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Money Market Fund Reform: Dealing with the Fundamental Problem

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Money Market Fund Reform: Dealing with the Fundamental Problem

Huberto M. Ennis, Jeffrey M. Lacker, and John A. Weinberg [#]

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Abstract: After the events in March 2020, it became clear to policymakers that the 2014 reform of the money market funds (MMFs) industry had not successfully addressed all associated stability concerns related to surges in withdrawals. In December 2021, the SEC proposed a new set of rules governing how money market funds can operate. A fundamental problem behind the instability of (some) money market funds is the expectation that backstop liquidity support will be provided by the government in the event of financial distress, along with the government’s inability to credibly commit to not provide such support. This expectation dampens funds’ incentives to take steps ahead of time to mitigate the risk of sudden withdrawals. The newly proposed reforms aim to address this problem by constraining withdrawals or penalizing them with “swing pricing.” We argue that if the commitment problem is the fundamental issue, it would be more useful to reduce expectations of ex post support by requiring MMFs to have contractual commitments in place, ex ante, for liquidity support from private parties.

Introduction

During the global financial crisis of 2007-2009, many short-term lending markets were quite volatile—funding flows and lending rates shifted rapidly. Among these were the *prime* money market mutual funds (MMFs) that provide a significant mechanism for intermediating short-term credit to large financial and other firms. A bit more than a decade later—after a wave of reforms enacted in response to the earlier crisis—these markets came under stress again at the onset of the COVID-19 pandemic. As part of a broad retreat from an array of financial instruments (a so-called “dash for cash”), funds flowed out of prime MMFs, which are large holders of commercial paper.

As a response to the turbulence of over a decade ago, in 2014 the Securities and Exchange Commission (SEC) implemented a series of reforms intended to address vulnerabilities in prime funds. Those reforms were not fully effective at containing the challenges faced by money market funds during the pandemic. As a result, many market observers and policymakers

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renewed their calls for further reforms. In fact, Eric Rosengren, then president of the Federal Reserve Bank of Boston, went as far as to say: “the money-market fund reform that occurred after the last crisis actually made things worse and so far there has not been a solution.” He went on to argue that prime money market funds needed to be “cleaned up” (Marte, 2021).¹

On December 2021, the SEC again introduced a new set of proposed reforms to the rules governing money market funds. The proposal abandons the liquidity fees and redemption gates that were introduced in 2014. In their place, the proposal intends to implement an alternative valuation method for institutional prime and tax-exempt money market funds: swing pricing. The basic idea is to require funds to adjust floating net asset values (NAVs) by a swing factor reflecting transactions costs that would result from selling proportional amounts (a “vertical slice”) of the various assets in the fund. Finally, the proposal increases the minimum liquidity requirements serving as buffers for money market funds in times of large, unexpected redemptions.

Prime money market funds and instability

Money market mutual funds provide investors with a highly liquid form of savings that act much like a bank account. Shareholders have ready access to their funds if needed for expenditures or other investments. The funds, in turn, hold exclusively short-term assets. Some funds hold only assets issued by the US Treasury or government-sponsored entities (government MMFs). Others—the so-called prime funds—also hold the short-term debt (commercial paper) of large corporations. A further distinction involves the investors in funds. “Retail” funds draw investments mainly from households and small businesses, while “institutional” funds are an important money management tool for financial institutions and other large corporations. Most of the regulatory attention—both in the 2014 reforms and in the current proposals—has been on prime institutional funds. Figure 1 displays the composition of assets held by prime institutional funds.

An important aspect of the development of money market funds is an accounting practice that under SEC rules is not available to other investment funds. Money market funds have historically been allowed to maintain a stable share price (typically one dollar), which enhances their usefulness to shareholders as a tool for money management. The most common method for maintaining a stable share price is the “amortized cost” method of valuation, under which individual securities are valued at acquisition cost.² Interest earned is accrued uniformly over the remaining maturity of the security and is paid to shareholders in the form of additional shares. In exchange for being able to offer a stable net asset value, money market funds must satisfy restrictions on their portfolio—essentially requiring them to hold only relatively safe,

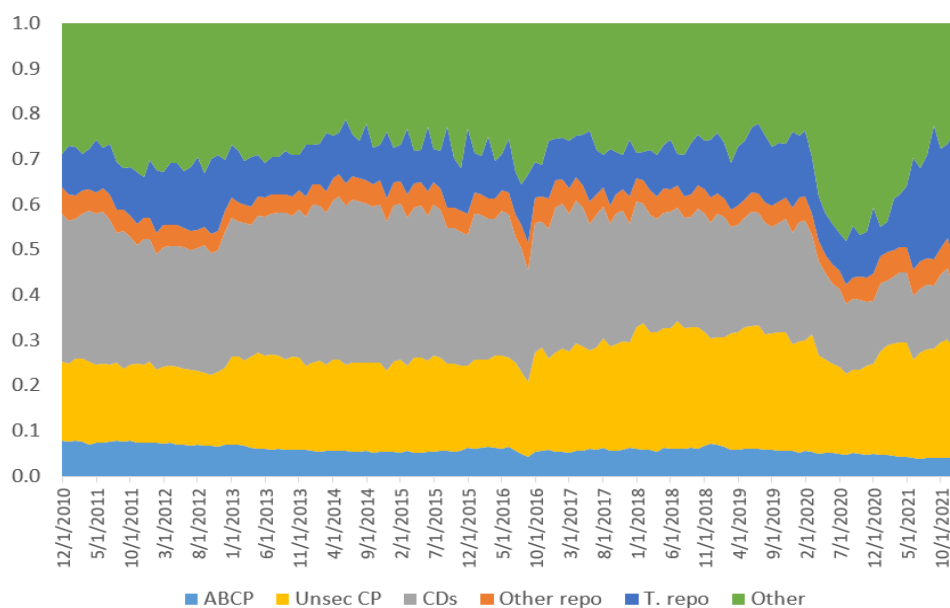
¹ See also the report of the President’s Working Group on Financial Markets from December 2020.

² The 2014 reforms made this stable value accounting practice no longer available to prime institutional funds.

short-term securities. Funds can further protect against losses by securing backstop support from a bank or another party, although this practice varies among funds.³

Money market funds became a significant part of the US financial system in the 1970s. After the first public issuance of shares in 1972, these funds saw their greatest early growth in periods when short-term market interest rates rose above the regulatory limits that capped the rates paid on bank deposits at the time (Regulation Q). Toward the end of the decade and into the 1980s, growth in money funds accelerated—again, during a period of high and volatile interest rates. From the start, then, it was apparent that a main purpose of these funds was as a substitute for bank deposits that could provide similar services to investors with fewer regulatory constraints. Money market funds continued to grow even after the repeal of Reg. Q interest rate caps because of cost differences that were—and to a large extent continue to be—attributable to differences in their regulatory treatment as compared to bank deposits.

Figure 1. Prime Money Market Funds’ Investments by Instrument (proportion of assets under management)



Note: Data is from <https://www.federalreserve.gov/releases/efa/efa-project-money-market-funds-investment-holdings-detail.htm>

The evolution of prime money market funds, especially beginning in the late 1970s, is closely linked to developments in the commercial paper (CP) market. Commercial paper is short-term debt issued by large firms—often, but not exclusively, nonbank financial firms. As money funds attracted increasingly large sums of investors’ dollars away from bank accounts, they created a

³ For a useful description and history of money market mutual funds, see Cook and Laroche (1994), Chapter 12.

ready market for CP, and highly-rated issuers typically found borrowings in that market less costly than bank loans. Also, since CP is typically issued in large, indivisible offerings, money funds proved to be a convenient way for investors to make smaller, diversified investments in those instruments. At the beginning of 2020, commercial paper accounted for more than a quarter of the holdings of prime institutional funds.⁴

So, on both “end-user” sides of financial markets—ultimate savers and borrowers—CP and MMFs saw big increases in activity at a time when a combination of regulatory constraints and volatile market conditions hampered banks’ ability to provide a close substitute. From the late 1980s through the Global Financial Crisis of 2007-09, the arbitrage of regulatory differences continued to drive the growth and evolution of these investment vehicles. The financing of financial and commercial firms through the issuance of commercial paper bought by money market funds exemplifies what has come to be known as “shadow banking” and can be thought of as a means of bypassing the banking system and its prudential regulation.

Like many short-term financial arrangements, money funds can experience large demands for withdrawals if investors suddenly lose their appetite for this form of savings. In the case of prime funds, outflows may arise due to a broader loss of confidence in their holdings of commercial paper. The potential for sudden outflows is exacerbated if a money fund maintains a stable share value to make itself attractive to investors who are averse to taking losses on the balances they use for cash management purposes (Ennis, 2012). This motivated the SEC’s 2014 rule requiring prime institutional money funds to adopt floating NAVs.

When investors request redemption of their money fund shares, funds may first meet those requests by selling the assets that can be sold most easily. In an environment of falling confidence, risk premia rise, even on short-term debt like CP, in which case the easy-to-sell assets are unlikely to be CP. But if redemptions continue, funds may ultimately have to liquidate their CP holdings. If they do so at a loss, they may be unable to live up to their commitment to redeem shares at a stable value. That is, late-coming redeemers may suffer a loss on their shares. Knowing this, when there is a loss of confidence in the underlying assets, fund investors may rush to withdraw as quickly as possible, further increasing the stress on the fund (and the CP market).

In principle, a fund can protect itself from such a disruption by arranging a backup line of credit or other contingent support (see, for example, Parlatore, 2016).⁵ Similarly, an issuer of CP can take similar actions to enhance the credit quality of their paper. Securing such protection, however, is costly and eats into the cost advantage that this shadow banking channel typically enjoys over traditional banking.

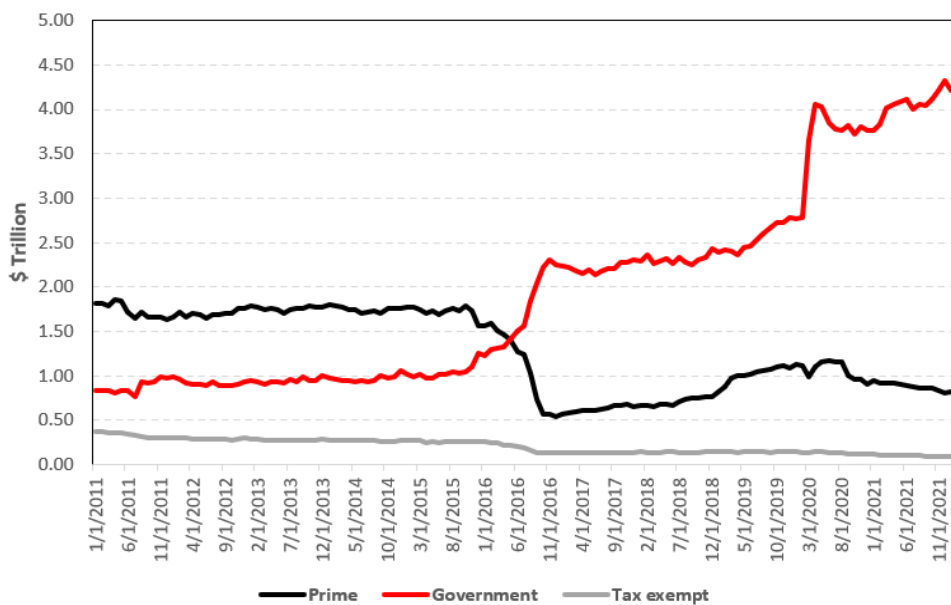
⁴ See Cook and Laroche (1994), Chapter 9.

⁵ Kacperczyk and Schnabl (2013) and La Spada (2018) study the role of sponsor reputation in driving risk decisions at MMFs.

As seen in Figure 2, after the reforms of the last decade, prime funds have been losing ground and assets under management in government money funds have increased substantially. It is also the case that, at times, funding can shift quickly away from prime funds and into government funds. Since government funds cannot invest in commercial paper, such shifts may appear to exacerbate any sudden withdrawal of available funding for the CP market. Note, however, that in principle, banks could respond to such a shift by selling government securities to government-only money funds and using the proceeds to fund CP issuers or buy their commercial paper. This suggests, instead, that withdrawals from prime institutional funds may simply be a reflection of a more general desire of sophisticated investors to reduce their exposure to commercial paper in response to deterioration in the creditworthiness of issuers.

Note that investors' desire to move out of prime money funds almost always reflects a broader desire to reduce exposure to the credit risk inherent in commercial paper. This is evident from the contrasting behavior of balances in prime funds and government funds during periods of stress. Typically, there are identifiable changes in the economic environment that either increases investors' perception of the extent of credit risk or reduces their appetite for holding such risk.

Figure 2. U.S. Money Market Funds Assets under Management (AUM)



Note: Data is from the Office of Financial Research, <https://www.financialresearch.gov/money-market-funds/us-mmfs-investments-by-fund-category/>

The bankruptcy of Lehman Brothers in September 2008 provides an example of how a sharp movement of investors away from commercial paper can affect the prime money funds industry. Investors in prime funds, who in normal times may not pay much attention to the particular assets held by the funds they hold, became understandably concerned about

exposure to commercial paper and other obligations of Lehman. One particular fund, Reserve Primary, had a large enough exposure to Lehman paper that marking those assets down made them unable to maintain a stable one dollar share value. Instead, it placed its share value at 97 cents, thereby, “breaking the buck.” Reserve Primary was particularly vulnerable, because, unlike many other funds, it did not have a large sponsor that could provide financial support in the event of such stresses.⁶

Widespread withdrawals from prime money funds may seem superficially like a catastrophic event, but it is worth noting that the money withdrawn does not simply disappear from the financial system. Rather, it typically flows into other forms of highly liquid savings, including safer instruments such as government debt, bank deposits, or government-only money market funds. Of course, concerns about the effects of withdrawals from prime funds tend to focus on the issuers of the commercial paper held by such funds and whether the reduction in CP funding for such companies will cause a contraction in economic activity. Some of these firms, presumably, can find other sources of credit. Indeed, as mentioned earlier, many issuers of commercial paper have prearranged lines of credit with banks for just such a contingency. In 2008, as it became difficult for some issuers to roll over their commercial paper, drawdowns of lines of credit from banks surged, just when banks’ deposits were also surging.

Still, turmoil among money funds commonly induces a public sector reaction and often leads to support for money funds and the CP market from the Fed, the Treasury, or both. When the Reserve Primary fund broke the buck in September 2008 and fears arose of a broad retreat from money funds, the Treasury stepped in to provide a temporary guarantee for *all* funds’ net assets values, and the Federal Reserve implemented lending programs to aid the CP market. When the onset of the pandemic in 2020 brought on a sharp increase in economic and financial uncertainty, the Fed again put in place credit facilities to support money market funds and commercial paper.⁷ The prompt intervention in this instance may help explain the relatively modest decline in prime institutional funds, while significant funding flowed into government funds as part of a broad move toward safety and liquidity (see Figure 2).

This type of government reaction has a long history. The Federal Reserve was founded, in part, with the aim of providing backstop support to the CP market.⁸ More recently, after the Fed and the administration resisted entreaties to rescue the failing Penn Central railroad in 1970, their subsequent bankruptcy and commercial paper default roiled the CP market, making it difficult for other issuers to roll over maturing issues on accustomed terms. The Fed responded by

⁶ See Schmidt, Timmermann, and Wermers (2016) for a detail study of cash flow dynamics in prime MMFs during September 2008.

⁷ See <https://www.federalreserve.gov/monetarypolicy/mmlf.htm>. See also Adrian, Kimbrough, and Marchioni (2011) and <https://www.federalreserve.gov/monetarypolicy/cpff.htm>

⁸ See Wicker (2015), p. 63.

encouraging banks to lend to enable their customers to pay off maturing commercial paper and signaling willingness to allow banks to borrow at the discount window to do so.⁹

The 2014 reform and the 2022 re-reform

Rule 2a-7 of the SEC is the basic regulatory framework for MMFs. Different types of MMFs are subject to different requirements. In particular, the rule distinguishes between government, tax-exempt, and prime MMFs; and between institutional and retail funds.

Before the 2014 reform, all MMFs were allowed to use the stable NAV approach for portfolio valuation, a method which disregards small variation in the value of assets. MMFs were thereby able to offer a stable share price that made them attractive for short-run money management purposes. Stable NAVs can create pernicious dynamics when the assets of a money fund fall in price, inducing a rush from investors to withdraw from the fund. This is particularly relevant for institutional prime funds, where investors tend to be more responsive to valuation differentials. For this reason, the 2014 reform mandated that institutional prime funds stop using stable NAV and, instead, adjust their NAV based on current market-based values of the securities in their portfolios (see Ennis and Haltom, 2014).

While floating NAVs help avoid artificial incentives to withdraw from a fund in times of stress, timely market-based valuation of fund assets can be challenging. Many of the investments of money market funds trade in thin markets and can experience sharp fluctuations in price. In many cases, the prices are not readily available and fund managers have to impute an estimated price. These complications motivate the combination of floating NAVs with other preventive measures. In particular, the 2014 reform required funds to hold buffer stocks of liquid assets and allowed funds to impose redemption fees and gates when those liquidity buffers fell below certain thresholds.

The shocks to financial markets following the outbreak of the pandemic in March 2020 provided a test of the new regulatory configuration for MMFs. That experience suggests that the possibility of funds imposing fees and gates created incentives for investors to withdraw even sooner, before the relevant thresholds were crossed (Li et al., 2021). Furthermore, fund managers were reluctant to draw on their liquidity buffers to avoid the need to impose fees and gates; apparently breaching their liquidity requirements was seen as less desirable. In a nutshell, the liquidity-based fees and gates seem not to have had their intended consequences.

The SEC's new reform proposal currently under evaluation removes the ability of institutional prime money market funds to impose liquidity fees or redemption gates. The proposal also requires that institutional prime and tax-exempt MMFs use *swing pricing* as their asset

⁹ The Fed notified member banks that "as they made loans to enable their customers to pay off maturing commercial paper and thus needed more reserves, the Federal Reserve discount window would be available." Calomiris (1994), p. 41, quoting Treiber (1970).

valuation method in order to mitigate the dilution that may occur when investors redeem shares during periods of market stress.¹⁰

Under swing pricing, fund managers adjust the NAV by a swing factor that reflects transaction costs and liquidity demands attributable to redemptions. Concretely, the swing factor reflects spreads and transactions cost that would be associated with selling a vertical slice of the fund's portfolio, even if the fund is initially only selling the most liquid assets to fulfill redemptions. Swing pricing, then, involves estimating the costs of liquidating a representative selection of the fund's assets and allocating those costs over all shareholders, including those attempting to avoid them by redeeming early. As a result, implementation is likely to involve some significant challenges.

To complement these valuation enhancements, the proposed rule also includes an increase in the daily and weekly liquidity requirements for funds from 10 and 30 percent in the current rule to 25 and 50 percent, respectively. Liquidity requirements are a natural way to address systemic risks posed by MMFs. Illiquidity is at the root of the issues and dealing *directly* with it makes good sense. When MMFs are required to hold more liquidity, their business model suffers. Less liquid assets have higher returns and, since the funds are partly in the business of liquidity transformation (Ennis, 2012), this limits their ability to perform that function. In fact, it seems likely that higher liquidity requirements will further reduce the size of the prime sector of the MMFs industry, possibly to a level where they no longer represent a policy concern.

There is a long-recognized tension created by liquidity requirements for financial intermediaries. Specifically, the moments when such requirements bind are likely to be the moments when the liquid holdings of the affected intermediaries are in greatest need. This can create a dilemma for both the firms and their regulators; the buffers are set aside for a purpose, but how do you decide it is time to make use of them rather than preserve them for some even more dire circumstance immediately ahead?¹¹

The fundamental problem

At the heart of the challenge of crafting appropriate rules for prime money funds is the attractiveness, to both borrowers and lenders, of short-term debt. Investors who desire ready access to their funds will accept a lower yield in exchange for increased liquidity. The liquidity of a longer-term debt instrument depends on how easy it is to sell before maturity. This can be difficult for bonds and other loans that do not trade in active secondary markets. Commercial

¹⁰ See <https://www.federalregister.gov/documents/2022/02/08/2021-27532/money-market-fund-reforms>.

¹¹ Irving Fisher pointed out this problem in 1913, likening rigid bank reserve requirements to "a rule that on shipboard there must be at least 25 life preservers nailed to the deck, so that they will always be there." See U.S. Congress. Senate. Committee on Banking and Currency. 1913. *Hearings Before the Committee on Banking and Currency, United States Senate, Sixty-Third Congress, First Session, on H.R. 7837 (S. 2639)*. 3 vols. Washington, D.C. <https://fraser.stlouisfed.org/title/429#7309>.

paper provides liquidity in a more automatic fashion as well—simply let the note mature and receive the proceeds. From an investor’s point of view, liquidity is further enhanced by bundling commercial paper into mutual funds that are redeemable on demand. Borrowers, in turn, find the relatively low yields at which they can issue short-term debt attractive for obvious reasons. Short-term debt can also provide a sort of discipline for borrowers, if they need to repeatedly go to the market to roll their debt over (Diamond, 1993 and 2004). So, under normal conditions, the reliance of firms on short-term borrowing through money market funds appears to be a win-win.

But the very feature that makes investors willing to hold short-term debt at low yields—the ability to get out easily—can create strains in abnormal times. If a loss of appetite for credit risk makes it hard for borrowers to refinance their short-term borrowings, then defaults on commercial paper become a possibility. As noted above, the prospect of widespread defaults has often prompted government or Fed officials to intervene. And that history is bound to affect market participants’ beliefs about the likelihood of similar interventions in the future.

The expectation of intervention has pernicious effects. First, it makes short-term debt even less expensive for borrowers, encouraging excessive issuance. It also dampens the extent to which the pricing of such debt differentiates between borrowers with different credit risk characteristics, offsetting (at least partially) the disciplinary benefits of short-term debt. As a result, it reduces the incentives of participants to take costly actions to mitigate risk. Furthermore, if investors believe that money funds benefit from support similar to that of large banking companies, the distortion of competition between these substitute forms of short-term investing is exacerbated—creating two alternatives with similar perceived government backing but very different regulatory frameworks. The result is likely to be overuse of the less regulated alternative.

Containing moral hazard effects is difficult. One approach is to simply refrain from intervening to protect investors and issuers (Goodfriend and Lacker, 1999). This requires commitment on the part of the institutions prone to intervening, such as the Treasury or the Federal Reserve, but their ability to commit in this realm appears to be limited. Ex post, when markets are in turmoil and some participants find themselves in difficult straits, intervention can be hard to resist; an example of the Samaritan’s Dilemma (Buchanan, 1975), where empathy in the moment conflicts with following through on a plan designed ex ante to encourage self-reliance. Anticipation of a robust commitment to not intervene can provide the proper incentives for agents to reduce risk appropriately. When this is not possible, though, regulating arrangements ex ante to try to replicate self-reliance may be the next-best alternative.

From this perspective, liquidity regulations for MMFs serve to constrain the moral hazard effects of expectations of official intervention in the event of a surge in the demand for withdrawals. Such expectations naturally intensified after the precedents set by the Treasury and the Fed in 2008. In the absence of any attempt to disavow future interventions (perhaps

due to the limited ability for any one administration to speak credibly for future administrations or recognition of the Samaritan's Dilemma), beefing up ex ante regulations made sense.¹²

The limited commitment perspective implies that some types of ex ante MMF regulations are more useful than others. The fundamental incentive distortion in the current environment is the belief in backstop credit provision coming from the official sector. But line of credit facilities are available in the private sector as well. This suggests that regulators should focus on ensuring that MMFs have contractual commitments in place, in advance, for liquidity support from private third parties, the expectation being that those are drawn on before any official support is forthcoming. The existence of such pre-arranged liquidity support is likely to enhance the ability of the official sector to resist intervening. Note also that the cost to a fund of obtaining such contingent support would likely depend on the fund's other risk management practices. This could, for instance, provide an independent incentive for funds to properly manage risk and possibly expand their liquidity buffers.

In contrast, the limited commitment framework suggests that efforts to limit the incidence of withdrawal-induced MMF distress by constraining withdrawals or penalizing them with swing pricing will not directly address the fundamental issue. Instead of suppressing the incentive to withdraw early, they could accelerate it. Instead of preventing the Samaritan's Dilemma, they could merely alter its timing.¹³

As we have argued here, the problem of MMF liquidity is closely related to the behavior of the CP market. Indeed, interventions to support MMF liquidity typically have been accompanied by interventions in the CP market. In fact, some interventions aimed at supporting MMFs amount to taking commercial paper off their hands on advantageous terms. The limited commitment perspective suggests that it might be most useful if regulation of prime MMFs portfolios were to encourage holding commercial paper for which the issuer had contractual commitments of third-party liquidity support, such as a backup line of credit at a bank. Regulations that push MMF holdings toward such paper would incentivize issuers to obtain lines of credit and reduce the likelihood of falling CP prices inducing crises and intervention.

In short, regulations should aim at replacing the public backup support of MMFs and commercial paper with pre-arranged backup support from other private investors, with all cost duly recognized in the ex ante market transaction and pricing.

¹² In their discussion of the current SEC-proposed rules, Cecchetti and Schoenholz (2022) argue in favor of a capital-like requirement in which money funds issue claims that are subordinate to ordinary shares.

¹³ The lack of commitment perspective also has implications for the appropriate determination of swing prices. Intervention is likely needed to address the incentive of funds to understate the needed adjustments in share prices in anticipation of contingent support from the government. See Keister and Mitkov (2021) for formal treatment of this and related issues.

The fact that as financial intermediaries MMFs serve a function that closely parallels the banking system suggests several broader perspectives on regulatory problems. First, a similar limited commitment problem besets the banking system—the Fed, the Federal Deposit Insurance Corporation (FDIC), and other regulators have trouble not rescuing bank creditors. The deposit insurance system provides a legislative mandate for insured depositors, of course, but uninsured depositors and other creditors have often been rescued as well. This has led to the problem known as “too big to fail” (TBTF)—creditors believe support will be forthcoming, reliance on which leads to fragile funding arrangements, such as very short-term debt, that make nonintervention more damaging and thus increase the likelihood of intervention. Counteracting the resulting incentive distortion through constraints on risk taking is a costly endeavor. The Dodd-Frank Act stiffened such constraints, but also included a provision that addresses the fundamental limited commitment problem in a fashion similar to our proposal for dealing with MMFs and commercial paper. Large and important financial institutions are required to submit to regulators’ resolution plans—so called “living wills”—that detail how they will be resolved in various failure scenarios. The Fed and the FDIC can reject plans they view as not credible and can “impose more stringent capital, leverage, or liquidity requirements, or restrictions on the growth, activities, or operations of the company.”¹⁴ Plans include specification of sources of liquidity in the event of financial distress. Mandating ex ante third-party liquidity support for MMFs would parallel the fruitful approach of living wills.¹⁵

Indeed, it seems likely that large banking firms would be the best suited to be suppliers of the sort of pre-contracted liquidity support we have argued in favor of here for MMFs. The extensive regulatory framework for banks has evolved to include capital regulation that takes into account the balance sheet risks created by contingent obligations. Presumably, this capital treatment would be reflected in the price paid by MMFs for contingent support. But this cost seems entirely warranted as it represents, in part, the regulatory costs born by TBTF banks in exchange for the implicit backing they receive from the public sector.

An alternative approach to enhancing the stability of prime institutional funds, which has been proposed by some observers, is to create a capital requirement for them similar to bank capital regulation. This seems a natural route to consider, given the similarities between the financial intermediation done by the two types of entities. But creating a capital regime for money funds would be a nontrivial exercise. Like all mutual funds, money funds have a simple capital structure—they issue ownership shares. The intent of a capital requirement is to have claims that are junior to the claims at risk of a run—shares, in the case of MMFs—in order to absorb losses before senior claimants. This might not be a simple thing to do in the case of MMFs. Creating a junior class of loss-absorbing claimants would fundamentally alter the nature of shareholders’ claims; they would no longer be pro rata portfolio interests but would become

¹⁴ *Dodd-Frank Wall Street Reform and Consumer Protection Act*. 12 U.S.C. § 5365(d)(5)(A).

¹⁵ See Jarque and Price (2014) for a detailed discussion of the role of living wills in bank regulation.

debt-like instruments that are invariant across a range of asset values. Such a financial structure would reinforce the expectation of shareholders that they will be protected from losses and arguably only strengthen the pressure for ex post support when shareholders losses loom. By contrast, our proposal to require pre-contracted contingent support takes advantage of the capital regime that already exists for the provider of the support, and it properly imposes costs of capital regulation in the price of contractual commitments. Indeed, it would be best to require that this contingent support be obtained only from providers who are subject to robust capital regulation and are properly stress-tested.

The parallel between MMFs and the banking system suggests a cautionary note, however. The evolution of banking regulation—particularly its increasing scope and rigor—has arguably contributed to the growth of intermediation arrangements such as MMFs that bypass the banking system. As banking regulations have become more elaborate and costly to implement, intermediation through the banking system has become more costly as well. Alternative financial arrangements with similar properties—such as flexible short-term investment and funding—thereby become more attractive. Those arrangements will be additionally attractive to the extent they also benefit from an implicit commitment of official support, the same type of support which, ironically, motivated stiffening the regulation of the formal banking sector after various past crises.

While strengthening MMF regulations seems well advised, if stronger pre-commitment not to intervene is unattainable, policymakers should be aware that doing so is likely to enhance the incentive for further bypass using arrangements beyond the banking system and MMFs. Just such an attempt seems to be underway, in the form of stablecoin cryptocurrency: intermediation arrangements promising investors fixed nominal dollar payoffs, similar to the fixed NAV offered by MMFs. The backing of these arrangements is in some cases opaque (Yellen, 2022), and some arrangements have broken the buck in dramatic fashion. Thus far, official intervention to rescue investors has been absent. The regulatory world is at something of a crossroads, however. Officials have suggested that consumer protection regulation may be warranted, under the presumption that consumers are entitled to expect fixed payoff commitments to be satisfied with higher probability. Regulation to ensure that might broadly resemble MMF and banking regulations, restricting portfolio holdings and redemption mechanisms. The danger in articulating such regulations lies in the implication that government intervention to provide financial support to ensure full payouts might also be warranted. That path is fraught with difficulties, as we have seen in the banking and MMF sectors. Alternatively, officials might choose to emphasize the principle of caveat emptor, warning consumers to be aware that these arrangements are outside of the familiar world of regulated financial intermediaries and that heightened prudence is warranted.

Finally, it is worth emphasizing that concerns about instability in money funds—both in 2008 and 2020—have been almost exclusively focused on prime institutional funds. That is, the

propensity of the largest and most sophisticated money managers to quickly move out of these funds and the commercial paper they hold has created the anxiety that has led to government support for these funds in the past. In the episodes that have prompted discussions of money fund reform, retail funds and government-only funds have generally remained quite stable. So, while reform discussions have rightly focused on the prime institutional side of the market, one might be tempted to ask a more fundamental question. If these funds repeatedly threaten instability that induces government intervention, have we misjudged the net social value of prime money funds? Perhaps money funds should be restricted to holding only government securities?

Conclusion

Ideally, we want financial arrangements to be determined by the true economic costs and benefits of alternative instruments and contractual arrangements. But when a set of financial arrangements benefit from an expectation that government resources will be deployed to rescue participants in the event of distress, that assessment is distorted. We can no longer trust private market participants to choose based solely on the true economic benefits and costs. Financial sectors benefitting from a perceived promise of support will overexpand. Moreover, they will underweight risks that may induce that support and overweight arrangements that make them vulnerable in the event of distress. While we might be better off in a world in which the relevant authorities can credibly commit *ex ante* to not providing support *ex post*, that world may not be available to us. If so, then MMFs should be required to have contractual commitments in place, in advance, for liquidity support from private third parties in the event of their financial distress. Such requirements would enhance the ability of the official sector to resist intervening and provide market-based incentives for MMFs to mitigate funding risks.

The approach we are advocating to address this limited commitment problem is, we believe, applicable more broadly, beyond just prime MMFs. The idea is to put in place mechanisms that reduce the perceived need for official intervention in the event of financial distress. We are guided by the nature of the typical official intervention, and we propose to ask MMFs to contract *ex ante* with other private parties for the type of contingent liquidity support that would be provided by the government in the case of lost funding. In a different context, living wills work in a similar fashion; they specify private sector funding to take the place of government funding that would otherwise be provided if a bank gets in trouble, and in this way, should reduce the need for official support. We believe this general principle could be used productively to address many of the issues that arise from the government's inability to commit to not intervene in stressed financial markets.

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