

# Do Money Market Funds Require Further Reform?

By Robert Comment

(bobcomment@msn.com)

December 31, 2012

(revised from December 17, 2012 and November 11, 2012)

The merit of further reform of money market funds by the SEC hinges on the extent to which runs on prime funds pose an investor-protection problem. Reformers assume that the many runs on prime funds in 2008 reflected rational inter-shareholder opportunism, but there is no evidence that retail investors need more protection from this. Notably, the non-redeeming shareholders of the Reserve Primary Fund were the only fund shareholders damaged in the runs on prime funds in 2008, and their avoidable loss amounted to just 1/3<sup>rd</sup> of one percent of their investment. Still, one-quarter of prime funds in 2008 had a mix of retail and (run-prone) institutional shareholders in the same fund. As the rest did not, this hypothetical hazard is unnecessary and the industry should act voluntarily to eliminate mixed-clientele prime funds. More importantly, now that bank-issued money market instruments have come to comprise half the holdings of the typical prime fund, the SEC should acknowledge correlated credit risk by requiring that prime funds practice sector diversification (in addition to issuer diversification). Money market funds should be made less important as financing arms of TBTF banks, not made more reliable as financing arms of TBTF banks.

There is systemic risk associated with short-term debt because, being short-term, it tends to mature during a financial crisis and the associated flight to quality – and not be renewed. This could be called systemic rollover risk.

Daniel Tarullo of the Federal Reserve Board noted recently that: “Many studies of the financial crisis demonstrate that the reliance of large financial firms on nondeposit funding made them, and the financial system as a whole, susceptible to the dramatic runs that peaked in the fall of 2008.<sup>1</sup> For instance, Kacperczyk and Schnabl document “the equivalent of a bank run” on bank-issued commercial paper as

buyers declined to renew during the crisis in 2008.<sup>2</sup> Gorton and Metrick see the heart of the crisis lying in a run from sale-and-repurchase agreements, or repo, which is effectively a secured loan, often overnight to a bank.<sup>3</sup> Ivashina and Scharfstein note that a run by short-term bank creditors made it difficult for banks to roll over their short-term debt.<sup>4</sup> Fahlenbrach, Prilmeier and Stulz find that banks that relied more on short-term funding performed poorly in the crisis.<sup>5</sup> Shleifer and Vishny conclude that direct regu-

---

<sup>1</sup> *Speech at the Brookings Institution Conference on Structuring the Financial Industry to Enhance Economic Growth and Stability*, Governor Daniel K. Tarullo, December 4, 2012. See also: *Risk Management Lessons from the Global Banking Crisis of 2008*, Senior Supervisors Group, October 21, 2009, page 2; (“firms that were least affected by market developments had the a priori discipline to resist excessive short-term funding.”)

---

<sup>2</sup> Marcin Kacperczyk and Philipp Schnabl, “When Safe Proved Risky: Commercial Paper During the Financial Crisis of 2007-2009,” November 2009 (at [ssrn.com](http://ssrn.com)).

<sup>3</sup> Gary Gorton and Andrew Metrick, “Securitized Banking and the Run on Repo,” *Journal of Financial Economics* 104, June 2012, pages 425-451.

<sup>4</sup> Victoria Ivashina and David Scharfstein, *Journal of Financial Economics* 97, September 2010, pages 319-3338.

<sup>5</sup> Rudiger Fahlenbrach, Robert Prilmeier and Rene Stultz, “This Time is the Same: Using Bank Performance in 1998 to Explain Bank Performance during the Recent Financial Crisis,” *Journal of Finance* 67, December 2012.

lation of short-term borrowing by banks is needed to control systemic risk.<sup>6</sup>

Paul Tucker of the Bank of England has blamed systemic rollover risk in part on money market funds, saying: “in straining to maintain a stable net asset value, money funds invest in very short-term instruments, and American finance and global finance may end up with too much short-term debt in consequence, which probably makes the whole of our economy slightly more fragile than needs be.”<sup>7</sup>

During September 2 to October 7, 2008, the assets of prime money market funds fell by \$498 billion while taxable government money market funds increased by \$409 billion.<sup>8</sup> (A “prime” money market fund is simply one that does not specialize in holding taxable government and agency securities or tax-exempt securities.) Accepting that the financial crisis in 2008 was at its core a realization of systemic rollover risk, the runs on prime funds during the crisis are best understood as manifestations of and contributors to a general flight to quality.

Because prime funds in the US provide short-term funding to banks globally, the shrinkage of prime funds in September 2008 complicated central bankers’ stabilization efforts. So, reformers now seek to address the “systemic relevance” of prime funds, where “their performance during the financial turmoil highlighted their potential to spread or even amplify a crisis.”<sup>9</sup> Translating from government-speak: Central bankers cannot rely on prime funds to roll over their holdings of bank-issued short-term debt in a crisis. It may qualify as ironic that reformers seek to limit systemic risk by making money market funds more reliable financing arms of TBTF banks, the balance sheets of which arguably should

be shrunk rather than accommodated.

### Systemic Relevance

Moody’s has reported that the holdings of prime funds in 2008 were “primarily issued by financial institutions.”<sup>10</sup> As of October 2010 money market funds held 37% of all commercial paper (much of it issued by banks), 25% of large CDs, 19% of repurchase agreements and 7% of Eurodollar deposits.<sup>11</sup> The Financial Stability Oversight Council (FSOC) has reported that: “As of September 30, 2012, 86 percent of the funding that MMFs extended to private entities was in the form of financial sector obligations, including CDs, financial CP, asset-backed commercial paper, repo, other MMF shares, and insurance company funding agreements.”<sup>12</sup> Much of this is bank-issued short-term debt.

In a sample of 50 prime funds, I find that bank-issued money market instruments of all types (notes, commercial paper, large CDs, time-deposits and repo), comprised 53% of the holdings of prime funds in mid-2008 and 58% in mid-2012 (46% and 45%, respectively, excluding repo).<sup>13</sup> Non-US banks issued much of this.<sup>14</sup> Sector diversification apparently is not relevant to funds’ compliance with the diversification provisions of Rule 2a-7, but it plainly should be.

---

<sup>6</sup> Andrei Shleifer and Robert W. Vishny, “Unstable Banking,” *Journal of Financial Economics* 97, September 2010, pages 306-318.

<sup>7</sup> *Roundtable on Money Market Funds and Systemic Risk*, SEC, May 10, 2011.

<sup>8</sup> *Response to Questions Posed by Commissioners Aguilar, Paredes, and Gallagher*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, page 7.

<sup>9</sup> *Policy Recommendations for Money Market Funds*, Final Report of the Board of the International Organization of Securities Commissions, October 2012, at iosco.org.

---

<sup>10</sup> *Sponsor Support Key to Money Market Funds*, Moody’s Investor Service, August 9, 2010, at moody.com.

<sup>11</sup> Comment Letter from the Investment Company Institute to the SEC, January 10, 2011, Figure 2.

<sup>12</sup> *Proposed Recommendations Regarding Money Market Mutual Fund Reform*, Financial Stability Oversight Council, November 2012, page 22.

<sup>13</sup> The SEC reports that prime fund assets totaled \$1,659 billion as of March 2012, included \$214 billion of “financial company” commercial paper (13% of the total) and \$439 billion in CDs (26%). *Response to Questions Posed ...*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, Table 7.

<sup>14</sup> Instruments (including repo) issued by non-US banks comprised 50% of the total assets of the 15 largest US prime funds as of mid-2008. Naohiko Baba, Robert McCauley and Srichander Ramaswamy, “US Dollar Money Market Funds and Non-US Banks,” *BIS Quarterly Review*, March 2009.

The FSOC also has reported that: “Use of short-term wholesale funding has dropped significantly,” a development that is “likely to enhance stability of funding for financial institutions.”<sup>15</sup> Overall, the reliance of U.S. banks on wholesale short-term debt has declined by 1/5<sup>th</sup> since the crisis, in line with the reduction in the amount of funding that U.S. banks obtain from prime funds, so prime funds still provide half of banks’ short-term wholesale funding.<sup>16</sup>

The Dodd-Frank Act authorizes but does not require the Federal Reserve Board to establish standards to limit bank issuance of short-term debt. So the Federal Reserve Board could address systemic rollover risk directly by limiting the issuance of short-term debt by U.S. banks and the U.S. arms of foreign banks (as economists have recommended). But the Board has decided, without explanation, not to propose such standards “at this time.”<sup>17</sup> The Board has instead proposed (in December 2011 for domestic banks and in December 2012 for the domestic operations of foreign banks) to rely on liquidity buffers, stress tests and governance measures.<sup>18</sup> The SEC

introduced liquidity buffers and stress tests for money market funds as part of its reforms of 2010.

Under its investor-protection mandate, the SEC has ample authority to regulate the prime money market funds that intermediate a good part of the demand for short-term debt, including much bank-issued short-term debt. By having the SEC act to make money market funds more reliable buyers of bank-issued short-term debt, reformers effectively seek to facilitate the continued reliance of TBTF banks on short-term debt. This seems perverse.

The incongruity between the valid goal of limiting systemic rollover risk and the legal writ (i.e., investor protection) under which the goal is being pursued has strained regulatory integrity. The several government reports and releases that have been issued to advance the further-reform agenda for money market funds are long on possibility, speculation and *ipse dixit* assertion, but very short on evidence of an unaddressed potential harm to fund shareholders that the agenda would address.

---

<sup>15</sup> 2012 FSOC Annual Report, page 55. Short-term wholesale funding is defined there as large time and checking deposits, repo and commercial paper.

<sup>16</sup> 2012 FSOC Annual Report, Chart 5.1.15.

<sup>17</sup> *Enhanced Prudential Standards and Early Remediation Requirements for Covered Companies*, Board of Governors of the Federal Reserve System (Board), Federal Register Vol. 77 No. 3, January 5, 2011, pages 595-596. Although it did not mandate direct limits on bank-issued short-term debt, the Dodd-Frank Act does compel the Federal Reserve Board to establish liquidity standards and the Board has responded by proposing liquidity standards that would apply to U.S. bank holding companies with over \$50 billion in assets, nonbank financial firms that may be designated by the FSOC as systemically relevant, and to the U.S. operations of foreign banks with over \$50 billion in assets.

<sup>18</sup> In proposing the liquidity requirements for U.S. banks (in December 2011), the Board stated (previous footnote, pages 599-600) that: “The proposal would require covered companies to conduct internal stress tests at least monthly to measure their liquidity needs at 30-day, 90-day and one-year intervals during times of instability in the financial markets and to hold liquid assets that would be sufficient to cover 30-day stressed net cash outflows under their internal stress scenarios. Covered companies also would be required to meet specified corporate gov-

---

ernance requirements around liquidity risk management, to project cash flow needs over various time horizons, to establish internal limits on certain liquidity metrics, and to maintain a contingency funding plan (CFP) that identifies potential sources of liquidity strain and alternative sources of funding when usual sources of liquidity are unavailable.”

In proposing the liquidity requirements for foreign banks (in December 2012), the Board stated similarly that: “These standards would include a requirement to conduct monthly liquidity stress tests over a series of time intervals out to one year, and to hold a buffer of high quality liquid assets to cover the first 30 days of stressed cash flow needs. These standards are designed to increase the resiliency of the U.S. operations of foreign banking organizations during times of stress and to reduce the risk of asset fire sales when U.S. dollar funding channels are strained and short-term debt cannot easily be rolled over.” *Enhanced Prudential Standards and Early Remediation Requirements for Foreign Banking Organizations and Foreign Nonbank Financial Companies*, Board of Governors of the Federal Reserve System (Board), December 17, 2012, page 32.

## The SEC's Reforms of 2010

The SEC's first round of reforms took effect in early 2010.<sup>19</sup> To protect non-redeeming fund shareholders from a hypothetical decline in NAV from losses incurred in forced sales, the reforms in 2010 raised minimum liquidity standards for fund portfolios to a level sufficient to satisfy most runs like those faced by prime funds in 2008. The new weekly liquidity standard requires that a minimum of 30% of a fund's assets be reliably convertible into cash at par value within seven days. Fidelity Investments reports that money market funds collectively held \$1.12 trillion in weekly liquidity as of early 2012, compared to required liquidity of \$0.8 trillion.<sup>20</sup> The SEC reports that the nearly one half of the assets of the typical prime fund in 2012 qualified as weekly liquidity.<sup>21</sup>

Probably the most severe run on a prime fund since the reforms of 2010 is the one that occurred at the Dreyfus Institutional Cash Advantage Fund, which reportedly lost nearly half of its assets in May 2011.<sup>22</sup> Dreyfus Corp. is a subsidiary of Bank of New York Mellon Corp. This large, purely institutional fund (minimum initial investment of \$250 million)

---

<sup>19</sup> Under the liquidity standards adopted by the SEC in 2010, a prime fund is required to hold at least 10% of its assets in cash, Treasury securities or overnight instruments, and to also hold at least 30% of its assets in cash, Treasury securities, Agency securities that mature within 60 days, or securities that convert to cash within a week. Secondarily, the 2010 reforms also required that money market funds disclose their holdings, along with their shadow, market-based NAV, monthly on new Form N-MFP, reduced the maximum allowable weighted-average maturity of funds' portfolios from 90 days to 60 days, imposed higher credit-rating standards, limited the use of repurchase agreements collateralized with debt other than government securities, required that funds stress test their ability of maintain a stable NAV, and facilitated fund liquidations.

<sup>20</sup> *A Look at Regulatory Reform for Money Market Mutual Funds: Studying the Impact of the 2010 Changes*, Fidelity Investments, March 1, 2012, Exhibit 4.

<sup>21</sup> *Response to Questions Posed by Commissioners Aguilar, Paredes, and Gallagher*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, page 20.

<sup>22</sup> Sergey Chernenko and Adi Suneram, "Frictions in Shadow Banking: Evidence from the Lending Behavior of Money Market Funds," Dice Center working paper, September 2012, page 7 (at [ssrn.com](http://ssrn.com)).

had previously experienced the fourth most extreme run of September 2008 (in percentage terms, see Table 4 below). No shareholders of the Dreyfus Institutional Cash Advantage Fund were harmed in 2011, just as none were harmed in 2008.

The runs in May 2011 coincided with the European Union's announcement of a stabilization package for Greece and the creation of a stability facility to cover future interventions. The Federal Reserve Board has determined from holdings disclosed on the SEC's new Form N-MFP that U.S. money market funds reduced their lending to large euro-zone banks by "roughly \$200 billion over a four-month period" as concerns about the euro zone rose in 2011.<sup>23</sup> Prime funds handled this euro-turbulence without visible government assistance, and no fund shareholders were harmed.

## The Further-Reform Agenda

The gist of the agenda for further reform is to make a prime fund's continued use of stable-NAV policies dependent on the fund's adoption of a bank-like capital cushion to be held aside in a reserve account called an NAV buffer.<sup>24</sup> The NAV buffer would stand first in line to absorb realizations of credit risk on the fund's individual holdings (this is a tail risk, given the nature of the holdings), or to absorb a trading loss on a forced sale of less-liquid holdings sold to raise cash to satisfy a run.

For an NAV buffer to serve its loss-absorption role, fund accountants would need to report a fictional version of the fund's balance sheet that regularly excludes those portions of the assets and liabilities of the fund that are assigned to the reserve

---

<sup>23</sup> *Enhanced Prudential Standards and Early Remediation Requirements for Foreign Banking Organizations and Foreign Nonbank Financial Companies*, Board of Governors of the Federal Reserve System (Board), December 17, 2012, page 12.

<sup>24</sup> The PWG Report considered various regulatory reforms besides eliminating stable-NAV policies, including allowing large funds to meet redemption requests in kind, introducing a private emergency liquidity facility, insurance for money market funds, conversion of money market funds to special purpose banks, and a two-tiered system of money market funds to isolate those that cater to institutional investors.

account. As the enforcer of strict GAAP compliance by reporting companies, the SEC has not historically embraced accounting fictions (nor have reformers in general).

The dissenting view at the SEC has held, in part, that “further action must be advanced on the basis of data and rigorous analysis” and that the proposed further reform of money market funds is “not supported by the requisite data and analysis.”<sup>25</sup> The dissent is correct on both counts. The SEC staff has produced a response to the dissent that, while data-intensive, does not identify a primary cause of the runs on prime funds in September 2008 or any evidence that investors other than the non-redeeming shareholders of the Reserve Primary Fund were harmed in the runs.<sup>26</sup> The specific agenda for further reform remains, at most, only vaguely tied to any evidence beyond the fact that runs did occur.

The policy option of ending funds’ stable-NAV policies was considered but not adopted in 2010. It has survived as unfinished business in large part thanks to a model, akin to the well-known prisoners’ dilemma model, that says that runs on prime funds are incentivized and rational due to funds’ stable-NAV policies. Specifically, attentive current shareholders can hypothetically “game” fund accounting by front-running a decline in NAV that is predictable due to the delay in recognizing a capital loss under amortized-cost accounting. As discussed below, this application of the prisoners’ dilemma model is dubious.

The report of the President’s Working Group on Financial Markets (PWG Report)<sup>27</sup> advances this loss-causes-run rationale (at page 2), stating: “MMFs are vulnerable to runs because shareholders have an

incentive to redeem their shares before others do when there is a perception that the fund might suffer a loss.” The PWG Report (page 20) also advances a similar run-causes-run rationale, where: “Rational investors still would have an incentive to redeem as fast as possible the shares of any MMF that is at risk of depleting its liquidity buffer before that buffer is exhausted, because subsequent redemptions may force the fund to dispose of less-liquid assets and incur losses.”

Finally, the PWG Report (page 9) posits a contagion effect, where secondary runs are “triggered” by a primary run, saying: “The events of September 2008 – when losses on Lehman Brothers Holdings, Inc. debt caused one MMF to break the buck and triggered a broad run on MMFs – highlight the fact that credit losses at even a single fund may have serious implications for the whole industry and consequently for the entire financial system.” This concept of triggering is naïve and speculative, but possibly stands in for the plausible concept of correlated credit risk. September 2008 was a time of elevated credit risk affecting much of the banking sector, where one outright default (the Lehman bankruptcy) was symptomatic rather than causative.

Recently, the Financial Stability Oversight Council has published its proposed recommendation.<sup>28</sup> Once finalized, the SEC will be required to implement any FSOC recommendation through a rulemaking of its own, or explain in writing why not. The proposed recommendation takes the form of three non-exclusive alternatives:

1. The SEC should require that money market funds adopt floating net asset values.
2. The SEC should require that money market funds maintain an NAV buffer consisting of a tailored amount of assets of up to 1% of the fund to absorb day-to-day fluctuations in the value of funds’ portfolio securities and allow the funds to maintain a stable NAV.

---

<sup>25</sup> *Statement on the Regulation of Money Market Funds by Commissioner Daniel M. Gallagher and Commissioner Troy A. Paredes*, US SEC, August 28, 2012. The dissenters ask, in part, for data and analysis on the degree to which the runs on prime funds reflected a broad flight to quality rather than any defect in money market funds, and also ask for data on the adequacy of the first-round reforms of 2010.

<sup>26</sup> *Response to Questions Posed...*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012.

<sup>27</sup> *Report of the President’s Working Group on Financial Markets: Money Fund Reform Options*, October 2010.

---

<sup>28</sup> *Proposed Recommendations Regarding Money Market Mutual Fund Reform*, Financial Stability Oversight Council, November 2012.

In addition, the SEC should require that redeeming fund shareholders leave behind for 30 days (as a minimum balance at risk) shares amounting to 3% of the shareholder's highest account value in excess of \$100,000 during the previous 30 days. These at-risk shares will be subject to cancellation as necessary to supplement the fund's NAV buffer.

3. The SEC will require that money market funds maintain a risk-based NAV buffer amounting to 3% of the fund, although the FSOC would consider a smaller buffer if the SEC can demonstrate that other reform measures (perhaps more stringent versions of its 2010 reforms) complement the NAV buffer and further reduce the vulnerabilities of money market funds.

The idea of imposing a minimum balance at risk (see item 2) is a recent addition proposed by four Federal Reserve economists, who argue that nothing else would be effective.<sup>29</sup> This proposal resembles a claw-back from redeeming shareholders when a fund is liquidated for less money per share than that received by front-running redeemers. The authors state (at page 2) that "the MBR concept would only affect shareholders' actual balances in the event that a fund breaks the buck and closes." As noted below, Judge Gardephe rejected (as legal but impractical) the SEC's request for such a claw-back in the liquidation of the Reserve Primary Fund.

Unaddressed problems with the FSOC's proposed recommendations of November 2012 include:

1. The absence of evidence that prime funds are prone to widespread runs or otherwise pose systemic risk for any reason other than correlated credit risk;
2. The absence of evidence that any part of the FSOC's proposed recommendation is the best or least-costly way to address the problem of

correlated credit risk;

3. The absence of an explanation for why the problem of systemic rollover risk is sufficiently addressed in the context of bank regulation by having banks perform stress tests and maintain minimum liquidity, but these same measures are not sufficient in the context of money market funds;
4. The absence of evidence that routine "day-to-day fluctuations in the value of funds' portfolio securities" are in any way relevant to public policy;
5. The absence of evidence that funds have incurred losses in material amount from forced sales of assets at fire-sale prices;
6. The absence of evidence that smaller money market funds (with assets of less than perhaps \$1 billion) pose any systemic risk under any scenario;
7. The absence of evidence that taxable-government or tax-exempt money market funds pose any systemic risk under any scenario;
8. The absence of evidence that prime funds with predominantly retail clientele pose any systemic risk under any scenario; and
9. The possibility that the FSOC's proposed NAV buffers are inconsistent with GAAP.

#### **Floating NAV by Choice**

I am aware of two prime funds in the U.S. that currently elect to use a floating NAV policy: the DWS Variable NAV Money Fund (\$17 million in net assets) and the DFA Short Term Investment Fund (\$15.5 billion in net assets). The first is very small and the second is a utility open only to other affiliated funds.

The DFA Short Term Investment Fund recently (in May 2012) switched from a stable NAV of \$1.00 per share to a floating NAV. The switch in the fund's investment objective and accounting policy was accompanied by a reverse stock split that yielded an NAV of \$11.57 per share, thereby reducing the effect of penny rounding. The fund continues to comply

---

<sup>29</sup> Patrick McCabe, Marco Cipriani, Michael Holscher and Antoine Martin, "The Minimum Balance at Risk: A proposal to Mitigate the Systematic Risks Posed by Money Market Funds," Federal Reserve Bank of New York, July 2012 (at [ssrn.com](http://ssrn.com)).

with the quality, maturity, diversification and liquidity requirements of Rule 2a-7. This prime fund is atypical in that its shareholders are limited to four other funds advised by Dimensional Funds Advisors LP that invest in this dedicated prime fund some or all of the cash collateral received in their securities lending activities.

Reformers believe that a stable-NAV policy leaves the shareholders of money market funds ignorant of and insensitive to the true risk of their investment. The FSOC has stated that: “A floating NAV would make gains and losses on MMF investments a regular occurrence.”<sup>30</sup> But this oft-repeated claim only presumes that day-to-day fluctuations in floating NAV would be meaningful to investors if reported, and the example of the DFA Short Term Investment Fund indicates otherwise.

Were it not for its reverse stock split, the DFA Short Term Investment Fund would have reported the following NAVs since it switched to a floating-NAV policy (daily NAVs seem not to be publicly available for this fund):

May 31, 2012	1.000026
June 30, 2012	1.000035
July 31, 2012	1.000069
August 31, 2012	1.000130
September 30, 2012	1.000130

Alternatively stated, this fund’s floating NAV (as reported) has at each month’s end rounded to \$11.57 per share.

I provide similar evidence for all money market funds in Table 1 below, but the example of the DFA Short Term Investment Fund is sufficient to illustrate what reformers overlook: that funds would need to implement reverse stock splits extreme enough to raise the general level of their NAVs from \$1.00 per share to \$1,000 per share before the NAV resulting from a combination of a floating-NAV policy and penny-rounding would exhibit any day-to-day fluctuation after penny rounding. As an illustration, reverse splitting by a factor of 1,000 would convert an NAV of 1.000026 into an NAV of 1,000.03. Investors would not plausibly conclude that money

market funds are risky by virtue of reformed fund policies that result in NAVs that fluctuate within a range as narrow as \$999.50 to \$1,000.50 per share. And NAVs of around \$1,000 per share would be impractical.

Finally, while two U.S. funds have elected to adopt a floating-NAV policy, no money market fund has voluntarily adopted an NAV buffer. I suspect that an NAV buffer may be impermissible under GAAP.<sup>31</sup> If so, NAV buffers may be impractical. It is problematic that the FSOC has not addressed whether the NAV buffers it intends to recommend would comply with GAAP, or addressed the consequences of non-compliance with GAAP.

### Board Action

Money market funds are thought to be susceptible to a rational run because shareholders have an incentive to front-run an expected decline in NAV. If this story seems related to investor protection, it is only because the reformers describe their application of the prisoners’ dilemma model incompletely (overlooking collusion via board action).

The rationality of fund runs is questionable as theory for the same reason the prisoners’ dilemma is broken when the prisoners all are represented by the same defense attorney. The proposition that fund shareholders can expect to benefit from gaming fund accounting rests on a presumed absence from the game of a player empowered to serve as agent for the non-redeeming shareholders. But there is such a player/agent, the fund’s board, and it is well-empowered to protect non-redeeming shareholders. A complete description of the “game” would admit that the fund’s board always holds trump, and this admission would negate any stable-NAV story.

Regarding empowerment, the boards of funds that use amortized-cost accounting are required, by

---

<sup>31</sup> I am not an accountant, but it would seem that for an NAV buffer to function it would have to have a balance sheet not consolidated with the fund’s balance sheet, at least for purposes of calculating the fund’s net asset value. But non-consolidation would have to occur even though the fund has a draw on the assets of the NAV buffer and would necessarily incur part of the cost of capital associated with the liabilities of the NAV buffer.

---

<sup>30</sup> FSOC, November 2012, page 32.

SEC Rule 2a-7,<sup>32</sup> to “promptly consider what action, if any, should be initiated by the board of directors” if the deviation between mark-to-market NAV and amortized-cost NAV should exceed ½ of 1 percent (or \$0.005 per share). A board is required to take remedial action when such a deviation “may result in material dilution or other unfair results to investors or existing shareholders.”

A board may suspend redemptions temporarily.<sup>33</sup> The board of the Putnam Prime Money Market Fund (with a \$10 million minimum investment, net assets of \$15.4 billion as of August 31, 2008, and no holdings of defaulted Lehman debt) suspended redemptions on September 17, 2008, due to “significant redemption pressure,” and promptly arranged to transfer the shareholders and assets of the fund to the Federated Prime Obligations Fund (a fund with a severe run of its own) at no loss to the Putnam fund’s shareholders.<sup>34</sup> A suspension would give the fund’s sponsor time to arrange financing to purchase a defaulted security from the fund.<sup>35</sup> Or it would give the board time to consider a *pro-rata* liquidation of the fund. The fund could simply adopt a variable-NAV policy, perhaps temporarily.

Insofar as a board relies on liquidation, investor protection will entail a degree of illiquidity and investor inconvenience. The liquidation of the Reserve Primary Fund involved eight distributions to shareholders that returned the assets of the fund to

shareholders four months (on a weighted-average basis) after redemptions were suspended.<sup>36</sup> Half of these assets were returned in the first distribution on October 30, 2008.

### Reserve Primary Fund

Decisive board action to protect the interest of continuing shareholders is not what happened at the Reserve Primary Fund,<sup>37</sup> but the Reserve example is

---

<sup>36</sup> Based on distributions disclosed by The Primary Fund in Liquidation (press releases at <http://primary-yieldplus-inliquidation.com/fundupdate.html>).

<sup>37</sup> The liquidation of the Reserve Primary Fund was overseen by Judge Gardephe, who (in his Memorandum Opinion of November 25, 2009 in *SEC v. Reserve Management Company, Inc., et al*, 09 Civ. 4346) provided a detailed account of events at the Reserve Primary Fund on Monday September 15, 2008 and Tuesday September 16 (after Lehman Brothers had declared bankruptcy on Sunday night). The fund, which began the day with \$64.5 billion in net assets, “faced a tidal wave of redemption requests” totaling \$5 billion by 8:40 a.m., over \$10 billion by 10:30 a.m. and \$16.5 billion by 1:00 p.m. Redemption requests totaled \$24.6 billion by 1:00 p.m. Tuesday and \$40 billion by 3:45 p.m. Tuesday.

At one point the board declared that redemption requests received before 3:00 p.m. Tuesday would be redeemed at \$1.00 while those received after that time would be redeemed at \$0.97 per share. The proposed NAV of \$0.97 was an algebraic consequence of the board’s assumptions that the fund’s holdings of defaulted Lehman debt had a value of zero, and that around 39 billion shares would be redeemed at \$1.00 per share (with the loss on defaulted Lehman debt borne by the remaining shareholders). This board declaration never took effect and was eventually disregarded by Judge Gardephe.

Actual redemptions were limited to those that occurred early Monday before the fund’s custodian bank (State Street Bank & Trust, starting in May of 2008) unilaterally stopped filling redemption requests at 10:10 a.m. I estimate that actual redemptions on the morning of September 15 totaled 13.3 billion shares (64.5 billion shares outstanding at the start of the day on September 15, minus 51.2 billion shares that participated in the fund’s liquidation, plus assumed inflows during the day of zero).

Finally, my estimate of shareholder losses (as small as it is) is overstated in that it assumes a value of zero for the fund’s holdings of defaulted Lehman debt. The liquidation press release of May 27, 2010 (see prior footnote) states that the fund’s proceeds from the sale of defaulted Lehman debt eventually totaled \$170 million. Also, my estimate of shareholder losses is overstated if fewer than 13.3 billion shares were redeemed at \$1 per share (it may have been as low as 12 billion).

---

<sup>32</sup> *Valuation of Debt Instruments and Computation of Current Price Per Share by Certain Open-End Investment Companies (Money Market Funds)*, SEC Release IC-13380, July 11, 1983.

<sup>33</sup> Section 22(e) of the Investment Company Act prohibits mutual funds from suspending redemptions for more than seven days. The SEC may permit a longer suspension, but had not done so in decades before granting an extension to the Reserve Primary Fund to facilitate its liquidation. SEC Rule 22e-3 now permits suspensions automatically for as long as a fund’s liquidation is pending.

<sup>34</sup> “Putnam Shifts Prime Money Market Fund Investors to Federated,” *Bloomberg News*, September 24, 2008.

<sup>35</sup> SEC Rule 17a-9 permits a fund sponsor to purchase a defaulted security from the fund if it pays a cash amount equal to the higher of amortized cost or market value. Sponsor support can also take the form of a cash infusion (the equivalent of a one-time refund of management fees).



not generalizable due to the outstanding ineptitude of this fund's board. Catering as it did to an institutional clientele; the Reserve Primary Fund had the policy of redeeming shares hourly rather than daily. And the board allowed redemptions to continue at \$1.00 per share after Lehman Brothers had filed for bankruptcy on the night of September 14, 2008 and the fund's NAV had plainly dropped below \$0.995 due to its holdings of defaulted Lehman debt. Redemptions were stopped unilaterally by the fund's custodian bank on Monday morning, but not before the bank had filled redemption requests for around 13.3 billion shares, or 1/5<sup>th</sup> of the fund's day-opening shares outstanding. In this one-and-only example of a run badly handled by a prime fund, the fund's board took no action that would qualify as timely.

The only tangible evidence of shareholder harm comes from the experience of the non-redeeming shareholders of the Reserve Primary Fund. No other money market fund shareholders actually were damaged.<sup>38</sup> The non-redeeming Reserve shareholders were damaged only slightly. They bore all of a \$767 million loss (this is amortized cost) on defaulted Lehman debt, a loss that came to \$0.015 per share. Damages occurred because non-redeeming shareholders would have incurred a smaller loss, of \$0.012 per share, had the total loss on defaulted Lehman debt been shared by those that redeemed on the morning of September 15. As the avoidable harm to the continuing shareholders was so minor (\$0.003 per share), it is not surprising that Judge Gardephe rejected the SEC's request for a claw-back from the redeeming shareholders.

As far as events at the Reserve Primary Fund exemplify an investor-protection problem that reformers seek to fix, they overreach. The need to protect shareholders of money market funds from the prospect of another inter-shareholder wealth transfer of 1/3<sup>rd</sup> of 1 percent of their investment, which is the

---

<sup>38</sup> That the continuing shareholders of the Reserve Primary Fund were the only ones damaged in September 2008 was previously noted by Jonathan Macey, "Reducing Systemic Risk: The Role of Money Market Funds as Substitutes for Federally Insured Bank Deposits," Yale Law & Economics Research Paper No. 422, January 4, 2011.

damage incurred in the only instance of damage, is too minor a need to justify government intervention to restructure the business model of money market funds, especially where the FSOC's recommended reforms merely "hold promise for mitigating the risks that MMFs pose."<sup>39</sup>

### **Amortized-Cost Accounting**

Most financial institutions other than mutual funds use amortized-cost accounting. Mutual funds differ because the Investment Company Act requires that mutual funds use fair-value accounting. Since its adoption of Rule 2a-7 in 1983, however, the SEC has exempted money market mutual funds and allowed them to use amortized-cost accounting.

Under amortized-cost accounting, securities that a financial institution expects to hold to maturity are valued on its books at historical cost (approximately) rather than current market value. An election to use amortized-cost accounting means, technically, that a fund will value the securities it holds using Level 2 inputs (observable factors other than market values) rather than Level 1 inputs (observable market values). For the securities that prime funds hold, Level 2 inputs are the result of an income approach that converts future cash flows to a present value based upon the discount or premium at purchase. Accordingly, absent default, securities purchased at par are carried on the books at par.

An election of fair-value accounting and a floating-NAV policy would amount to the use, wherever possible, of Level 1 inputs in place of the Level 2 inputs. But it is only possible to use Level 1 inputs to value securities that trade in active secondary markets, and few money market instruments trade in active secondary markets, so the use of Level 2 inputs is largely inescapable regardless of whether a prime fund elects a stable-NAV policy or a floating-NAV policy. I noted earlier that the DFA Short Term Investment Fund is the one prime fund of significance that has elected to use a floating-NAV policy, and this fund nevertheless values all of its holdings using Level 2 inputs, meaning that Level 1 inputs are not available for any of its holdings.

---

<sup>39</sup> FSOC, November 2012, page 21.

Table 1: **The Difference between Shadow, Market-Based NAV and Amortized-Cost NAV, as of July 31, 2012, for All Money Market Funds with an Amortized-Cost NAV of \$1.00, by Type of Fund**

Type of Fund	Number of Funds	Mean Shadow NAV	Mean Absolute Deviation From \$1.00*	% With Shadow NAV < \$0.9995	% With Shadow NAV > \$1.0005
Prime	255	\$0.99992	\$0.00025	11%	2%
Taxable Government	188	\$0.99998	\$0.00014	5%	1%
Tax-Exempt	185	\$1.00009	\$0.00032	7%	13%
Total	629	\$0.99999	\$0.00024	8%	5%

\* An “absolute” deviation from \$1.00 treats negative deviations as positive deviations.

This implies that market-based NAVs will differ little from amortized-cost NAVs, and this is confirmed in the available data beyond the data available for the DFA Short Term Investment Fund. For instance, Fidelity Investments has reported that, for its prime funds over the past 20 years, a “significant” deviation of shadow market-based NAV from \$1.00 was just 10 basis points.<sup>40</sup>

Data on shadow, market-based NAV are now available monthly, and these (cross-sectional) data typically deviate from amortized-cost NAV by less than the 10 basis points reported by Fidelity. The evidence in Table 1 above is based on the 629 money market funds with a regular NAV of \$1.00 that filed on Form N-MFP to disclose a shadow, market-based NAV (Item 18c) as of July 31, 2012. Results are reported by type of fund. As of this one point in time, shadow NAVs differed only trivially from \$1.00.<sup>41</sup> By this evidence, amortized-cost accounting is not important to prime funds’ stable NAV policies.

#### **Defaulted Securities and NAV**

Because Rule 2a-7 limits the holdings of money market funds to those with minimal credit risk, debt that has defaulted is not an eligible security under paragraph (a)(10)(i) of Rule 2a-7 and may not be valued at amortized cost. A ratings downgrade will

generally have the same consequence as an outright default. Accordingly, the default or downgrade of a security held by a fund will have the identical effect on an NAV calculated using amortized-cost accounting as on an NAV calculated using market values. This means that losses due to default or downgrade ought to be reflected in NAV contemporaneously and without any delay that would allow attentive fund shareholders to front-run an impending decline in NAV.

In the event of default, fund accountants must determine what valuation inputs to use for a security in default, including Level 3 inputs (these are essentially guesses), with zero being a plausible assumed value absent a trading market in the defaulted security. Whatever inputs are used, the valuation of a defaulted-but-retained security will reasonably anticipate the market consequences of default.

Since there is no delay in accounting recognition of default, as long as fund accountants are attentive an occurrence of default will not create an opportunity for attentive shareholders to front-run a delayed-but-predictable decline in NAV. The events that threaten an amortized-cost NAV that shareholders might front-run are limited to (1) future defaults that (2) have not yet triggered a downgrade.

#### **Sponsor Support**

The most severe run on a prime fund during September 2008 occurred at the Morgan Stanley Institutional Liquidity - Prime Portfolio, where the starting assets of \$36 billion shrank by 71%. With the SEC’s

<sup>40</sup> Statement by Robert P. Brown, *Roundtable on Money Market Funds and Systemic Risk*, SEC, May 10, 2011.

<sup>41</sup> The SEC has reported results for 2011 that are similar to those reported here in Table 1 for 2012. *Response to Questions Posed...*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, Table 3.

permission, the sponsor purchased from the fund securities with a face value of \$11.5 billion, paying amortized cost plus accrued interest. The relevant note to the fund's next financial statements stated that there were no reliable market prices available for these (unidentified) securities, so it is not possible to estimate how much this support was worth. In October 2008, the sponsor purchased from the fund certain additional securities with a face value of \$375 million that had become ineligible for a money market fund to own when they were downgraded by a rating agency. The fund would have realized a loss of \$37.5 million (or 10%) had the downgraded securities been sold to a third party instead of to the sponsor at amortized cost.

Moody's has reported that 200 money market funds in the U.S. and Europe received sponsor support during 1980-2009, including 53 instances in the U.S. during August 2007 to December 2009 where a fund needed support to sustain an NAV of \$1.00.<sup>42</sup> Moody's calculated that sponsor support totaled \$12.1 billion during this 29-month interval, including capital contributions, purchases of securities at par, execution of letters of credit, and formal commitments from sponsors, called capital support agreements, to buy defaulted securities at par.

During the two weeks following the Lehman Brothers' bankruptcy, the SEC provided no-action assurances to 100 funds to permit each to receive support from its sponsor.<sup>43</sup> While this, like the Moody's study, suggests that the need for support was widespread following the Lehman Brothers bankruptcy, some of these 100 permits apparently went unused or were used in insignificant ways.

---

<sup>42</sup> *Sponsor Support Key to Money Market Funds*, Moody's Investor Service, August 9, 2010, at moodys.com.

<sup>43</sup> *Money Market Fund Reform; Proposed Rule*, SEC (17 CFR Parts 270 and 274), July 8, 2009, footnote 54. The 100 letters were issued September 16 to October 1 of 2008. The SEC has reported that an additional 158 funds have sought staff no-action assurances for sponsor support during 1989-2001 and 2010-2011 (i.e., excluding the 100 letters issued in 2008). *Response to Questions Posed...*, SEC Division of Risk, Strategy, and Financial Innovation, Table 1, November 30, 2012.

As an example of a support agreement that went unexecuted, the sponsor of the TCW Money Market Fund, a predominantly retail prime fund with starting assets of \$1.9 billion that experienced the fourth most severe run (55% of starting assets) during September 2008, agreed to contribute a maximum of \$35 million in the event the fund incurred aggregate losses of more than \$9.5 million on its holdings of 17 specified fixed-income notes (having maturities of around six months) issued by American General Finance, Associates Corp. of North America, Bank of America, BNP Paribas Finance, Citigroup, Credit Suisse USA, HSBC Finance, International Lease Finance and Wachovia. The market values of the specified notes rebounded as the panic subsided, and the fair value of the support agreement fell to \$2.07 million by October 31, 2008 and \$0.18 million by January 31, 2009.

Brady, Anadu and Cooper ("Boston Fed study")<sup>44</sup> report that, during 2007-2011, money market funds received sponsor support on a total of 123 occasions, including serial instances of support at the same fund due to the same defaulted debt (the result of defaults in 2007 of asset-backed commercial paper issued by SIVs).<sup>45</sup> Of the various government studies and statements to report a total number of support events, the Boston Fed study is alone in identifying the funds that received sponsor support and the amount of support received. This study counted as a support event only those events where a support agreement was executed and support actually was provided. The Boston Fed study marks 21 support events (17% of 123) where the amount of support exceeded ½ of 1 percent of net assets, the level at which support had immediate consequence. Fewer than 17% of all support agreements (both executed and unexecuted) were consequential.

---

<sup>44</sup> "The Stability of Prime Money Market Mutual Funds: Sponsor Support from 2007 to 2011," Steffanie Brady, Ken Anadu and Nathaniel Cooper, Working Paper RPA12-3, August 2012, Figure 1 (at bostonfed.org).

<sup>45</sup> SIV-issued ABCP differed from other ABCP in that it generally had no explicit liquidity put to a commercial bank. Sandra Krieger, Federal Reserve Bank of New York, Remarks at the Global Association of Risk Professionals 12<sup>th</sup> Annual Risk Management Convention, March 8, 2011.

Table 2 Instances of Sponsor Support Attributable to the Lehman Brothers Bankruptcy

	<b>Total Fund Investments, Last Before Default</b> (\$ millions)	<b>Par Value of Defaulted Lehman Debt Held</b> (\$ millions)	<b>Sponsor Support per Boston Fed Study</b> (\$ millions)	<b>Sponsor Support as a % of Total Fund Investments</b>
1 Columbia Cash Reserves (Columbia Management)	51,344.7	400.0	621.5	1.21%
2 Columbia Money Market Fund was Riversource Cash Management Fund (Ameriprise Financial),	4,964.0	40.0	34.9	0.70%
3 Columbia Short Term Cash Fund was Riversource Short-Term Cash Fund (Ameriprise Financial),	2,424.5	122.0	39.1	1.61%
4 Dreyfus Basic Money Market Fund (BNY Mellon)	1,287.5	45.0	35.6	2.77%
5 Dreyfus Cash Management Plus (BNY Mellon)	16,207.3	97.2	68.4	0.42%
6 Dreyfus Liquid Assets (BNY Mellon)	5,646.1	100.0	73.0	1.29%
7 Dreyfus Worldwide Dollar Money Market Fund (BNY Mellon)	699.9	20.0	15.4	2.20%
8 Financial Square Prime Obligations Fund (Goldman Sachs)	56,152.1	140.0	100.0	0.18%
9 Evergreen Institutional Money Market Fund (Wachovia Corp)	16,149.2	309.2	295.5	1.83%
10 Evergreen Money Market Fund (Wachovia Corp)	7,122.9	35.0	121.3	1.70%
11 Evergreen Prime Cash Management Money Market Fund (Wachovia Corp)	7,832.0	75.0	65.6	0.84%
12 ING Money Market Fund (ING America Insurance)	371.3	2.0	1.74	0.47%
13 Mount Vernon Securities Lending Prime Portfolio (FAF Advisors)	14,347.2	40.0	35.0	0.24%
14 Russell Money Market Fund (Russell Investment Management)	8,425.2	402.8	336.8	4.00%
Total	192,973.9	1,828.2	1,843.8	0.96%

I reviewed the holdings of the funds identified in the Boston Fed study as having received sponsor support and identified 14 (11% of 123) that held defaulted Lehman debt, which is similar to the SEC's estimate of around one dozen.<sup>46</sup> The 14 instances are itemized in Table 2 above. These 14 prime funds each required comparatively high percentage levels of sponsor support, essentially all of which was needed to cover defaulted Lehman debt. Conversely, only minor amounts of support were required absent defaulted Lehman debt.

The detail provided in the Boston Fed study shows that over four-fifths of the total number of past support events at public money market funds amounted to housekeeping exercises not plausibly related to the likelihood of future occurrences of runs on prime funds. Accordingly, the total number of past support events is of little or no relevance to

this (or any) policy debate. Reformers' repeated citation of the sheer number of support events as justification for further reform is one manifestation of how the agenda for further reform has strained regulatory integrity.

#### Fire-Sale Losses

In the totals reported at the bottom of Table 2, the aggregate of sponsor support nearly equals the total amount of defaulted Lehman debt. This implies that very little (if any) support was needed to cover losses on forced sales of securities sold to raise cash to satisfy a run, which is one of the hypothetical justifications advanced for further reform. Specifically, in the 102 support events listed in the Boston Fed study that were not associated with defaulted Lehman debt, sponsor support amounted to just 0.13% of assets, per instance on average. And even this small amount included support for losses on asset-backed commercial paper that defaulted in 2007 (none of which was associated with a run).

<sup>46</sup> *Money Market Fund Reform; Proposed Rule*, page 32691.

Accordingly, stable NAVs were not significantly jeopardized in 2008 by fire-sale losses incurred in forced sales needed to cover heavy withdrawals from prime funds in September 2008. Were it real, one would have expected the fire-sale problem supposedly associated with runs would have been observed during the runs on prime funds that occurred during September 2008. The 30 most-severe runs on prime funds are listed in Table 4 below, and these amounted to meaningful (real-world) stress tests.

Since funds realized negligible losses on their holdings other than defaulted Lehman debt in September 2008, it is not surprising that the question of how funds accomplished this outcome has not been addressed. Liquidity buffers were one reason. Another reason is that many prime funds maintain lines of credits (generally with their custodian bank) that they can draw down for short-term liquidity or other emergency purposes.

When citing the prospect of fire-sale losses on forced sales to justify further reform, reformers ought to acknowledge that the problem is purely hypothetical, or nearly so, and not significant in practice. Indeed, to avoid being misleading, any discussion of the prospect of fire-sale losses at money market funds should acknowledge that a relevant “experiment” has been run – and the hypothesis rejected.

### Hair-Trigger Runs?

Reformers theorize that when a fund’s shadow, market-based NAV falls below \$1.00 the fund becomes structurally unstable and susceptible to a run. A loss becomes progressively concentrated among the continuing shareholders as more shares are redeemed at \$1.00 – and the progression only accelerates, as the incentive to redeem is strengthened by redemptions.<sup>47</sup> This theory has no stopping point short of zero demand for the shares of a fund with a significant embedded loss, including a loss initially

smaller than \$0.005 per share.

This theory is testable. How often has the predicate condition (an embedded loss) *not* been associated with the predicted consequence (unusual net redemptions)? While embedded losses are infrequent (see Table 1 above), they do occur and are now publicly disclosed as Item 18c on Form N-MFP.

Currently there are several dozen prime funds that (1) have reported a persistent embedded loss since late 2010 that is (2) not covered by a support agreement where (3) the fund has not experienced unusual net redemptions. The total number, historically and including all types of funds, is undoubtedly larger. Reformers ought to investigate and understand instances like these, where embedded losses have not been associated with unusual net redemptions, as such evidence challenges their motivating theory.

Chart 1 **Scatterplot of Net Redemptions over the 20 Months ended September 2012, versus Embedded Loss Measured by the Market-Based NAV of the Fund, for 146 Prime Funds with Beginning Net Assets of \$1 Billion Plus**

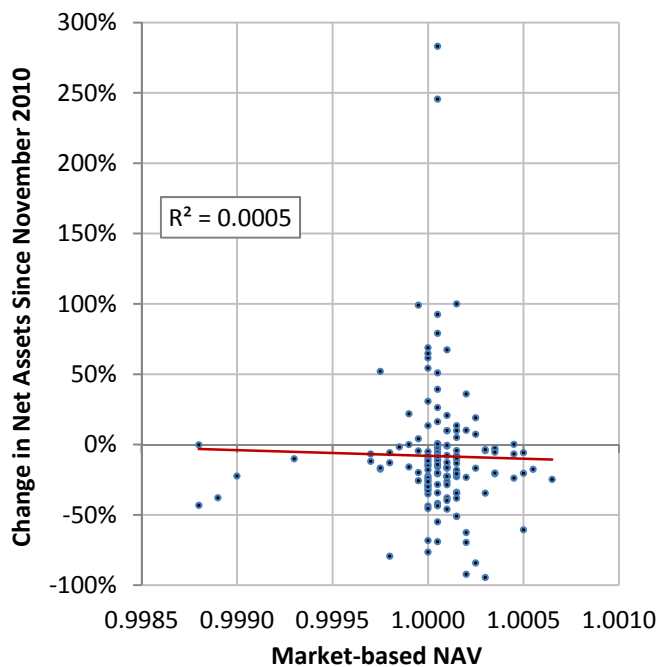


Chart 1 is a scatterplot that shows the relation between percentage net redemptions measured over a recent 20-month period, versus embedded losses

<sup>47</sup> *Response to Questions Posed by Commissioners Aguilar, Paredes, and Gallagher*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, page 3. Also: FSOC, November 2012, page 19.

or gains measured as a fund's market-based NAV.<sup>48</sup> It plots data for the 146 prime funds with starting net assets of \$1 billion or more as of November 30, 2010 (smaller funds are omitted because they pose no systemic risk). A shadow NAV below \$1.00 reflects an embedded loss. The hair-trigger-spiraling-run theory advanced by the FSOC and the SEC predicts an upward-sloping trend line. But the trend line plotted in Chart 1 is not upward sloping (there is no association), so the theory is not confirmed in these data. Reformers cite no alternative data or test that confirms their theory that runs are associated with defective fund policies.

The embedded losses in Chart 1 are all garden-variety losses. If reformers believe that their theory is nevertheless relevant because a large capital loss might cause the spiraling net redemptions posited in their theory, then the FSOC should limit its attention to that scenario and not recommend NAV buffers motivated by a supposed threat posed by small embedded losses.

The FSOC has stated that money market funds are vulnerable in part because they attract "a base of highly risk-averse investors that are prone to withdraw assets when even small losses appear possible."<sup>49</sup> For this reason, apparently, the FSOC's is concerned with "day-to-day fluctuations in the value of the funds' portfolio securities."<sup>50</sup> However, while realizations of correlated credit risk (e.g., among banks during a financial crisis) matter, there is no evidence that routine, day-to-day fluctuations in funds' market-based NAVs are relevant to systemic risk absent an ongoing financial crisis. The FSOC states that "even a small threat to an MMF can start a

run,"<sup>51</sup> but does not explain why no threat, large or small, has caused runs at multiple funds absent an ongoing financial crisis.

Default is a tail risk for the type of instruments held by money market funds, and tail risk (by definition) will only rarely affect the market value of a security. Because of averaging, security-specific tail risk will have even less effect on the market-based NAV of a portfolio that includes that security. Accordingly, the FSOC's concern with routine, day-to-day fluctuations in the value of individual holdings or fund NAVs is without foundation.

The FSOC notes that prime funds experienced net redemptions during May to August 2011 absent any material losses or declines in shadow, market-based NAVs.<sup>52</sup> But the FSOC does not recognize that this evidence challenges the validity of their motivating theory. In my opinion, if money market funds worsen the next financial crisis, it will be for the same reason they worsened the last: prime funds hold too much short-term debt issued by banks.

#### **Runs and Defaulted Lehman Debt**

The Lehman bankruptcy threatened the \$1.00 NAVs of 15 prime funds (the Reserve Primary Fund plus the 14 listed in Table 2 above), or 7% of the total number of prime money market funds in 2008. The runs on prime funds were far more widespread. The McCabe study reports that 83% of 116 institutional prime funds experienced net redemptions.<sup>53</sup>

As to size, I estimate that defaulted Lehman debt constituted one-tenth of 1% of the aggregate net assets of prime money market funds as a whole, which translates into fund holdings of defaulted Lehman debt totaling around \$2 billion.<sup>54</sup> In comparison, the

---

<sup>48</sup> For purposes of Chart 1, net redemptions are measured as the change in a fund's assets between November 30, 2010 and September 30, 2012 (or for as much of this period as data were available on Forms N-MFP for a given fund). The horizontal axis is the average of the first and last market-based NAV reported on Form N-MFP during the period. Averaging market-based NAVs has little effect because market-based NAVs are nearly as stable as are NAVs that are expressly stable at \$1.00 per share.

<sup>49</sup> FSOC, November 2012, page 18.

<sup>50</sup> FSOC, November 2012, page 6 (see also, page 21).

---

<sup>51</sup> FSOC, November 2012, page 18.

<sup>52</sup> FSOC, November 2012, footnote 65 at page 28.

<sup>53</sup> "The Cross Section of Money Market Fund Risks and Financial Crisis," Patrick McCabe, Board of Governors of the Federal Reserve System, September 2010, page 10.

<sup>54</sup> The funds in my random sample of 50 prime Money market funds (see Appendix A), held a total of \$600 billion in net assets as of mid-2008, of which 0.108% was Lehman-issued debt (excluding collateralized instruments such as repos and CLOs associated with Lehman but not losses). The ICI reports that prime funds held assets total-

assets of prime money market funds fell by \$310 billion in the week following the Lehman bankruptcy (September 15 and September 19), \$396 billion over a 3-week period (September 10 to October 1, 2008) and by \$498 billion over a 5-week period (September 2 to October 7, 2008).<sup>55</sup> So, the story of rational runs has aggregate withdrawals of almost \$500 billion being caused by \$2 billion in aggregate exposure to defaulted Lehman debt, or somehow “triggered” by the run on the Reserve Primary Fund.<sup>56</sup>

The decidedly un-systemic nature of the defaulted holdings held by prime funds in September 2008, being minor in comparison to the runs on prime funds, presents a factual challenge to reformers. The bankruptcy of Lehman Brothers was the only significant realization of credit risk that prime funds experienced in 2008, and thus the most tangible threat to fund NAVs at the time of the runs. It is difficult to see how the runs on prime funds in September of 2008 could have been rationally related to prime funds’ stable-NAV policies without being associated, fund-by-fund, with the immediate threat to those policies: holdings of defaulted Lehman debt.

The evidence indicates there was no association.<sup>57</sup> The McCabe study used multiple regression analysis to explain the variation across funds in redemptions (measured as the log of the percentage

---

ing \$2.18 trillion as of September 10, 2008.

<sup>55</sup> Lehman Brothers declared bankruptcy on Sunday night, September 14<sup>th</sup>. The decline of \$310 billion (15% of assets) was reported in the PWG Report (page 12), the decline of \$396 billion was reported by the Investment Company Institute in its Comment Letter to the SEC of January 10, 2011, and the decline of \$498 billion was reported in *Response to Questions Posed...*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, page 7.

<sup>56</sup> The incongruence of the frequency and size of redemptions versus fund exposures to defaulted Lehman debt has been noted in Jill Fisch and Eric Roiter, “A Floating NAV for Money Market Funds: Fix or Fantasy?” August 2011 (at [ssrn.com](http://ssrn.com)).

<sup>57</sup> The lack of association between the runs on prime funds in September 2008 and each fund’s holdings of defaulted Lehman debt was noted in the McCabe study as well as by Lawrence Schmidt, Allan Timmermann and Russ Wermers, “Runs on Money Market Funds,” October 22, 2012, page 2 (at [ssrn.com](http://ssrn.com)).

change in a fund’s net assets) during September 9 to October 7, 2008. McCabe finds no economically or statistically significant association between a fund’s redemptions and whether or not it held defaulted Lehman debt.<sup>58</sup> The study (page 23) concludes that “the run in 2008 was not simply an indiscriminant panic.” In their similar empirical study of the causes of the runs in September 2008, Schmidt, Timmerman and Wermers similarly conclude that “the events following September 15, 2008 were not purely panic driven” and that shareholders “were to some extent discerning” in the funds from which they ran.<sup>59</sup>

That the runs on prime funds did not depend on fund exposures to defaulted Lehman debt means that the runs were not discriminant or discerning in the way one would most expect based on reformers’ theory that the runs were associated with defective fund policies. By the econometric evidence, if the runs on prime funds in September 2008 were rational attempts to game fund accounting, the rationality of the runs was surprisingly weak.

---

<sup>58</sup> In an ancillary analysis, McCabe finds a positive correlation between redemptions and Lehman exposure during the second week following the Lehman bankruptcy, but not during the first week or the whole four weeks following. Beyond the negative finding regarding defaulted Lehman debt, McCabe reports four significant positive findings: Redemptions at individual funds were (1) negatively correlated with the fund’s recent gross yield, (2) positively correlated with its expense ratio, (3) negatively correlated with fund size and (4) negatively correlated with the fund sponsor’s credit risk measured by CDS spreads (although CDS spreads were available for sponsors of only 43% of prime funds). Each of these four empirical regularities held for institutional funds but not for retail funds. The PWG Report (at page 10) characterizes the literature (apparently referring to the results of the McCabe study) as follows: “Outflows from prime MMFs following the Lehman Brothers bankruptcy tended to be larger among MMFs with sponsors that were themselves under strain (as measured by credit default swap spreads for parent firms or affiliates), indicating that MMF investors quickly redeemed shares on concerns about sponsors potential inability to bolster ailing funds.”

<sup>59</sup> Lawrence Schmidt, Allan Timmermann and Russ Wermers, “Runs on Money Market Funds,” October 22, 2012, page 4 (at [ssrn.com](http://ssrn.com)). This study finds that the magnitude of a run on a prime fund in 2008 was significantly negatively correlated with the fund’s average yield.

## Government Interventions

Because of the interdependency between banks and prime money market funds, the runs on prime funds during the week ended September 21, 2008 contributed to the broader run on bank-issued short-term debt and necessitated the creation of several special-purpose facilities. The US Treasury opened its Temporary Guarantee Program (TGP) on September 29 to guarantee the NAVs of money market funds at \$0.995, covering balances held as of the close of business on September 19, the day the insurance program was announced.<sup>60</sup> The guarantee applied to funds that entered liquidation, not to continuing funds.

Funds with assets totaling over \$3 trillion participated, in the TGP, including 91% of prime funds and 41% of taxable-government funds.<sup>61</sup> The participation by taxable-government funds was pointless, as these funds specialize in owning the destination assets in a flight-to-quality. That so much participation was pointless implies a general motive for participation other than actual need. Participating funds were required to use “best efforts” to obtain sponsor support before making any claim, and claims were conditional on the fund’s liquidation, so it not surprising that the TGP expired without any claims being made.<sup>62</sup> The government received \$1.2 billion in fees.<sup>63</sup>

The Federal Reserve opened its Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, known as AMLF, on September 22. The AMLF peaked at \$150 billion.<sup>64</sup> A study by five Federal Reserve economists states that the objective of this facility was to provide liquidity for asset-

backed commercial paper (ABCP) and to allow prime funds to sell their holdings of ABCP at amortized cost, thereby avoiding fire sale losses.<sup>65</sup> This study utilizes data on AMLF purchases of ABCP from prime funds and concludes that the AMLF lowered overnight yields on eligible ABCP by an average of 100 basis points (after they had risen by around 300 basis points following the Lehman bankruptcy). Although this study asserts that the AMLF “prevented many MMMFs from ‘breaking the buck,’” it provides no evidence that sponsor support would have been inadequate absent the AMLF.

The FDIC opened its Debt Guarantee Program (DGP) on October 14, 2008. Half of all eligible banks opted to participate and a total of \$224 billion in debt was covered as of the end of 2008 (compared to total possible coverage of almost \$1,000 billion). The FDIC has stated that: “At the inception of the program, firms heavily relied upon the DGP to roll over short-term liabilities given the fragility in the credit markets and investors’ continued aversion to risk. As the program took hold, financial institutions began to issue debt with longer maturities and financial institutions gradually shifted to medium-term note issuance.”<sup>66</sup>

Finally, following several weeks of small net inflows to prime funds,<sup>67</sup> the Federal Reserve instituted its Money Market Investor Funding Facility, known as the MMIFF, on October 21.<sup>68</sup> The MMIFF was authorized to buy bank-issued instruments (and no others) from money market funds in total amount of up to \$540 billion.

---

<sup>60</sup> “U.S. Treasury Launches Money-Market Guarantee Program, press release of September 29, 2008.

<sup>61</sup> Philip Strahan and Basak Tanyeri, “Once Burned, Twice Shy: Money Market Fund Responses to a Systemic Liquidity Shock,” July 2012, page 21. (at [ssrn.com](http://ssrn.com))

<sup>62</sup> 2011 FSOC Annual Report, page 52.

<sup>63</sup> *Updated Fiscal Cost Projections on the Government’s Emergency Financial Stabilization Programs*, U.S. Department of the Treasury, March 2011, Page 6.

<sup>64</sup> Sandra Krieger, Federal Reserve Bank of New York, Remarks at the Global Association of Risk Professionals 12<sup>th</sup> Annual Risk Management Convention, March 8, 2011.

---

<sup>65</sup> Burcu Duygan-Bump, Patrick Parkinson, Eric Rosengren, Gustavo Suarez and Paul Willen, “How Effective Were the Reserve Emergency Liquidity Facilities? Evidence from the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility,” *Journal of Finance* (forthcoming), February 21, 2012, page 2.

<sup>66</sup> Statement by Jason C. Cave, FDIC, Congressional Oversight Panel, March 4, 2011.

<sup>67</sup> “Money Market Funds: Slow, Steady Recovery Apparent for Second Week,” *Bloomberg News*, October 17, 2008.

<sup>68</sup> Adrian Tobias, Karin Kimbrough and Dina Marhioni, “The Federal Reserve’s Commercial Paper Funding Facility,” *FRBNY Economic Policy Review*, May 2011.



While these various facilities have been characterized as support for money market funds, to a degree they helped funds to help banks. Likewise, it is often said that the runs on prime funds in September 2008 were stopped by government intervention, but evidence of a decisive effect is surprisingly thin. One study states that it “should be clear” from daily changes in aggregate net inflows experience by institutional prime funds that news of the TGP on September 19 (the first item ran on Bloomberg News at 11:14 a.m.) “stopped the run.”<sup>69</sup> But in the data they point to the funds they classify as institutional prime funds as a group experienced a small net inflow on September 18, the day before the TGP was announced, where the TGP was the first of the various facilities to be announced.

In any event, even with government intervention many of the runs were tests severe enough to have revealed run-related investor-protection problems, if any, due to fund policies. The 30 funds that shrank by more than 30% during the month of September 2008 are listed in Table 4 below.

### Runs and Fund Clienteles

By “clienteles” I mean the distinction between institutional and individual or retail investors. The SEC would argue, with merit, that its job is to protect both retail and institutional investors. But it is the job of the lifeguard to protect humans from the sharks, not the sharks from each other. By this lifeguard analogy, runs on prime funds with predominantly institutional clienteles do not raise investor-protection concerns that really merit the SEC’s attention because these investors can take care of themselves. As a practical matter, the runs on prime funds with a primarily retail clientele were too minor in 2008 (averaging just 4.6% of net assets) to raise investor protection concerns that merit anyone’s attention. That leaves mixed-clientele funds.

The Investment Company Institute and data vendors conventionally distinguish between institutional and retail money market funds as if the dis-

inction were two-fold.<sup>70</sup> But the retail/institutional distinction applies to share classes rather than funds, where the typical money market fund offers multiple share classes. The various share classes of a fund are not necessarily all marketed to one clientele. The inherent ambiguity in fund clientele has been addressed in some studies and reports by taking share class as the unit of analysis but nevertheless describing the unit of analysis as a “fund.”<sup>71</sup>

In one notable instance of confusion, the FSOC has stated that “29 MMFs” would have publicly reported NAVs below \$0.995 during “September and October 2008” absent sponsor support,<sup>72</sup> apparently referring to a statement in the study by the four Federal Reserve economists (cited above as the origin of the most recent addition to the FSOC’s proposed recommendation), which claims that: “A total of 29 funds reported shadow NAVs that would have fallen below \$0.995 at some point.”<sup>73</sup>

In the SEC’s version, however: “29 of the 74 share classes reporting had NAV prices below \$0.995 at least once between September 5<sup>th</sup> and October 17<sup>th</sup>, 2008.”<sup>74</sup> Both the FSOC and SEC appear to cite the same non-public data, which was submitted

---

<sup>70</sup> The SEC proposed to adopt a formal distinction between retail and institutional funds, to be declared annually by each fund’s board, but dropped this proposal from the final rule in 2010, saying it did not see an effective way to distinguish between retail and institutional funds. *Money Market Fund Reform; Final Rule*, 17 CFR Parts 270 and 274, March 4, 2010, page 10077.

<sup>71</sup> The study by Kacperczyk and Schnabl is exceptional in that they define a fund as institutional if it offered at least one institutional share class, an approach that yielded 148 institutional prime funds. (They replicate their analysis defining institutional funds as ones that offer only institutional share classes.) Marcin Kacperczyk and Philipp Schnabl, “How Safe Are Money Market Funds?” April 2012, page 11 (at [ssrn.com](http://ssrn.com)).

<sup>72</sup> FSOC, November 2012, page 20.

<sup>73</sup> Patrick McCabe, Marco Cipriani, Michael Holscher and Antoine Martin, “The Minimum Balance at Risk: A proposal to Mitigate the Systematic Risks Posed by Money Market Funds,” Federal Reserve Bank of New York, July 2012, page 30 (at [ssrn.com](http://ssrn.com))

<sup>74</sup> *Response to Questions Posed...*, SEC Division of Risk, Strategy, and Financial Innovation, November 30, 2012, page 14.

---

<sup>69</sup> Philip Strahan and Basak Tanyeri, “Once Burned, Twice Shy: Money Market Fund Responses to a Systemic Liquidity Shock,” July 2012 (at [ssrn.com](http://ssrn.com)).

to the Treasury and SEC by funds that participated in the Treasury's Temporary Guarantee Program. If the SEC staff is correct (they have direct access to these confidential data), the 29 MMF *share classes* needing sponsor support would equate to around one dozen *funds*, or a number similar to the 14 funds that have publicly reported receiving sponsor support during 2008 in an amount exceeding \$0.005 per share due to holdings of defaulted Lehman debt (see Table 2 above). If the SEC is correct, the non-public evidence cited by the FSOC (presumably as support for the reform agenda) seems redundant to the evidence addressed in this paper.

Aside from the confusion in these government statements, the practice of referring to share classes as "funds" is consequential because it obscures the extent to which actual funds have mixed clienteles.

The share classes treated as institutional generally are those that require minimum initial investments of at least \$1 million. Share classes also differ by the fees that shareholders pay, where higher minimum initial investments are strongly associated with lower percentage fees. And the issue is somewhat broader than the distinction between fund and share class because some sponsors structure one or more of their funds as feeder funds that feed a common portfolio. Here, the common portfolio will have a mixed clientele if the feeder funds do not all share the same clientele or have mixed clienteles individually. For simplicity, and because feeder-fund structures are less common, I refer to the highest level of pooling (whether fund or portfolio) as a fund.

Crane Data LLC provided me with fund data ("Money Fund Intelligence XLS") as of August 31, 2008 and September 30, 2008. Among the many included data items, the two spreadsheets list the amounts of assets associated with each of the various share classes of each money market fund. I use these data to obtain the sizes of the runs experienced by individual prime funds during the month of September 2008 (Lehman Brothers filed for bankruptcy before the open of business on September 15.) Specifically, I sum the assets across the various share classes of a given fund ("portfolio" in the Crane spreadsheet) and make this sum my unit of analysis.

I do this separately for the share classes that Crane classified as "individual" versus those classified as "institutional."

The result of this aggregation across share classes is fund-by-fund data on the proportion of fund assets associated with each of two clienteles: retail and institutional. I use these proportions to classify funds as having been predominantly (95% or more) retail or institutional. The remaining funds, where institutional shareholders contributed between 5% and 95% of fund assets, are "mixed-clientele" funds.

As it happens, all but several of the predominantly retail funds were purely retail funds, whereas almost one-fifth of the predominantly institutional funds had minor share classes classified as retail. I suspect that the holders of the retail shares in predominantly institutional funds are affiliates of institutions and sponsors. Not all funds disclose on a monthly or weekly schedule, leaving me with data on assets for 200 prime funds as of August 31, 197 prime funds as of September 30, 210 prime funds on one or the other date, and for 189 prime funds on both dates.

Table 3 below reports results for this last group. Mixed-clientele funds comprised 23% of the number of prime funds in mid-2008. Being comparatively large, mixed-clientele funds held 38% of all prime fund assets. Considering just the assets associated with retail share classes, predominantly retail funds held 68.0% and mixed-clientele funds held 31.5%.

Another distinctive finding when averages are taken across funds rather than share classes is that the average percentage run per fund through the end of September amounted to 11.9% of starting assets. In comparison, the PWG Report (page 12) states that redemptions from all prime funds totaled 15% of assets, on average, during the first week of the runs on prime funds (from September 15 through September 19, 2008).

Being lower than previously reported, an estimate of 11.9% means the 30% weekly liquidity requirement adopted in 2010 is more effective than previously thought. The runs at predominantly institutional funds averaged 23% of assets, compared to 30% as previously reported.

Table 3 **Size of the Average Run during September 2008, by Fund Clientele (institutional versus retail), for All Prime Funds (not share classes) Reporting Total Assets on both August 31, 2008 and September 30, 2008**

<b>Predominant Fund Clientele</b>	<b>Number of Funds</b>	<b>% of Funds</b>	<b>% of Total Assets</b>	<b>% of Retail Assets</b>	<b>Average Fund Size 8/31/08 (\$ millions)</b>	<b>Average % Decline in Assets During September</b>	<b>% of Funds with a Run Exceeding 30% of Assets</b>
95%+ Individual/Retail	87	45.5%	29.8%	68.0%	6,370	4.6%	2.3%
Mixed	43	23.6%	38.0%	31.5%	16,435	11.3%	11.1%
95%+ Institutional	59	30.9%	32.1%	0.5%	10,121	23.1%	39.0%
Total	189	100.0%	100.0%	100.0%	9,831	11.9%	15.7%

### **Runs Exceeding 30% of Assets**

Perhaps as justification for further reform, the PWG Report (page 18 and footnote 18) states that the 30% minimum weekly liquidity requirement that the SEC adopted in 2010 would not have been adequate had it been in place in 2008. The PWG Report does not provide a basis for this claim, but I find the claim to be accurate in as much as the runs at 30 prime funds exceeded 30% of the fund's assets before the run.

As reported in Table 3, 15.7% of prime funds experienced runs during September 2008 that exceeded the required 30% in weekly liquidity (as noted above, actual weekly liquidity exceeds required weekly liquidity by a factor of 1.4). Required weekly liquidity alone would have provided enough liquidity to cover the runs at all but 39% of predominantly institutional funds, all but 11.1% of mixed-clientele

prime funds, and all but 2.3% of predominantly retail prime funds. In comparison, the FSOC (November 2012, page 27) has reported that "10 institutional prime funds had five-day outflows exceeding the new 30 percent weekly liquidity requirement."

Table 4 below lists the 30 prime funds with runs during September 2008 that exceeded 30% of starting assets. Two of these prime funds with extreme runs were retail funds, 5 were mixed-clientele funds and 23 were predominantly institutional funds. Only three held defaulted Lehman debt. This is consistent with the lack of statistical association between the size of runs and holdings of defaulted Lehman debt found in the McCabe study. The most extreme runs occurred mostly at prime funds that were not affected by the most tangible and immediate threat to the fund's stable NAV: holdings of defaulted Lehman debt.

**Table 4 Prime Money Market Funds that Experienced a Run during September 2008 that Exceeded 30% of Starting Assets, in Declining Order of the Size of the Run**

		<b>% of Assets in Institutional Share Classes</b>	<b>Starting Assets</b>	<b>Par Value Defaulted Lehman Debt (\$ millions)</b>	<b>Size of Run (% of Assets)</b>
1	Morgan Stanley Institutional Liquidity - Prime Portfolio	99.9%	36,051	0	71.1%
2	Morgan Stanley Institutional Liquidity - Money Market Portfolio	100.0%	14,441	0	61.5%
3	TCW Money Market Fund (TCWXX)	0.0%	1,908	0	55.5%
4	Dreyfus Institutional Cash Advantage Fund	99.0%	49,333	0	54.9%
5	Dreyfus Cash Management Plus Fund	77.6%	16,926	97.2	54.3%
6	Merrill Lynch Premier Institutional Fund (FFI Premier Institutional)	100.0%	27,843	0	51.3%
7	Barclays Institutional Money Market Fund	98.7%	4,932	0	49.3%
8	DWS Money Market Series (feeder to Cash Management Portfolio)	100.0%	24,279	0	48.2%
9	American Beacon Money Market Portfolio	98.8%	10,930	0	47.6%
10	Legg Mason's Citi Institutional Cash Reserves	100.0%	11,259	0	46.7%
11	Merrill Lynch Select Institutional Fund	100.0%	2,932	0	46.5%
12	BlackRock Liquidity Funds – TempCash	100.0%	11,920	0	44.6%
13	AIM STIT Liquid Assets Portfolio	93.0%	32,330	0	43.2%
14	Morgan Stanley Active Assets Institutional Money Trust	100.0%	3,170	0	42.5%
15	Fidelity Institutional Money Market Funds: Prime Portfolio	100.0%	27,814	0	41.2%
16	UCM Institutional Money Market Fund	100.0%	1,074	0	39.9%
17	Evergreen Prime Cash Management Money Market Fund	98.5%	7,857	155.0	39.0%
18	Legg Mason's Citi Institutional Liquid Reserves	100.0%	14,839	0	38.5%
19	Goldman Sachs Financial Square Prime Obligations Fund	96.9%	58,041	0	38.1%
20	AIM ATST Premier Portfolio	100.0%	4,628	0	37.3%
21	Janus Institutional Cash Management Fund	100.0%	3,074	0	36.0%
22	UBS Select Prime Money Market Fund	100.0%	15,189	0	35.3%
23	Federated Prime Cash Obligations Fund	84.9%	14,462	0	35.0%
24	Legg Mason's Western Asset Institutional Money Market Fund	100.0%	3,127	0	34.6%
25	Federated Prime Value Obligations Fund	82.6%	14,497	0	34.5%
26	Credit Suisse Institutional Money Market Fund – Prime Portfolio	100.0%	9,319	0	33.8%
27	Goldman Sachs Financial Square Money Market Fund	97.1%	25,279	0	33.7%
28	Columbia Daily Cash Reserves (UTMXX)	0.0%	1,039	0	32.0%
29	BlackRock Liquidity Funds - TempFund	94.5%	68,948	0	31.0%
30	Evergreen Institutional Money Market Fund	99.5%	16,125	194.2	30.6%

### **WAM, WAL and Systemic Rollover Risk**

The reforms in 2010 included two that likely worsened systemic rollover risk by encouraging the issuance of even shorter-termed debt. First, the SEC cut the maximum weighted average maturity (WAM) of a fund's portfolio from 90 to 60 days. Second, it capped the weighted average life (WAL) of a fund's portfolio at 120 days. WAM differs from WAL in that maturity shortening provisions are used in calculating WAM but not WAL. The maturity shortening provisions in SEC Rule 2a-7(d)(3) allow funds to treat floating-rate notes and some other variable-rate instruments of longer notional maturity as maturing on the date of the next rate reset.

The SEC stated in its final release that a lower WAM would make money market funds "more resilient to changes in interest rates." Fidelity Investments confirmed this with an analysis that showed that a hypothetical 300 basis-point spike in short-term rates would jeopardize the stable NAV of a fund with 90-day WAM but not the stable NAV of a fund with 60-day WAM. The logic of the WAL constraint is that a fund holding longer-term floating-rate debt is more exposed to fluctuations in credit risk (called "spread" risk in the SEC release) because credit risk is issuer-specific and not reflected in the index rate that the note floats on. So, holdings of fixed-income and discount securities expose a fund's shadow, market-based NAV to credit risk and general interest-rate risk, while holdings of floating-rate and variable-rate debt expose it to issuer-specific credit risk.

But pushing prime funds to hold debt of even shorter maturity can only worsen systemic rollover risk. As a substitute for short-term commercial paper and large CDs, banks should be encouraged to issue more floating-rate notes that have longer-term maturity and pose less rollover risk. To this end, the SEC should reverse the WAL reform adopted in 2010 in order to increase the aggregate demand for floating-rate notes and thereby reduce systemic rollover risk.

### **Tail Risk and Yield**

The reforms of 2010 could have done more to encourage the use of yield as a proxy for credit risk. Rule 2a-7 requires that money market funds invest

only in securities with minimal credit risk. Credit ratings are conventional measures of credit risk, but credit ratings have been unreliable and the Dodd-Frank Wall Street Reform and Consumer Protection Act deterred the use of credit ratings for regulatory purposes. Regulators and fund shareholders could benefit from having another measure of credit risk. In the alternative, credit risk is potentially detectable as a difference between the yield on a given money market instrument and yields typical of like instruments.

I only approach the question of whether the yields reported for the individual securities held by money market funds are useful proxies for credit risk. I do so with an analysis of the 11,855 individual investments held by one or another of a random sample of 50 prime funds, sampling from all those that operated during mid-2008 to mid-2012. Due to net attrition, 48 of these funds operated as of mid-2008 and 41 operated as of mid-2012. Specifically, the holdings are those reported as of quarter-end for fund quarters ended closest to June 30, 2008 (but not later than August 31, 2008) and June 30, 2012. I exclude 38 individual holdings of defaulted debt (0.3% of the 11,855 holdings) and I exclude holdings of shares of other money market funds. Appendix A lists the 50 funds along with their total assets, if any, at each time.

Table 5 below reports the mean and standard deviation of reported yields on individual holdings when grouped by type of holding. It is apparent from the high levels of standard deviation that reported yields on the individual securities held by prime funds are heterogeneous, even within types of security, suggesting that credit risk varies considerably.

Unfortunately, the wide range in reported yields is attributable in part to measurement problems arising from the practice of expressing yield as a percentage of par or amortized cost rather than current market value. The reported yields on fixed-income securities are especially quirky. Due to very-high-yield outliers, the standard deviation in reported yields is high even for fixed-income government securities with no credit risk. The very high reported yields on individual securities often seem inexplica-

ble, and fund disclosures provide little or no explanation of very high reported yields.

Still, the wide range in the reported yields on individual securities is consistent with a wide range in credit risk, and this calls for better yield disclosure on individual holdings. While the current mar-

ket value of each security held by a money market fund is reported monthly, as Item 45 on the new Form N-MFP, the new form does not expressly disclose a measure of each security's yield that is optimized to reflect differential credit risk.

**Table 5 Average and Standard Deviation of Reported Yields on Individual Money Market Instruments Held by One or Another of a Random Sample of 50 Prime Funds as of Mid-2008 and Mid-2012, by Type of Instrument**

Type of Money Market Instrument Held	Held as of Mid-2008				Held as of Mid-2012			
	Number	% of Total	Reported Yield (in basis points)		Number	% of Total	Reported Yield (in basis points)	
			Mean	Standard Deviation			Mean	Standard Deviation
Repurchase Agreement	158	2.4%	250.5	27.9	304	5.8%	28.3	19.4
Commercial Paper	1,256	18.9%	265.8	39.8	1,044	20.0%	32.0	16.2
Asset-Backed Commercial Paper	1,448	21.8%	273.0	30.7	726	13.9%	35.2	16.5
Floating Rate Note	1,353	20.4%	270.0	37.5	536	10.3%	40.4	41.4
Variable Rate Demand Note	288	4.3%	276.1	30.6	1,180	22.6%	22.6	14.4
Certificate of Deposit	1,215	18.3%	296.4	61.8	762	14.6%	35.9	21.6
Fixed Income - Government	437	6.6%	260.9	81.7	449	8.6%	64.8	102.9
Fixed Income - Other	472	7.1%	331.9	133.2	195	3.7%	198.6	207.0
Other	32	0.5%	264.0	20.5	16	0.3%	45.5	16.1
Total	6,643	100.0%	278.2	59.7	5,212	100.0%	40.7	63.2

### Sector Diversification

Bisias, Flood, Lo and Valavanis conclude that: "Perhaps the most direct measure of systemic risk is simply the joint distribution of negative outcomes of a collection of systemically important financial institutions."<sup>75</sup> Suh finds that: "Asset correlation is a major aspect that financial regulators should take into account regarding systemic risk."<sup>76</sup>

It is well known that portfolio diversification is more effective when the financial performances of companies and assets are independent of each other and less effective when financial performances are correlated. For the assets of a money market fund,

the relevant negative outcome for any one holding is credit risk, or a default on one or more portfolio securities such as happened in September 2008 with the actual default of Lehman-issued debt and the sudden rise in the likelihood of default by other financial institutions. So, for money market funds, the efficacy of diversification depends importantly on correlated credit risk.

As noted above, bank-issued money market instruments have come to comprise half the holdings of the typical prime fund. The SEC should acknowledge correlated credit risk by requiring that prime funds practice sector diversification (in addition to issuer diversification). Requiring that prime funds practice sector diversification would directly address the problem of correlated credit risk that is a root cause, and arguably the only important cause (none other has been documented), of *widespread runs* on prime funds. No reform is needed to address the possibility of an *isolated run* on one or two indi-

<sup>75</sup> Dimitrios Bisias, Mark Flood, Andrew Lo and Stavros Valavanis, "A Survey of Systemic Risk Analytics," Office of Financial Research Working Paper #1, January 5, 2012, page 33.

<sup>76</sup> Sangwon Suh, "Measuring Systemic Risk: A Factor-Augmented Correlated Default Approach," *Journal of Financial Intermediation* 21, 2012, page 349.

vidual prime funds because these raise neither investor-protection concerns for the SEC nor systemic-risk concerns for central bankers.

### **Conclusion**

It would be a mistake for the SEC to adopt the further reforms of money market funds contemplated by the FSOC. The SEC's regulatory thicket, nearly impenetrable already, ought not to be expanded to serve the aims of central bankers, as laudable as those aims may be. The further reform contemplated by the FSOC is only tenuously related to investor protection, if related at all, but poses a tangible threat to a product attribute (stable NAV) that is prized by consumers.

Professors Shleifer and Vishny (see my footnote 6) may well have been right to call for direct regulation of short-term borrowing by banks to control systemic risk. It is a mystery why reformers instead seek to reduce systemic rollover risk indirectly by pouring sand in the gears of money market funds.

The most compelling further reform of money market funds would be a simple reinterpretation of the diversification provision of Rule 2a-7 to require sector diversification in addition to issuer diversification. Sector diversification would have the immediate effect of limiting the dollar amount of bank-issued instruments held by prime funds. Markets would adjust, with non-bank issuers increasing their issuance of money market instruments, including synthetic instruments, to fill any supply-side void. (Almost the entire supply of tax-exempt money

market instruments takes the form of VRDN, a synthetic money market instrument that survived 2008 unscathed.) If TBTF banks, including foreign banks, ended up issuing less short-term debt as a consequence, that would only reduce systemic rollover risk and improve financial stability.

The proposed recommendation of the Financial Stability Oversight Council (as of November 2012) is one of almost Rube Goldberg complexity. No single rulemaking in the history of the SEC has expanded the regulatory thicket as much as this one would. The alternative of imposing sector diversification on prime funds is comparatively simple – being a mere reinterpretation and updating of a longstanding SEC rule well-related to investor protection. Accordingly, the procedural challenge of justifying this alternative reform (perhaps ultimately in court) would be manageable, as agency rule promulgations go. The SEC would be in the advantageous position of pursuing the alternative that least expands its regulatory footprint.

Finally, three-quarters of all prime money market funds, including funds with multiple share classes that all cater to the same clientele, already comply in reasonable degree with a regime of exclusively single-clientele funds (either retail or institutional). The remaining one-quarter of prime funds that are mixed-clientele funds present an image problem. The mutual fund industry should advance single-clientele prime funds as a stated best practice, lest eternal regulation be visited on all their heads.

---

ROBERT COMMENT has taught finance at Johns Hopkins University, New York University and the University of Rochester. He served as the SEC's Deputy Chief Economist under Chairman Arthur Levitt and has appeared as an expert witness in over 50 litigations.

My work is completely independent. I have not received any financial support for this research nor have I been retained by any mutual fund, fund sponsor or fund affiliate during the past five years.

Dr. Comment can be reached at [bobcomment@msn.com](mailto:bobcomment@msn.com).

---

**Appendix A: Constituents of My Random Sample of 50 Prime Money Market Funds**

Class Ticker	Name	Assets in \$ millions as of:	
		Mid-2008	Mid-2012
1	AMRXX ABN AMRO Institutional Prime Money Market Fund	1,709	0
2	ASRXX American Beacon Money Market Select Fund (Money Market Portfolio)	10,854	699
3	TCRXX American Century Premium Money Market Fund	1,186	996
4	CMEXX BIF Money Fund	21,758	8,149
5	BGTXX BlackRock Cash Funds – Institutional (Money Market Master Portfolio)	31,099	37,413
6	BPEXX BlackRock Cash Funds – Prime (Prime Money Market Master Portfolio)	14,251	10,199
7	MLOXX BNY Mellon Money Market Fund	1,180	917
8	CSIXX Calvert Social Investment Fund Money Market Portfolio	1,042	256
9	CSPXX Cash Account Trust – Money Market Portfolio	4,872	1,734
10	ADLXX Daily Income Fund – Money Market Portfolio	0	3,391
11	DCRXX Delaware Cash Reserve Fund	458	282
12	DAFXX Deutsche Asset Management – Daily Assets Fund Institutional	0	7,023
13	DLAXX Dreyfus Liquid Assets	5,646	2,489
14	KMMXX DWS Money Funds – DWS Money Market Prime Series	4,227	1,955
15	EVMXX Eaton Vance Money Market Fund – Cash Management Portfolio	2,284	0
16	ERPXX Evergreen Prime Cash Management Money Market Fund	7,421	0
17	CTPXX Federated Prime Cash Series	5,768	2,798
18	POLXX Federated Prime Obligations Fund	25,419	52,641
19	FCOXX Fidelity Institutional Money Market Funds - Money Market Portfolio	47,526	59,862
20	FICXX First Investors Cash Management Fund	243	133
21	FBAXX Goldman Sachs Financial Square Prime Obligations Fund	42,916	19,639
22	GMVXX GuideStone Funds - Money Market Fund	1,105	0
23	HBMXX Hartford Money Market HLS Fund	3,539	2,053
24	HEWXX Hewitt Money Market Fund (Money Market Master Portfolio)	29,587	37,418
25	HIMXX HSBC Prime Money Market Fund	8,054	5,472
26	HFDXX Huntington Money Market Fund	964	320
27	ITLXX ING Liquid Assets Portfolio	1,914	1,510
28	INAXX Invesco Money Market Fund	1,244	1,365
29	JCAXX Janus Institutional Cash Management Fund	3,217	0
30	AVIXX Morgan Stanley Active Assets Institutional Money Trust	2,798	1,043
31	MMNXX Morgan Stanley Institutional Liquidity Funds – Money Market Portfolio	13,722	2,825
32	MNKXX Munder Funds – Institutional Money Market Fund	1,775	0
33	GMIXX Nationwide Money Market Fund	2,355	1,458
34	NBAXX Neuberger Berman Institutional Cash Fund	2,704	0
35	NPAXX Northern Institutional Prime Obligations Portfolio	4,911	3,752
36	PMIXX PIMCO Money Market Fund	457	751
37	PFCXX Putnam Money Market Fund	3,460	1,622
38	CICXX RidgeWorth Institutional Cash Management Money Market Fund	4,238	0
39	SWVXX Schwab Value Advantage Money Fund	58,050	15,327
40	UMPXX Scout Money market fund - Prime Portfolio	1,060	0
41	SSMXX SSgA Prime Money Market Fund	13,487	11,879
42	SMFXX Sun Capital Money Market Fund	140	176
43	PRRXX T Rowe Price Prime Reserve Fund	6,335	5,670
44	TINXX Touchstone Institutional Money Market Fund	1,233	436
45	VIIXX VALIC II - Money Market II Fund	322	192
46	VMMXX Vanguard Prime Money Market Fund	105,837	112,247
47	SHMXX Wells Fargo Advantage Heritage Money Market Fund	6,641	23,655
48	CIRXX Western Asset Institutional Liquid Reserves	53,596	57,009
49	SBOXX Western Asset Money Market Fund (Legg Mason Partners Money Market Trust)	33,315	1,947
50	AKMXX Wilmington Prime Money Market Fund	445	3,292