about deteriorating underlying MMF portfolios. This reduced market discipline would then create greater risk-taking incentives for MMFs and fund managers.

As discussed in Part IV, limiting moral hazard relies on a strategy of internalizing costs to stakeholders, the success of which depends largely on whether private payments can be risk-priced accurately. The problems of perfecting the pricing of risk with respect to MMFs may, however, prove insurmountable, considering that only low-frequency and high-impact tail-risk events will require insuring. Portfolio risks of individual MMFs may not be a good proxy for systemic risk. Furthermore, even assuming a second-best pricing mechanic is sufficient to create an optimal risk-sharing outcome, insurance in the particular context of MMFs poses moral hazard problems because it has the potential to create perverse incentives for MMF shareholders, who would become better off in a crisis situation (guaranteed \$1.00 NAV), than in a non-crisis situation (no formal guarantee, pass-through investment) – depending on how the insurance program is structured.

This alludes to another fundamental problem with insurance as an MMF reform solution: insurance would fundamentally alter the nature of the MMF product, changing it from a pass-through investment in assets with some measure of risk, into a guaranteed-outcome insured product. This would make the MMF product virtually indistinguishable from bank-deposits to end-users, with the only differentiation being the interest rate offered. In this hypothetical scenario, MMFs may find it difficult to compete with deposits, given the Rule 2a-7 portfolio restrictions to which such funds are subject, the fact that they are not set up for such a business model, and their inability to take on leverage. MMFs also lack the funding advantages banks possess. Such changes would thus potentially kill an investment product that has uniquely met the demand-side gap identified in Part V(B), given that MMF investors choose these differentiated cash management vehicles over deposits for a variety of commercial reasons. Fundamental changes to the MMFs' business structure would mean they can no longer provide such a service to investors in the present form, transmuting MMFs into a deposit-style product. Along with the private costs to MMFs and their investors, there would be broad costs and externalities, including significant migration risk in institutional cash pools (as such funds move outside of the regulatory oversight radar).

In conclusion, based on this Article's three-part framework, public insurance programs score well on the first evaluative principle but weakly on the second and third principles. While such programs will address systemic risk by preventing and containing MMF runs and their contagion effects, they involve substantial costs that may prove insurmountable, including distortion of incentives and a real risk of migration to unregulated alternative investment vehicles. This makes such programs an un-

desirable direction for MMF reform, especially if one can imagine an alternative proposal that addresses systemic risks with substantially less costs. This Article proposes such a solution in Part VII.

F. Dual-Sector Models With Different Rules for Different Funds

Another class of proposals focuses on segmenting the MMF industry into two sectors, based on either investor profile or the assets of such MMFs, and applies different rules to each MMF category. For instance, Walt Bettinger of Charles Schwab has advocated the following dual-sector model: prime institutional MMFs would be subject to floating NAV, while both retail MMFs and “nonprime” MMFs would continue to operate with a stable NAV.²⁷⁵ Robert Pozen of the Harvard Business School has publicly supported such a proposal.²⁷⁶ The SEC also took this approach in its June 2013 proposed rulemaking, where exemptions to the floating NAV requirement were allowed for “government” and “retail” funds.²⁷⁷ Variations on this theme would include carving out other structural reforms – such as capital buffers – for application to only prime institutional funds. Such dual-sector proposals run into several problems: (1) they may be futile to solve run and contagion problems; (2) the categories approach could prove unworkable; and (3) dualism in the MMF industry may in fact create dangerous incentives for regulatory arbitrage.

First, to the extent that such a dual-sector model proposal employs substantive features derived from previously discussed proposals, it would, of course, be subject to the same problems as those proposals. For instance, mandating floating NAV only for prime institutional MMFs would have all the flaws of floating NAV proposals generally discussed above; notably, such a proposal would not stop the problems of runs and contagion in such MMFs. Likewise, the same analysis applies for dual-sector capital proposals.

Second, it may prove practically impossible or infeasible to differentiate between retail and institutional MMFs. Pozen acknowledges that knowing which funds to designate as “institutional” is a not self-evident exercise and that, correspondingly, a workable definition needs to be created. However, such a definition may be difficult to derive or put into place. For one, individual MMFs or fund complexes do not in practice segregate between institutional and retail investors and often intermingle

²⁷⁵ Walt Bettinger, *Time for Compromise on Money-Market Reform*, WALL ST. J. (Nov. 22, 2012), <http://online.wsj.com/news/articles/SB10001424127887324352004578132770453306616>.

²⁷⁶ Robert Pozen & Theresa Hamacher, *Not All Money Market Funds Are Equal*, FIN. TIMES (Dec. 16, 2012), <http://www.ft.com/intl/cms/s/0/29e2d6d0-4393-11e2-a68c-00144feabdc0.html#axzz2RXcvdTSc>.

²⁷⁷ *Proposed Rule*, *supra* note 76, at 65, 71.

both types of clients.²⁷⁸ Fund complexes with multiple share classes may be very hard to define as either “retail” or “institutional,” and any attempted line drawing might prove to be an arbitrary exercise.²⁷⁹ Implementing a dual-sector MMF reform may, therefore, require such MMFs to segregate their clientele, which would not only impose additional costs on the funds but also disadvantage both retail and institutional investors, as they would lose scale economies from pooled investments.²⁸⁰ Finally, the line between retail and institutional investors is also blurred in practice because retail investors in a modern financial system also act through institutional advisers. For instance, retail investors often invest in MMFs through 401(k) plans or sweep accounts.²⁸¹

Finally, a dual-sector model of MMF reform may actually increase, rather than decrease, the risks MMFs pose, by creating incentives for regulatory arbitrage. As BlackRock points out, such a “two-tier approach” may lead to “gaming behavior by investors.”²⁸² For instance, institutional investors may have incentives to structure their operations so that they can qualify as “retail” investors under the official definition and utilize stable NAV funds.²⁸³ Such regulatory arbitrage would leave the systemic risks posed by MMFs unaddressed.

G. Summary and Overview

Based on this Article’s three-part framework, I have sought to demonstrate how all the available structural reform proposals have serious theoretic defects. The proposals presently advocated by the regulators – including floating NAV, redemption restrictions, and capital buffers – are fundamentally flawed. They fail to achieve their stated objectives because they misunderstand run behavior and the source of structural vulnerability in MMFs. Since maturity mismatch and informational cascades are at the heart of the run potentiality of all credit intermediation institutions, including MMFs, public support measures are necessary to stop the run problem effectively. These proposals cannot effectively deal with runs and only impose substantial costs, without countervailing benefits.

Considering next the proposals for deposit-style insurance or bank-like regulation, I have analyzed how they present an undesirable direction for MMF reform.

²⁷⁸ See BLACKROCK, *supra* note 231, at 4.

²⁷⁹ *Id.* at 4. Pozen suggests drawing the line at \$1 or \$2 million, but does not give any good reason for drawing the line there, beyond the stated purpose of ensuring that “small businesses, as well as individuals” could continue to use stable MMFs. See Pozen, *supra* note 27.

²⁸⁰ INV. CO. INST., *supra* note 5, at 118.

²⁸¹ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 4.

²⁸² See BLACKROCK, *supra* note 231, at 4.

²⁸³ FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 4

Although they will deal with the run and contagion problems, such proposals have the potential for distorting incentives and creating moral hazard costs. They also fundamentally alter the nature of MMFs as a pass-through investment product. As previously demonstrated, that would pose serious migration risks, as well as the potential for unintended economic consequences.

Dual-sector proposals are similarly flawed. Insofar as they rely on floating NAV or capital proposals, they will be equally impotent to deal with runs and contagion problems. Additionally, they are practically infeasible and may lead to regulatory arbitrage through dualism. I summarize these conclusions in Table 2 below:

Table 2: Overview and Evaluation of Existing MMF Proposal

<u>MMF REFORM PROPOSALS</u>	(1) Effectively Addresses Runs and Contagion Effects?	(2) Limits (or Eliminates) Moral Hazard?	(3) Minimizes Migration Risk and Transaction Costs by Considering Differences between MMFs and Banks?
A Floating NAV	✗	✓	✗
B Redemption Restrictions	✗	✗	✗
C Capital Buffers	✗	-	-
D Private Liquidity Facility	✗	✓	✓
E. Insurance Program	✓	✗	✗
F. Dual-Sector Model	✗	-	-
<i>Same flaws as underlying proposal. In addition: implementation may be impractical; dualism promotes regulatory arbitrage.</i>			

VII. Proposal For A Public-Private Liquidity Fund

Given the shortcomings of the available options, as discussed in Part VI, this Article proposes a novel PPLF as an optimal solution to MMF structural reform. This proposal is intended as a prototype or sketch and is meant to provoke thought and discussion towards an ideal structural reform for MMFs. As with any new idea, further research will be needed on the details of design and implementation, which may reveal new difficulties. However, the broader intentions of this Article and proposal are to resuscitate discussion about the necessity of public support measures to address systemic risk in MMFs and to provide a framework for exploring the benefits and costs various modes of structuring such public support. The proposed PPLF is thus a logical extension of the framework of the three principles I developed in Parts III to V.

The PPLF is built around a hybrid public-private fund, which has two components. First, the private aspect involves an emergency liquidity fund that is funded by private risk-assessed premiums, which will take a first-loss position during systemic events. The second component is public and involves structuring the fund to have an ultimate resort to a public liquidity backstop, supplied by the Federal Reserve. The PPLF works to deal with MMF runs and contagion by providing liquidity support during high-stress crisis scenarios. At the trigger of a liquidity shock or crisis, the PPLF would provide liquidity support by purchasing portfolio securities from MMFs at amortized cost. This liquidity support would allow funds to meet redemptions in crisis situations, while ensuring a market for MMF assets (which are highly rated and short-term) in distressed situations. This would help to prevent downward asset price spirals and, thereby, contain the possible contagion effects on other MMFs that are not experiencing similar portfolio issues.

This PPLF proposal was inspired by a combination of: (1) the 2008 ABCP Liquidity Facility, which worked well to stem contagion and contain runs during the 2008 crisis and (2) the private emergency liquidity facility considered by the PWG and proposed by certain industry groups. This combination is effective because the fund's private facility internalizes the cost of liquidity protection and ensures market-discipline incentives remain, thereby limiting moral hazard costs, while the public liquidity backstop ensures the prevention and containment of runs in a crisis scenario. The interaction of these private and public aspects is a crucial point, on which I will elaborate below. Furthermore, the PPLF has the advantage of preserving MMFs as a pass-through stable NAV investment product, retaining their unique characteristics and functionalities. This mitigates potentially significant migration risks into unregulated "insured deposit alternatives" and also minimizes the transactional costs involved in converting MMFs into floating-NAV products. In sum, the PPLF is an op-

timal mode of reform because it satisfies all three of this Article's evaluative principles. In addition to being theoretically satisfying, the PPLF proposal may be politically, as both industry groups and regulators have shown some support for a liquidity facility to stabilize the MMF industry. In the Parts to follow, I provide a summary of the PPLF's main advantages and outline several potential implementation difficulties.

A. Design Strengths and Advantages

1. Liquidity Support without Direct Shareholder Guarantee

An important observation arising from the 2008 government interventions is that the Treasury's MMF guarantee program – the TGP – was not drawn down upon at all, even though most MMFs had subscribed to the program through participating premiums. In contrast, the Federal Reserve's liquidity backstop – the AMLF – was utilized substantially, and studies have shown that it was successful in restoring liquidity to markets and driving down ABCP spreads.²⁸⁴ A study by Duygan et al. compared overnight ABCP yields to those of other financial CP with similar credit ratings to show that ABCP yields decreased by about 100 basis points on average, as a result of the AMLF's liquidity support.²⁸⁵ The differential impact of the AMLF and TGP is significant and should guide the design of optimal MMF reform.

Extrapolating from this observation, the PPLF proposal focuses on liquidity support and does not provide direct, fixed-par guarantees to MMF shareholders. As discussed above in Parts V and VI, deposit insurance and bank-like regulation are not well-suited for MMFs. While they address systemic risks in the forms of MMF runs and contagion effects, they also contribute to moral hazard costs, implicate potential migration risks, and impose transaction costs. Bearing in mind the key differences between banks and MMFs, the PPLF is designed as a liquidity facility, capable of providing robust liquidity support to MMFs during distressed situations, but which does not make direct, par-value guarantees to MMF shareholders. In other words, the PPLF will provide liquidity insurance to MMFs but not “deposit insurance” to MMF investors.

I further outline three more reasons why the PPLF focuses on liquidity support, as opposed to direct insurance. First, liquidity backstops, assuming they are adequate and credibly backed up by resort to public funds, are not merely necessary but also sufficient to stop runs and prevent contagion effects. As I extrapolate from Diamond and Dybvig's analysis of deposit insurance in Part III, such contracts work as a

²⁸⁴ Duygan-Bump et al., *supra* note 54, at 16-17.

²⁸⁵ *Id.*

credible assurance to make good on the terms of the original private contract *on its ex ante terms*. This works because it makes investors no better off by participating in a run and counteracts the informational cascade herd dynamic. As demonstrated in Part V, the *ex ante* contractual framework of an MMF investment does not guarantee the stability of the principal via a legal promise to pay at par, unlike a deposit contract. Therefore, to address runs on MMFs, it is sufficient to make good on the *ex ante* MMF contract through liquidity provision, without making direct, fixed-sum guarantees.

Providing liquidity insurance to the MMFs in distress will ensure there are only first-movers (and no second-movers) by neutralizing the problem of informational cascades and preventing the undesirable bank run equilibrium described by Diamond and Dybvig. Assuming the source of liquidity is credible (i.e. there is a backstop that is *public*),²⁸⁶ the availability of liquidity prevents the second-mover's herd dynamic from initiating. Because investors know *ex ante* that MMFs will not be forced into distressed asset sales, they have incentives to make their own private assessments about the MMF portfolio, rather than react to the behavior of other investors. If investors believe the first-movers are wrong in their assessments, they can be confident that the MMF can sell "good" assets at healthy prices and make good on redemptions. If such waiting investors are right that the portfolios are in a better position than the first-movers speculate, they can benefit from higher pass-through yields. This creates healthy incentives that will stem a self-fulfilling bank run at its inception. Additionally, the very design of MMFs also allows for the concentration of portfolio gains (as well as losses) in the event of redemptions, adding another incentive for investors to be correct about the portfolio position. In sum, liquidity support deals with runs by targeting informational cascade problems, and insulating individual investors' decisions from others' observed redemptions.

It is acknowledged that such liquidity protection would mitigate, but not completely remove, the incentives to run on a *single* distressed fund facing enormous portfolio losses due to bad holdings. There will still be a first-mover advantage with respect to that individual fund, which will ultimately prove "insolvent" (defined as a fund that liquidates and distributes to shareholders at significantly below \$1.00 NAV).²⁸⁷ However, even in this unusual situation, liquidity support would be sufficient from a systemic risk perspective, since liquidity protection mitigates the damage the run on a single MMF can cause to the rest of the industry. The liquidity facili-

²⁸⁶ See *infra* Part III(C).

²⁸⁷ Note that an MMF that breaks the buck is not technically insolvent, since MMF investors are shareholders and not creditors. Therefore, by saying that MMFs may prove insolvent, I am referring to the case in which an MMF has to be liquidated and the MMF shareholder redeems significantly below \$1 NAV.

ty is able to complete markets and thereby ensure protection from the harmful effects of liquidity shocks on asset prices. It would also prevent widespread vertical contagion effects, by pre-empting widespread runs on institutions that rely on short-term funding. A robust system of liquidity support is thus competent to address contagion problems, even though a single fund may ultimately be subject to a run. Further, in the case of an insolvent fund, a liquidity facility would buy time for the fund to undertake an orderly and expedited liquidation process under the 2010 SEC rules, by allowing it to meet redemptions. That would ensure that the expected loss to MMF investors, even in such a scenario, would be small.

The second advantage of a liquidity facility over insurance programs is the minimization of moral hazard through the preservation of market discipline incentives. Because liquidity support would target run-based effects and contagion externalities, portfolio risks would be isolated, as the determining factor for an MMF's viability. In other words, funds with bad portfolio investments would be allowed to fail. As already described above, a credible assurance of liquidity would meet the problem of runs as they develop and also prevent horizontal contagion, by keeping the market for MMF portfolio assets complete during liquidity shocks. Liquidity protection thus prevents herd-like runs, while at the same time allowing for "bad" MMFs to fail. But the facility would not provide direct, par-value guarantees to investors; consequently, investors would retain incentives to make withdrawals from funds that they assess as making bad investments.

Third, liquidity protection would not morph the MMF product into a guaranteed-principal product which is no different from bank deposits to end-user; thus it would avoid the consequent loss of functionality for institutional investors, who require an insured deposit alternative. Such a change would exacerbate the risk of migration of institutional cash into the unregulated sector, in addition to creating substantial transaction costs. As outlined in Part V, proposed MMF insurance programs encounter this problem. However, by avoiding the provision of direct guarantees to investors for their fixed-sum principal investments, the PPLF would retain the functionality of MMFs as cash-like investment products, preferred by a large segment of institutional investors for their calibration of risk-reward and functionality. MMFs would continue to utilize the efficiencies that result from scaled and diversified investments into highly-rated money market instruments, and investors could continue to mine these efficiencies, while accepting that the trade-off is a risk that they may redeem below \$1.00 in a liquidation scenario entailing significant portfolio losses.

2. The Public-Private Aspect

The PPLF proposal incorporates a public-private aspect, designed to accommodate two principles, which may potentially be in tension: 1) the necessity of a public backstop for any liquidity protection to be credible and 2) the need for the MMF industry to internalize costs of such protection, to avoid the distortion of incentives. It attempts to address the flaws of both public insurance programs and private liquidity facilities by drawing on and combining the strengths of both.

The PPLF minimizes moral hazard costs through its private aspect, which involves funding a private facility with risk-priced premiums paid by MMFs. This private facility would take a first-loss position during systemic events, and after its depletion the PPLF would then draw upon its public facility. As a matter of design, the PPLF should have a self-sufficient private facility. That is, the PPLF proposal targets sufficiently capitalizing this private facility to deal with systemic events without engaging the public facility, which would exist as a credible backstop to create confidence in market participants. In theory, this should best limit potential moral hazard costs.

The second component of the PPLF is its public feature: ultimate resort to a liquidity backstop supplied by the Federal Reserve as central bank. As analyzed in Part III, a public backstop is needed to credibly address the run problem and financial contagion, by providing potential liquidity support to stem runs during high-stress crisis scenarios. Crucially, this backstop is designed to be preventive: the very existence of the public backstop will ideally prevent MMF runs and contagion at their inception.

Ultimately, if done well, a regulatory philosophy that combines both the public and private aspects will work best to address both systemic risks and minimize moral hazard. It will draw on both the efficiency and ingenuity of the private sector, as well as the stabilizing function of a public backstop, and may also improve coordination between the private and public sector towards the common goal of financial system stability. However, while this public-private interaction is the conceptual basis of the PPLF proposal, it is at the same time acknowledged that the devil may lie in the details of structuring access to a public liquidity backstop while ensuring that the costs of such remedy will be borne privately. I deal with these issues of implementation in a later Part.

3. Satisfies All Three Framework Principles

To briefly summarize, an adequately capitalized and credible public-private liquidity support system, such as the PPLF, would stabilize the MMF industry with-

out making it unviable. This is an ideal mode of reform that satisfies the three principles for MMF reform developed in this Article. First, it addresses the systemic risk MMF runs and financial contagion pose, through a credible public liquidity backstop. Second, it does so while retaining investors' private incentives to monitor portfolios, since their investments are not guaranteed, and ensuring that MMFs also retain incentives to manage their portfolios to prevent breaking the buck. Finally, this proposal does not change the nature of the MMF product, thereby preserving its private value to investors, as well as its social value to the broader financial system in terms of meeting the cash-management demand of institutional cash pools.

B. Anticipated Issues of Implementation

The PPLF's implementation raises several issues. In this Part, I will explore these potential difficulties, as well as the ways in which the PPLF's conceptual design can mitigate them.

First, there is the preliminary question of the fund's corporate structure and organization as a public or private entity. This will affect the rules of liquidity access and administrative decisions regarding disbursements from the fund. Unlike BlackRock and ICI, I do not propose a privately run entity because of potentially insurmountable conflicts of interest issues, particularly during a crisis. The independence of the facility and rules of fair access are crucial in order for the liquidity protection it provides to be perceived as credible, with fair and equal access to all MMFs. A public organization, without a profit-making mandate, best ensures that these goals are met. The PPLF should, therefore, be publicly administered, by an independent agency organized as a U.S. government corporation, in the style of the FDIC. Such organizations should be subject to appropriately structured checks and balances, such as oversight and periodic review by the FSOC, and other corporate governance measures. The funds should also be ring-fenced and their application limited to the particular purpose of supplying liquidity to MMFs during distressed situations.²⁸⁸ Of course, this raises the question of the expenditure of public resources. The point of a public-private proposal, however, is to share costs between the private and public sector in furtherance of the shared goal of financial stability. Since the private sector liquidity facility will be taking on the burden of first-loss through premium payments, it would be apposite for the public sector to take on the cost of administering the fund.

Second, participation by private MMFs in the PPLF will have to be *mandatory*, rather than based on an opt-in or opt-out system. This is necessary to prevent a

²⁸⁸ REINHART & ROGOFF, *supra* note 18, at 257.

free-rider problem that may arise in optional systems: MMFs who wish to avoid the costs but enjoy the benefits of increased stability to the industry may opt-out, free-riding on the system-wide stability and confidence that the PPLF would bring. This feature is another reason why a public organization needs to bear the cost of administering the PPLF facility and monitoring compliance; MMFs will always have an incentive to cut costs and free-ride on the system's public benefits.

Third, a potential practical issue the public-private set-up raises is that there may be incentives to deplete the private fund completely in order to draw on public funds. If structures are not put in place to avoid this, the market discipline function of the private liquidity facility would be completely circumvented. This is another type of moral hazard. To avoid this problem, I suggest designing the PPLF with a two-track cost assessment mechanism, such that the costs of *public* liquidity support are assessed only *ex post* by the regulators, while the costs of *private* liquidity are risk-assessed *ex ante* and internalized through premium payments. When the cost of public liquidity is unknown *ex ante*, regulators have the option of imposing penalty costs when the public facility is disbursed. This will align industry incentives by forcing MMFs to operate on the assumption that the first-loss private facility in the PPLF is preferable to public funds.

Fourth, there is a practical challenge to overcome in structuring access to the public backstop, given the Federal Reserve's unwillingness to extend traditional discount window access to MMFs.²⁸⁹ As mentioned, in order for the PPLF to be able to address MMF runs and contagion effects, there must be some level of credible *ex ante* public commitment to signal the availability of public support to the market. Only with that credible assurance will the PPLF address investors' run behavior in a crisis situation, such that they will be able to make investment decisions knowing that public funds *are already* available to provide liquidity, should an unexpectedly large liquidity shock overwhelm the private facility. Even though the Federal Reserve may be unwilling to extend traditional discount window facilities to non-bank institutions, there may be a variety ways to creatively structure such public support. I propose to structure the public backstop component of the PPLF by way of an *ex ante* announcement by the regulators that the Federal Reserve will implement public liquidity facilities (similar to and modeled after the 2008 AMLF and MMIFF liquidity facilities) if a crisis depletes the PPLF's private facility. This form of assurance would be sufficient to stem MMF runs. As discussed above, to eliminate the incentive to deplete the PPLF's private facility to draw on the public facilities, the Federal Reserve should leave the borrowing rate for those facilities to be determined *ex post*, by regulatory discretion. Crucially, the Federal Reserve would make *ex ante* commitment to

²⁸⁹ BLACKROCK, *supra* note 244, at 4.

provide public liquidity, which would supply the credible assurance necessary to stabilize MMF runs and contagion problems during a distressed environment.

Fifth, given that incentives of MMFs will be aligned towards drawing on the private facility first, it is necessary to ensure the PPLF is adequately capitalized. Without adequate capitalization, the private facility would be subject to the same run problem as fully private emergency liquidity facilities. This is especially true because the industry is supposed to operate on the assumption that there might be penalty costs incurred with access to public funds. I propose to capitalize the PPLF through a combination of the following: (1) initial sponsor capitalization, with a bridge loan facility to provide initial support; (2) ongoing commitment payments by either sponsors or MMFs; (3) “shared” retained earnings; and (4) credit lines from MMF sponsors. Under this proposal, the initial capital for the PPLF would come from two main sources. The first would be a forced buy-in by MMF sponsors, proportionate to their market share as calculated by AUM with a minimum contribution of \$250,000 for small funds, targeting initial equity of \$400 million. Acknowledging that this is hardly enough to restore confidence during a crisis, I also propose supplementing this initial capital with a syndicated loan facility from the Federal Reserve and MMF sponsors, which could be drawn down within the first four years, as the PPLF builds its capital through ongoing commitment fees from market stakeholders. These ongoing fees would be priced to reflect systemic risk and paid monthly, as discussed below; in addition, the PPLF would hold a shared retaining earnings capital buffer to supplement the monthly payment. The shared capital buffer will be based on one basis point of retained earnings, which would overcome the difficulty current tax rules pose for individual MMFs with respect to retained earnings.²⁹⁰ Finally, PPLFs should also have access to credit lines from MMF sponsors, to further ensure that the private facility is robustly capitalized. The idea here is to leverage existing networks of sponsor support that operate on a discretionary basis, building them into a robust and institutionalized system of guaranteed liquidity support.

Sixth, there is the issue of pricing the private payments to the PPLF to reflect risk and limit moral hazard – a perennial difficulty that is faced by deposit insurance schemes. Here, the PPLF would enjoy certain advantages because it would provide liquidity protection to funds without also providing direct shareholder guarantees. By isolating for portfolio risk as the key determinant of fund failure, which liquidity-only support achieves, risk assessments need only focus on systemic risk indicators. This would remove one aspect of the pricing difficulty because the ideal model of pricing

²⁹⁰ Currently, under Financial Accounting Standards Board rules, MMFs would incur tax the manager of a MMF cannot accrue a liability or record “capital/reserves” in retained earnings to cover future potential losses. *See id.*; *see also* FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 4, at 40.

private sector premiums for the PPLF would target only the cost of liquidity during systemic risk events. Since systemic risk is an externality, such pricing should work like a tax to subsidize rare systemic events. I, therefore, suggest a simple risk-pricing methodology on a per-NAV basis, set at one basis point per \$1.00 NAV on a monthly basis. This methodology would use MMF size as a proxy for systemic risk, as well as the cost of liquidity support. It would be an easy and cost-efficient way to price the premium payments to reflect systemic risks, since MMFs already calculate and distribute income dividends on a daily business, and are set up to do so. Other methods of pricing the private premium payments are of course possible.²⁹¹ This Article's intention is only to provide a sketch, and the details of such pricing and its methodology will require further research.

Finally, an additional challenge in implementing the PPLF will be defining the "trigger" point when PPLF funds become available. This is very challenging, as it will require a set-up capable of distinguishing between liquidity and insolvency²⁹² issues – often a difficult line to draw with respect to MMFs in practice. Given that the PPLF is designed as an emergency fund, it should be available only during periods when there are severe strains on financial markets. To deal with this issue, I suggest using a systemic liquidity risk index (SLRI), as proposed in an IMF working paper by Tiago Severo, to determine when there are liquidity strains so that PPLF liquidity needs to be activated.²⁹³ This indicator interprets "violations of arbitrage" as a sign of strains in the securities and funding markets, using four different arbitrage relationships: (1) Covered Interest Parity, (2) CDS-Bond basis for non-bank corporations, (3) On-the-run versus off-the-run U.S. Treasuries, and (4) the interest rate swap spread.²⁹⁴

Conclusion

This Article analyzes the problem of structural reform to the U.S. MMF industry. From a survey of the existing literature, I have developed a three-part framework to assess the efficacy of existing reform proposals, in the hope of stimulating discussion and pointing to new directions. First, I analyze the structural susceptibility of MMFs to runs, as well their role as a vector for systemic risk via contagion, con-

²⁹¹ See, e.g., SCOTT, *supra* note 70, at 250-61.

²⁹² Again, it is noteworthy that an MMF that breaks the buck is not technically insolvent, since MMF investors are shareholders and not creditors. By MMF insolvency, I am referring to the case in which an MMF has to be liquidated and the MMF shareholder redeems significantly below \$1 NAV.

²⁹³ See generally Tiago Severo, *Measuring Systemic Liquidity Risk and the Cost of Liquidity Insurance* (Int'l Monetary Fund, Working Paper No. WP/12/194, 2012), available at <http://www.imf.org/external/pubs/ft/wp/2012/wp12194.pdf>.

²⁹⁴ *Id.* at 6.

cluding that MMF run-fragility and contagion risks derive from maturity mismatch, coupled with the behavioral dynamics of short-term investors. I then argue the necessity of public support or backstop measures for effective reform. Second, I argue that any MMF regulation must aim to avoid or minimize moral hazard, especially when public support is necessary to deal with MMF runs and contagion effects. I suggest that this be done by internalizing systemic risk costs through ex-ante, risk-assessed private payments. Third, I argue that MMF structural reform must take into account meaningful differences between such funds and bank deposits. To the extent MMFs play a conceptually distinct role in the modern financial system, for which bank deposits cannot be a perfect substitute, modifying the structural attributes of MMFs, so as to compromise their ability to perform that role would have unintended economic costs and pose real migration risks, including the risk of substantial institutional cash moving out of MMFs into unregulated, alternative investment products.

Based on this evaluative framework, I have sought to show that the available MMF reform proposals all suffer from theoretic flaws. The structural reform proposals presently advocated by the SEC and FSOC – including floating NAV, redemption restrictions, and capital buffers – are fundamentally flawed. They fail to achieve their stated objectives of addressing MMF runs because they misunderstand run behavior and the source of structural fragility in MMFs. As I have analyzed, maturity mismatch and informational cascades are at the heart of the run potentiality of all credit intermediation institutions, including MMFs, and the use of public backstops is necessary to effectively stop the run problem and its contagion effects. The regulators' proposals cannot effectively deal with runs and impose substantial costs without countervailing benefits. Considering next the proposals for deposit-style insurance or bank-like regulation, I have analyzed how they present be an undesirable direction for MMF reform. Although such proposals deal with the run and contagion problems, they have the potential for distorting incentives and creating moral hazard costs. They also fundamentally alter the nature of MMFs as a pass-through investment product, which entails serious migration risks and the potential for unintended economic consequences. Dual-sector proposals are similarly flawed. Insofar as they rely on floating NAV or capital proposals, they will be equally impotent to deal with runs and contagion problems. Additionally, they are practically infeasible and may lead to regulatory arbitrage through dualism.

Concluding that there are limitations with all the presently available reform proposals, I have proposed instead a novel public-private liquidity program – the PPLF – as the optimum mode of reform. The PPLF is ideal because it satisfies the three principles for MMF reform developed by this Article. First, it addresses the systemic risk MMF runs and financial contagion pose through a credible private-public liquidity backstop. Second, it preserves investors and MMFs' private incentives to

monitor fund portfolios. Third and finally, this proposal does not change the nature of the MMF product into a guaranteed-principal deposit-like product, thereby preserving its private value to investors. This also mitigates migration risk (to alternative and less-regulated instruments where systemic risk would remain), while preserving the social value of MMFs for the broader financial system – in terms of meeting institutional cash pools’ cash-management demand and fulfilling their supply-side role, as a major source of short-term financing for corporate and financial institutions. While there are several issues of implementation and design that have yet to be ironed out, I submit that the PPLF is a theoretically satisfying proposal, which stabilizes the MMF industry with the least economic costs. It therefore best accomplishes the regulators’ mandate of reducing systemic risk from a cost-benefit standpoint and should be the subject of further study and debate.