



# Fragility in money market funds: Sponsor support and regulation<sup>☆</sup>



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## ABSTRACT

Money market funds (MMFs), which are crucial to short-term funding markets, rely on voluntary support of fund sponsors to maintain stable share values. I develop a general equilibrium model of MMFs to study how sponsor support affects the industry's fragility and regulation. Adverse asset-quality shocks lead MMFs to liquidate assets. When liquidity in asset markets is limited, asset prices are lower if more funds liquidate. Lower asset prices, in turn, make sponsor support costlier and even more liquidations occur. This feedback leads to complementarities in sponsors' support decisions. Based on the model's insights, I derive implications for the regulation of MMFs.

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## 1. Introduction

Money market funds (MMFs) account for a significant amount of plumbing in the financial system. They are among the most important suppliers of short-term liquid-

ity to other financial institutions and, thus, flows into and out of MMFs can affect the financial system as a whole. By the end of 2013, US MMFs managed more than \$2.6 trillion in assets, almost a quarter of all US mutual fund assets, and over 10% of mutual fund assets worldwide (see [Investment Company Institute, 2013](#).) In December of 2011, MMFs owned over 40% of U.S. dollar-denominated financial commercial paper and around a third of dollar-denominated negotiable certificates of deposit, and they were among the biggest category of repo lenders, with an estimated \$460 billion in repos (see [McCabe, Cipriani, Holscher, and Martin \(2012\)](#) and [Financial Times, 2011](#)). Because of these features, the large outflows experienced by the MMF industry after the Reserve Primary Fund (RPF) broke the buck in mid-September 2008 contributed largely to the freezing of the short-term funding market.<sup>1</sup>

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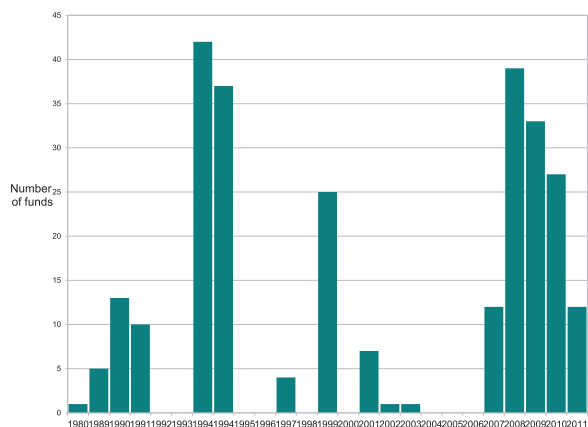
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<sup>1</sup> See [Board of Governors of the Federal Reserve System \(2009\)](#); [Financial Stability Oversight Council \(2011\)](#); [President's Working Group on Financial Markets \(2010\)](#); [US Securities and Exchange Commission \(2009\)](#) and [Chernenko and Sunderam \(2014\)](#).



**Fig. 1.** Number of funds receiving support: 1980–2011. Data sources are Brady, Anadu and Cooper (2012).

An important issue concerning the stability of MMFs is their lack of capital or precautionary liquid reserves to deter investor outflows. Instead, MMFs can receive support from their sponsors who, at their own discretion, can transfer outside funds to an MMF's balance sheet. In fact, one of the main ways in which outflows from MMFs can be prevented is through voluntary sponsor support. Outflows can be very costly for the companies that sponsor MMFs: there could be forgone returns and negative spillovers to other activities in which the sponsors participate. Therefore, to minimize outflows and prevent funds from breaking the buck and being liquidated, sponsors can choose to offer support to their funds by purchasing assets from them at a premium over their market value. As Fig. 1 shows, sponsor support has been a common feature throughout the history of the MMF industry even prior to the 2007–2008 financial crisis. Between 2007 and 2011, 78 MMFs (out of a total of 341 MMFs) received sponsor support in 123 instances for a total amount of at least \$4.4 billion.

This paper is the first to analyze theoretically sponsor support and its implications for the industry's stability and regulation. First, I build a general equilibrium model of the MMF industry to study the ability of sponsor support to provide stability to the industry. The main contribution of the paper is to show that sponsor support can be a source of fragility instead of mitigating it. Strategic complementarities in the sponsors' support decisions can lead to runs of the MMFs on the money market and amplify systemic shocks. I then analyze three policies that affect the amount of support offered by sponsors to MMFs: the prohibition of sponsor support; the adoption of a floating net asset value (NAV), which would decrease the sponsors' incentives to offer support; and the adoption of a capital buffer, which would force sponsors to offer a minimum amount of support.<sup>2</sup>

I build a three-period model of financial intermediation with two types of agents: risk-averse investors and

risk-neutral fund managers. There are two assets, a short-term safe asset and a long-term risky asset, which are traded each period in competitive markets. Only managers can access the risky asset market directly. Therefore, investors can access the risky asset only through a manager. The intermediation contract between investors and managers captures three main features of MMFs: the demandable nature of the shares held by investors in MMFs, the eventual liquidation of a fund after it breaks the buck, and, through the possibility of voluntary sponsor support, the stability of the NAV.<sup>3</sup> To capture the fact that sponsors of different sizes have different incentives to support a MMF for the same realized NAV, the model introduces heterogeneity in the costs faced by fund managers after a breaking-the-buck event.

The quality of the risky asset is subject to shocks. At the time of issuance, uncertainty exists about the probability of default of the risky asset, which is resolved before the asset matures. Adverse asset-quality shocks, i.e., sufficiently high realizations of the probability of default, induce asset sales by MMFs and, absent sponsor support, can even lead to fund liquidations. However, when there is limited liquidity in the asset market, the sponsors' support decisions determine the demand for the risky asset and its price. That is, asset prices are lower if more funds liquidate. Lower asset prices, in turn, make offering support costlier and even more liquidations occur. The interdependence between asset prices and support decisions gives rise to strategic complementarities in sponsor support decisions. These complementarities make the MMF industry vulnerable to runs that are different from the canonical bank runs in Diamond and Dybvig (1983). MMF runs are not runs of investors on the financial intermediaries but runs of financial intermediaries on the asset market. Thus, MMF runs are associated with a distinct form of pecuniary externality that arises from the interaction between coordination failures and asset prices.

Finally, I use the model to analyze the general equilibrium effects of three different policies: the prohibition of sponsor support, the adoption of a floating NAV, and the adoption of a capital buffer. These policies appear not to have been designed to target the equilibrium in the money market and, therefore, their general equilibrium effects seem largely ignored in the policy discussion. By affecting the sponsors' incentives to offer support and to supply liquidity, and given the relative size of MMFs in the money market, I show that these policies have crucial, albeit unforeseen, implications for asset prices.

Sponsor support has been instrumental in maintaining the stability of the NAV and preventing fund liquidations. Therefore, one could argue that forbidding sponsor support increases fund liquidations and the fragility of the MMF industry. However, if no sponsor support is allowed, individual managers have incentives to reduce the risk they take to decrease the probability of their fund being liquidated. In turn, this decrease in risk can lead to fewer asset

<sup>2</sup> These policies are the main regulations that are being considered in the US and Europe to change the MMF industry.

<sup>3</sup> See the Appendix for a fuller description of the institutional features of MMFs.

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