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JANUARY 2013 | VOL. 19, NO. 1

WHAT'S INSIDE

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Suggested citation: Collins, Sean, Emily Gallagher, Jane Heinrichs, and L. Christopher Plantier. 2012. "Money Market Mutual Funds, Risk, and Financial Stability in the Wake of the 2010 Reforms." *ICI Research Perspective* 19, no. 1 (January). Available at www.ici.org/pdf/per19-01.pdf.

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Money Market Mutual Funds, Risk, and Financial Stability in the Wake of the 2010 Reforms

KEY FINDINGS

» **Following comprehensive reforms to their regulatory structure in 2010, money market funds were tested by significant challenges to the financial markets.** Money market funds were hit in the summer of 2011 by two financial market shocks: the standoff over the U.S. federal debt ceiling and deteriorating conditions in eurozone debt markets.

» **Money market fund managers prepared for the likelihood that the U.S. federal government would default in 2011.** Anticipating that concerns about the debt ceiling impasse might lead investors to redeem shares, both government and prime funds shortened their maturities in the weeks leading up to a key August 2011 deadline. Funds also maintained levels of liquidity well above new liquidity requirements.

» **Money market funds gradually reduced their holdings to banks most exposed to the unfolding debt crisis in Europe.** Prime money market fund holdings of banks in the eurozone fell from 30 percent of their assets in May 2011 to 11 percent by December 2011. Prime funds also reduced their exposures to other European banks that, although outside of the eurozone itself, were exposed to eurozone banks.

» **Evidence from 2011 shows that prime money market funds took only marginally more credit risk than did Treasury-only money market funds.** Analysis of credit default swap spreads (when calibrated to the securities money market funds held) shows that the credit risk in prime money market fund portfolios remained minimal throughout 2011 despite small increases as the eurozone crisis progressed in the second half of 2011.

» **The 2010 money market reforms enhanced financial stability.** Bolstered by the 2010 reforms, money market funds easily met the heightened 2011 redemptions triggered by market difficulties. Prime money market funds had plentiful liquidity to meet redemptions in the summer of 2011. As of May 31, 2011, prime money market funds held an estimated $626 billion in weekly liquid assets, well in excess of the outflows they experienced over the next several months.

Key findings continued on the next page

Key findings continued

- **Claims that money market funds "squeezed" European bank funding in 2011 are misleading or overstated.** Prime money market funds did reduce their dollar holdings of eurozone banks, but these reductions were merely a small part of a months-long, market-wide withdrawal from eurozone banks that reflected deteriorating financial conditions and rising credit concerns in Europe. The fact that eurozone banks did not tap European Central Bank dollar swap lines earlier in 2011, and for larger amounts, suggests that they were able to adapt to the reduction in funding from money market funds.
- **Outflows from prime money market funds did not cause an aggregate decline in lending by subsidiaries of foreign banks in the United States.** Recent research by some regulators could be interpreted as suggesting that U.S. subsidiaries of foreign banks reduced lending to U.S. entities in 2011 because of a reduction in funding from money market funds in the second half of 2011. U.S. subsidiaries of foreign banks ("branches and agencies") actually increased lending to the U.S. economy in the second half of 2011.
- **Outflows from prime money market funds in 2011 did not cause collateral damage to U.S. nonfinancial firms.** Contrary to some reports, prime funds increased their lending to U.S. nonfinancial firms in the summer of 2011. The prime funds most exposed to eurozone banks gradually reduced their holdings of U.S. nonfinancial firms over the summer of 2011 by a small amount, $900 million. More than anything, however, this decline reflected the decision of U.S. non-financial firms to take advantage of historically low long-term interest rates to replace short-term funding with long-term debt issuance.

Introduction

U.S. money market mutual funds must adhere to the same strict regulations governing disclosure, custody, governance, and compliance as all other U.S. mutual funds. Like other mutual funds, money market funds are regulated under all four of the major securities statutes.

In addition, any mutual fund in the United States calling itself a money market fund must adhere to Rule 2a-7 under the Investment Company Act, regardless of whether the fund seeks to maintain a stable $1.00 net asset value (NAV, or price per share).[1] This rule requires that money market funds hold diverse portfolios containing only high-quality, short-term securities.

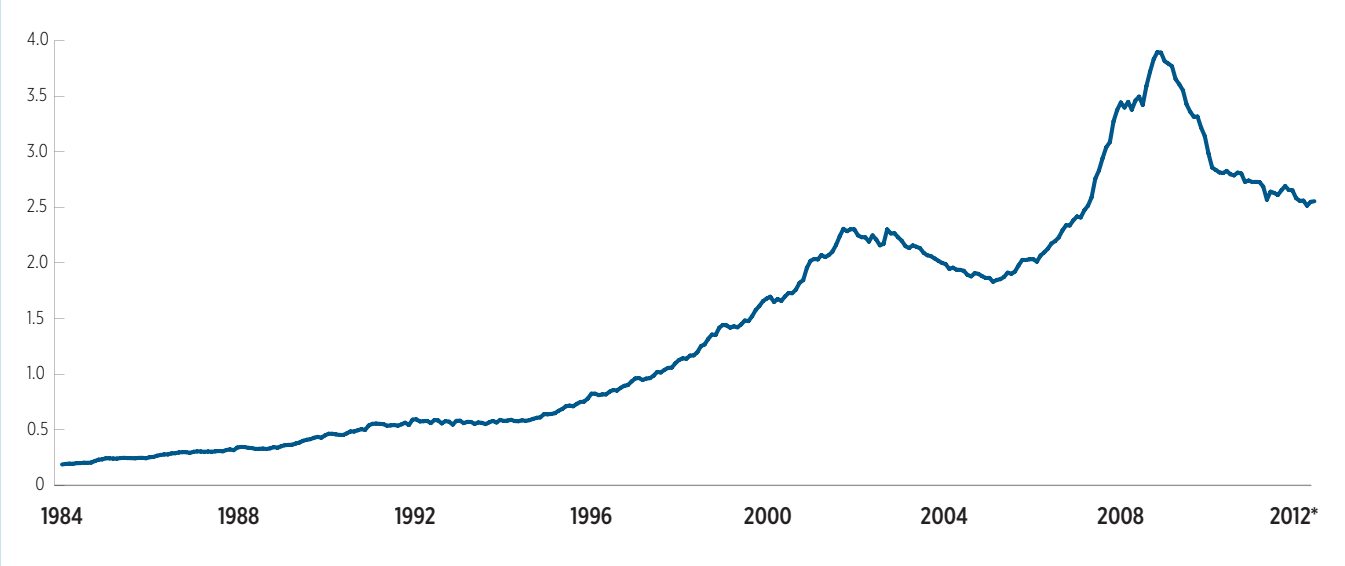
Money market funds are not guaranteed by the Federal Deposit Insurance Corporation (FDIC) or any other governmental agency, and as such do not compete directly with insured bank deposits but instead provide a means for investors to access the money markets.[2]

As a result of these funds' strict risk-limiting features, both retail and institutional investors have shown, and continue to show, strong interest in money market funds, holding more than $2.5 trillion of assets in these funds (Figure 1).

FIGURE 1

Total Net Assets of Money Market Funds

Trillions of dollars, monthly



* Data to August 31, 2012

Source: Investment Company Institute

In February 2010, the Securities and Exchange Commission (SEC) adopted sweeping reforms to money market fund regulation.[3] Among other things, these reforms:[4]

- added liquidity provisions, which require taxable funds to hold at least 10 percent of their assets in securities deemed to be liquid within one day and all funds to hold 30 percent of their assets in securities deemed to be liquid with five business days or less;
- reduced credit and interest rate risk by shortening the maximum weighted average maturity (WAM) of money market funds to 60 days from 90 days and by adding a new weighted average life (WAL) limit, set at 120 days;
- added an orderly wind-down and liquidation process if a fund experiences difficulties;
- greatly enhanced transparency by requiring a money market fund to disclose on a monthly basis every security it holds, the fund's per-share mark-to-market value, and a wealth of other information, all of which has significantly improved the ability of investors and regulators to monitor money market fund exposures;
- further limited credit risk by reducing the amount of lower-rated (A2/P2/F2) commercial paper that funds may hold from 5 percent to at most 3 percent of a fund's portfolio;
- required funds to adopt "know your investor" rules; and
- required funds to undertake periodic stress tests.

A majority of SEC commissioners have called for work studying various aspects of these reforms, including how they: (a) improved the liquidity of money market funds; (b) reduced the interest rate and credit risk of money market funds; (c) increased transparency into the portfolio holdings of money market funds; and (d) performed during the 2011 U.S. debt ceiling impasse and ratings downgrade and the eurozone sovereign debt crisis. The SEC's Division of Risk, Strategy, and Financial Innovation has published one such analysis.[5]

This paper seeks to advance and deepen the study of these issues.[6] The examination begins by reviewing the history of money market fund regulations, particularly SEC Rule 2a-7. It then describes the 2010 reforms and uses the new disclosure data (and other information) to assess the efficacy of the SEC's 2010 reforms.

The paper next describes financial market developments in 2011 related to the U.S. federal debt ceiling impasse and the eurozone sovereign debt crisis. These two shocks, which hit home in the summer of 2011, affected the short-term credit markets, providing a test for the SEC's amendments to Rule 2a-7. These two developments were not as severe as the financial crisis of 2007–2008. But they were significant and had the potential to become worse. In that respect, the developments in 2011 were perhaps more representative of the shocks that money market funds are likely to face.

During the U.S. federal debt ceiling standoff, the increasing probability of a Treasury default led to outflows from both prime and government money market funds, especially in late June and July 2011. Money market funds accommodated these redemptions without any negative effects on shareholders, funds, or the markets in which funds invest. The debt ceiling standoff was finally resolved by Congress and the president on August 2, 2011, just one day before the Treasury Department was expected to exhaust its borrowing authority. Nevertheless, on August 5, Standard & Poor's Rating Services downgraded its rating of U.S. sovereign debt.

The eurozone debt crisis also affected money markets throughout 2011. The intensity of the crisis waxed and waned as European governments and the European Central Bank (ECB) responded to the evolving crisis. The eurozone debt crisis began in 2010 in Greece, Ireland, and Portugal; in 2011, the crisis spread beyond these countries, and market participants began to fear that the crisis could engulf the entire eurozone.

Against the backdrop of these overlapping crises, money market funds adjusted their portfolios. Money market funds anticipated that investors might redeem assets because of concerns about the federal debt ceiling crisis and began preparing for that by adding to their already high levels of liquid assets. Money market funds also sharply reduced holdings of dollar-denominated securities issued by European banks, particularly those headquartered in the eurozone. Aggregate evidence indicates that money market funds began making these changes before late fall 2011, the point at which concerns about the eurozone peaked.

Using the new disclosure data required by the SEC's 2010 reforms, investors, regulators, and analysts were able to closely monitor funds' exposures. This paper illustrates how this new disclosure data can be used to study money market fund developments through a case study of funds' reactions to deteriorating market perceptions about the financial condition of Dexia, a European bank.

Money market fund investors also reacted to the twin financial crises. As this paper shows, money market fund investors redeemed substantial amounts in the weeks immediately before the federal debt ceiling crisis was resolved on August 2, 2011. Outflows turned to inflows in the weeks immediately thereafter. Over the remainder of the year, prime funds experienced modest outflows and government funds experienced inflows.

The efficacy of the SEC's 2010 reforms, combined with funds' reduction in exposure to eurozone banks, had a number of salutary effects. First, throughout 2011, credit default swap (CDS) premiums[7]—when calibrated to the short-term, high-quality securities that money market funds must hold—indicate that in 2011 prime money market funds took only marginally more credit risk than comparable Treasury-only funds. Moreover, despite the deteriorating situation in Europe, the credit risk of prime funds rose only modestly in the second half of 2011 because money market funds reduced exposure to the eurozone banks most at risk. Because funds had plentiful liquidity, they could readily accommodate investors' redemption requests with little, if any, downward pressure on funds' mark-to-market values. Thus, the portfolio changes required by the 2010 amendments to Rule 2a-7 helped funds weather a sequence of significant financial market shocks.

Finally, the paper considers whether the 2011 actions of money market funds or their investors caused difficulties for issuers of short-term securities, either banks or nonfinancial companies. Chernenko and Sunderam (2012a), McCabe et al. (2012), and Ansidei et al. (2012) have suggested that as investors redeemed out of prime money market funds in the summer of 2011, funds met these redemptions by indiscriminately reducing their investments, notably in U.S. nonfinancial corporations.

Contrary to this view, SEC data show that prime funds actually increased their investments in U.S. nonfinancial firms during the summer of 2011. Prime money market funds did reduce their investments in banks headquartered in the eurozone. Some (Correa et al. 2012) have argued that this led U.S. subsidiaries of foreign banks ("branches and agencies") to reduce their lending to U.S. borrowers. But Federal Reserve data show that U.S. subsidiaries of foreign banks in fact increased their lending to the U.S. economy in the second half of 2011.

Others (Ivashina et al. 2012) suggest that the reduced exposure of money market funds to eurozone banks squeezed the dollar liquidity of those banks. As this paper discusses, however, eurozone banks had other sources of U.S. dollars available to them. One source was their large reserve balances (U.S. dollar cash deposits) with the Federal Reserve. Another was their ability to borrow dollars from the ECB. Eurozone banks did ultimately borrow dollars from the ECB in 2011, but the timing and the amounts of that borrowing do not support the view that reduced funding from money market funds adversely impaired these banks' dollar liquidity.

Regulation of Money Market Funds

Money market funds share key features with other mutual funds: they issue shares that are redeemable upon demand, invest in marketable securities, and adhere to the same rules and regulations that apply to all mutual funds. Those regulations are based on all four of the major securities laws: the Securities Act of 1933, which requires registration of the mutual fund's shares and the delivery of a prospectus; the Securities Exchange Act of 1934, which regulates the trading, purchase, and sale of fund shares and establishes antifraud standards governing such trading; the Investment Advisers Act of 1940, which regulates the conduct of fund investment advisers and requires those advisers to register with the SEC; and, most importantly, the Investment Company Act of 1940, which requires all mutual funds to register with the SEC and to meet significant operating standards.[8]

In addition, money market funds must comply with SEC Rule 2a-7. The SEC originally proposed Rule 2a-7 in February 1982 and adopted it in July 1983, establishing for the first time specific rules restricting the portfolio composition of money market funds. The Commission has amended Rule 2a-7 several times since then (Figure 2).

Under Rule 2a-7, a money market fund can offer its shares at a stable net asset value (usually $1.00) provided that its mark-to-market portfolio value does not deviate by more than one-half of 1 percent from that stable net asset value. To help ensure that deviations between a fund's $1.00 share price and its per-share mark-to-market value remain minimal, the SEC requires money market funds to operate according to a set of standards for the credit quality, liquidity, maturity, and diversification of the fund's investments.[9]

One crucial feature of Rule 2a-7 is the use of amortized cost accounting by money market funds. Under the amortized cost pricing method, portfolio securities generally are valued at cost plus any amortization of premium or

FIGURE 2

Rule 2a-7 Provisions Have Become More Restrictive over Time

		Money market funds			
			Rule 2a-7 era		
Portfolio restriction	**Long-term mutual funds**	**Pre–Rule 2a-7**	**1983**	**1991**	**2010**
Amortized cost valuation: may use for securities with remaining maturity of:	≤ 60 days	≤ 60 days	All securities	All securities	All securities
Portfolio maturity (WAM)	None	None	≤ 120 days	≤ 90 days	≤ 60 days
Portfolio maturity (WAL)	None	None	None	None	≤ 120 days
Maximum remaining maturity on any security	None	None	375 days	397 days	397 days
Portfolio quality:					
General requirement for securities holdings	None	None	Must present minimal credit risk	Must present minimal credit risk	Must present minimal credit risk
Lower-rated securities (A2/P2/F2): maximum portfolio percentage:	None	None	None	≤ 5%	≤ 3%
Rating agency rating test?	None	None	A2/P2/F2 or better	A2/P2/F2 or better	A2/P2/F2 or better
Specific per-issuer position limits as a percentage of fund's assets?	None	None	None	≤ 5% A1/P1/F1 ≤ 1% A2/P2/F2	≤ 5% A1/P1/F1 ≤ 1% A2/P2/F2
Liquid asset test?	No	No	Sufficient to meet redemptions	Sufficient to meet redemptions	1 day: 10% 7 days: 30%
Any restriction on currency denomination of holdings?	No	No	U.S. dollar–denominated	U.S. dollar–denominated	U.S. dollar–denominated
Ability to suspend redemptions?	No	No	No	No	Yes, but must liquidate fund

Source: Investment Company Institute

accumulation of discount.[10] Beginning in 1977, all mutual funds, including money market funds, were permitted by the SEC under Accounting Standards Release 219 (ASR 219) to value securities with a remaining maturity of 60 days or less at amortized cost. ASR 219 continues in force today, allowing long-term funds to value securities with a remaining maturity of 60 days or less at amortized cost. With the adoption of Rule 2a-7 in 1983, money market funds explicitly were allowed to use amortized cost pricing to value all of the securities in their portfolio.[11] Rule 2a-7 requires a money market fund to periodically compare its NAV (calculated on the basis of amortized cost) with its mark-to-market value. If the fund's mark-to-market value differs from the $1.00 NAV by more than one-half of 1 percent ($0.005, or one-half cent, per share), the fund's board must consider promptly what action, if any, it should take, including whether the fund should discontinue the use of the amortized cost and reprice the securities of the fund below $0.9950 or above $1.0050 per share. This repricing is known as "breaking the dollar."

Rule 2a-7 also requires a fund's board to take appropriate action if the difference between the fund's NAV and its mark-to-market value, however small, could materially dilute the interests of shareholders or result in other unfair outcomes. Moreover, a money market fund must dispose of a defaulted or distressed security (that is, a security that no longer presents minimal credit risks) as soon as practicable, unless the fund's board specifically finds that disposal would not be in the best interests of the fund.

Rule 2a-7 also imposes risk-limiting conditions on money market funds. As initially specified in 1983, money market funds were required to maintain a portfolio weighted average maturity of 120 days or less; to invest in securities with a remaining maturity of no more than 375 days; and to hold only high-quality securities (i.e., those rated in the top two rating categories: A1/P1/F1 or A2/P2/F2). They also were required to invest only in U.S. dollar–denominated securities. There was, however, no specific limit on the portion of a fund's portfolio that could be held in lower-rated (A2/P2/F2) commercial paper.[12]

Since 1983, Rule 2a-7 has been strengthened a number of times, with the goal of ensuring that funds can maintain a $1.00 NAV. In 1991, the SEC limited the amount of A2/P2/F2 commercial paper that a fund could hold to 5 percent of a fund's portfolio. The SEC also imposed for the first time limits on the amount of a money market fund's portfolio that could be held in a particular issuer: 5 percent for A1/P1/F1 issuers and 1 percent for A2/P2/F2 issuers. Also, the SEC lowered the maximum allowable weighted average maturity (WAM) from 120 days to 90 days and included a "names rule" provision that required any fund calling itself a money market fund (or that used similar terms such as *cash* or *liquid*) to follow the risk-limiting conditions in Rule 2a-7.

The SEC further amended Rule 2a-7 in 1996 and 1997, primarily to address issues related to tax-exempt money market funds. In addition, the SEC staff at times has issued guidance to money market funds on what is permissible under Rule 2a-7. Issuing guidance allows the SEC staff to address a particular concern without having to undertake a formal revision to Rule 2a-7. For example, in 1991 and again in 1994, the SEC staff issued guidance on the use of certain floating-rate securities that it believed were inappropriately risky for money market funds.

As described in the next section, the SEC undertook yet another major reform of Rule 2a-7 in 2010 that further tightened the standards under which money market funds operate.

Amortized Cost and Valuation: Money Market Funds and Beyond

Under Generally Accepted Accounting Principles (GAAP), publicly traded companies, including financial intermediaries, generally are required to value their securities holdings at market value. However, GAAP allows a company to value securities at amortized cost in two cases: (a) if it has the intent and ability to hold the security to maturity; or (b) if the security is a cash equivalent, which is defined as a short-term, highly liquid investment that is both readily convertible to cash and so near its maturity that it presents insignificant risk of changes in value because of interest rates (examples include Treasury bills and commercial paper with remaining maturities of 90 days or less).

Reflecting these standards, most financial intermediaries—including banks,[13] insurance companies, state and local defined benefit pension funds,[14] and short-term bank collective investment funds[15]—use amortized cost to varying degrees to value securities holdings.[16] Even federal government agencies at times use amortized cost to value assets. For example, the Federal Reserve uses amortized cost to value its vast holdings of Treasury and agency securities (virtually all of which mature in one year or more).[17] The Federal Deposit Insurance Corporation (FDIC) reports at amortized cost the securities held by the $16 billion National Liquidation Fund (NLF).[18]

The logic for allowing an entity to use amortized cost valuation is that the market value of a short-term security, when held to maturity, necessarily equals the security's amortized cost value. In addition, market values of short-term fixed income securities are less responsive to changes in interest rates than are those of long-term fixed income securities. Thus, for short-term fixed income securities, deviations between market value and amortized cost are likely to remain small over a range of financial market conditions.

It is sometimes suggested that money market funds are able to maintain a stable $1.00 NAV only by virtue of amortized cost valuation. Although a money market fund can use amortized cost to price all of its portfolio securities, the fund's sponsor must monitor the mark-to-market price of each security to ensure that the fund's mark-to-market value does not materially deviate from $1.00. If a money market fund's mark-to-market value deviates from $1.00 by more than 50 basis points (one-half cent), the fund's board must take certain actions, such as deciding whether to reprice the fund's shares below or above $1.00.

FIGURE 3

Mark-to-Market Values for Prime Funds Are Highly Stable

Averages of absolute monthly changes in mark-to-market values of all prime money market funds, January 2011–July 2012

Average absolute change in mark-to-market value (basis points)	Number of funds	Percentage of funds
0	11	5
.01–1	193	91
1.01–2	6	3
> 2	2	1
Total	**212**	**100**

Source: Investment Company Institute tabulations of SEC Form N-MFP data

As Figure 3 shows, the average (absolute) change in the mark-to-market value of the vast majority of prime funds from January 2011 to July 2012 was 1 basis point or less. This almost imperceptible fluctuation is consistent with the findings of other analysts who conclude that the variability of prime funds' mark-to-market values has declined significantly since 2009 as a result of the SEC's 2010 amendments to Rule 2a-7.[19]

The implication is simple: a money market fund maintains a stable $1.00 NAV not simply because of amortized cost valuation but largely because it holds high-quality, short-term instruments whose market values are highly stable.

The SEC's 2010 Amendments to Rule 2a-7

Amid the financial turmoil of 2008, the SEC significantly amended Rule 2a-7.[20] According to the SEC, the "severe problems experienced by money market funds since the fall of 2007 and culminating in the fall of 2008…[prompted the SEC] to review [the] regulation of money market funds."[21] Based on that review, the SEC proposed significant amendments to Rule 2a-7 in July 2009, indicating that its proposals were designed to

- increase the resilience of money market funds to market disruptions,
- reduce the vulnerability of money market funds by improving their ability to satisfy significant redemptions,
- diminish the chance that a money market fund would break the dollar, and
- through increased disclosure, improve regulators' ability to oversee money market funds.

In early 2010 the SEC adopted these revisions largely as proposed.[22]

Daily and Weekly Liquidity Requirements

Until 2010, Rule 2a-7 imposed no specific liquidity requirements on money market funds. Under the 2010 reforms, all taxable funds must keep at least 10 percent of their assets in cash, Treasury securities, or securities that convert into cash within one day (daily liquid assets). All funds must maintain at least 30 percent of their assets in cash, Treasury securities, certain other government securities with remaining maturities of 60 days or less, or securities that convert into cash within five business days (weekly liquid assets).

The daily and weekly minimum liquidity requirements are measured each time a fund purchases a security. If a money market fund's daily or weekly liquid assets subsequently fall below the required minimums, there is no violation. But Rule 2a-7 then forbids the fund from acquiring anything other than a daily liquid asset or weekly liquid asset if, immediately after the acquisition, the fund would have invested less than 10 percent or 30 percent (as applicable) of its total assets in daily liquid assets or weekly liquid assets, respectively. The purchase rule allows money market funds to use their liquid assets to meet redemptions during periods of stress.

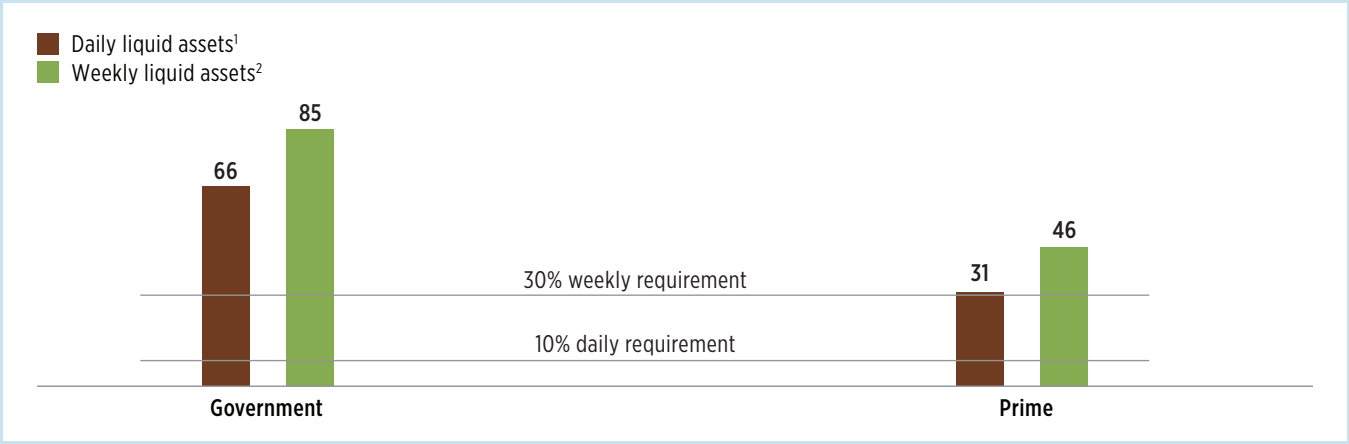
The new liquidity requirements have had a transformative effect on money market funds. As Figure 4 shows, as of June 2012, funds exceeded the minimum daily and weekly liquidity requirements by a considerable margin. For example, 31 percent of the assets of prime money market funds were in daily liquid assets and 46 percent were in weekly liquid assets (the 46 percent includes the 31 percent in daily liquid assets). In total, money market funds held $1.38 trillion in weekly liquid assets, of which $629 billion was held by prime money market funds. In comparison, during the business week September 15, 2008, to September 19, 2008 (the week Lehman Brothers failed), prime money market funds experienced estimated outflows of $310 billion.[23] Thus, in June 2012, prime money market funds held weekly liquid assets (which includes their daily liquid assets) more than twice the level of outflows they experienced during the worst week in money market fund history.

In addition to these explicit liquidity requirements, Rule 2a-7 places on funds a general requirement to hold sufficient liquidity to meet reasonably foreseeable shareholder

FIGURE 4

Liquid Assets for Taxable Money Market Funds

Percentage of total assets, June 2012



[1] Daily liquid assets include securities with a remaining maturity of one business day and Treasury securities.

[2] Weekly liquid assets include securities with a remaining maturity of five business days or less, Treasury securities, and agency securities with a remaining maturity date of 60 days or less.

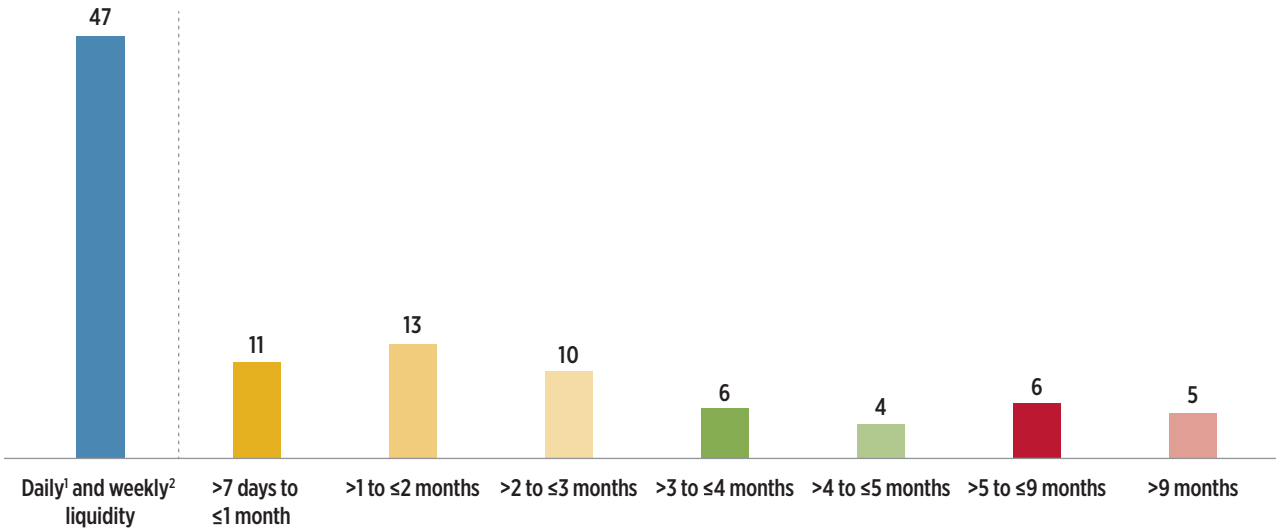
Source: Investment Company Institute tabulations of SEC Form N-MFP data

redemptions. Toward that end, money market funds commonly "ladder" their portfolios, holding a large portion of their assets in daily and weekly liquid assets, while spreading the remainder of their assets over a range of maturities (Figure 5). For example, almost half (47 percent) of prime fund assets were in daily and weekly liquid assets in June 2012. Of the remaining 53 percent, almost half had a remaining maturity of less than 60 days. Figure 6 gives a longer range view of these percentages, showing that prime money market funds have consistently maintained laddered portfolios.

FIGURE 5

Prime Fund Assets Are Laddered Across Maturities

Percentage of assets, June 2012



[1] Daily liquid assets include securities with a remaining maturity of one business day and Treasury securities.

[2] Weekly liquid assets include securities with a remaining maturity of five business days or less, Treasury securities, and agency securities with a remaining maturity of 60 days or less.

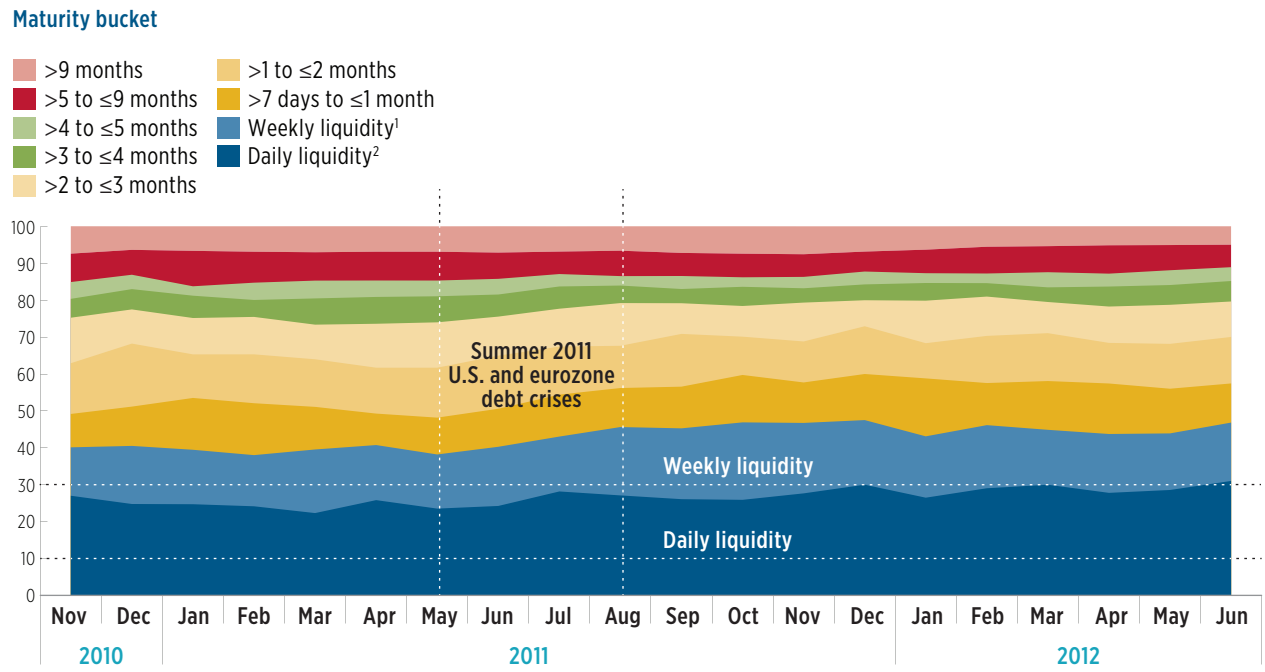
Note: Maturity buckets are formed using the security's final legal maturity. Totals do not add to 100 percent because of rounding.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

FIGURE 6

Prime Funds Have Consistently Held Substantial Medium-Term Liquidity

Percentage of prime fund assets



[1] Weekly liquid assets include securities with a remaining maturity of five business days or less, Treasury securities, and agency securities with a remaining maturity of 60 days or less.

[2] Daily liquid assets include securities with a remaining maturity of one business day and Treasury securities.

Note: Maturity buckets are formed using the security's final legal maturity. While daily liquidity is part of weekly liquidity, for the purposes of this chart, the two are separated.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

Shorter Maturities for Funds' Portfolio Securities

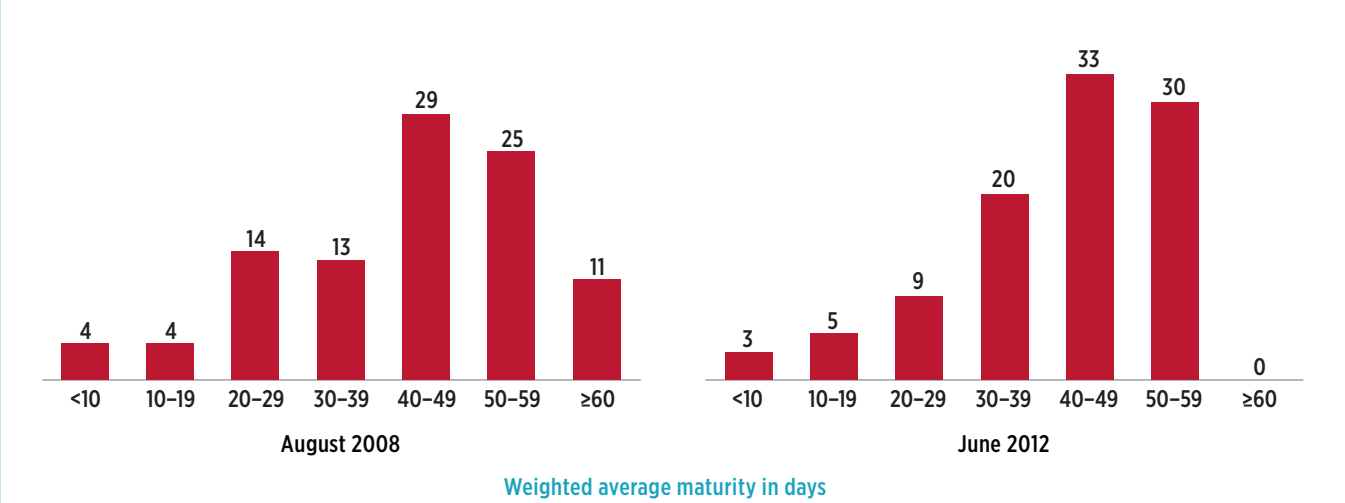
The SEC's 2010 amendments to Rule 2a-7 shortened the WAM of money market fund portfolios. A fund's WAM, which is measured in days, is calculated using all securities the fund holds, with each security contributing to the WAM in proportion to the percentage of the fund's assets in that security. The security's maturity is measured as the minimum of the remaining days to maturity on the security or, if the security is a floating-rate instrument, the number of days until the next date at which a security's interest rate may rise or fall (interest rate reset date). With the 2010 amendments, the SEC reduced the maximum allowable WAM from 90 days to 60 days, thus eliminating funds with WAMs over 60 days (Figure 7).

This change reduced the likelihood that a fund's mark-to-market value would deviate from the $1.00 NAV because of changes in interest rates or credit spreads (e.g., an increase in yields on commercial paper relative to Treasury securities). As Figure 8 shows, a fund's mark-to-market value is more sensitive to changes in interest rates (and hence credit spreads also) as its WAM increases.[24] For example, for a fund with a WAM of 90 days (operating before the 2010 amendments), a 1 percentage point rise in interest rates would have resulted in a decline in its mark-to-market value to $0.9975 (dashed green line). Although that is well above the level at which a fund would break the dollar, a fund's board and sponsor would monitor such a development closely.

FIGURE 7

Weighted Average Maturity (WAM) for Taxable Money Market Funds

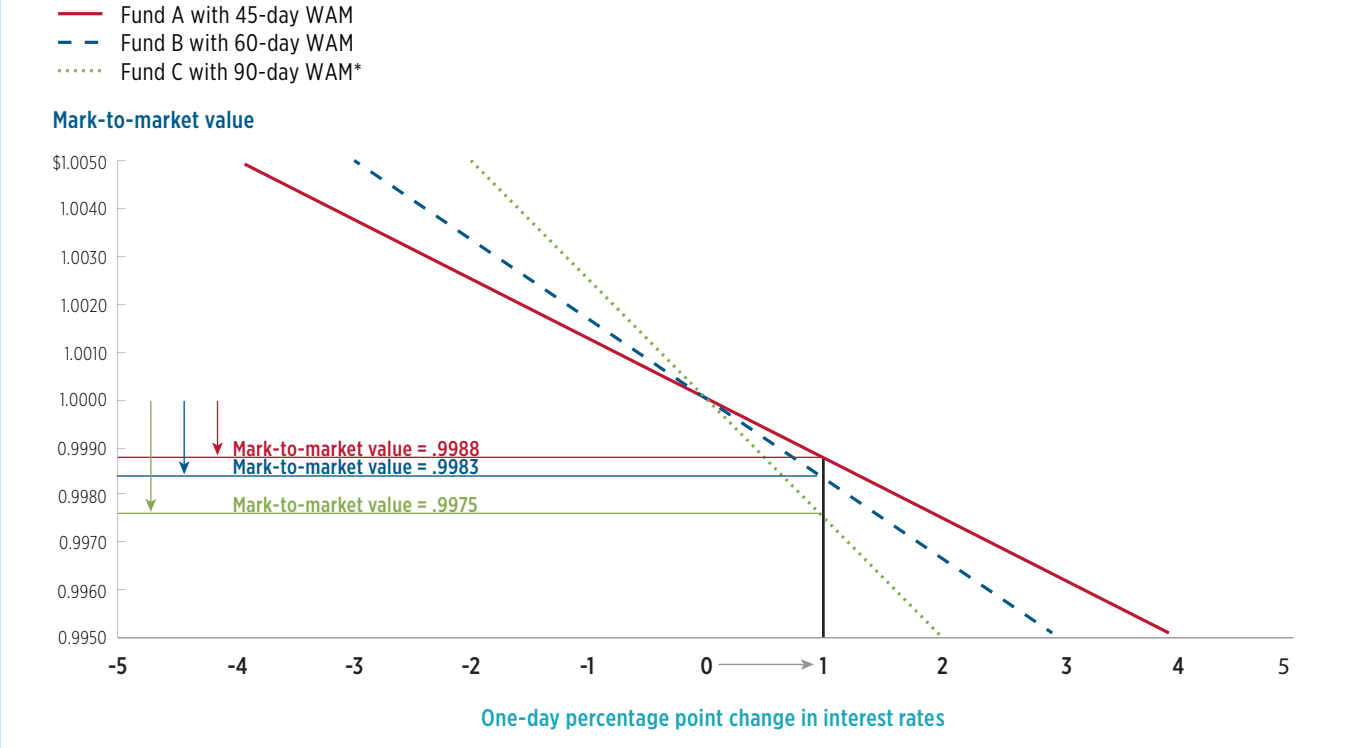
Percentage of funds



Source: Investment Company Institute

FIGURE 8

Sensitivity of a Fund's Mark-to-Market Value to Changes in Interest Rates



* No longer permitted under Rule 2a-7.

Note: Figure indicates the resulting mark-to-market value for a given change in interest rates. The initial mark-to-market value is $1.0000.

Source: Investment Company Institute

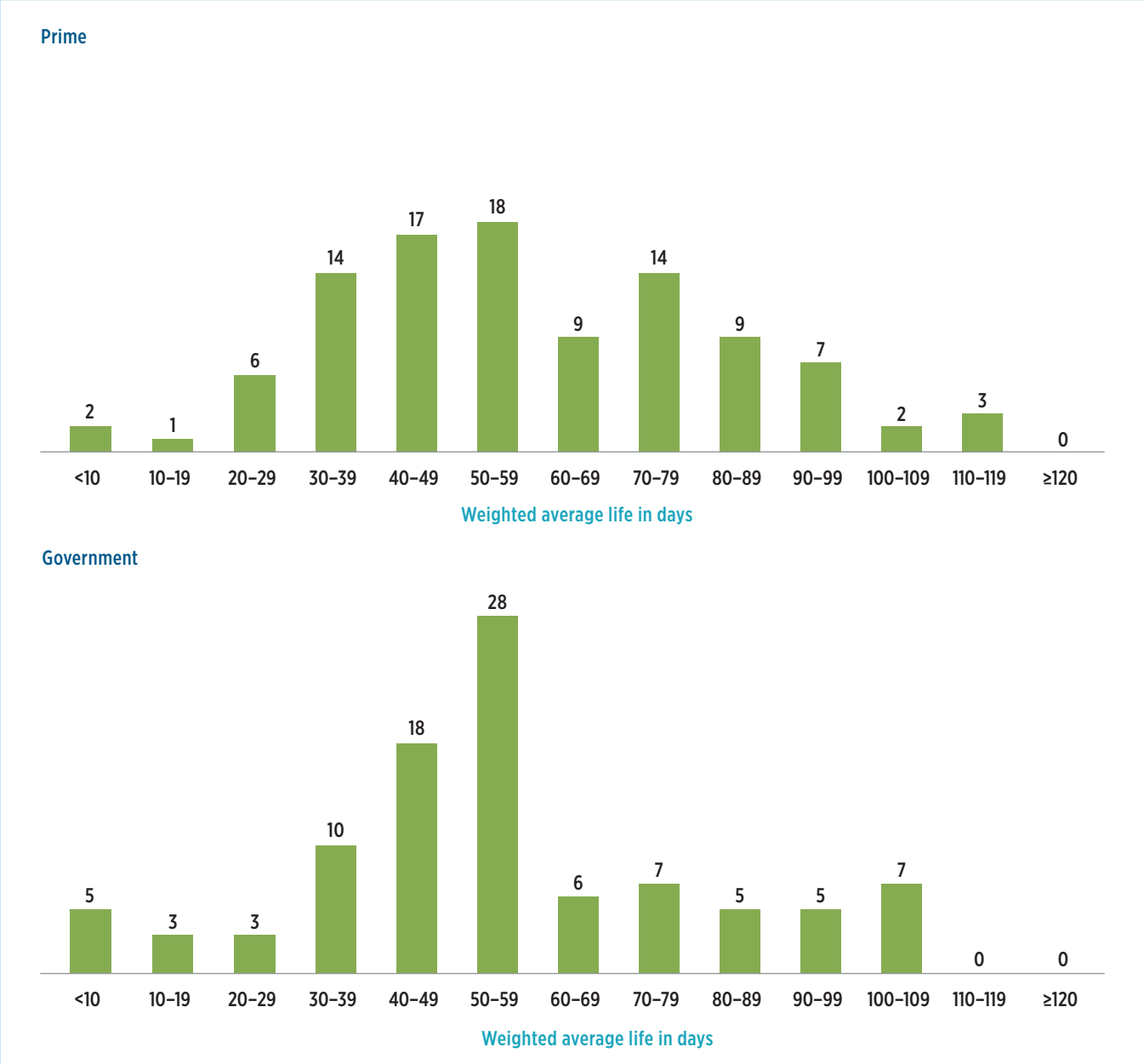
When a fund's WAM is 60 days—the maximum allowed after the 2010 amendments—changes in interest rates have a smaller effect on a fund's mark-to-market value. Now, a 1 percentage point increase in interest rates causes the fund's mark-to-market value to fall only to $0.9983 (blue dashed line). In practice, most funds seek to maintain WAMs considerably below the SEC's 60-day limit. As of October 2012, the average WAM for prime funds stood at 42 days. For a fund with a 45-day WAM, a 1 percentage point rise in interest rates results in a decline of the fund's mark-to-market value to $0.9988 (solid red line). Thus, the SEC's 2010 decision to reduce allowable WAMs from 90 to 60 days has resulted in a decline of perhaps 30 to 50 percent in the potential variability—as the result of changes in interest rates or credit spreads—of a fund's mark-to-market value around the $1.00 NAV.[25]

In addition to shorter WAMs, the 2010 Rule 2a-7 reforms introduced the new concept of weighted average life, or WAL, and required funds to keep a WAL of 120 days or less. Unlike a fund's WAM calculation, a fund's WAL is measured without reference to interest rate reset dates, thus restricting a fund's investments in longer-term adjustable-rate securities. Figure 9 depicts the distribution of WALs for taxable money market funds as of June 2012. Most funds are well below the maximum allowable WAL of 120 days, with the great majority having WALs in the range of 30 to 80 days. Only a very small proportion of funds have WALs in excess of 90 days.

FIGURE 9

Weighted Average Life (WAL) for Taxable Money Market Funds

Percentage of funds, June 2012



Note: Percentages do not add to 100 percent because of rounding.

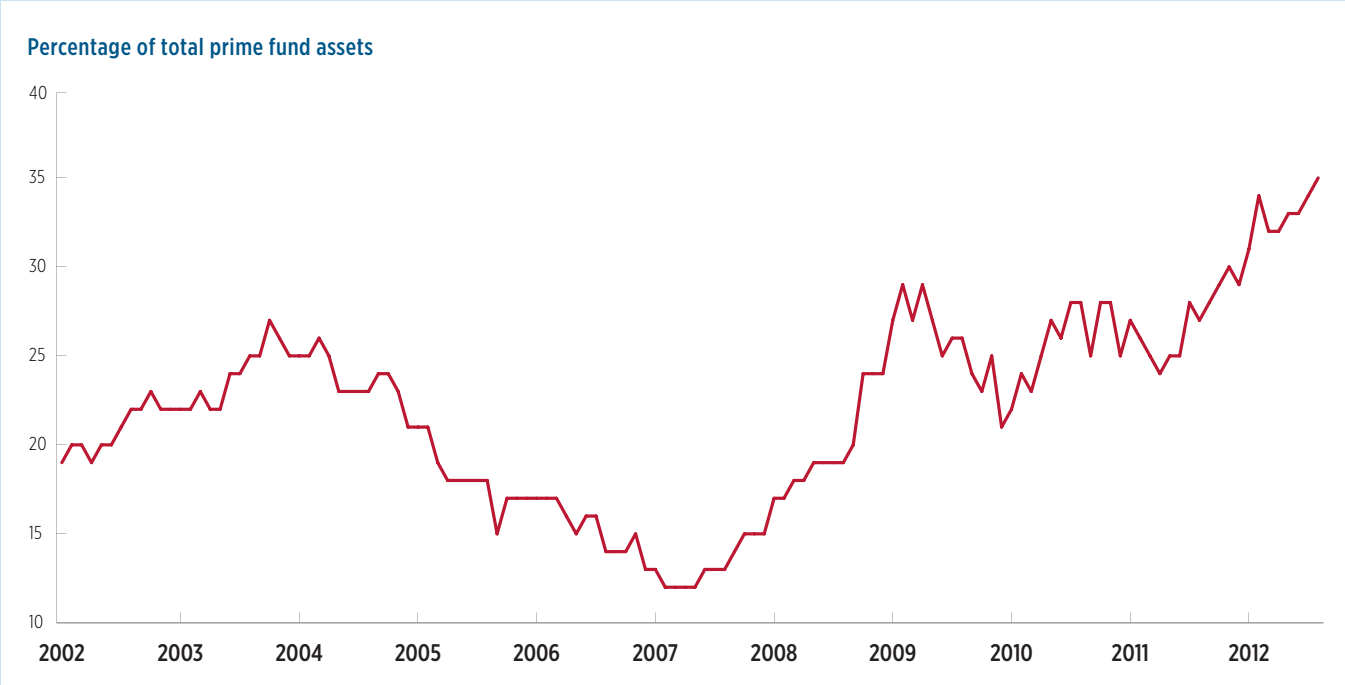
Source: Investment Company Institute tabulations of SEC Form N-MFP data

One outcome of the liquidity and maturity provisions in the 2010 amendments to Rule 2a-7 is that prime funds have become much more like government money market funds. To a significant degree, prime funds adjusted to the SEC's 2010 amendments to Rule 2a-7 by adding to their holdings of Treasury and agency securities. They also boosted their assets in repurchase agreements. A repurchase agreement can be thought of as a short-term collateralized loan, such as to a bank or other financial intermediary, which is backed by collateral to ensure that the loan is repaid. Repurchase agreements are typically collateralized by Treasury and agency securities. Figure 10 shows that prime funds' holdings of Treasury and agency securities and repurchase agreements have nearly tripled from 12 percent of the funds' portfolios in May 2007 to 35 percent in August 2012. This change is spread across prime funds. Figure 11 shows that in June 2012, two-thirds of all prime funds had more than 20 percent of their assets in Treasury and agency securities and repurchase agreements. Nearly one-third of all prime funds have at least 40 percent of their assets in these three types of securities.

FIGURE 10

Prime Money Market Fund Holdings of Treasury, Agency, and Repo Securities

Monthly, January 2002–August 2012

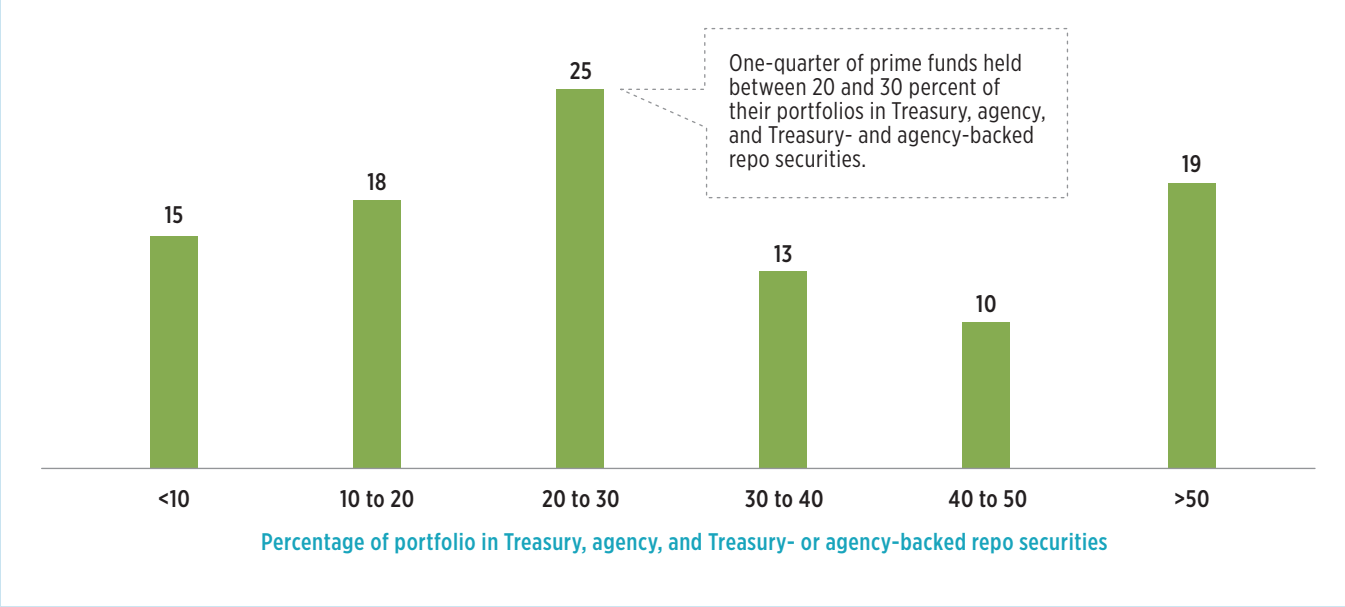


Source: Investment Company Institute

FIGURE 11

Prime Funds' Portfolios Are Becoming More Similar to Those of Government Funds

Percentage of funds, June 2012



Source: Investment Company Institute tabulations of SEC Form N-MFP data

Orderly Liquidation

Money market funds, like other mutual funds, are overseen by boards of directors (or trustees), which includes independent directors. The SEC's 2010 amendments gave money market fund boards of directors, for the first time, the ability to suspend redemptions if the fund can no longer maintain a $1.00 NAV.[26] This powerful new tool will help stem flight from a fund, ensure equitable treatment for all of the fund's shareholders, allow an orderly liquidation of a troubled fund, and minimize the potential for disruption to other funds and the money market generally.[27] In contrast, the Reserve Primary Fund did not have the ability to suspend redemptions when it faced heavy investor redemption demand in September 2008.

Indeed, this capability—which is available only if the board has determined to liquidate the fund—helps protect all of a fund's shareholders by limiting the ability of some investors to leave a money market fund under extreme circumstances. The rule recognizes that a money market fund's share price can decline in value but, by providing for an orderly liquidation process, limits the ability of any shareholder to gain a first-mover advantage. Under the orderly liquidation procedure, a distressed money market fund could be closed to redemptions, leaving all investors in the same loss position. The fund's assets would then be liquidated in an orderly manner and paid out to investors on a pro-rata basis. Any tendency of investors in a distressed fund to redeem early is prevented simply by closing the fund.

Transparency

Like other mutual funds, a money market fund must send shareholders annual and semiannual reports and must provide investors with a prospectus that describes the fund's investment objectives, strategies, fees, and principal risks, and other matters.[28] The SEC's 2010 amendments substantially enhanced money market fund disclosure.

Since November 2010, money market funds have been required to submit detailed information about their portfolios on a monthly basis to the SEC via the SEC's EDGAR website on Form N-MFP. Funds must file Form N-MFP no later than the fifth business day of each month for the previous month. The SEC makes this data publicly available 60 days later.[29] Form N-MFP provides detailed information on the structure of money market fund portfolios, arguably among the most detailed data provided to regulators by any kind of financial intermediary. In addition, funds must disclose a full list of their securities holdings on fund websites within five days after the end of the month. Thus, regulators and investors now have access to detailed, nearly real-time data with which to monitor money market funds.

Most importantly, Form N-MFP provides detailed portfolio-level holdings information. A fund must disclose every security that it holds, including the name of the security's issuer, the security's credit rating, legal maturity date, and interest rate reset date for floating-rate securities.

One of the most significant requirements of Form N-MFP is that a fund must report both the amortized cost and mark-to-market value of each security it holds. As noted earlier, because money market funds hold short-term, high-quality securities, there is generally little if any difference between a security's amortized cost value and its mark-to-market value. Data provided in Form N-MFP allow regulators and others to verify this.

Additionally, funds must disclose whether a security has a demand feature, credit enhancement, or liquidity enhancement, features that increase a security's value. Funds must disclose the enhancement provider's name to enable regulators to assess the credit quality of the firm that provides the enhancement. A fund also must report its total assets and total liabilities, as well as its WAM and WAL and provide the assets, net yield, and monthly flows, for each of the fund's share classes.

Finally, funds must provide detailed information on the repurchase agreements they have undertaken. In order for regulators to assess the type and quality of collateral money market funds backing these repurchase agreements, Form N-MFP requires a fund to provide information on each piece of collateral received in support of each repurchase agreement that the fund has entered into.

The amount of data collected on Form N-MFP each month is extensive. For example, in April 2012, 632 unique money market funds in total held 69,007 portfolio securities consisting of at least 23,654 unique issues (i.e., different securities) issued by 4,399 unique issuers (i.e., companies, financial institutions, state and local governments, and others).

Credit Quality, Know Your Investors, and Stress Testing

The SEC's 2010 amendments to Rule 2a-7 significantly reduced the amount of lower-rated commercial paper (A2/P2/F2) that a money market fund may hold. Before 2010, a money market fund could hold up to 5 percent of its portfolio in securities of issuers rated A2/P2/F2. Issuers that receive a short-term credit rating of A2/P2/F2 are considered by credit rating agencies to have a "strong ability" to repay their obligations (compared with "superior ability" for short-term issuers rated A1/P1/F1). Nevertheless, to strengthen further the ability of money market funds to withstand credit risks, in 2010 the SEC reduced the maximum allowable percentage of a fund's portfolio that may be held in A2/P2/F2 rated issues to 3 percent. All of a fund's assets must be rated in the top two tiers of short-term credit ratings, a restriction in place since 1983.

The 2010 amendments to Rule 2a-7 also require funds, as part of their overall liquidity management responsibilities, to have know your investor procedures. These procedures are intended to help fund advisers anticipate the potential for heavy redemptions and prepare appropriately. Funds also must periodically stress test their ability to maintain a stable NAV in the face of changing interest rates, credit conditions, or investor redemptions.

The SEC's 2010 Amendments to Rule 2a-7 at Work: The Experience of Money Market Funds in 2011

With the SEC's 2010 money market fund reforms fully implemented, money market funds were hit in the summer of 2011 by two financial market shocks largely attributable to government gridlock: the weeks-long standoff over the U.S. federal debt ceiling, and deteriorating conditions in eurozone debt markets.

The debt ceiling standoff arose in mid-2011 as the level of federal government debt outstanding approached the limit set by Congress, then $14.3 trillion. Concerns about the steep increase in federal debt since 2008 created a sharp divide in Congress over taxing and spending policies. It appeared that without an agreement between Congress and the president on fiscal policy it would be impossible to muster enough votes in Congress to raise the debt ceiling. As August 2 (the date at which federal debt would hit the $14.3 trillion limit) approached, market participants began to believe that it was increasingly likely that the federal government might default.

The federal debt ceiling impasse threatened one of the key tenets of the modern U.S. financial system: the notion that U.S. government debt is riskless. In the run-up to the August 2 deadline, markets were subjected to considerable uncertainty and confusion about the financial and legal implications of a Treasury default—even one involving only a very brief delay on the return of principal and interest. Concerns also arose that a default could trigger a downgrade of the credit rating on Treasury debt, raising the possibility that prices of Treasury and agency securities might decline. A further risk was that a downgrade of

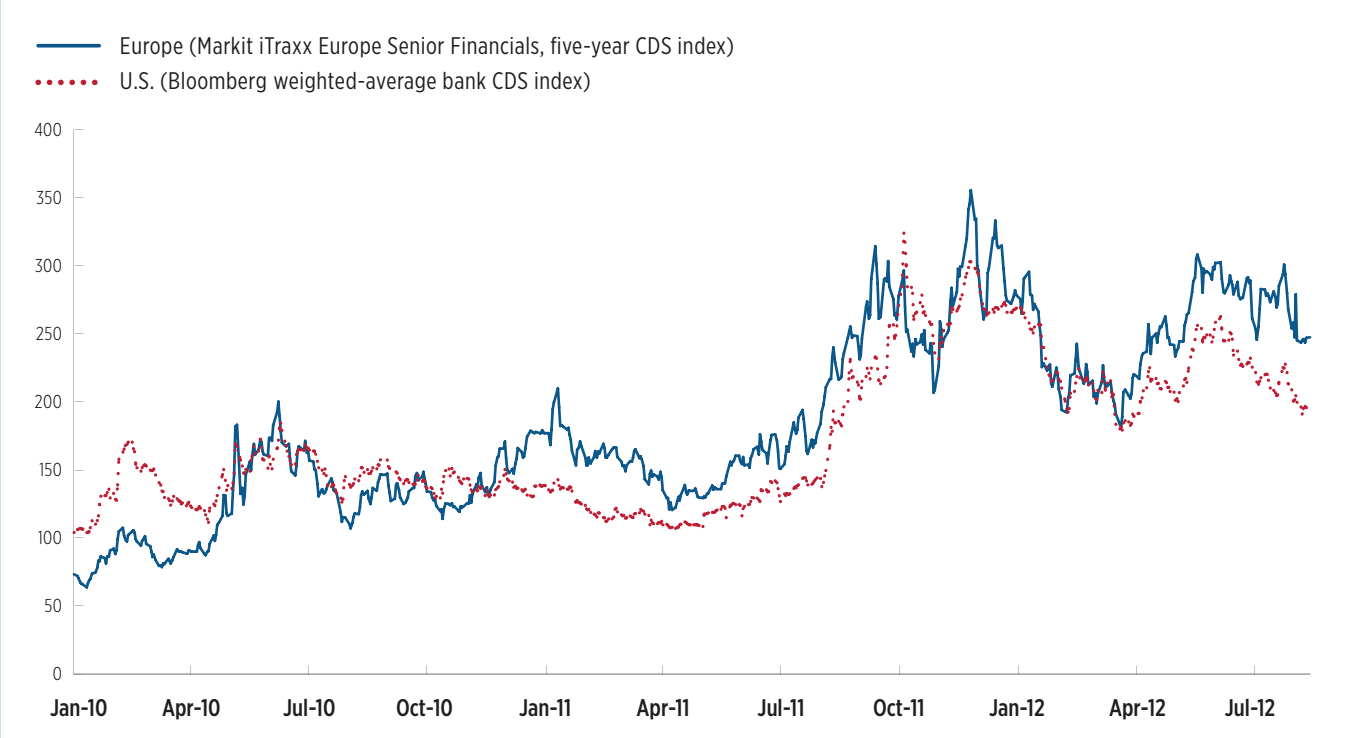
the U.S. Treasury could trigger a downgrade of credit ratings for U.S. banks, which are large holders of Treasury securities. All of these factors had the potential to disrupt the money markets,[30] in turn affecting government and prime money market funds—through their holdings of Treasury and agency securities—and prime funds through their investments in the short-term debt of U.S. banks. Ultimately, the crisis was resolved on August 2, 2011, when President Barack Obama signed the Budget Control Act of 2011, which, among other things, increased the debt ceiling limit. Nevertheless, on August 5, Standard & Poor's Rating Services, citing a number of concerns, stripped the U.S. government of its AAA credit rating.

The eurozone debt crisis was more persistent. Questions arose in 2009 and 2010 about the amount and risk of debt issued by a number of eurozone countries, notably Greece, Ireland, and Portugal (the eurozone periphery). Until early 2011, large global banks domiciled in Europe, especially those within the eurozone, were not viewed by market participants as especially risky, nor more risky than U.S. banks. For example, premiums on five-year CDS for European financial institutions were generally lower than those of U.S. banks for most of 2010 (Figure 12). CDS premiums on European banks fluctuated some in the first half of 2011 but were on average only slightly higher than those on U.S. banks.

FIGURE 12

Annual Cost of Insuring Against Default on U.S. and European Financial Institutions (Five-Year CDS)

Basis points, daily, January 1, 2010–August 13, 2012



Source: Bloomberg

Beginning in the spring and early summer of 2011, however, market participants increasingly feared that the sovereign debt crisis in Europe, which had so far been limited to smaller countries (primarily Greece, Ireland, and Portugal), might well spread to larger countries, notably Spain and Italy. Many large eurozone banks held sovereign debt issued by Spain and Italy and market participants reasoned that a default by Spain or Italy could threaten the stability of these banks. Market fears were compounded by the apparent lack of political will among eurozone governments to reach an all-encompassing solution to the problem.

Nevertheless, CDS premiums indicate that market concerns did not begin to intensify significantly until late June 2011. Investors increasingly worried that the crisis could engulf the entire eurozone. In mid-June 2011, Moody's placed French banks on review for a possible downgrade to their long-term credit rating. In early August, the ECB began significant purchases of Spanish and Italian debt in an effort to contain the debt crisis. Market perceptions of the riskiness of eurozone banks deteriorated throughout the second half of 2011. Indeed, judging from CDS premiums, market fears peaked in late November 2011.

Like the federal debt ceiling impasse, the eurozone debt crisis had the potential to affect prime money market funds. Prime money market funds invest dollars on a short-term basis with large global banks, including those domiciled in Europe. Global banks use dollars raised in the U.S. money markets to invest in U.S. Treasury and agency securities, to make consumer or auto loans to U.S. citizens, or to make loans to subsidiaries of foreign companies that do business in the United States. In addition, global banks hold large amounts of dollar deposits (reserve balances) with the Federal Reserve. Eurozone banks also may borrow dollars to make dollar loans to subsidiaries of U.S. companies that do business in Europe. Unlike U.S. banks, these large foreign banks do not have significant retail U.S. dollar deposits to fund their global dollar-based operations, and thus may be more likely to seek dollars from capital market investors.

Arising shortly after the SEC's 2010 amendments to Rule 2a-7, the twin crises of the U.S. federal debt stalemate and eurozone sovereign debt offered significant real-world tests of the efficacy of those reforms. The remainder of the paper considers how money market funds and their investors responded to these twin crises in light of the new regulatory requirements. The paper addresses issues around four key areas:

- How money market funds managed their portfolios in light of the heightened risks
- Whether, as some have argued, prime funds took excessive risk by investing in eurozone banks
- The scope of redemptions from money market funds in light of the debt ceiling and eurozone crises and whether both shocks weighed equally in investors' decisions to redeem
- Whether, as some have also argued, prime funds "squeezed" lending to eurozone banks or U.S. nonfinancial companies

How Money Market Funds Managed Their Portfolios During the U.S. Debt Ceiling and Eurozone Crises

As the twin financial crises evolved and picked up steam, fund managers sought to mitigate the risks by adjusting their portfolios.

By May 2011, money market fund managers had already begun preparing for the possibility that the U.S. federal government would default. Anticipating that concerns about the debt ceiling might lead investors to redeem shares, both government and prime funds shortened their maturities in the weeks leading up to the August 2 deadline (Figure 13).

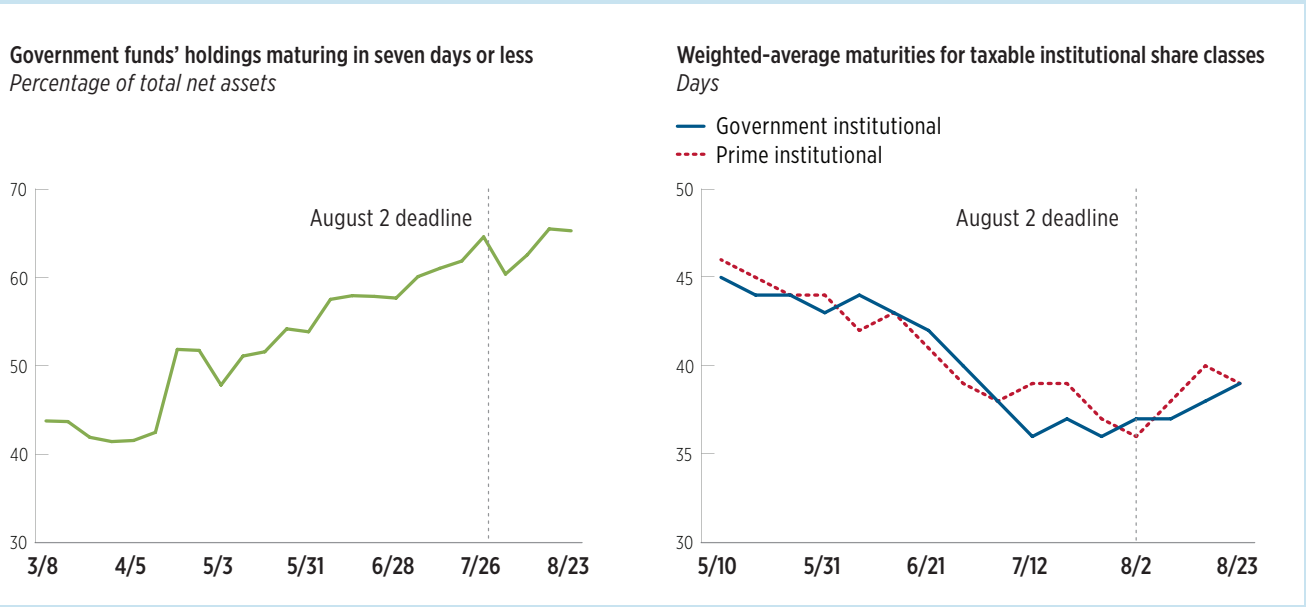
Funds also maintained levels of liquidity well above those required by the new Rule 2a-7 liquidity requirements (Figure 14).

As the situation in Europe deteriorated, prime money market funds responded by shedding risk. Funds reduced their overall holdings of banks in the eurozone from 30 percent of their assets in May 2011 to 14 percent by November 2011 (Figure 15). Prime funds also reduced their exposures to other European banks that, although outside of the eurozone itself, were heavily exposed to eurozone banks. Prime funds undertook half of this adjustment from June to August 2011, before concerns about eurozone banks spiked in September and again in November.

FIGURE 13

Money Market Funds Prepared for Possible Redemptions During Debt Ceiling Debate

2011

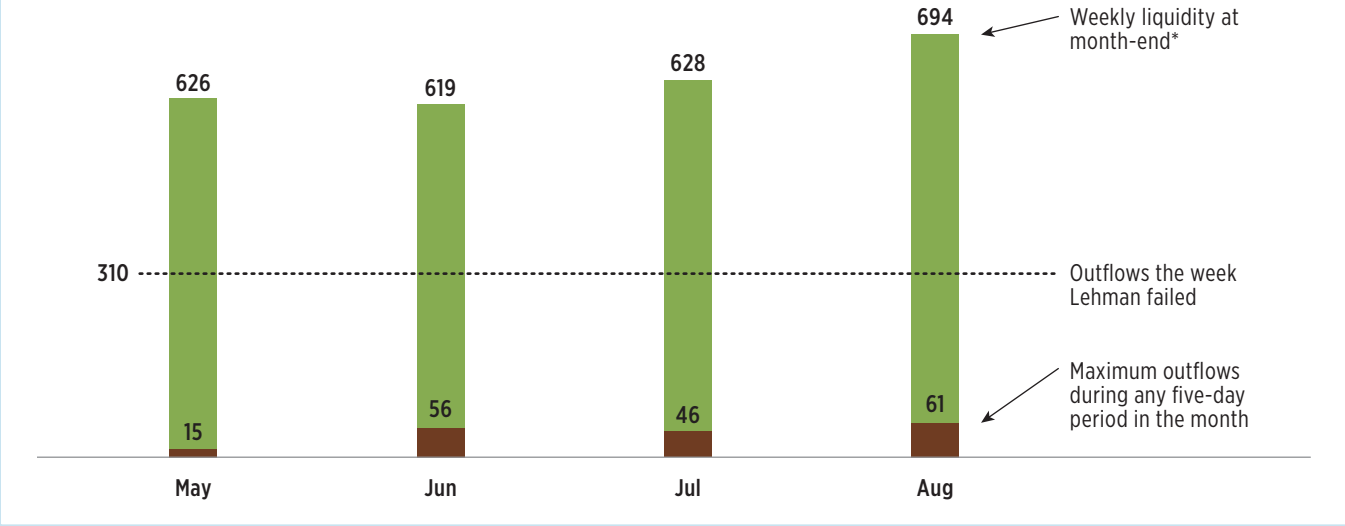


Source: Investment Company Institute tabulations of iMoneyNet data

FIGURE 14

Prime Fund Liquidity Versus Maximum Outflows

Billions of dollars, May–August 2011



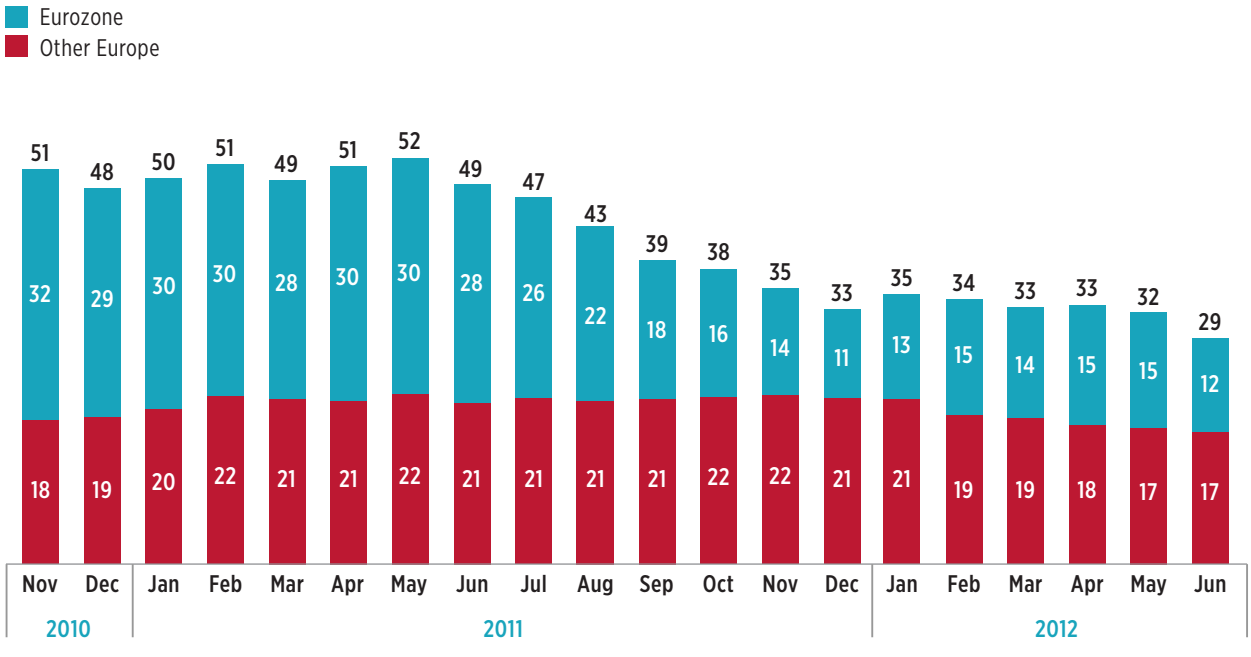
* Weekly liquid assets include securities with a remaining maturity of five business days or less, Treasury securities, and agency securities with a remaining maturity of 60 days or less.

Sources: Investment Company Institute tabulations of SEC Form N-MFP and iMoneyNet data

FIGURE 15

Prime Money Market Funds' Holdings of Eurozone Issuers

Percentage of prime funds' total assets, month-end



Note: Data exclude prime money market funds not registered under the Securities Act of 1933. Data may not add to the totals because of rounding.

Sources: Investment Company Institute tabulations of SEC Form N-MFP data

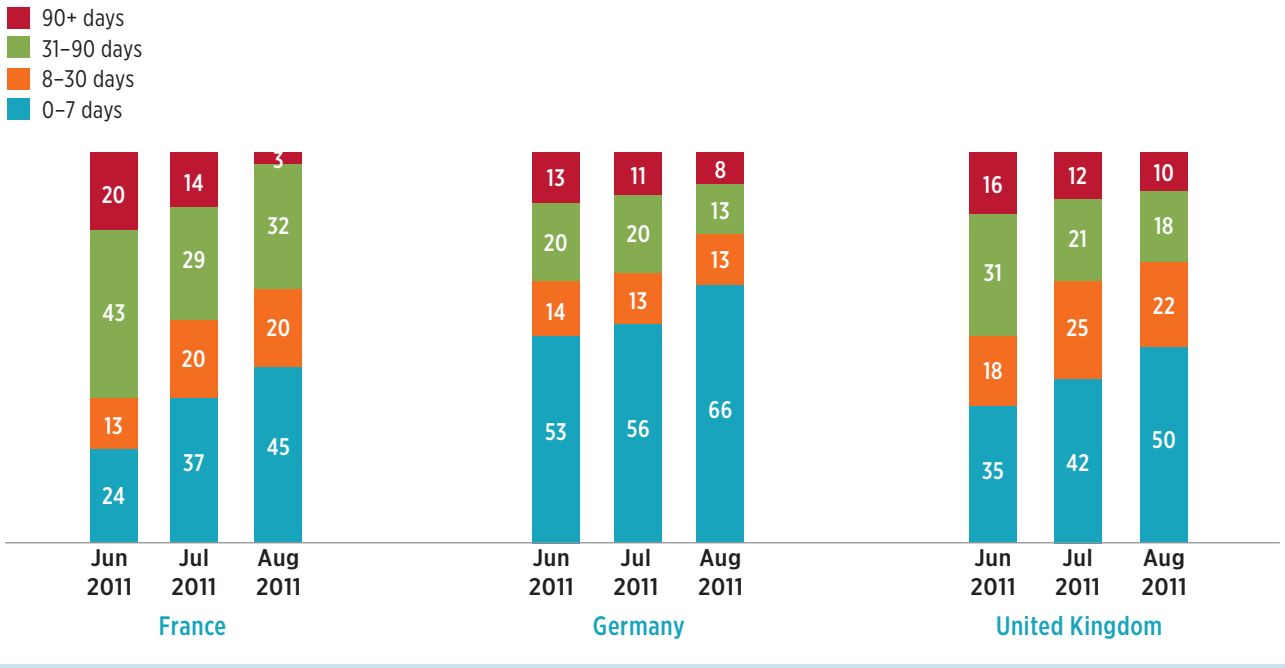
Anticipating potential redemptions, funds also reduced the maturities of their remaining holdings in European banks (Figure 16). For example, in June 2011, 20 percent of the investments that prime funds held in French banks were in securities maturing in more than 90 days. By August, that figure had fallen to 3 percent as funds shifted toward investments in securities maturing in seven days or less. These shorter-term securities would allow funds to reduce investments in stressed eurozone banks without having to sell securities in a fire sale.

The callout box on page 25 presents a case study of how prime funds adjusted their portfolios in response to the increased risk of investing in one particular eurozone bank: Dexia. Market participants began to question the Franco-Belgian bank's viability in early- to mid-2011. The case study shows that while prime funds never had large exposures to Dexia, they reduced that exposure as risks of investing in the bank increased in 2011.

FIGURE 16

Prime Money Market Funds Shortened Maturities in Holdings of Core European Countries

Percentage of assets



Source: Investment Company Institute tabulations of data provided by Crane Data

Dexia: A Case Study of Risk Management by Money Market Funds

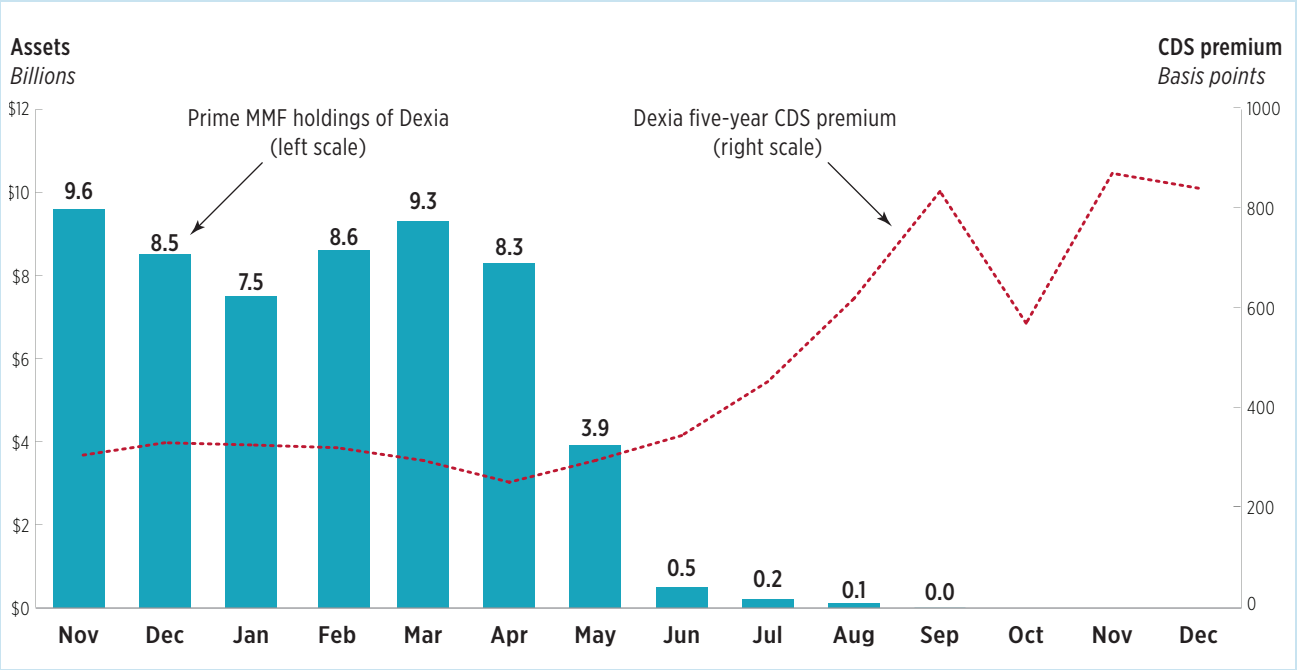
A money market fund's adviser and its board of trustees have a fiduciary duty to protect the interests of the fund and its shareholders. Thus, as market conditions change, a portfolio manager may take steps to alter a fund's risk exposure. The response of money market funds to the unfolding sovereign debt crisis in Europe illustrates how money market funds manage risk to the benefit of fund shareholders.

Dexia, a Franco-Belgian bank, provides an excellent example. In November 2010, the first month for which detailed Form N-MFP data are available, money market funds held a total of $9.6 billion of short-term debt issued by this eurozone bank (Figure 17).

FIGURE 17

Prime Money Market Fund Holdings of Dexia and Dexia's Five-Year Credit Default Swap (CDS) Premium

Month-end, November 2010 to December 2011



Sources: Investment Company Institute tabulations of SEC Form N-MFP and Bloomberg data

At that point, from the perspective of the money market funds that held this debt, these holdings were neither large nor particularly risky. Among the funds that held Dexia, those holdings accounted for just 1.8 percent of their assets; additionally, the debt those funds held was very short-term debt, with an average maturity of just 15 days on an asset-weighted basis. Dexia's short-term debt was rated A1/P1 by credit rating agencies, the highest possible short-term rating. Moreover, Dexia was supported in part by the governments of France, Belgium, and Luxembourg. Finally, the market did not necessarily perceive Dexia's financial position as deteriorating. Indeed, if anything, the market seemed to view Dexia's financial strength as improving throughout the second half of 2010; the five-year CDS premium to insure against

default on Dexia's debt stood at 332 basis points on June 30, 2010, but had fallen by one-third to 218 basis points by the end of October 2010, indicating the market believed that Dexia was becoming less risky.

By the end of March 2011, however, concerns began to surface about Dexia's business model. Credit rating agencies placed Dexia's long-term debt on credit watch but maintained its top-rated short-term credit rating.[31] In May 2011, Standard & Poor's placed Dexia's short-term debt on negative credit watch and Moody's followed suit in June. Market concerns intensified in May and June, which was reflected in an increase in CDS premiums for Dexia.

As concerns surfaced, money market funds shed their holdings of Dexia. In March 2011, 68 prime money market funds held $9.3 billion in short-term debt issued by Dexia, a bit less than the $9.6 billion they held in November 2010. These funds reduced their holdings of Dexia in April, May and June 2011. By July, money market funds held just $240 million of Dexia debt. Dexia ultimately required assistance from the French and Belgian governments in October 2011. By then, however, money market funds had eliminated their exposure to Dexia.

Thus, money market funds never had large exposure to Dexia, and they managed what exposure they did have by generally holding only very short-term Dexia debt. That helped them to reduce their exposure to Dexia without selling securities into a falling market.

Did Money Market Funds Take On Excessive Credit Risk in 2011? Evidence from Credit Default Swap Premiums

Some have argued that despite the SEC's 2010 reforms to Rule 2a-7, prime money market funds took large or excessive risks by investing dollars on a short-term basis in eurozone banks in 2011.

For example, Rosengren (2012) states, "A significant source of the credit risk in many prime money market funds over the past year has been the large exposure to European banks. While these exposures were substantially reduced as the risks became more apparent, I have to question whether investors in money market funds would have been willing to directly hold such large exposures in foreign financial institutions, and whether such investments were consistent with the perceptions of very low credit risk that many investors expect to be associated with prime money market funds." Chernenko and Sunderam (2012b) state, "In the context of the European sovereign debt crisis, we show that risk taking by money market funds, in the form of investments in risky Eurozone banks, drove large investor redemptions in the summer of 2011…this is particularly surprising given that money market funds are only permitted to purchase securities from the highest credit-quality firms, which are usually large and highly rated."

Scharfstein (2012) states, "A recent study…finds that some funds loaded up on the riskier, higher-yielding securities of Eurozone banks." The Financial Stability Oversight Council (2012b), citing Chernenko and Sunderam (2012) and Rosengren (2012), states, "The increase in certain MMFs' exposure to European securities in 2011 appears to have been motivated by increased risk taking."

One way to evaluate such concerns is to examine evidence from credit default swaps. Credit default swaps are generally quoted in maturities of six months and one, two, three, four, five, seven, and 10 years. A five-year CDS premium of 300 basis points would mean that a purchaser would pay $300,000 each year for five years to obtain $10,000,000 in insurance against the default of Company X.

Rosengren (2012) seeks to evaluate how the credit risk of money market funds evolved in response to the European debt crisis by relying on five-year CDS premiums for European banks. On this basis, he suggests that the credit risk in "many prime money market funds is substantially greater than the credit risk in U.S. government-only funds." For example, he argues that 23 percent of prime money market fund holdings have a five-year CDS premium of 200 to 300 basis points, 9 percent have a CDS premium of 300 to 400 basis points, and 5 percent have a CDS premium of 400 basis points or more. By way of comparison, a premium of 400 basis points on a five-year CDS for Company X would imply that the market assigns roughly a 30 percent chance of that company defaulting within five years.

But this conclusion is misleading for two fundamental reasons. First, money market funds do not hold five-year debt. The investments that money market funds hold generally mature quickly, within a week to a few months. While a money market fund may hold a security that matures or can be redeemed within 397 days, the remaining maturity of its securities holdings must average (on an asset-weighted basis) 120 days or less. Thus, it is inappropriate to assess the credit risk of a money market fund using premiums on five-year CDS.

Second, for highly rated companies, CDS premiums for shorter maturities are generally lower than those for longer maturities.[32] For example, on July 27, 2012, the five-year CDS premium for insuring against the default on Boeing was 65 basis points, whereas the premium for a one-year CDS was 13.5 basis points (both are annual costs). The lower annual cost of insuring against default using a one-year CDS is explained by the fact that an investor who holds a five-year Boeing bond can insure at lower cost for the first year but bears the risk that the cost of one-year insurance might rise significantly next year, perhaps to above 65 basis points. With a five-year CDS contract, the investor is guaranteed to pay an annual premium of no more than 65 basis points for each of the next five years.

This principle works in reverse for money market funds: because they hold only very short-dated, high-quality instruments, money market funds in effect have a valuable "put option" to reduce their exposure to companies whose default risk increases by allowing those securities to mature rather than selling them in the market. Thus, holding a portfolio of short-term instruments helps mitigate credit risk, a feature which is reflected in the upward sloping term structure of CDS premiums for highly rated companies.

In combination, these two effects mean that the market's estimate of the credit risk in a money market fund is much lower than that suggested by five-year CDS premiums. Figure 18 shows the annual CDS premium on an index of large European financial institutions (top panel, solid red line). The five-year CDS premium is about 150 basis points throughout the first half of 2011 but rises sharply in the second half of 2011 to a peak of 275 to 300 basis points from September to November as concerns mounted that European governments might be unable to contain the eurozone crisis.

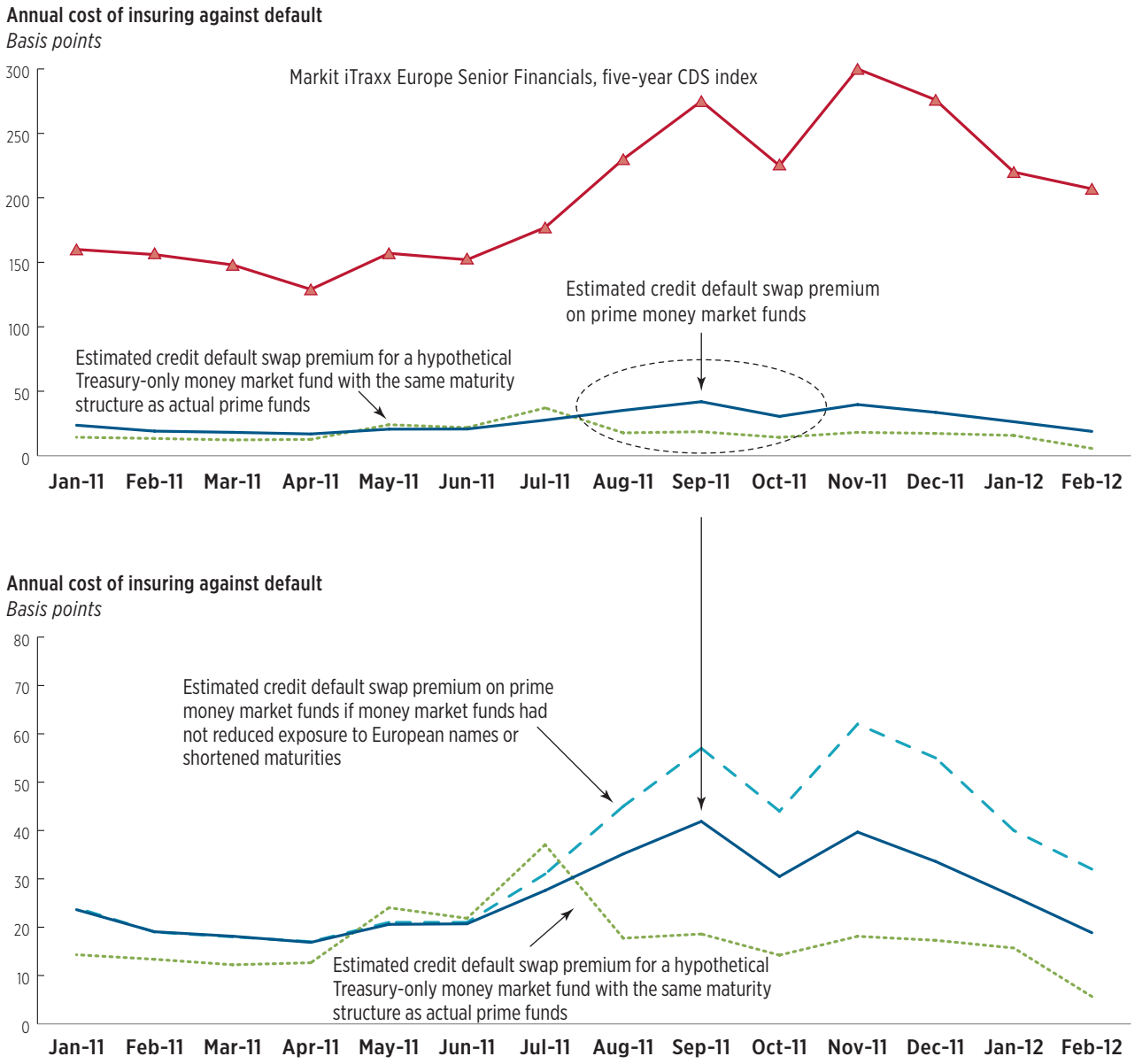
This five-year CDS premium on large European financial institutions, however, is not at all representative of the credit risks of prime funds. The blue line in the panel provides a more plausible estimate of the CDS premium that the market might in fact require to insure against default losses on any and all securities held by prime funds.[33] For comparison, the top panel also plots an estimate of the CDS premium (dashed green line) that the market might demand for a hypothetical Treasury-only money market fund whose securities have the same maturities as those actually held by prime money market funds.[34]

As the figure demonstrates, the market-based estimate of the CDS premium on prime money market funds is very low in comparison to the five-year CDS premium on European financials. If anything, the estimate may overstate—perhaps by a significant margin—the market's assessment of the credit risk of prime money market funds: the analysis makes no attempt to adjust for a number of important features that limit the credit exposure of money market funds to particular issuers.[35] Moreover, the estimated CDS premium for prime money market funds is only marginally higher than the premium for hypothetical Treasury-only money market funds with the same maturity structure. This is consistent with the general perception of institutional investors that prime money market funds, by investing in high-quality, short-term securities, take on only a bit more credit risk than Treasury-only money market funds.

The bottom panel of Figure 18 gives a more detailed look at CDS premiums. The estimated CDS premium on prime funds is quite low over the first three months of 2011, averaging just 20 basis points, only 7 basis points more than the 13 basis point average for a hypothetical Treasury-only money market fund.[36] Moreover, the estimated CDS premium is virtually unchanged from January to June 2011 and, if anything, falls slightly. Thus, there is no evidence that prime funds were generally taking on greater credit risk by investing in European-domiciled issuers over the first half of 2011. In fact, the CDS premium for the hypothetical Treasury-only fund exceeds that on prime funds in June and July 2011 because the cost of insuring against a Treasury default jumped significantly in late July as the stalemate over the federal debt ceiling raised the probability of a Treasury default.[37]

FIGURE 18

Prime Money Market Funds Take Minimal Credit Risk



Sources: Investment Company Institute, Securities and Exchange Commission, and Bloomberg

The estimated credit risk of prime money market funds, as judged by the solid line in the chart, rises in September and again in November when concerns spiked about the safety of eurozone banks. Nevertheless, the risk was only a bit greater than it had been in early 2011 relative to the market's assessment of the risk on a hypothetical Treasury-only money market fund. Moreover, this exercise shows that prime funds reduced risk throughout 2011 by paring their exposure to eurozone banks and shortening their portfolio maturities. The blue dashed line shows that a somewhat higher CDS premium might have applied had prime funds continued to hold throughout the year the portfolios they held in May 2011.

By January 2012, the difference between the CDS premium on prime funds and hypothetical Treasury-only funds of similar maturity structure remained at about the level of January 2011, a difference of only 13 basis points.

Thus, throughout 2011, prime money market funds took only marginally more credit risk than did Treasury-only money market funds. Moreover, contrary to some reports, prime funds did not appear to take on additional credit risk in the first half of 2011 and the portfolio adjustments they took from May 2011 reduced their risk exposure.

Did Investor Concerns About Prime Fund Exposure to the Eurozone Spark a Run?

A number of regulators[38, 39] and commentators[40] have suggested that investor concerns about the eurozone crisis sparked large redemptions from prime money market funds in 2011. This has been interpreted as suggesting that despite the SEC's 2010 amendments to Rule 2a-7, prime funds remain prone to large-scale withdrawals, which could affect short-term credit markets.

This section examines that concern. As discussed, investor concerns about the eurozone did contribute to the outflows from prime money market funds during the summer of 2011. However, eurozone concerns were not the only factor, nor perhaps even the most important factor motivating redemptions by prime fund investors. Evidence indicates that investor concerns about the U.S. federal debt ceiling impasse were significant. In addition, certain seasonal factors (e.g., corporate tax payments) contributed substantially to the decline in prime fund assets during June 2011.

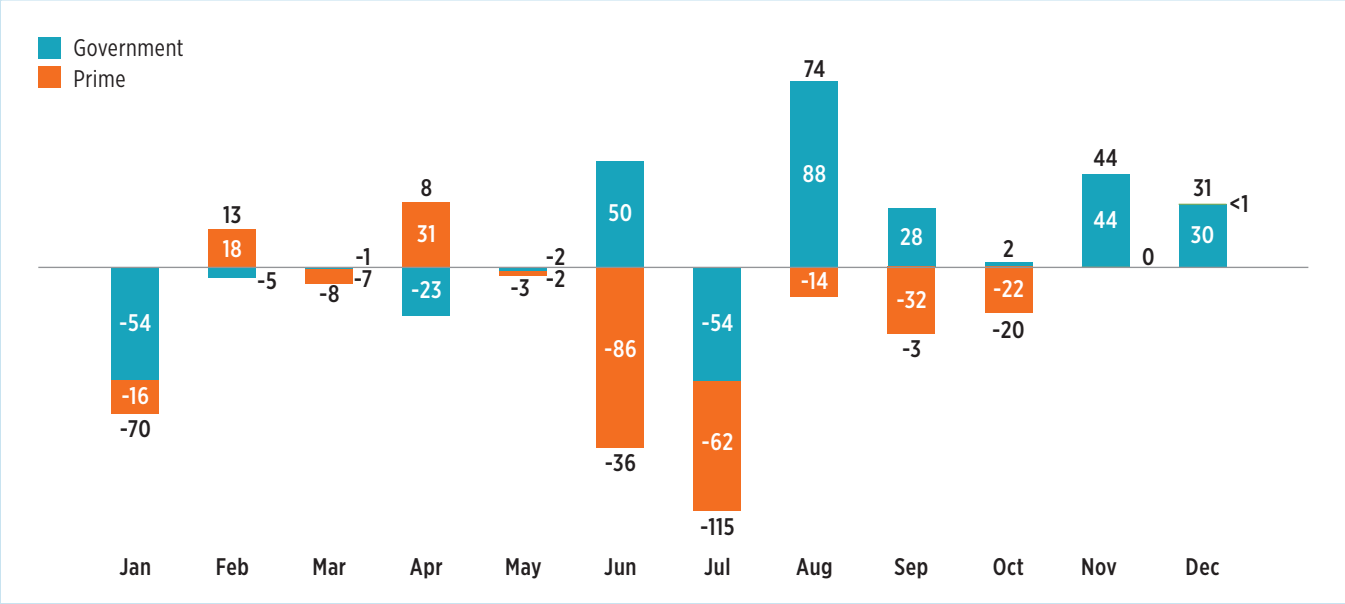
Redemptions from Money Market Funds in Summer 2011 Reflected Several Factors

Amid the U.S. federal debt ceiling and eurozone crises, money market funds experienced very sizable outflows. Prime money market funds experienced strong outflows in June and July, but outflows lessened substantially in August, September, and October (Figure 19). Investors withdrew a total of $216 billion from prime money market funds over the six-month period from June 2011 to November 2011. These outflows were smaller in dollar and percentage terms than the outflows prime funds experienced during the worst months of the financial crisis in September and October 2008. Nevertheless, they were quite large, totaling 13 percent of the assets of prime money market funds as of May 2011.

FIGURE 19

Net New Cash Flow to Prime and Government Money Market Funds

Billions of dollars, 2011



Note: Data may not add to the totals because of rounding.
Source: Investment Company Institute

(1) Federal debt ceiling crisis and (2) unlimited insurance on demand deposits. One very important factor behind the outflows was the federal debt ceiling crisis. The federal debt ceiling crisis heightened uncertainty in the summer of 2011, straining the money markets. As the Federal Reserve's Federal Open Market Committee noted on August 9, 2011:[41]

> Late in the period [i.e., between June 23 and August 9, 2011], investor focus appeared to turn to the U.S. debt ceiling and the potential for delayed debt service payments by the Treasury Department, the possibility of a downgrade of U.S. sovereign debt, and the prospects for significant long-term fiscal consolidation. Liquidity and funding in money markets deteriorated in the last week of July, and interest rates on a number of short-term funding instruments increased markedly. The strains in these markets eased after legislation to raise the debt ceiling and to cut the federal budget deficit was signed into law on August 2.

Investors withdrew $54 billion from government money market funds in July, likely as the result of two factors. First, investors wished to avoid issues that a Treasury default might create. Second, investors may have been prompted to move balances to demand deposits at banks because of a temporary unlimited federal guarantee on such balances. To avoid uncertainties created by the federal debt ceiling impasse, some institutional investors reportedly moved liquid balances to demand deposit accounts at banks that had unlimited deposit insurance.[42]

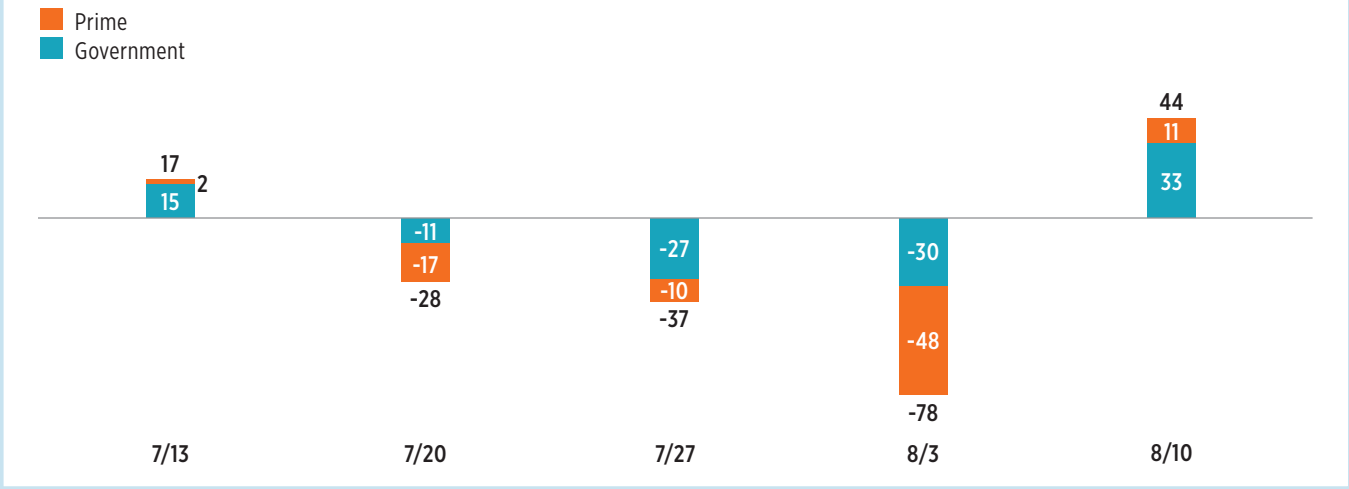
Prime fund investors, like investors in government money market funds, had concerns about how a Treasury default could affect their funds. First, and most directly, prime funds hold Treasury and agency securities. It was also possible that a Treasury default would trigger a downgrade of Treasury debt, in turn leading to a downgrade of U.S. banks whose securities money market funds hold (banks' credit ratings could face downgrades because they hold Treasury debt and because rating agencies usually rate banks no higher than their corresponding sovereigns).

Weekly data indicate that the debt ceiling impasse was likely a very important factor driving outflows from prime money market funds (Figure 20). During the weeks ended July 20 to August 3, government money market funds lost $68 billion in assets. Over those same weeks, prime funds lost $75 billion, accounting for more than one-third of the assets prime funds lost from June to November. However, as the weekly data also indicate, outflows from both government and prime funds immediately turned to inflows once the debt ceiling was raised in early August.

FIGURE 20

Money Market Fund Flows Around the August 2 Debt Ceiling Deadline

Change in week-ending total net assets, billions of dollars, 2011



Source: Investment Company Institute

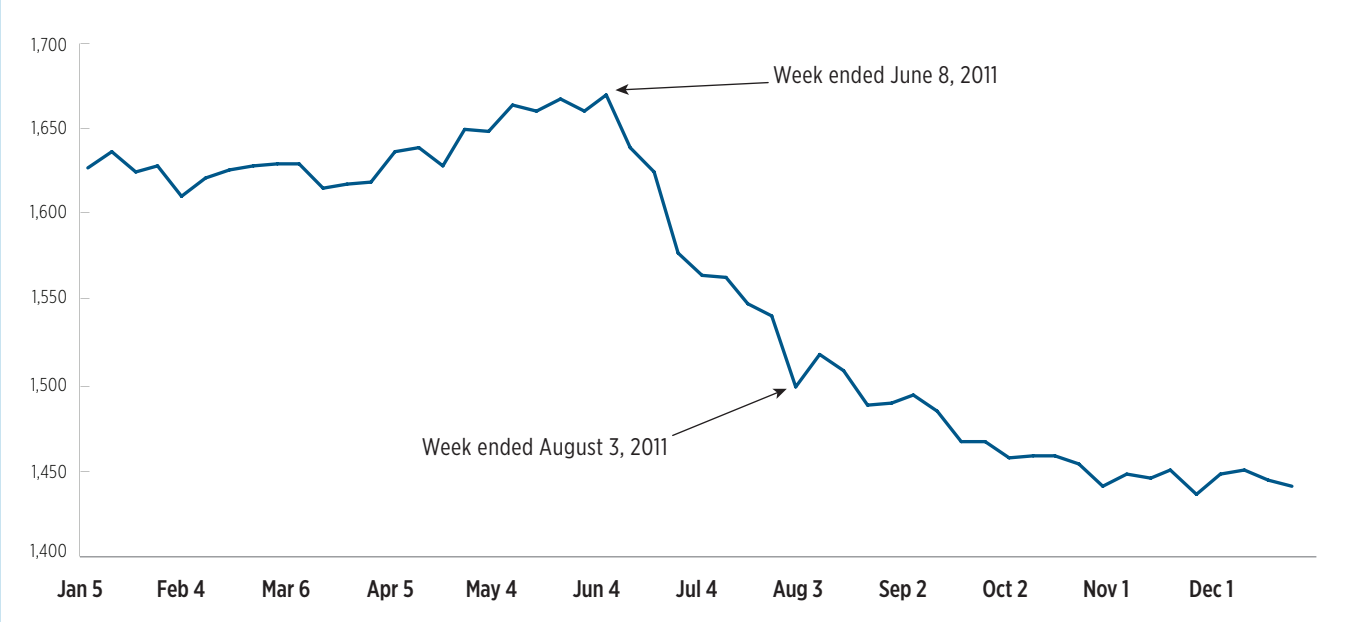
(3) Seasonal influences. A third factor explaining outflows from prime funds over the summer of 2011 was more mundane: seasonal influences. Money market funds often experience large outflows on the last business day of the month owing to redemptions to meet corporate payrolls or accounts payable. Funds also see significant redemptions around corporate tax payment dates (March 15, June 15, September 15, and December 15 or the nearest business day), and occasionally large outflows related to mortgage-backed securities around the 25th of each month. Daily figures indicate that institutional share classes of prime money market funds saw outflows of $15 billion on June 15, $16 billion on June 24 (June 25 was a Saturday), and another $11 billion on June 30, for a total of $42 billion, potentially accounting for nearly half of the $86 billion outflow prime funds experienced in June 2011.[43]

Of the $216 billion that flowed out of prime money market funds over the six-month period from June 2011 to November 2011, the bulk occurred in a short time. Almost 80 percent—$172 billion—occurred during the weeks ended June 8, 2011, to August 3, 2011—in other words, the period when the U.S. federal debt ceiling crisis came to a head (Figure 21). Given the confluence of events in the summer of 2011, it is difficult to tell whether domestic events had more or less impact on outflows from prime funds than the deteriorating outlook in the eurozone. At a minimum, though, the U.S. debt ceiling crisis, in combination with seasonal influences and the availability of unlimited deposit insurance, may have accounted for a very significant portion, perhaps even the majority, of the outflows. This is underscored by the turnaround from outflows to inflows in government and prime funds immediately after the debt ceiling crisis passed on August 2, 2011.

FIGURE 21

Prime Money Market Funds Accommodated Large Outflows During Summer 2011

Assets, billions of dollars, 2011, weekly



Source: Investment Company Institute

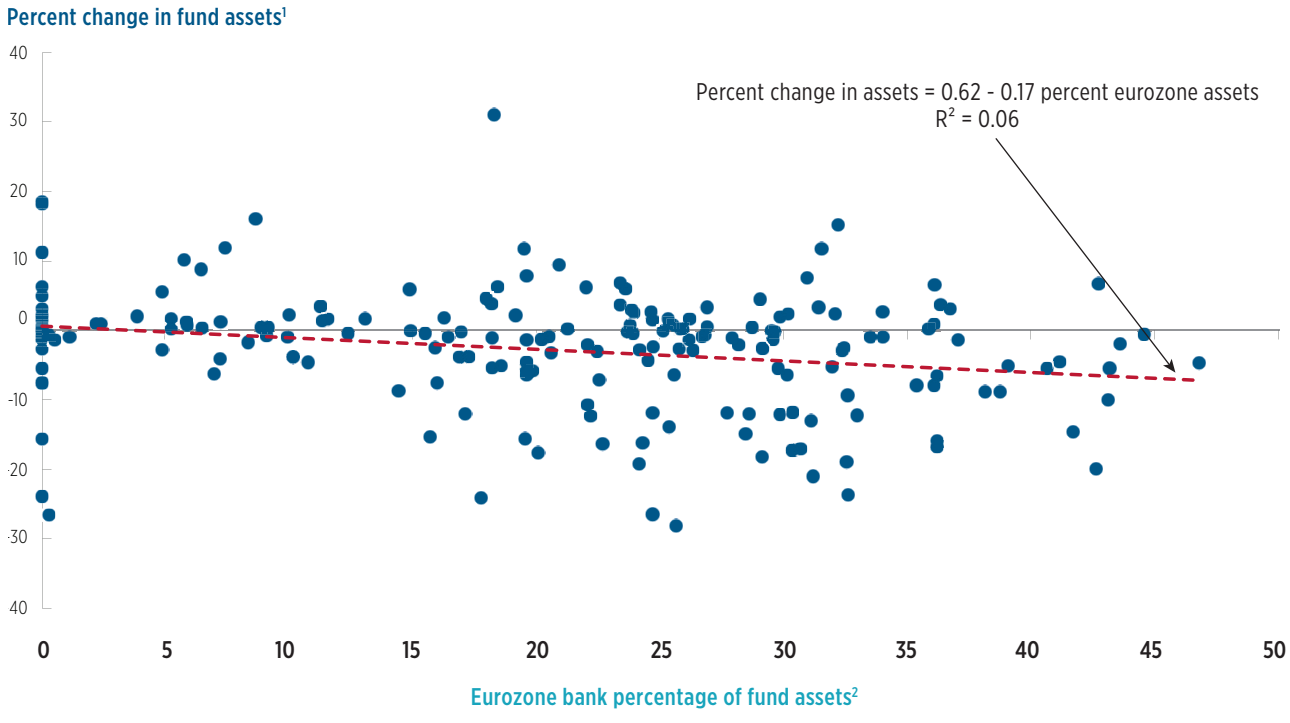
Figure 22 further buttresses this point. The figure plots flows from prime money market funds against exposure of those funds to eurozone-domiciled banks for June 2011. As can be seen, there is a negative relationship (dashed red line). This indicates that outflows from prime funds were in part influenced by funds' exposure to eurozone banks. The relationship, however, is very weak, explaining only 6 percent of the total variation in the flows of individual prime funds in June 2011.[44] This means that factors other than eurozone exposure explain 94 percent of variation in individual fund flows.

A deeper understanding of these various influences is important for policy purposes because the indicated responses likely are quite different. Seasonal factors are a normal feature of money markets that can be accommodated and pose no systemic risks. To the extent that outflows arose from the U.S. debt ceiling or unlimited deposit insurance, the most obvious response would be to address those factors directly.

FIGURE 22

The Relationship Between Eurozone Bank Exposure and Prime Fund Flows

Percentage of fund assets, June 2011



[1] The percent change in fund assets is measured as the difference in fund assets from May to June over May assets.

[2] Eurozone bank exposure is measured as percentage of fund assets as of the end of May.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

Money Market Funds Met 2011 Redemptions in Good Order

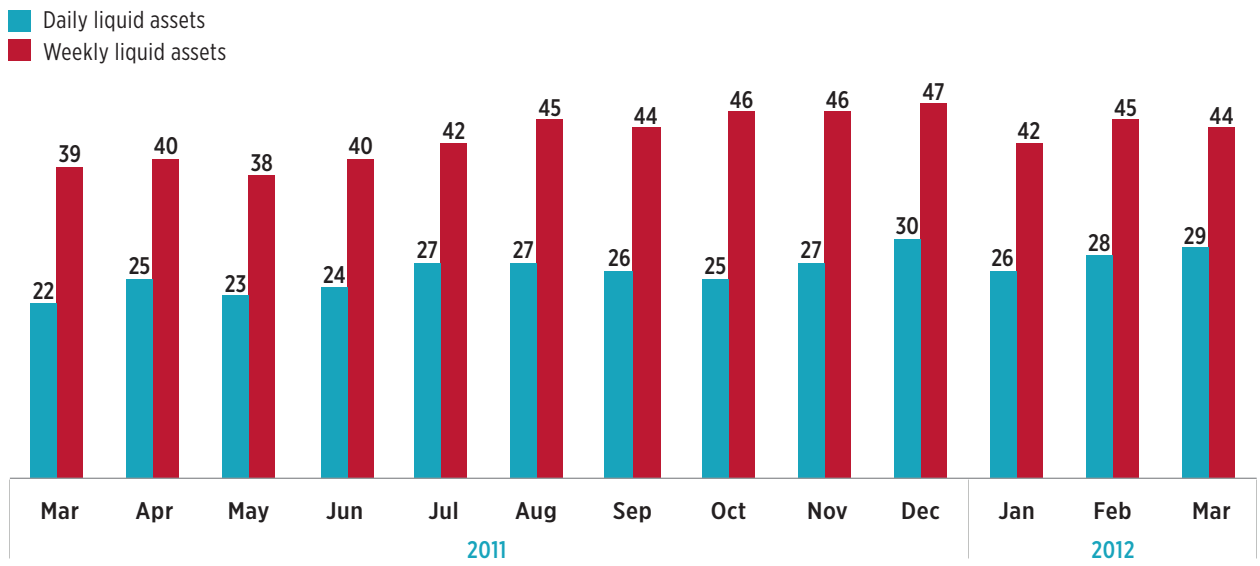
Whatever the precise factors creating outflows, prime money market funds had plentiful liquidity to meet redemptions in the summer of 2011. As of May 31, 2011, prime money market funds held an estimated $625 billion in weekly liquid assets, well in excess of the outflows they experienced over the next several months. The outflows in the second half of 2011 had only a small effect on funds' liquid asset ratios. Liquid asset ratios remained well above required minimum levels of 10 percent and 30 percent, respectively, for daily and weekly liquid assets (Figure 23).

Regulators have sometimes expressed concerns that outflows from prime funds could put downward pressure on funds' mark-to-market values. That, in turn, could increase the likelihood that a fund might break the dollar. In fact, because prime funds held plentiful liquidity during the summer of 2011 and could accommodate outflows, their mark-to-market values were very stable.

FIGURE 23

Liquid Asset Ratios of Prime Money Market Funds, March 2011 to March 2012

Percentage of prime fund assets



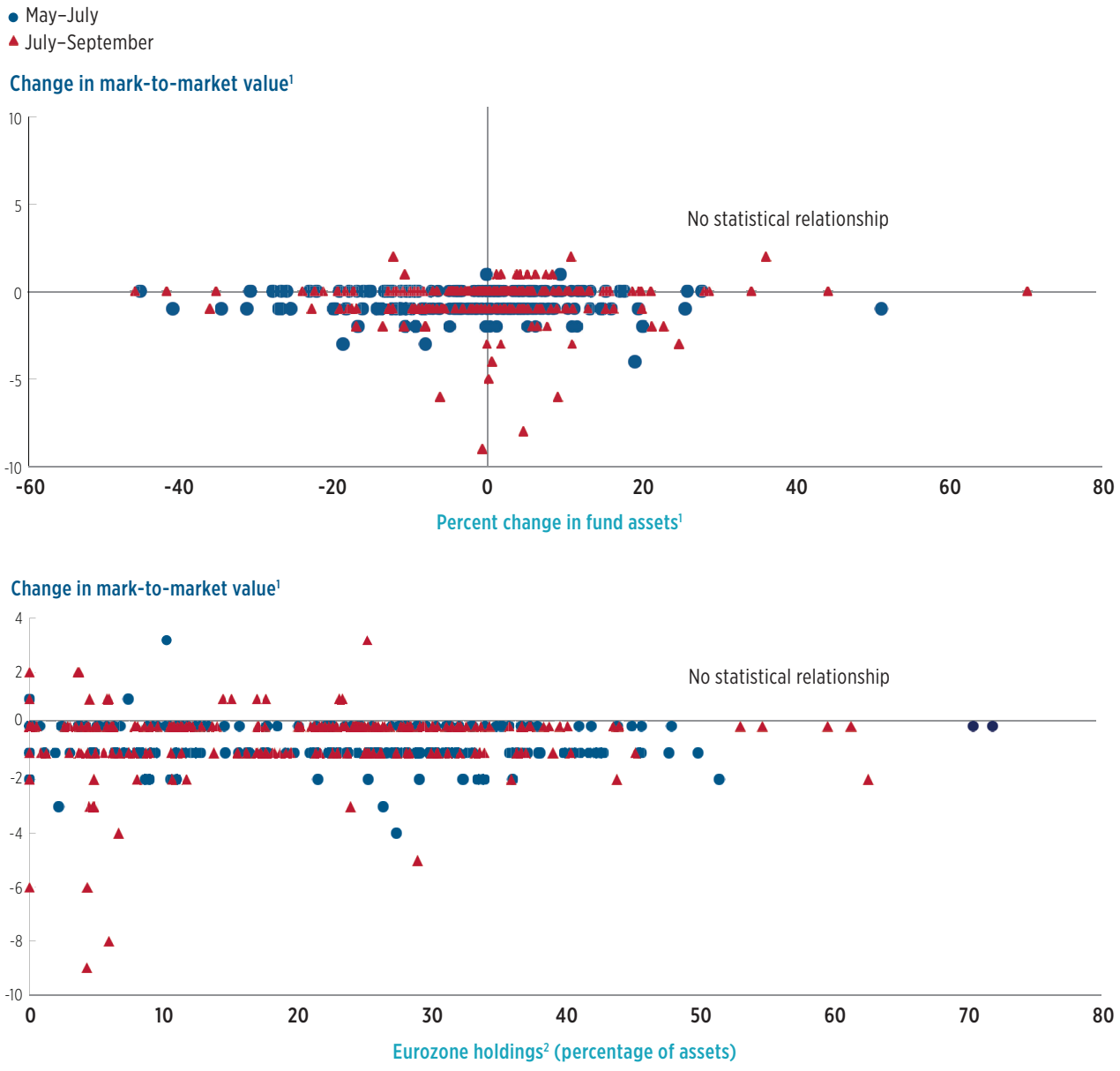
Source: Investment Company Institute tabulations of SEC Form N-MFP data

The small changes that did materialize appear unrelated to concerns about the eurozone. Figure 24 plots changes in the mark-to-market values of prime money market funds during the summer of 2011 against two key variables. The top panel looks at the relationship between funds' mark-to-market values and fund outflows. There is no statistical relationship. The bottom panel examines whether funds with greater exposure to eurozone banks experienced a decline in their mark-to-market values. Again, there is no statistical relationship.

FIGURE 24

Changes in Prime Fund Mark-to-Market Values over the Summer of 2011

Basis points, two periods: May–July and July–September, 2011



[1] Change in fund mark-to-market values and assets are measured across two periods: May–July and July–September. Thus, changes in mark-to-market values from May–July are matched with May eurozone holdings and changes in mark-to-market values from July to September are matched with July eurozone holdings.

[2] Eurozone holdings are measured in May and July.

Note: Excludes funds with absolute flows above 99 percent of assets.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

These results are not particularly surprising given the amount of liquidity, very short WAMs, and minimal credit risk of prime funds. But the results highlight that the stable $1.00 NAV largely reflects the stability of the market values of funds' underlying portfolio securities.

Did Money Market Funds or Their Investors Create Difficulties for Borrowers in 2011?

The role that money market funds played in the evolving eurozone debt crisis has been debated in policy and academic circles. Some claim that U.S. prime money market funds contributed to the eurozone crisis by reducing (squeezing) investments in eurozone banks. Academics and regulators have also asserted that the actions prime funds took in 2011 to limit their exposures to eurozone crisis caused "collateral damage" to issuers outside the eurozone, notably to U.S. nonfinancial firms. This section examines these contentions.

Did Money Market Funds "Squeeze" European Banks' Funding in 2011?

The *Economist* wrote in fall 2011 that "American money-market funds have almost completely withdrawn dollar funding from European banks over the past few months."[45] Regulators and other commentators have suggested that that caused strains in eurozone banks, which in turn then reduced investments in U.S. entities, causing collateral damage to the U.S. economy. For example, Rosengren (2011) expressed concerns about U.S. money market funds' role in creating "dollar shortages" among European banks. Also, a recent SEC study suggests that redemptions from money market funds in the summer of 2011 created difficulties in the money market.[46] The SEC study cites two Federal Reserve studies as evidence in support of this view.[47]

The data, however, indicate that such claims are overstated or misleading. For example, as discussed earlier, prime money market funds did reduce their holdings of securities issued by eurozone banks in the second half of 2011. But reports stating that money market funds withdrew all funding from European banks are incorrect. By the time market fears about the eurozone peaked in November 2011, prime money market funds still had 14 percent of their assets invested in eurozone issuers and another 22 percent in European issuers outside the eurozone.

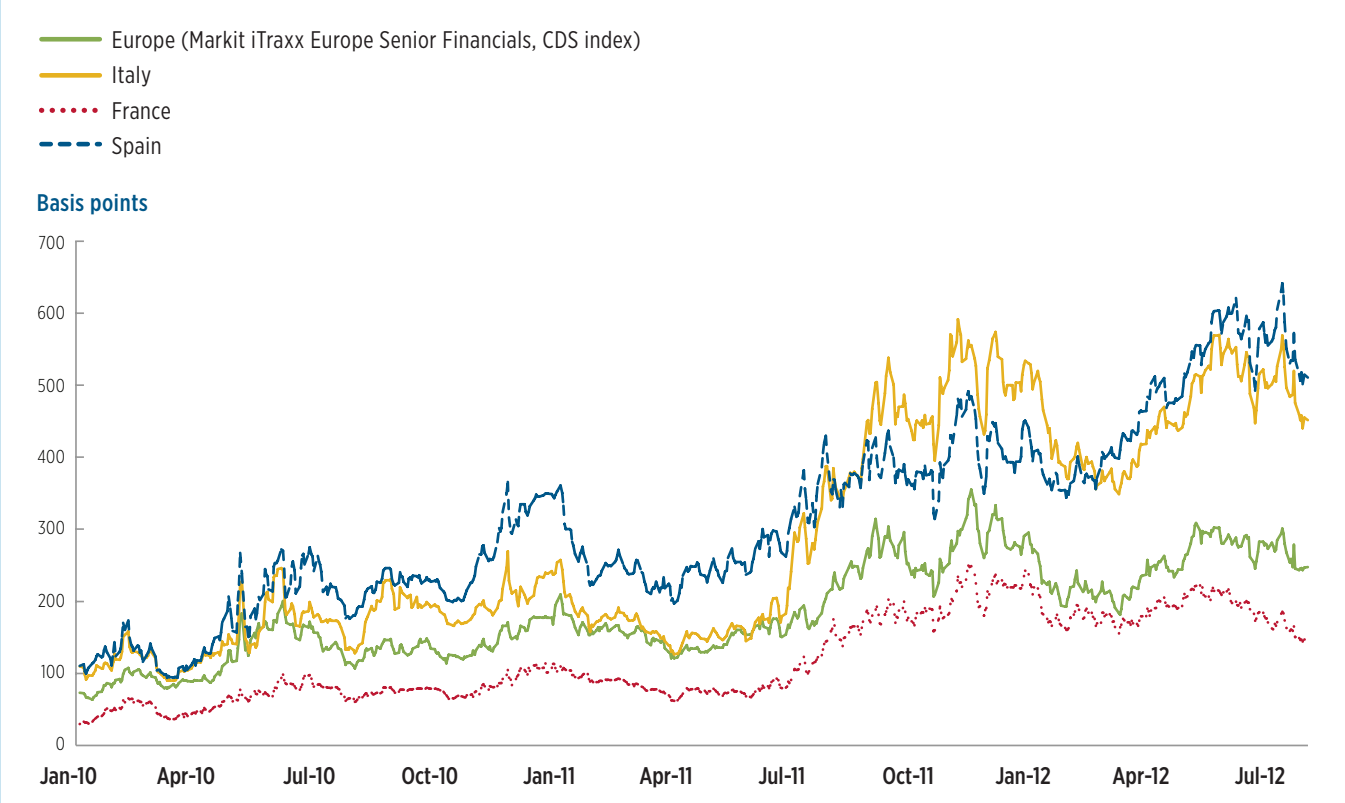
The suggestion that prime money market funds "squeezed" liquidity positions of eurozone banks is misleading: it falsely conveys a notion that money market funds were responsible for the difficulties eurozone banks faced in 2011. In fact, the pullback by money market funds was a small part of a months-long, market-wide withdrawal from eurozone banks that reflected deteriorating financial conditions and rising credit concerns about eurozone sovereigns and banks. The fundamental issue was the very real possibility that the eurozone crisis might move from peripheral to core countries, putting at risk the entire eurozone banking system and perhaps even the viability of the euro itself. As a result, the creditworthiness of eurozone banks deteriorated in the second half of 2011.

Market concerns about eurozone banks were reflected not only in the short-term credit markets where money market funds invest, but also in markets where money market funds do not invest, such as sovereign debt markets and equity markets. For example, Figure 25 shows that during the summer and fall of 2011, CDS premiums on sovereign debt in core eurozone countries (France, Italy, and Spain) widened substantially. Figure 26 shows that equity prices on eurozone banks (brown line, right scale) declined throughout 2011 more or less in tandem with widening CDS premiums on eurozone banks (solid green line, left scale).

FIGURE 25

Annual Cost of Insuring Against Default for European Debt (Five-Year CDS)

Daily, January 1, 2010–August 13, 2012

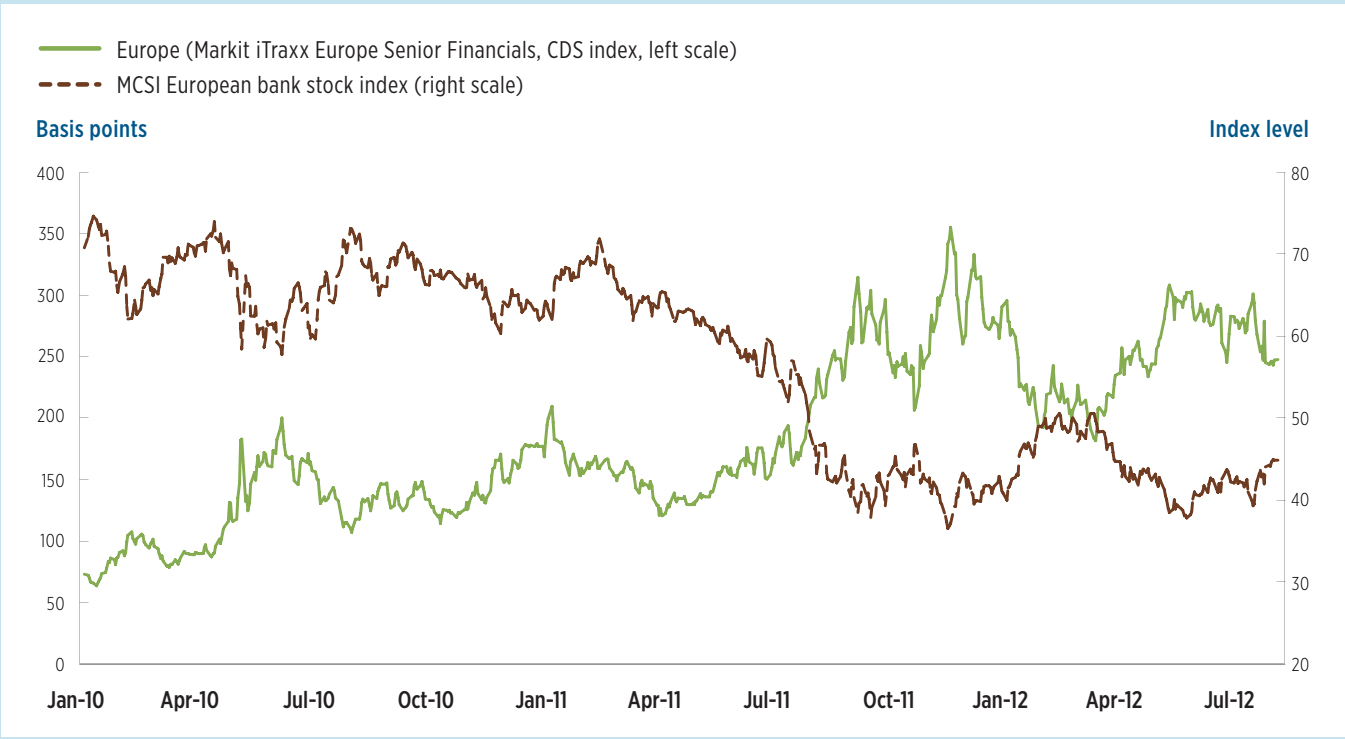


Source: Bloomberg

FIGURE 26

European Bank Stock Prices and Five-Year CDS Premiums

Daily, January 1, 2010–August 13, 2012



Source: Bloomberg

The suggestion that prime money market funds "squeezed" liquidity positions of eurozone banks is misleading for another reason: it presupposes that U.S. money market funds provided a large, irreplaceable portion of the funding of eurozone banks. It is true that prime money market funds play an important role in short-term dollar credit markets. But the overall amount of financing they provide to European banks is small relative to the size of those banks' worldwide balance sheets. For example, the ratings agency Fitch has calculated ratios of bank reliance on prime money market funding for several large European banks, finding percentages that are in the low single digits in June of 2011.[48] Moreover, banks in the eurozone periphery had the biggest liquidity and funding problems in 2011, as evidenced by the fact that they were the primary borrowers from the European Central Bank (ECB) that year. Money market funds did not have any exposure to banks in the eurozone periphery (e.g., Greece) and thus could not have caused funding shortages there.

In addition, the notion that prime funds squeezed the liquidity of eurozone banks ignores the fact that such banks could tap other significant sources of dollars. One source was reserve balances that U.S. subsidiaries of eurozone banks ("branches and agencies") held with the Federal Reserve. Reserve balances are deposits that banks place with the Federal Reserve. They are the most liquid balances available: they are instantaneously redeemable on demand and have no default or price risk. Thus, if a bank has reserves with the Federal Reserve, it can use them to

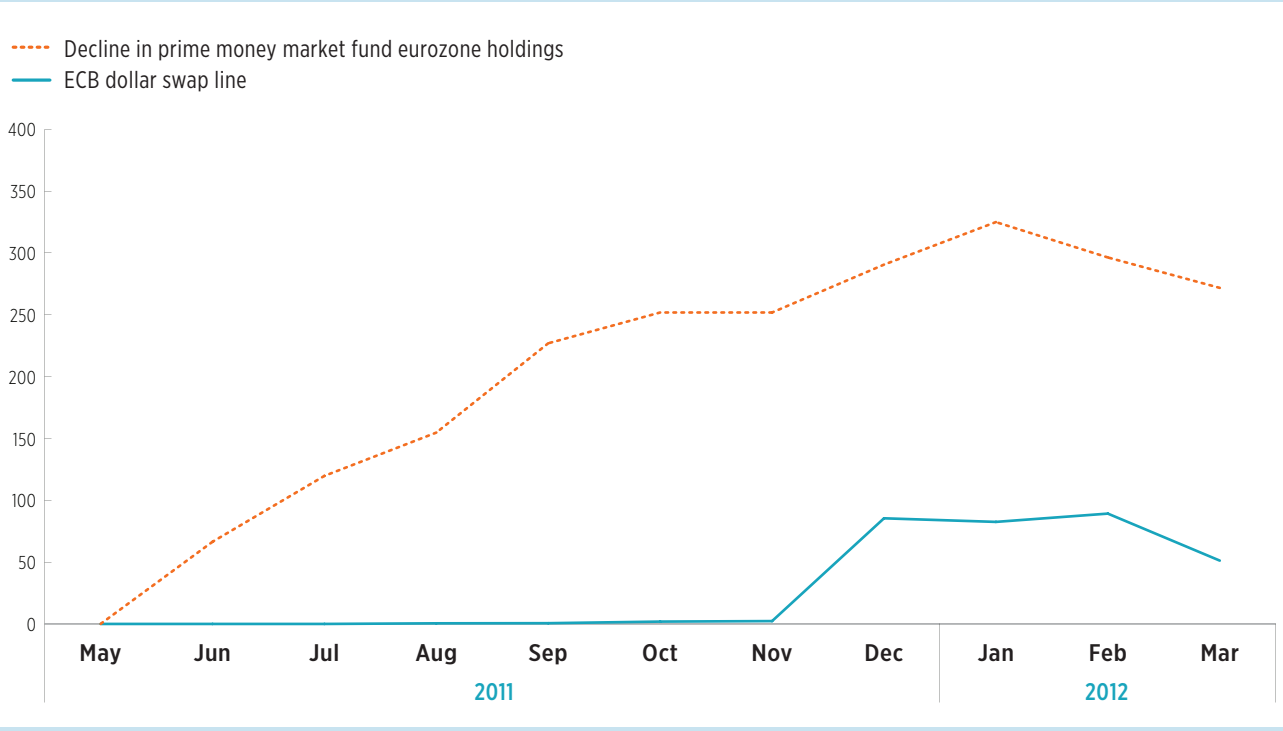
meet deposit outflows.[49] In late 2010, because of continuing weakness in the U.S. economy, the Federal Reserve began a massive asset purchase program known as quantitative easing II (QE II). From November 2010 to June 2011, this program led to an increase in reserve balances in the U.S. banking system of more than $600 billion. The bulk of the increase (more than $500 billion) appears to have ended up in reserve balances at U.S. branches and agencies of foreign banks.[50] Thus, to the extent that foreign banks with offices in the United States (i.e., those with branches and agencies) lost funding from money market funds or other depositors, they had plentiful reserve balances to help them accommodate deposit outflows.

In addition to reserve balances held with the Federal Reserve, eurozone banks had the ability to borrow dollars from the ECB.[51] The ECB could in turn borrow dollars from the U.S. Federal Reserve System under a reciprocal arrangement known as a swap line. Presumably, if a loss of funding from money market funds had constrained eurozone banks, they could have borrowed dollars from the ECB. Figure 27 shows the dollar reduction in prime funds' eurozone holdings in dollars compared to the ECB's lending of dollars to eurozone banks. From May to November 2011, prime money market funds reduced their eurozone holdings by $252 billion. In sharp contrast, over the same period eurozone banks borrowed just $2.3 billion

FIGURE 27

U.S. Money Market Fund Pullback from Eurozone and Use of European Central Bank (ECB) Dollar Swap Line

Billions of dollars



Sources: Investment Company Institute tabulations of SEC Form N-MFP and Federal Reserve Bank of New York data

from the ECB. It was not until December 2011, after the Federal Reserve lowered the interest rate it charged the ECB to borrow dollars, which in turn led the ECB to lower the rate it charged eurozone banks, that eurozone banks began borrowing dollars in size from the ECB. Still, even at the peak level of borrowing in February 2012, eurozone banks had borrowed just $89.2 billion, well below the nearly $300 billion reduction in funding they had by that point obtained from prime money market funds. The fact that eurozone banks did not tap ECB swap lines earlier in 2011 and for larger amounts suggests that they were able to adapt to the reduction in funding from money market funds.

Outflows from Prime Money Market Funds Did Not Cause a Decline in Lending by Subsidiaries of Foreign Banks in the United States

Money market funds reduced their investments in U.S. subsidiaries of foreign banks (branches and agencies) in the summer of 2011. Some authors (Correa et al., 2012) have suggested that this caused branches and agencies to reduce their lending to U.S. entities. The key question, however, is whether the reductions of money market fund investments in branches and agencies in 2011 led to a reduction in the supply of credit to the U.S. economy.

The answer is no. Over the second half of 2011, the total of commercial and industrial loans, real estate loans, and consumer loans held by branches and agencies increased, rather than decreasing. Although the increase was small, just 1.6 percent at an annual rate, it was roughly in line with the modest increase at domestic banks of just 2.5 percent at an annual rate.

Outflows from Prime Money Market Funds Did Not Cause Collateral Damage to U.S. Nonfinancial Firms

Some (Chernenko and Sunderam 2012a, 2012b) have argued that in order to accommodate outflows in the summer of 2011, prime funds reduced their holdings of all issuers, not just eurozone and other European banks. This, the authors claim, "significantly reduc[ed] the ability of other firms to raise short-term financing."[52] They further state that "money market funds…transmit distress from Eurozone banks to other firms, particularly nonfinancial firms, by temporarily disrupting their ability to raise financing in other markets." The implication is that U.S. nonfinancial firms with no direct ties to the eurozone were harmed when money market funds with large eurozone holdings withdrew (or did not renew) funding to meet shareholder redemptions. This study has received frequent mention by regulators and other commentators in policy debates regarding money market funds.[53]

The data, however, do not support this view. In the summer of 2011 (May 31 to August 31), assets of prime money market funds declined by $156.7 billion (Figure 28, top panel). Prime funds accommodated this by reducing their holdings of eurozone financial institutions by a nearly identical amount ($158.2 billion). Prime funds also reduced by $44.0 billion their exposure to financial institutions within Europe but outside the eurozone; many such banks were exposed to at-risk banks within the eurozone. Because prime funds reduced their exposure to European financial institutions (both inside and outside the eurozone) by more than the total decline in prime fund assets, prime funds had to increase their holdings elsewhere in the world. As Figure 28 demonstrates, much of that increase ($35.5 billion) went to U.S. Treasury and agency securities. At the same time, however, prime money market funds increased their investments in U.S. nonfinancial firms by $5.4 billion.

FIGURE 28

Change in Portfolio Composition of Prime Funds by Issuer Type

Billions of dollars; May 31 to August 31, 2011

[1] Funds are ranked by their eurozone bank exposure as of May 31, 2011.

[2] The "other" issuer category consists primarily of Canadian, Japanese, and Australian financial issuers.

Note: Components may not add to the totals because of rounding. Data include 1933 and 1940 Act feeders. Data exclude masters and funds that did not report their holdings for May 31, 2011.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

The bottom panel considers only those 25 percent of prime funds that were most exposed to eurozone banks on May 31, 2011. Such funds did, on net, reduce their holdings of U.S. nonfinancial firms over the summer of 2011 by a small amount (roughly $900 million).

There is compelling evidence, however, that this small reduction did not reflect an attempt or desire of these funds to reduce their investments in U.S. nonfinancial firms. According to SEC Form N-MFP data, on May 31, 2011, the quartile of prime funds most exposed to eurozone banks held debt issued by 102 U.S. nonfinancial firms. Figure 29 shows that from May 31 to August 31, these prime funds invested less in 31 U.S. nonfinancial firms, invested more in 20 firms, and maintained the same level for 51 firms. Thus, there was no general tendency of prime funds to reduce their investments in U.S. nonfinancial firms.

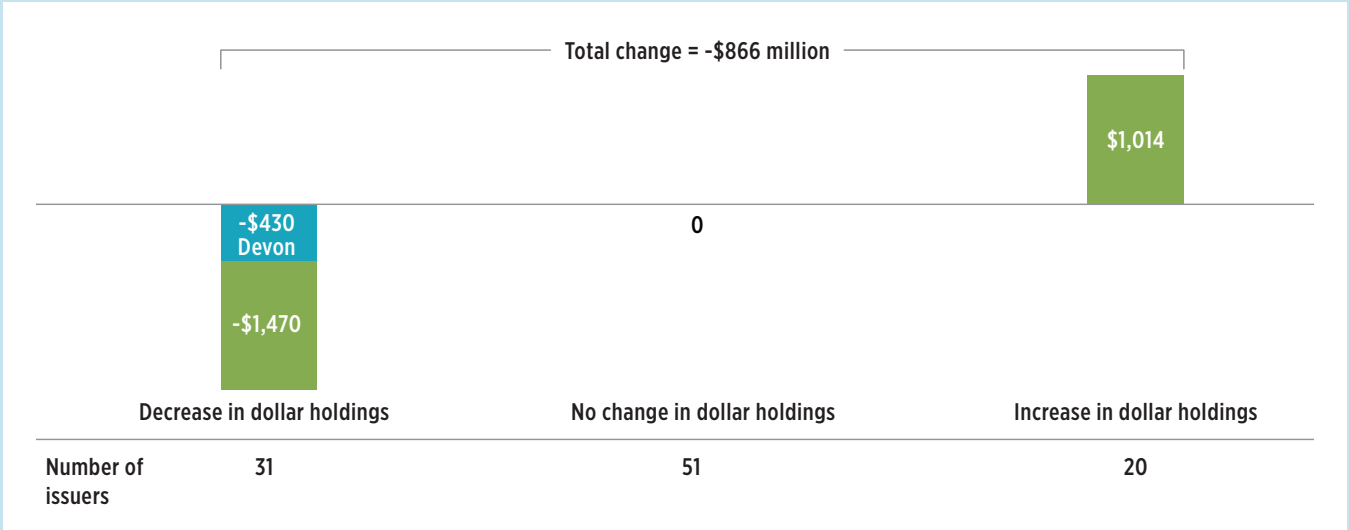
Moreover, the net reduction of $900 million in the investments of prime funds in U.S. nonfinancial firms from May 31 to August 31 is explained in significant part by supply-side factors, not a decline in demand by prime money market funds for U.S. nonfinancial debt. For example, nearly half of the $900 million net reduction was attributable to just one firm: Devon Energy Corporation. From May 31 to July 31, 2011, investments in Devon by the prime funds most exposed to the eurozone fell $430 million, a decline of 100 percent. However, market participants indicate that this $430 million decline reflected a reduction in the supply of Devon's commercial paper to the market, not a fall in money market funds' demand for that paper. On July 5, 2011, Devon completed a successful issuance of $2.3 billion of long-term bonds (Robinson and Catts, 2011). Fund managers indicate that Devon Energy subsequently elected not to roll over short-term financing it had obtained from prime funds.

Devon Energy Corporation is just one of many large U.S. nonfinancial companies that apparently used long-term bond issuance to reduce short-term financing during this time. The period from May to June 2011 saw a large number of companies issuing bonds as long-term interest rates fell to very low levels.[54] Money market funds' investments also

FIGURE 29

Change in Prime Funds Holdings of U.S. Nonfinancial Issuers Among Prime Funds with Top Quartile* Eurozone Bank Exposure

Millions of dollars; change from May 31, 2011, to August 31, 2011



*Funds are ranked by their eurozone bank exposure as of May 31, 2011.

Source: Investment Company Institute tabulations of SEC Form N-MFP data

declined during this period at Johnson & Johnson, CVS, IBM and Google. Media reports indicate that each of these firms had billions of dollars of cash on hand or had decided to lock in longer-term financing through bond issuance.[55] For example, IBM sold $2 billion of five-year notes, which, according to one analyst, allowed IBM to take "advantage of the market conditions to refinance short-term debt to extend maturities."[56]

In short, to the extent that prime fund investments in particular U.S. nonfinancial companies declined during the summer of 2011, that decline most likely reflected a lack of supply of commercial paper. Indeed, portfolio managers of prime funds indicate that they actively sought to purchase additional commercial paper (or other short-term debt) from U.S. nonfinancial corporations during the summer of 2011. In some cases, however, supply was too limited.

Conclusion

U.S. money market funds are among the world's most comprehensively regulated financial products. Like all U.S.-registered investment companies, they are governed by all four of the major U.S. securities laws. Money market funds are unique, however, in that they must adhere to an additional set of strict risk-limiting conditions set by the SEC. In the wake of the financial crisis of 2008, the SEC in 2010 significantly tightened the money market fund risk-limiting provisions. The efficacy of the SEC's new provisions was tested in 2011 by the market turmoil created by the standoff over the U.S. federal debt ceiling and deteriorating conditions in eurozone debt markets.

Money market funds passed these tests. The data show that money market fund managers proved themselves careful stewards of their investors' assets, adjusting their holdings in response to changing conditions and maintaining liquidity levels above those stipulated by the 2010 requirements.

Money market funds, while a vital segment of the financial markets, are but one segment among many. Despite what some critics have charged, their activity in 2010–2011 did not result in less credit being supplied to U.S. nonfinancial issuers or lead U.S. branches and agencies of foreign banks to reduce lending to the U.S. economy. Moreover, although money market funds reduced their investments with eurozone banks, such banks had access to other sources of U.S. dollars.

None of these points, however, suggests that money market funds are without risk.

Financial intermediaries—banks, hedge funds, insurance companies, investment companies, and private equity companies—exist to bring together those who have excess funds with those who need funds. This process naturally entails risk. The only way to eliminate such risks entirely is to eliminate financial intermediaries, an outcome unthinkable for modern economies.

Consequently, regulation of financial entities must strike a balance between the benefits to society of financial intermediation and controlling and limiting risks financial intermediation may pose. The SEC's 2010 amendments to Rule 2a-7 did just that: they struck a reasonable balance by seeking to strengthen the money market fund product while preserving the benefits of the product both to money market fund investors and to issuers who obtain financing from money market funds.

Moreover, the evidence presented here indicates that the SEC's 2010 amendments are working as intended—namely to reduce any systemic risks that could arise from money market fund investments and to improve investor safety. For example, liquidity levels mandated by the 2010 reforms—and in practice exceeded by fund managers—helped ensure that funds can meet substantial redemption pressures, in turn helping to limit self-fulfilling anticipations and redemptions by investors that a fund might run out of liquid assets with which to meet redemptions.

Nonetheless, driven by a desire to reduce systemic risk further, some regulators seek to impose additional regulations on money market funds. Although not considered here, some of these proposals would come at the cost of eliminating money market funds and the substantial benefits they provide to investors and issuers who obtain financing from money market funds.

The data in this paper will be updated in early February and provided on www.ici.org.

Notes

[1] In the United States, money market funds with a fluctuating NAV are legally permitted, but are rare. A recent example of a publicly offered fluctuating NAV money market fund is the DWS Variable NAV Money Fund launched in 2011. As of the end of September 2012, this fund had total net assets of $17 million (www.dbadvisorsliquidity.com/extras/_media/fs_vnav_inst_1011.pdf).

[2] After the financial crisis, the FDIC permanently raised the maximum insured limit to $250,000 (from $100,000 before the financial crisis) on deposit accounts. In addition, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 provided that non-interest-bearing demand deposits (e.g., business checking accounts) temporarily would have unlimited insurance until December 31, 2012.

[3] Money market funds, like banks and other financial institutions, faced extraordinary stresses in September 2008 in light of the U.S. federal government's decision to let Lehman Brothers fail. In 2010, in an effort to improve the resiliency of money market funds to withstand severe market stresses, the SEC adopted a number of wide-ranging revisions to Rule 2a-7, the rule that a mutual fund must adhere to if it wishes to call itself a mutual fund.

[4] A detailed comparison of Rule 2a-7 provisions before and after the 2010 money market fund reforms can be found at www.ici.org/policy/regulation/products/money_market/11_mmf_reg_summ.

[5] See SEC Commissioner Luis A. Aguilar, "Statement Regarding Money Market Funds," August 23, 2012, available at www.sec.gov/news/speech/2012/spch082312laa.htm, as well as Commissioners Daniel M. Gallagher and Troy A. Paredes, "Statement on the Regulation of Money Market Funds," August 28, 2012, available at www.sec.gov/news/speech/2012/spch082812dmgtap.htm. In response to the request of these three SEC commissioners for analysis, the SEC's Division of Risk, Strategy, and Financial Innovation published a paper on November 30, 2012.

[6] This study was undertaken independently and separately from the SEC's Division of Risk, Strategy, and Financial Innovation study of November 30, 2012. ICI staff began working on this study in the summer of 2012 before the three SEC commissioners put out their request for information on the effects of the 2010 reforms.

[7] A credit default swap (CDS) is a financial instrument that provides insurance against default on the debt of a corporation, government, or other entity should it default. The CDS purchaser pays a premium (CDS premium) to the CDS "writer," who in turn provides the insurance coverage if the entity defaults. Credit default swaps are generally quoted and available in maturities of six months, one to five years, seven years, and 10 years.

[8] For an overview of the key principles of the Investment Company Act, see Appendix C to Letter from Paul Schott Stevens, President and CEO, Investment Company Institute, to the Secretariat of the Financial Stability Board, c/o Bank for International Settlements (June 3, 2011) (regarding the FSB's directive to develop recommendations to strengthen the oversight and regulation of the "shadow banking system"). Available at www.ici.org/pdf/25258.pdf.

[9] Any fund registered under the Investment Company Act that holds itself out as a money market fund, even if it does not rely on the exemptions provided by Rule 2a-7 to maintain a stable share price, must comply with the rule's risk-limiting conditions. The SEC adopted this approach to address the concern that investors would be misled if an investment company that holds itself out as a money market fund engages in investment strategies not consistent with the risk-limiting conditions of Rule 2a-7.

[10] Rule 2a-7 also permits money market funds to use the penny rounding method of pricing. Under this method, share price is determined by valuing securities either at market value, fair value, or amortized cost, and rounding the per-share NAV to the nearest cent on a share price of $1.00.

[11] A money market fund could choose not to use the amortized cost method to value all of its securities, but would still have to comply with Rule 2a-7 in order to call itself a money market fund.

[12] See Investment Company Institute, *Report of the Money Market Working Group*, March 17, 2009, Appendix E for a history of Rule 2a-7.

[13] For example, the annual report of one large U.S. bank notes that "certain debt securities which management has the intent and ability to hold to maturity (HTM) are reported at amortized cost."

[14] See California Public Employees' Retirement System, *Comprehensive Annual Financial Report*, fiscal year ended June 30, 2011, which states that "short-term investments can consist of U.S. Treasury and Government Sponsored Securities, Money Market Funds, Commercial Paper, Certificates of Deposit, Delivery Versus Payment (DVP) Repurchase Agreements, Asset Backed Securities, Notes and Bonds issued by U.S. corporations, and other allowable instruments that meet short-term maturity or average life, diversification, and credit quality restrictions. This approach allows for a high level of liquidity and diversification. Assets are reported at fair value or cost or amortized cost that approximates fair value." Available at www.calpers.ca.gov/eip-docs/about/pubs/comprehensive-annual-fina-report-2011.pdf.

[15] See Office of the Comptroller of the Currency, U.S. Treasury Department, Short-Term Investment Funds, 77 FR 195, October 9, 2012.

[16] See, for example, Beresford (2012) who states that "T-bills are very common investments of money market mutual funds, as are short-term agency obligations. Other common money market mutual fund investments that would qualify as cash equivalents if held by commercial entities are commercial paper and repurchase agreements. Under current GAAP, all of these cash equivalents would be carried at cost in the financial statements of commercial entities because they are short-term highly liquid investments and are usually held to maturity—just like those that meet the requirements for the amortized cost method for investments of money market mutual funds."

[17] See Federal Reserve Board, *Financial Accounting Manual for Federal Reserve Banks*, stating that "for all domestic securities transactions, premiums and discounts are… amortized (accreted) on a straight-line basis. The securities are accounted for at amortized cost rather than fair value; therefore, no unrealized gains or losses are recognized." Available at www.federalreserve.gov/monetarypolicy/files/BSTfinaccountingmanual.pdf. Certain other major central banks, which are responsible for conducting monetary policy in their respective countries, follow conventional international accounting standards (International Financial Reporting Standards, or IFRS) in valuing portfolio securities, which requires that certain portfolio holdings be valued at their mark-to-market values. For example, the Bank of Canada, which follows IFRS, values at amortized cost only those securities it intends to hold to maturity; remaining securities that it holds as "available for sale" are valued at their current market values (see Bank of Canada, *2011 Annual Report*, page 53, www.bankofcanada.ca/wp-content/uploads/2012/04/annualreport2011.pdf). Similarly, the European Central Bank (ECB), the central bank for countries included in the eurozone, indicates that it uses amortized cost accounting for securities that it intends to hold to maturity and marks to market the value of other securities (see European Central Bank, *Annual Report 2011*, www.ecb.int/pub/pdf/annrep/ar2011en.pdf, page 176).

[18] See Federal Deposit Insurance Corporation, *Second Quarter 2012 CFO Report to the Board*, August 14, 2012, available at www.fdic.gov/about/strategic/corporate/cfo_report_2ndqtr_12/0612_CFO_Report.pdf.

[19] See, for example, Fitch Ratings' report titled "U.S. MMFs Show Shadow NAV Stability," available at www.fitchratings.com/creditdesk/reports/report_frame.cfm?rpt_id=681660. See also SEC Division of Risk, Strategy and Financial Innovation (2012), which states that after the SEC's 2010 reforms, "the largest change appears to be in the minimum reported shadow price (it used to be as low as $.995, but now it is always above $.9970) and the maximum reported shadow price (it used to be often above $1.003, but now it is generally below $1.003)."

[20] See Investment Company Institute, *Report of the Money Market Working Group*, March 2009, available at www.ici.org/pdf/ppr_09_mmwg.pdf.

[21] See *Money Market Fund Reform, Proposed Rule*, SEC Release No. IC-28007, 17 CFR 32688 (July 8, 2009).

[22] See *Money Market Fund Reform*, SEC Release No. IC-29132, 75 CFR 10060 (March 4, 2010).

[23] See *Report of the President's Working Group on Financial Markets: Money Market Reform Options* (October 2010). Available at www.treasury.gov/press-center/press-releases/Documents/10.21%20PWG%20Report%20Final.pdf.

[24] In the figure, changes in interest rates are generic. For example, they can be thought of as reflecting a case where both Treasury and commercial paper yields rise simultaneously by, say, 1 percentage point. Alternatively, they can be thought of as illustrating a case where credit spreads widen, such as if the yield on commercial paper rises by 1 percentage point but Treasury yields remain constant.

[25] Nevertheless, various factors limit how far regulation might seek to reduce funds' WAMs. One significant issue is whether there is a sufficient supply of money market securities at the very short end of the yield curve.

[26] See Rule 22e-3 under the Investment Company Act. Rule 22e-3 permits a money market fund to suspend redemptions and payment of redemption proceeds if (i) the fund's board, including a majority of directors that are independent of fund management, determines that the deviation between the fund's amortized cost price per share and the market-based NAV per share may result in material dilution or other unfair results, (ii) the board, including a majority of disinterested directors, irrevocably has approved the liquidation of the fund, and (iii) the fund, prior to suspending redemptions, notifies the SEC of its decision to liquidate and suspend redemptions.

[27] For an extensive discussion of Reserve Primary Fund, see the 2009 *Report of the Money Market Working Group* at www.ici.org/pdf/ppr_09_mmwg.pdf.

[28] Funds may choose to deliver a summary prospectus or a long-form prospectus. Those that choose to deliver a summary prospectus must make the long form available and statement of additional information (which provides supplemental detail) available on the fund's website and must furnish paper copies upon request.

[29] Several data providers help bridge this 60-day lag by compiling filings from websites—Crane Data and iMoneyNet are among them. There are certain data points, however, that are often only available from the SEC's form N-MFP report.

[30] See for example, the discussion in Minutes of the Federal Reserve Open Market Committee, June 21–22, 2011, stating that, "While admitting that it was difficult to know what the precise effects of such a development [i.e., failure to raise the statutory federal debt ceiling in a timely manner] would be, participants [at the FOMC committee meeting] emphasized that even a short delay in the payment of principal or interest on the Treasury Department's debt obligations would likely cause severe market disruptions and could also have a lasting effect on U.S. borrowing costs." Available at www.federalreserve.gov/monetarypolicy/files/fomcminutes20110622.pdf.

[31] See Moody's Investor Service, *Global Credit Research*, "Moody's Places Long-Term Ratings of Dexia's Main Operating Entities on Review for Possible Downgrade," March 28, 2011, stating that "Moody's decision to affirm the Prime-1 short-term ratings is similarly driven by our expectation that a downgrade of the long-term ratings to A3 is less likely than a downgrade to A2. In addition, we note that a Prime-1 short-term rating is not incompatible with an A3 long-term rating. While this combination is unusual, it reflects Moody's continued high expectations of systemic support for the group's financing needs." Available at www.moodys.com/research/Correction-to-Text-March-28-2011-Release-Moodys-places-long--PR_216733.

[32] Empirical evidence indicates that the term structure of credit default swap premiums generally slopes upward for investment grade companies (money market funds are restricted by Rule 2a-7 to holding short-term securities issued by investment grade companies). For non–investment grade companies, it is possible to have an inverted CDS curve, in that the CDS premium for shorter maturities is higher than for longer-dated CDS premiums. See for example, Lando and Mortensen (2005). There are a number of potential explanations for an upward sloping term structure of credit default swap premiums among high quality issuers. One is that high-quality issuers may have a smaller expected probability of default over a short horizon thus requiring a smaller CDS premium as insurance against default (Agrawal and Bohn, 2006).

[33] The estimate is constructed from the actual holdings of prime money market funds, as reported on the SEC's Form N-MFP. These holdings are matched with month-end CDS premiums for quotes of six months, one, two, three, four, or five years for the issuers that money market funds hold. Roughly 90 percent of the assets of prime money market funds are debt of issuers for whom we could find the range of CDS quotes. When there is no quote for a particular maturity, the CDS premium is estimated (interpolated) from the nearest two quotes (for example, the premium on a 230-day security is estimated using the six-month and one-year quoted CDS premiums for an issuer). Of course, many of the securities that money market funds hold mature in less than six months. To deal with that, we assume that the CDS premium on an overnight security is one-fourth the level of the six-month CDS premium for a given issuer. This one-fourth estimate is intended to be illustrative but is roughly consistent with certain other measures of the credit risk of very short-term money market instruments. For example, one measure of the credit risk of lending to banks over the very short term is the difference between one-week LIBOR and the one-week OIS (overnight index swap) rate. In 2011, the spread between one-week LIBOR and one-week OIS averaged 9 basis points. Over the same period, the spread between six-month LIBOR and six-month OIS averaged 38 basis points, a ratio of almost exactly one-fourth. An alternative measure, also indicative of the plausibility of our one-fourth estimate is provided by details in Covitz and Downing 2007. They indicate that the credit spread on AAA-rated issuers for one– to four–day commercial paper is 10 basis points compared to 22 basis points for the same issuers for maturities of 74 days or more, a ratio of about one-half at a maturity horizon significantly less than six months. We then interpolate CDS premiums for securities with a remaining maturity of two to 179 days. An alternative that would provide an upper bound would be to set the CDS premium at a maturity of zero for a given issuer equal to the six-month CDS premium for the same issuer. Doing so, however, would not change the two basic messages in Figure 16, namely that: (a) using of a five-year CDS premium vastly overstates the credit risk of a prime money market funds; (b) prime money market funds take only a modest amount of credit risk relative to Treasury-only funds (because we would shift to using six-month CDS premiums for the hypothetical Treasury-only fund for maturities of less than six months).

[34] To make this comparison, we use a hypothetical Treasury-only fund rather than actual Treasury-only funds. This is constructed by matching the holdings of prime money market funds with credit default swap premiums on Treasury securities of the same maturity. For example, if a prime money market fund is holding commercial paper with a remaining maturity of 180 days, this is matched with the six-month credit default swap premium on Treasuries. In cases where no comparable maturity exists, CDS premiums on Treasury securities are interpolated from existing quotes using the procedure described in the previous note. This comparison could also be made using actual Treasury-only funds, but doing so would introduce distortion because the portfolio holdings of Treasury-only funds can have a different maturity structure than prime funds.

[35] The analysis may overstate the credit risk in money market funds for a number of reasons. First, the roughly 10 percent of assets that are not matched with CDS premiums tend to be nonfinancial companies in the United States. When available, CDS premiums on nonfinancial corporations have recently tended to be lower than those on financial corporations. For example, on February 29, 2012, the five-year CDS premium on PepsiCo Inc. was 62.29, compared to 193.29 for BNP Paribas SA, a large European bank. Second, the analysis makes no allowance for securities that have a guarantee, letter of credit, or other type of credit enhancement. Such enhancements reduce the risk of holding a security but are ignored here except in cases where the guarantee is provided by the U.S. government or other sovereign nation. Third, no allowance is made for asset-backed securities. All else equal, asset-backed securities have less credit risk than securities that are not asset-backed. For example, recovery rates on asset-backed securities that defaulted during the 2007–2008 crisis are generally reported to have been much higher (in the range of 80 percent or more) compared with a recovery rate on Lehman Brothers Inc. debt of about 40 percent. This difference is ignored here. Finally, the analysis ignores collateral backing repurchase agreements, unless that collateral is composed entirely of Treasury and agency securities. Thus, if a repurchase agreement is more than fully collateralized but the collateral is not made up entirely of Treasury and agency collateral, it is treated as if the repurchase agreement is not collateralized at all.

[36] The 20 basis point estimate is on an asset-weighted basis across all prime money market funds with weights given by each fund's assets as a proportion of the total assets of prime money market funds.

[37] Some caution is appropriate because credit default swaps on U.S. Treasury securities are thinly traded. See, for example, the discussion in Austin and Miller (2011). However, the rise in the CDS premium on U.S. Treasuries over the June–July 2011 period is indicative of the stresses the Treasury market was experiencing and the realization that Treasury securities, previously always considered to be risk-free, in fact might not be risk-free (*Economist* 2011a).

[38] In its *2012 Annual Report*, the Financial Stability Oversight Council states that "A more recent episode of large-scale MMF redemptions is the response of MMFs to increased uncertainty about euro area stability in June 2011. This episode provides an opportunity to examine potential vulnerabilities in the MMF industry. In June 2011, the potential for European bank downgrades and rising concern about the euro area periphery debt crisis prompted concerns about MMF exposures to European banks. Prime MMFs began experiencing substantial redemptions, with assets falling by $165 billion…in June 2011." See Financial Stability Oversight Council (2012a).

[39] Ben Bernanke, Chairman of the Federal Reserve Board, stated on November 14, 2012, in comments before the Financial Stability Oversight Council that "We saw something analogous to the 2008 run, although much smaller, in the summer of 2011, when concerns about money market funds' exposures to European banks triggered institutional investors to pull about $180 billion from prime money market funds in eight weeks." Available at: www.treasury.gov/press-center/Video-Audio-Webcasts/Pages/Webcasts.aspx at minute 12:00.

[40] For example, Chernenko and Sunderam 2012a; Scharfstein 2012.

[41] See Minutes of the Federal Reserve Open Market Committee, August 9, 2011, available at: www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

[42] This led one large bank to announce in early August 2011 that it would charge 13 basis points for customers that had deposited more than $50 million since the end of July 2011. See the *Wall Street Journal*, "New Fee to Bank Cash." Available at http://online.wsj.com/article/SB10001424053111903366504576488123965468018.html

[43] By way of comparison, on these three days, institutional share classes of prime money market funds saw outflows of $24 billion in 2010 and $33 billion in 2012.

[44] Readers might ask whether other fund characteristics influenced the responsiveness of investors to the eurozone exposure of their individual funds. We tested this possibility by controlling for the share of fund assets held in institutional share classes and fund size. In that case, the influence of eurozone exposure of individual funds on fund flows falls by more than half, from -.17 to -.07, and becomes statistically insignificant. In other words, when we control for institutional assets and fund size, the effect of eurozone exposure on fund flows weakens dramatically. This suggests that large institutional funds experienced outflows irrespective of their individual eurozone bank exposure.

[45] See "Western Banks: Danger Everywhere," *The Economist*, October 8, 2011. Available at www.economist.com/node/21531473

[46] See Division of Risk, Strategy, and Financial Innovation, U.S. Securities and Exchange Commission, "Responses to Questions Posed by Commissioners, Aguilar, Paredes, and Gallagher," November 30, 2012.

[47] The two Federal Reserve studies the SEC report cites are Correa et al. (2012) and Ivashina et al. (2012).

[48] Fitch tracks a sample of prime money market funds that account for approximately 45 percent of total assets. See www.fitchratings.com/creditdesk/reports/report_frame.cfm?rpt_id=639850.

[49] To be more precise, a bank may tap its reserve balances in excess (i.e., excess reserves) of any reserves it is required by the Federal Reserve to hold either because of reserve requirements or to compensate the Federal Reserve for services it provides to the bank (so-called required clearing balances). The distinction between reserve balances and excess reserves is essentially irrelevant in this case, since the additional reserves that the Federal Reserve created under its QE II (quantitative easing II) program boosted banks' excess reserves.

[50] This is based on the change between October 2010 and June 2011 of "cash assets" reported for foreign-related institutions by the Federal Reserve in its Assets and Liabilities of Commercial Banks in the United States (H.8). Foreign-related institutions apparently report reserve balances held with the Federal Reserve under the line item "cash assets."

[51] See, for example, *Wall Street Journal* (2011b), which states that a "comfort for eurozone banks is that funding from U.S. money funds account [sic] for only a small portion of their financing, meaning the banks can still tap other channels, such as the European Central Bank. They can also tap the Federal Reserve's dollar swap line to access to short-term dollar loans." Available at http://online.wsj.com/article/SB10001424052702303848104576383792509500446.html.

[52] Chernenko and Sunderam (2012a) state that a money market fund manager reported, "it is just easier to say to clients 'we don't have any exposure to Europe' than to try to explain the differences." In fact, this is a misquote of an article in *The Economist* which attributes that comment to a central banker. The correct quote is: "'Money-market funds say it's easier just to say to clients that "we haven't any exposure to Europe" than to try to explain the differences,' says a central banker." See *The Economist* (2011a). Available at www.economist.com/node/21526926.

[53] For example, a recent paper by Federal Reserve staff (McCabe et al. 2012) claims, on the basis of the Chernenko and Sunderam (2012) paper, that "sizeable redemptions from [prime] funds motivated by concerns about their exposures to European banks caused reductions in the availability of short-term funding for U.S. nonfinancial firms." The Chernenko and Sunderam paper was recently mentioned in testimony on money market funds before a congressional committee. See testimony of David S. Scharfstein, "Perspective on Money Market Mutual Fund Reforms," before the Senate Committee on Banking, Housing, and Urban Affairs, June 21, 2012. Available at www.squamlakegroup.org/Scharfstein%20MMF%20Senate%20Testimony%20Final%20v2.pdf.

[54] See *Wall Street Journal Market Watch*, "Johnson & Johnson, McDonald's Sell Bonds," May 17, 2011, available at http://articles.marketwatch.com/2011-05-17/investing/30683678_1_bond-yields-move-coupon-bonds-treasury-bonds.

[55] See "Johnson & Johnson, McDonald's Sell Bonds," *Wall Street Journal Market Watch*, May 17, 2011, available at http://articles.marketwatch.com/2011-05-17/investing/30683678_1_bond-yields-move-coupon-bonds-treasury-bonds; "High-Grade: JPMorgan Bonds Wider on New Issues; CVS Soft on Earnings," *S&P Capital IQ*, May 5, 2011, available at www.lcdcomps.com/lcd/f/article.html?rid=800&aid=12328135; "IBM Sells $2 Billion of Notes After Sales Surpass Estimates," *Bloomberg*, July 19, 2011, available at www.bloomberg.com/news/2011-07-19/ibm-plans-five-year-notes-as-sovereign-debt-crises-fuel-short-term-demand.html; and "Record Low Interest Rates Create Stampede to Issue Corporate Bonds," *Money Morning*, May 30, 2011, available at http://moneymorning.com/2011/05/30/record-low-interest-rates-create-stampede-issue-corporate-bonds.

[56] See Sapna Maheshwari and Will Robinson. Bloomberg, "IBM Sells $2 Billion of Notes After Sales Surpass Estimates," July 19, 2011. Available at www.bloomberg.com/news/2011-07-19/ibm-plans-five-year-notes-as-sovereign-debt-crises-fuel-short-term-demand.html.

Glossary

accumulation of a discount. An accounting process by which the book value of a security purchased at a discount from face value (par) is increased during the security's holding period. The accumulation reflects the increase in the security's value as it approaches maturity, so that the book value will equal face value on the security's maturity date. For example, if a security with a face value of $100 and a remaining maturity of 60 days is purchased for $99.40, the daily accretion on a straight-line basis is one cent ($0.01). Thus, the security's book value will increase by one cent each day, from $99.40 at the time of purchase to $100 on the security's final maturity date.

amortization of a premium. An accounting process by which the book value of a security purchased at a premium above face value (par) is decreased during the security's holding period, so that the book value will equal par on the security's maturity date. The amortization reflects the decrease in the security's value as it approaches maturity. For example, if a security with a face value of $100 and a remaining maturity of 60 days is purchased for $100.60, the daily amortization on a straight-line basis is one cent ($0.01). Thus, the security's book value will decrease by one cent each day, from $100.60 at the time of purchase to $100 on the security's final maturity date.

amortized cost. The acquisition cost of a security as adjusted for accretion of a discount or amortization of a premium. Money market funds use amortized cost in lieu of market value to calculate their per-share net asset value (NAV).

basis point (bp). One one-hundredth of 1 percent (0.01 percent); thus, 100 basis points equal 1 percent. When applied to $1.00, 1 basis point is $0.0001; 100 basis points equal one cent ($0.01).

book value. The value at which a debt security is shown on the holder's balance sheet. For a money market fund, book value is amortized cost, which may differ from market value. It also may be described as "accreted book value" or "amortized book value."

break the dollar. A phrase used to describe when the net asset value (NAV) of a money market fund is repriced from its stable $1.00 NAV, an event that could be triggered by a deviation greater than one-half of 1 percent (one-half cent, or $0.0050) between the fund's mark-to-market value (shadow price) and its stable $1.00 NAV. Also known as *break the buck*.

commercial paper (CP). Short-term, unsecured notes issued by a corporation to meet immediate short-term needs for cash, such as the financing of accounts payable, inventories, and short-term liabilities. Maturities typically range from overnight to 270 days. Commercial paper is usually issued by corporations with high credit ratings and sold at a discount from face value.

credit default swap (CDS). A contract designed to transfer the credit exposure of debt obligations between parties. The buyer of a CDS receives credit protection, whereas the seller of the CDS provides protection against the security's default. The buyer makes a series of payments to the seller and, in return, receives a payoff if the security underlying the agreement experiences a credit event, such as a default.

credit quality. A term used to describe the creditworthiness of an issuer of fixed-income securities and to indicate the likelihood that the issuer will be able to repay its debt.

credit rating. An evaluation given by a nationally recognized statistical ratings organization (NRSRO) of a security's creditworthiness. Also known as *rating*.

credit risk. The risk that an issuer of debt securities or a borrower may default on its obligations.

credit spread. The additional yield required of a debt security beyond that of a default-free security.

daily liquid assets. The cash, Treasury securities, or securities that convert into cash within one day in a fund's assets. All taxable funds must keep at least 10 percent of their assets in these types of investments.

default. Broadly, a failure by an issuer to pay principal or interest when due or to meet other terms required by a debt contract.

demand feature. A feature permitting the holder of a security to sell the security at an exercise price equal to the approximate amortized cost of the security plus accrued interest, if any, at the time of exercise.

diversification. The practice of investing broadly across a number of different securities, industries, or asset classes to reduce risk. Diversification is a key benefit of investing in mutual funds and other investment companies that have diversified portfolios.

eurozone. Eurozone refers to the monetary union of European Union countries using the euro as their primary currency.

fair value. The price for a security which the fund might reasonably expect to receive upon its current sale.

Federal Deposit Insurance Corporation (FDIC). A federal agency that insures money on deposit in member banks and thrift institutions.

floating-rate security. A security whose interest rate periodically resets to a different level, according to a particular interest rate or index.

government money market fund. See **money market fund**.

interest rate reset date. The date on which a variable-rate debt security's interest rate is adjusted. This adjustment occurs periodically over the life of the variable-rate security and is either tied to some reference rate or determined by an agent to allow the security to be resold for its par value.

interest rate risk. Risk of gain or loss on a security due to possible changes in interest-rate levels. When interest rates rise, the market value of a debt security will fall, and vice versa. Interest rate risk is a type of market risk.

know your investor. To comply with the new portfolio liquidity requirements, money market funds are required to implement procedures designed to identify and monitor the risk characteristics of fund shareholders. These procedures must be reasonably designed to ensure that the fund has sufficient portfolio liquidity to meet anticipated redemptions.

laddered portfolio. A portfolio whose securities have final maturity dates across a broad range of maturities, rather than being concentrated at only a few dates.

liquidity. The ability of a security to be easily and rapidly converted to cash without a substantial loss of value. In the money market, a security is said to be liquid if the spread between bid and ask prices is narrow and reasonably sized trades can take place at those quotes.

market value. The price at which a security was last traded or a market maker or dealer is currently offering to trade and could presumably be purchased or sold.

mark-to-market value. The current market value of an asset or liability.

maturity. The date by which an issuer promises to repay a bond's face value.

maturity date. The final payment date of a debt security, on which all outstanding principal and interest are repaid.

money market. The global financial market for short-term borrowing and lending where short-term instruments such as treasury bills, commercial paper, and repurchase agreements are bought and sold.

money market fund. A mutual fund that seeks to maintain a stable $1.00 net asset value (NAV) by valuing its assets at amortized cost, or that is otherwise required to comply with the risk-limiting conditions of rule 2a-7. Money market funds are generally classified as follows:

- **1. tax-exempt money market fund.** A fund that seeks to maintain a stable NAV while paying dividends that are not taxed by the federal government, and in some cases by states and municipalities, by investing in municipal money market securities.
- **2. taxable money market fund.** A government or prime money market fund, the dividends of which are taxed by federal, state, and local governments.

- **a. government money market fund.** A taxable money market fund invested principally in U.S. Treasury obligations and other financial instruments issued or guaranteed by the U.S. government, its agencies, or its instrumentalities. One type of government fund is a **Treasury money market fund**, which primarily invests in direct government obligations, such as U.S. Treasury bills and other short-term securities backed by the full faith and credit of the U.S. government either through direct purchases or repurchase agreements collaterized by such securities.

- **b. prime money market fund.** A taxable money market fund that invests in high quality, short-term money market instruments including Treasury and government obligations, certificates of deposit, repurchase agreements, commercial paper, and other money market securities.

mutual fund. An investment company registered with the SEC that buys a portfolio of securities selected by a professional investment adviser to meet a specified financial goal (investment objective). Mutual funds can have actively managed portfolios, where a professional investment adviser creates a unique mix of investments to meet a particular investment objective, or passively managed portfolios, in which the adviser seeks to track the performance of a selected benchmark or index. One hallmark of mutual funds is that they issue "redeemable securities," meaning that the fund stands ready to buy back its shares at their current net asset value (NAV).

net asset value (NAV). A mutual fund's price per share, calculated by dividing the value of the fund's securities and other assets, less liabilities, by the number of shares outstanding. Money market funds use amortized cost, rather than market value, to calculate their NAV.

prime money market fund. See **money market fund**.

rating. An evaluation given by a nationally recognized statistical ratings organization (NRSRO) of a security's creditworthiness. Also known as credit rating.

registered investment company. A company that is required to register as an "investment company" with the SEC under the Investment Company Act of 1940 and is also required to register the public offering of its shares under the Securities Act of 1933. The definition of investment company in the Investment Company Act of 1940 generally includes any company that is engaged primarily in the business of investing, reinvesting, or trading in securities.

remaining maturity. A security's remaining maturity is the number of days between the current date and the security's maturity date.

repurchase agreements (repos). A form of short-term funding for dealers. The dealer sells the securities to investors, usually on an overnight basis, and buys them back at a higher price reflecting the cost of funding.

Treasury bill (T-bill). A short-term debt obligation of the U.S. government with a maturity of less than one year. T-bills are issued for maturities of four, 13, 26, and 52 weeks.

Treasury money market fund. See **money market fund**.

weekly liquid assets. The cash, Treasury securities, certain other government securities with remaining maturities of 60 days or less, or securities that convert into cash within five business days in a fund's assets. All funds must keep at least 30 percent of their assets in these types of investments.

weighted average life (WAL). A measure of a money market fund's sensitivity to changes in credit spreads and other spread risks. Weighted average life, which is expressed in days, is calculated by summing the remaining maturity of each portfolio security or, when relevant, the number of days until the date of the next demand feature when the fund may receive payment of principal and interest, scaled by that security's share of the portfolio's total value, as measured by amortized cost. Weighted average life differs from weighted average maturity (WAM) in that the weighted average life calculation uses a variable-rate security's final maturity (or the date of the next demand feature); the weighted average maturity calculation uses the security's next interest rate reset date. Thus, weighted average life will always be equal to or greater than the weighted average maturity.

weighted average maturity (WAM). A measure of a money market fund's sensitivity to changes in interest rates. Weighted average maturity, which is expressed in days, is calculated by summing the remaining maturity or time to an interest rate reset of each portfolio security scaled by that security's share of the portfolio's total value, as measured by amortized cost.

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