

10

Money Market Funds

How to Avoid Breaking the Buck

Marcin Kacperczyk and Philipp Schnabl*

10.1 OVERVIEW

A money market fund is a financial intermediary that manages funds on behalf of investors who wish to invest in low-risk securities while being able to withdraw funds at short notice. The primary objective of a money market fund is to maintain the value of the principal of its assets. Thus, money market funds invest only in low-risk, short-term securities, such as commercial paper, certificates of deposit, and Treasuries. From the investors' perspective, holding shares of money market funds is similar to depositing cash in a bank, because investors can withdraw money from a fund anytime without a penalty. The benefit relative to bank deposits is that money market funds earn a slightly higher yield relative to what cash yields in bank deposit accounts. The cost relative to bank deposits is that money market funds are not insured by the government. The money market funds sector is large, with more than \$3 trillion of assets under management in 2007.

This chapter is partly based on the authors' article "When Safe Proved Risky: Commercial Paper during the Financial Crisis of 2007–2009," published in the *Journal of Economic Perspectives* in winter 2010. We thank the editors, Matt Richardson and Viral Acharya, for their help in preparing this chapter. We also benefited from discussions in the "Money Market Funds" Working Group, which also included Andy Kon, Anthony Lynch, Antti Petajisto, Kermit L. Schoenholtz, and Robert Law.

10.2 PRIMER ON MONEY MARKET FUNDS

Money market funds emerged in the 1970s as an alternative to bank deposits. The driving force behind their emergence was restrictive regulation of bank deposits. Until the early 1980s, the government set a maximum interest rate on bank deposits, which limited the returns to investors. Money market funds allowed investors to circumvent this regulation by directly investing in money market instruments, such as commercial paper, which yielded higher returns than bank deposits.

Even after the government lifted the interest rate ceiling, rates on bank deposits typically remained below rates on money market deposits. As shown in Figure 10.1, interest rates on money market deposits closely followed the federal funds rate, but bank deposits' rates usually remained below the Fed funds rate. As a result, money market funds offer a yield advantage over bank deposits, and total money market deposits increased steadily over the past three decades from \$500 billion in 1987 to \$3 trillion in 2007, as shown in Figure 10.2.

A possible explanation for the difference between the two interest rates is that money market deposits are riskier, because, unlike bank deposits, they do not have government insurance. Hence, even though money market funds seek to preserve the value of an investment at \$1.00 per share, it is possible that investors in money market funds can suffer a loss on their investments.

To limit the risks of money market fund investments, the government regulates holdings of money market funds under Rule 2a-7 of the Investment Company Act of 1940. The regulation specifies the type of instruments money market funds can invest in. For example, Rule 2a-7 limits commercial

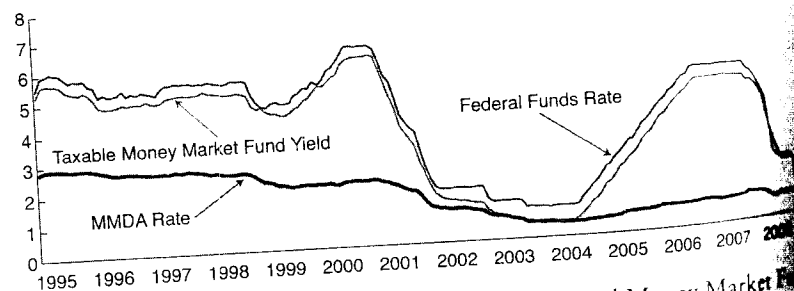
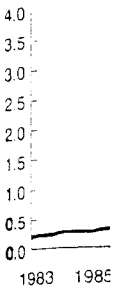


FIGURE 10.1 Comparison of Annual Bank Rates and Money Market Yields (Percent, Monthly)
Source: Bank Rate Monitor, Federal Reserve Board, and iMoneyNet.



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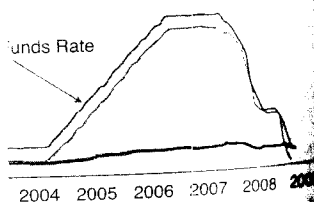
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alternative to bank deposits. Restrictive regulation of bank deposits set a maximum interest rate for bank deposits. Money market funds, by directly investing in commercial paper, which yielded higher

interest rates, rates on bank deposits. As shown in Figure 10.1, money market deposits closely followed the Fed's discount rate. They generally remained below the Fed's discount rate, offering a yield advantage over bank deposits. As interest rates increased steadily over the 1980s, money market funds grew to \$3 trillion in 2007, as shown

in Figure 10.2. Between the two interest rates, money market funds, unlike bank deposits, are not insured by the FDIC. Even though money market funds are insured, they can suffer a loss on their investments.

Under Rule 2a-7 of the Investment Company Act of 1940, which specifies the type of instruments money market funds can hold, Rule 2a-7 limits commercial



Money Market Fund

and iMoneyNet.

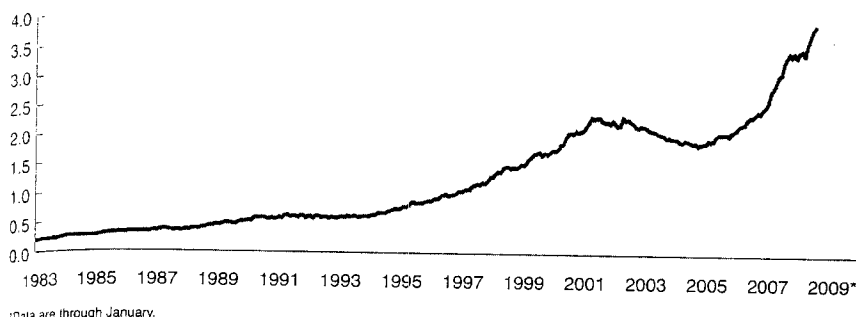


FIGURE 10.2 Total Net Assets of Money Market Funds (Trillions of Dollars, Monthly)

Source: Report of the Money Market Working Group (Figure 2.2), Investment Company Institute, March 17, 2009.

paper holdings of money market funds to commercial paper that carries either the highest or second-highest rating for short-term debt from at least two of the nationally recognized credit rating agencies. Further, money market funds must hold not more than 5 percent of their assets in securities of any individual issuer with the highest rating and not more than 1 percent of their assets in securities of any individual issuer. Also, holdings of securities with the second-highest rating must not exceed 5 percent of the funds' assets. Rule 2a-7 also contains regulation of other asset classes to limit risks of money market funds (Stigum and Crescenzi 2007).

We use a novel data set provided by iMoneyNet to analyze the holdings of money market funds. This data set provides the most comprehensive source of information on money market funds' asset holdings. Our subsequent analysis focuses on taxable money market funds, which represent 84.5 percent of money market fund holdings in 2007.

As of January 2007, there were 473 taxable money market funds holding assets worth \$1.95 trillion. About one-third of the funds were Treasury funds, which almost exclusively invest in government debt and government-backed agency debt. The remaining two-thirds were prime funds that invest primarily in nongovernment assets, such as commercial paper. The largest asset class held by taxable money market funds was commercial paper, accounting for \$634 billion or 32.5 percent of total asset holdings. The remaining asset classes included government debt and government-backed agency debt (\$585 billion), repurchase agreements (\$390 billion), bank obligations (\$297 billion), and other assets (\$45 billion).

Most large money market funds are geared toward institutional investors. A study by Moody's Investors Service (2007) shows that in

January 2007 the 15 largest institutional prime funds accounted for a total of \$459 billion of assets. Institutional prime funds hold a large number of different money market instruments, and these money market funds are therefore considered well diversified. Nevertheless, money market funds are highly exposed to risks in the financial industry as a whole. Assets originated by the financial industry—measured as the total of financial commercial paper, structured securities, bank obligations, and repurchase agreements—accounted for 91.4 percent of money market fund assets.

Outside the United States, most countries have no regulation similar to Rule 2a-7. As a result, money market funds developed only recently, when changes in the regulatory environment in Europe led to a more favorable treatment of money market fund deposits. Over the past several years, money market funds in Europe have grown significantly. As of January 2008, European money market funds had about €350 billion of assets under management. In terms of currency, the market was about evenly split between euros and British pounds (see International Capital Market Association 2008).

Given that most money market funds are based in the United States, we focus our discussion on money market funds in the United States. However, we note that most of our analysis also applies to European money market funds.

10.3 MONEY MARKET FUNDS DURING THE FINANCIAL CRISIS

Prior to Lehman's bankruptcy, most investors regarded money market funds as a safe asset class. The only time a money market fund ever defaulted prior to the financial crisis was in the early 1990s during the Orange County bankruptcy. However, it was a small fund and other funds weathered the bankruptcy without breaking the buck. This is probably why, during the early phase of the financial crisis, most investors perceived money market funds as a safe haven. Even though a large number of prime money market funds had invested in asset-backed commercial paper, these funds barely suffered any losses from those investments, as most issuers of asset-backed commercial paper had credit guarantees from large commercial banks (Acharya, Schnabl, and Suarez 2009). In case a fund did face some losses, the management company often voluntarily purchased impaired assets at face value.

It was not until September 2008 that money market funds faced significant pressure. After the bankruptcy of Lehman Brothers on September 15, 2008, many investors were surprised to learn that the Reserve Prime

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Fund—one of the largest money market funds, with more than \$65 billion in assets under management—owned more than \$785 million of Lehman's commercial paper. In fact, the founder of the Reserve Primary Fund, who had been one of the pioneers of the money market industry, had publicly expressed the view that money market funds should not invest in commercial paper because it was too risky. In line with this view, until September 2005 the Reserve Primary Fund's reports with the Securities and Exchange Commission (SEC) did not include any investment in commercial paper. This commitment was subsequently abandoned and, from 2006 onward, the reports filed by the Reserve Primary Fund indicated that the fund began acquiring significant amounts of commercial paper, probably to boost its performance (Stecklow and Gullapalli 2008).

The revelation of the Reserve Primary Fund's exposure to Lehman during its bankruptcy triggered an immediate run on the fund. On September 16, 2008, the Reserve Primary Fund was forced to pay out \$10.8 billion in redemptions, and it faced about \$28 billion of further withdrawal requests. The run quickly spread to other money market funds with commercial paper holdings. Our analysis based on iMoneyNet data shows that within a week institutional investors reduced their investments in money market funds by more than \$172 billion. To stop the run on money market funds, on September 19, 2008, the U.S. Department of the Treasury instituted a temporary deposit insurance covering all money market investments. This announcement stopped the run on money market funds, and redemption requests promptly receded.

Nonetheless, investors interpreted Lehman's bankruptcy as a signal that commercial paper issued and sponsored by financial institutions was far riskier than investors had previously thought. As shown in Figure 10.3, financial commercial paper outstanding dropped by 29.5 percent, from \$806 billion on September 10, 2008, to \$568 billion on October 22, 2008. Over the same time period, asset-backed commercial paper outstanding dropped by a smaller 9.8 percent, from \$741 billion to \$668 billion. Also, the spreads on both asset-backed and financial paper significantly increased, though the change for financial commercial paper was more temporary.

Money market funds were a leading force in the decline of the commercial paper market. Although money market fund investments were considered safe because of the newly introduced deposit insurance, money market funds themselves decided to reduce their holdings of commercial paper. As Figure 10.4 shows, within one month after Lehman's bankruptcy, as a percentage of money market funds, commercial paper holdings fell from 22.2 percent to 16.9 percent. The decrease in commercial paper holdings was accompanied by money market funds' expansion of their holdings of government debt from 36.7 percent to 44.5 percent of asset holdings.

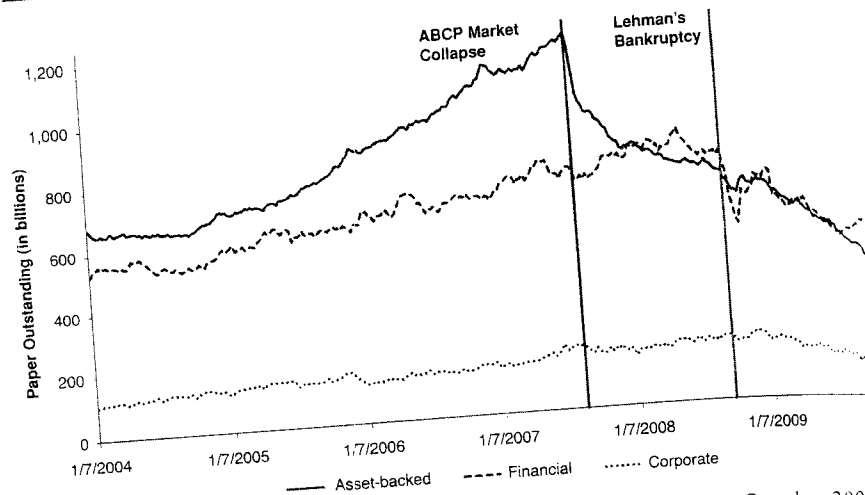


FIGURE 10.3 Commercial Paper Outstanding, January 2004 to October 2009
Note: Weekly commercial paper outstanding based on Federal Reserve Board data.

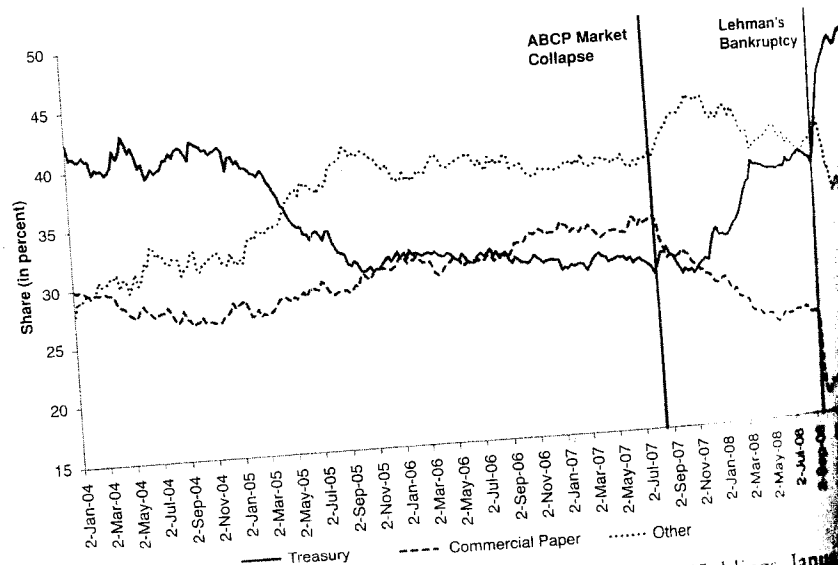


FIGURE 10.4 Money Market Funds' Asset Shares in Total Holdings, January 2004 to December 2008
Note: Authors' own analysis using iMoneyNet data on money market funds' holdings.

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10.4 GOVERNMENT RESPONSE TO LEHMAN'S BANKRUPTCY

In response to the run on money market funds, the government decided to roll out a number of new policy initiatives to contain the situation. On September 19, 2008, the U.S. Treasury announced that the U.S. government would temporarily guarantee assets of money market funds (U.S. Department of the Treasury 2008). Around the same time, it announced a new lending program—the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF). The AMLF—administered by the Federal Reserve Bank of Boston—was supposed to provide loans to commercial banks so that they could purchase high-quality asset-backed commercial paper from money market funds. These are nonrecourse loans, which implies that if the asset-backed commercial paper defaults, the Federal Reserve takes over the commercial paper instead of requiring repayment of the loan. As Figure 10.5 illustrates, the AMLF started buying commercial paper on September 24, and its first two weeks of activity amounted to approximately \$150 billion worth of purchases. Over time, the AMLF reduced its purchases, and by October 2009, its holdings had gone down to almost zero.

On October 7, 2008, the Federal Reserve announced that, in addition to buying through the AMLF, it would purchase three-month commercial

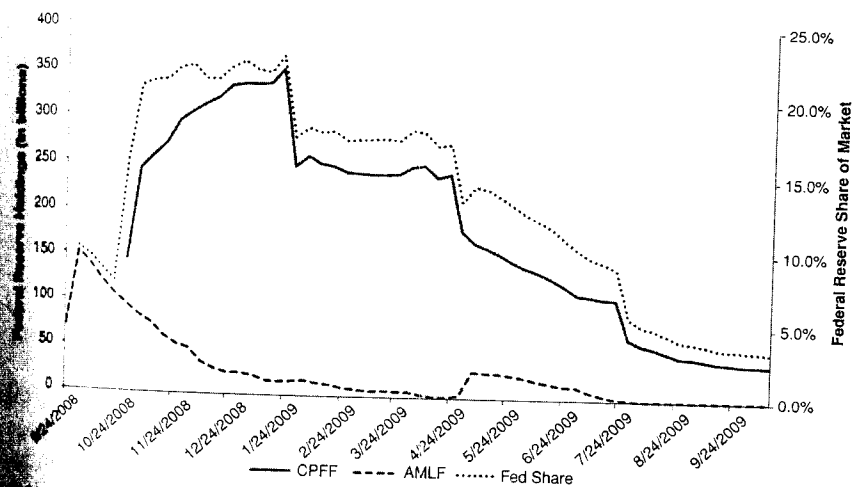
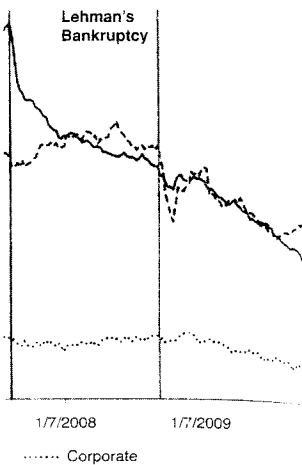


FIGURE 10.5 Holdings of Fed Funding Facilities, September 2008 to October 2009

Source: Based on Federal Reserve Board and New York Federal Reserve data.



January 2004 to October 2009
Federal Reserve Board data.



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paper directly from eligible issuers through the Commercial Paper Funding Facility (CPFF). Only U.S. issuers of commercial paper, including U.S. issuers with a foreign parent, were eligible to sell commercial paper to this facility. This was important because many issuers of commercial paper are located outside of the United States, but they maintain funding facilities in the United States (Acharya and Schnabl 2009). The interest rate on corporate and financial commercial paper was the three-month overnight indexed swap rate—a standard measure of borrowing costs in money markets—plus 200 basis points. Likewise, the interest rate on asset-backed commercial paper was the overnight indexed swap rate plus 300 basis points.

As shown in Figure 10.5, the CPFF started purchasing commercial paper on October 26, 2008. The value of financial commercial paper outstanding came back to its precrisis level. Also, the spreads on all types of commercial paper significantly decreased. By the end of 2008, the total value of commercial paper purchased under the CPFF program equaled \$335 billion, of which one-third was asset-backed commercial paper. As a result, the Federal Reserve was the single largest buyer of commercial paper (Federal Reserve Bank of New York 2008). Initially, the program purchased only assets with maturities over 15 days, and only from January 2009 on did it expand to shorter-maturity assets. Also, like the AMLF, the value of assets purchased under the CPFF has been gradually declining; it reached about \$40 billion in October 2009.

Finally, on October 21, 2008, the Federal Reserve announced another lending program—the Money Market Investor Funding Facility (MMIFF)—intended to complement the AMLF. Similar to the AMLF, the new program was supposed to provide nonrecourse loans to money market funds. The main difference was that it was restricted to money market instruments other than asset-backed commercial paper, such as certificates of deposit, bank notes, and financial and corporate commercial paper. The New York Fed began funding eligible money market instruments under this program on November 24, 2008. However, the facility never took off, and as of August 2010 it had not provided a single loan to money market funds.

10.5 NEW REGULATION AND ASSESSMENT

The SEC adopted new regulation for money market funds in March 2010. The new regulation aims to reduce the risk-taking behavior of money market funds by restricting their investments to the highest-quality securities, reducing the average maturity of their holdings, requiring funds to maintain a portion of their portfolios in instruments that can easily be converted into cash, and requiring them to provide monthly holdings reports. Regarding

the funds' liquidation, have broken the bubble (winding of the fund in 2010).

In an earlier period, money market funds' net asset value ratios were a key factor in reasoning for this, but on whether a fund was in normal circumstances.

In evaluating the money market funds, First, they effectively market fund investments in the market funds primary sector. Hence, they financial intermediaries.

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The key problem follows:

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the funds' liquidations, the new regulation allows money market funds that have broken the buck to suspend redemptions to allow for an orderly unwinding of the fund (see Securities and Exchange Commission 2010; Maxey 2010).

In an earlier proposal, the SEC was also seeking comments on whether money market funds, like other mutual funds, should be priced at a floating net asset value rather than at a fixed net asset value of one dollar. The reasoning for this proposed change was that investors would put less focus on whether a fund breaks the buck if net asset values also fluctuated under normal circumstances (see Securities and Exchange Commission 2009).

In evaluating the new SEC regulation, it is important to recognize that money market funds perform two important functions in the economy. First, they effectively form a part of the payment system, because money market fund investors can redeem their shares on demand. Second, money market funds primarily invest in short-term securities issued by the financial sector. Hence, they are an important source of short-term financing for other financial intermediaries.

Why should the government regulate money market funds? During a financial crisis, concerns are usually voiced about the viability of the payment system and access to short-term financing for financial intermediaries. If either the payment system fails or financial intermediaries cannot refinance themselves, there can be large negative effects on the rest of the economy. Given that money market funds provide both payment services to investors and refinancing to financial intermediaries, there is a strong case for the government to support money market funds during a financial crisis by guaranteeing the value of money market fund investments. As a result of such support, money market funds have an *ex ante* incentive to take on excessive risk, similarly to other financial institutions with explicit or implicit government guarantees.

Prior to Lehman's bankruptcy, guarantees to money market funds may have been perceived as unlikely. However, after the guarantees were provided in September 2008, most investors will expect similar guarantees during future financial crises, independent of whether the guarantees are made explicit. Hence, we evaluate the new regulation in terms of its suitability to address the prospect of government support during financial crises.

The key provisions of the new money market fund regulations are as follows:

- Improved portfolio liquidity (e.g., 30 percent of money market funds' holdings must be liquid within one week).
- Higher credit quality (e.g., maximum of 3 percent invested in second-tier securities).

- Shorter portfolio maturity (e.g., maximum weighted average maturity of a fund's portfolio restricted to 60 days).
- Introduction of periodic stress tests to evaluate funds' ability to withstand shocks.
- Enhanced disclosure (monthly reporting of money market fund holdings).
- Authorization of a fund's board of directors to suspend redemptions if the fund breaks the buck.

Importantly, the SEC decided against the introduction of a floating net asset value and instead maintained the stable net asset value for pricing.

We believe that the new regulation is sensible and should increase the safety of the money market fund sector. However, we point out that the new regulation cannot entirely eliminate runs on money market funds. Like other financial intermediaries, money market funds transform illiquid securities (e.g., commercial paper) into liquid demand deposits. As long as the regulator does not impose liquidity requirements of 100 percent—and thereby effectively outlaw money market funds—there will always be a possibility of a run. In fact, several money market funds satisfied the regulation even during the financial crisis and were still subject to runs after Lehman's bankruptcy. Hence, even though the new regulation makes the money market fund sector more secure (and also less profitable), it will not eliminate the issue of government support during systemic crises.

Our key observation is that the new regulation does not address the critical issue of likely government guarantees during future financial crises. We therefore recommend considering the following alternative proposals.

Glass-Steagall for Money Market Funds

Our first solution is based on the principle that money market funds inherently look just like banks and are engaged in maturity mismatch. Under this alternative, we envision that the government explicitly recognizes its commitment to support money market funds during a systemic crisis. The provision of guarantees should be restricted to large systemic crises and can be at the discretion of a financial regulator. In exchange for the expected cost of the guarantee, the government should charge a fee to money market funds. The fee should be charged in normal times and not after the crisis has arisen. To preclude risk taking at the expense of the guarantee, the SEC should require investment restrictions on portfolio maturity and eligibility. In addition, we recommend restrictions on exposure to a single issuer, by aggregating exposure across securities. (See Kacperczyk, Sialm, and Zheng 2005 for implications of such rules for equity funds.) The fee

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charged against the guarantee would thus typically be lower than the cost of the guarantee provided on bank deposits, because investments by money market funds would be more restrictive than those of banks benefiting from deposit insurance.

Discount Window for Money Market Funds

Our second alternative is based on the idea that even though money market funds in principle can be treated differently from banks—that is, without explicit guarantees to deposits—in a systemic crisis, when several financial institutions are in trouble, there will invariably be a collective run on money market funds since they primarily invest in short-term commercial paper and a large part of the market for this paper consists of issuance by banks and financial institutions. Recognizing this possibility, some resolution of such collective runs must be planned for in advance. Individual runs on funds may be easy to resolve through requiring that funds in trouble simply liquidate their assets and pass on their losses to investors. However, such a resolution may be difficult when several funds are in trouble simultaneously, as it would require large-scale liquidations of commercial paper all at once.

Hence, under the second alternative, we propose that the government would announce that it will *not* provide guarantees to money market funds during a systemic crisis. To make such an announcement credible, the government needs to outline a clear procedure for stopping runs on money market funds. First, the government should allow money market funds to place a stay on redemptions in the case of a run—that is, a temporary suspension of the rights of investors to redeem their invested funds. The primary purpose of the stay is to allow for an orderly liquidation of the fund. This measure recognizes that putting a stay on a single fund's redemptions can trigger a run on the rest of the money market fund sector, leading to a stay on the entire industry.

Second, the government should establish a liquidity window (similar to the discount window for banks), which lends to money market funds freely against liquid collateral (such as bonds of governments of the highest credit quality). On illiquid assets, either the central bank could lend through the liquidity window against a fee and a sizable haircut (depending on current market conditions) or, preferably, the illiquid assets should be liquidated in an orderly manner during the period of the stay. These three features—a stay, the liquidity facility, and the orderly liquidation of illiquid assets—should allow investors to withdraw money during the liquidation process, but only after first paying for losses on liquidations and fees to the central bank.

In addition, the regulator can require money market funds to purchase guarantees from affiliated financial intermediaries. Before Lehman's bankruptcy, several fund families supported their funds to avoid breaking the buck. The regulator could require fund families explicitly to recognize—and suitably capitalize—such guarantees. Funds lacking support from their fund families would be required to purchase guarantees from financial institutions of comparable financial strength as fund families providing support.

Require Floating Net Asset Value

Our third alternative is to require money market funds to use a floating net asset value instead of a stable net asset value. However, we recognize that under such regulation, money market funds would lose their special status of being almost equivalent to cash or bank deposits and instead would become more like short-term bond funds. Hence, this proposal would effectively outlaw money market funds.

Moreover, to the extent that investors value the stable net asset value, we would expect the emergence of money market funds that have (nominally) floating net asset values but effectively provide a stable net asset value. Such

TABLE 10.1 Money Market Proposals

New SEC Regulation	Option 1: Glass-Steagall	Option 2: Discount Window	Option 3: Floating Net Asset Value
Minimum liquidity, maximum maturity	Recognize government support during systemic crisis	No guarantee during systemic crisis	No guarantee during systemic crisis
Restrict to first-tier securities	Charge insurance fee	Allow funds to suspend redemptions (SEC)	Require floating net asset value
Periodic stress tests	Restrict liquidity and maturity (SEC)	Lend against illiquid securities	
Monthly disclosure	Limit exposure to single issuer		
Authorize fund to suspend redemptions			

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funds would break the buck only during a systemic crisis, which would effectively make them equivalent to money market funds with stable net asset values. Hence, this proposal would require the regulator to ensure that net asset values are indeed floating during normal times.

10.6 RECOMMENDATIONS

We believe that one of these three approaches is needed to address the issue of government guarantees to the money market fund sector during a systemic crisis (see Table 10.1). In order to choose among the three approaches, we recommend undertaking more research on the costs and benefits of each approach, allowing policymakers to make an informed choice. The key message of our chapter is that money market funds benefit from an implicit government guarantee and that no regulatory reform will succeed without explicitly addressing this issue.

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Option 3: Floating Net Asset Value

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