An Evaluation of Money Market Fund Reform Proposals

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Introduction

• The financial crisis revealed significant vulnerabilities of the global shadow banking system

• Money market funds (MMFs) play a central role in the global shadow banking system
  • Used for short-term funding of global financial institutions and for liquidity management by individuals, firms and institutional investors
  • Faced large-scale runs during the crisis, which exacerbated runs on large banks.
  • A variety of government programs were put in place to backstop MMFs.

• Regulators still trying to find the right structural reforms to prevent this from happening again.
Introduction

- Reform debate centers on whether MMFs should come under bank-like regulation or be subjected more fully to market forces.

- In 2012, the U.S. Financial Stability Oversight Council (FSOC) asked for comment on three reform proposals.
  - **Alternative 1:** Requiring MMFs to float reported net asset values (NAVs).
  - **Alternative 2:** Requiring MMFs to have a 1% capital buffer combined with a “Minimum Balance at Risk” (MBR) provision whereby investors are penalized for redeeming all of their shares.
  - **Alternative 3:** Requiring MMFs to have a 3% subordinated capital buffer.

- Our paper evaluates these proposals from the perspective of financial stability. Two goals:
  1. Reduce *ex ante* incentives for excessive risk-taking.
  2. Increase the ability of MMFs to absorb losses *ex post* without triggering system-wide runs.
Background on MMFs

- A money market fund is a type of mutual fund that is required by law to invest in short-term, low-risk securities.
  - Typically pay dividends that reflect the level of short-term interest rates.
  - Unlike a deposit account at a commercial bank, MMFs are not FDIC-insured.

- Invest in short-term, low-risk securities:
  - Short-term government securities, bank certificates of deposit, commercial paper issued by corporations, and repurchase agreements.

- Attempt to keep their net asset values (NAV) at a constant $1.00 per share—only the fund yield goes up and down.
  - “Penny-rounding”: Permitted to report a fixed $1.00 NAV so long as the mark-to-market value or “shadow NAV” is above $0.995.
  - A MMF’s reported NAV may fall below $1.00—an event known as “breaking the buck”—if the shadow NAV falls below $0.995.
Background on MMFs: Prime MMFs

- MMFs managed approximately $2.60 trillion of assets as of June 2014.

- The majority of all money fund assets, over $1.4 trillion, are in “prime” MMFs
  - Invest in paper issued by private, non-government borrowers.
  - These are the primary focus of regulatory reform.

- Prime MMFs are divided into institutional and retail funds.
  - Institutional MMFs are high minimum investment, low expense share classes that are marketed to nonfinancial firms, governments, and institutional investors.
    - Approximately $900 billion of assets*
  - Retail MMFs are low minimum investment, higher expense share classes that are marketed to households.
    - $500 billion of assets

*Prorated based on year-end 2013 data on mix of institutional and retail funds. *Investment Company Factbook*, 2014.
Background on MMFs: Asset under Management

Prime institutional and prime retail MMF assets

Lehman failure

Eurozone crisis

Source: ICI
Background on MMFs: Systemic Importance

- Prime MMFs are a crucial source of short-term, wholesale dollar funding to large financial firms.
  - Estimate that prime MMFs provide approximately 35% of such funding.

- Most prime MMFs assets are liabilities of large, global banks
  - Mostly commercial paper (CP), repo, and bank certificates of deposit (CDs).
  - Negligible amount issued by nonfinancial firms
  - 71% of MMF assets are liabilities of non-US financial firms (40% Europe, 19% Asia/Pacific, 12% Canada)

- Thus, prime MMFs are essentially vehicles to collect funds from individuals and nonfinancial firms to provide financing to large banks.
  - Intermediation benefit to investors: convenience, diversification, less monitoring.
  - Introduces potentially significant costs:
    - Agency problems = incentives for excessive risk taking
    - Shares are demandable (daily) = increased system-wide run risk due to greater maturity transformation
MMFs: Risk taking Incentives

• As of September 2011, almost 40% of MMF holdings were backed by firms with a CDS spread above 200 basis points.
  • Investment grade average was 145 bps.

• Why do MMFs hold by such seemingly risky assets?
  • Institutional investors actually reward MMFs for taking greater risk.
  • During the financial crisis: MMFs investing in risky asset-backed commercial paper grew assets by 60% from Aug 2007-08 (Kacperzyck and Schnabl (2012)).
  • During the Eurozone crisis: MMFs investing in risky Eurozone banks grew their assets more in early 2011 (Chernenko and Sunderam (2013)).

• The performance-flow relationship is extremely strong at present.
  • A 10 basis point (0.1%) increase in yield is associated with additional inflows of 14% of assets per year.
  • From a system perspective, encourages MMFs to take risk at the wrong times: imposition of market discipline is disorderly & late instead of orderly & early.
MMFs: Run Risk and Demandable Claims

• Diamond-Dybvig (1983) runs:
  • Strategic complementarities: incentives to run increasing in the probability that other investors run.
  • The combination of demandability and illiquid assets is key.
    • Due to illiquidity, early redemptions affect asset value available to pay late redemptions.
    • Prime MMF assets (commercial paper, CDs) tend to be quite illiquid (Covitz and Downing (2007)): secondary markets are thin / non-existent.
    • Exacerbated by Fixed NAV and historical cost accounting

• Panic-based runs:
  • Can occur when highly risk-averse investors realize that they may suffer losses on assets they had previously regarded as “safe.”
  • Investors treat “safe” assets in a qualitatively different way than “slightly risky” assets. Runs occur when investors reclassify assets from “safe” to “slightly risky.”
Market Failures and Goals of Reform

• The market failures associated with MMFs involve financial stability.
  • Prime MMF assets are largely claims on financials, primarily foreign banks
  • So a run on MMFs would likely result in a system-wide run on financial firms

• What are the main market failures?
  • Investors can redeem their shares before losses are allocated
    → do not internalize the costs of the potential ensuing credit crunch.
  • MMFs may receive future government support in extremis
    → actions taken during the financial crisis may have generated an expectation of future support.
  • Problems at one MMF may lead investors in other MMFs to run

• These market failures may encourage excessive MMF risk taking, which effectively lowers the cost of short-term funding for financial firms.
  • Encourages over-reliance on short-term funding by financial firms.
Capital Buffers for MMFs

- Mechanics of capital buffers vary across proposals.
  - Subordinated shares
  - Standby liquidity facility
  - Lockbox of Treasuries

- Key to all the proposals is that capital simply divides the risks and rewards of MMF portfolio assets between two distinct securities:
  - Subordinated capital security which bears first loss.
  - Ordinary, senior MMF shares.

- In return for protection, ordinary senior shares receive slightly lower yields, while the subordinated capital buffer earns higher returns in normal times.
Capital Buffers for MMFs

- Capital reduces *ex ante* incentives for risk taking
  - Capital providers explicitly bear risk of loss and therefore have incentives to discipline fund risk taking.
  - Evidence from Kacperzyck and Schnabl (2012): Fund sponsors who implicitly have capital at stake rein in the risk taking by their MMFs.
    - Potential gains from risk taking outweighed by potential loss of franchise value.

- Capital reduces the probability of system-wide runs
  - MMF investors will be protected by capital providers, so MMFs would have to suffer much larger losses before ordinary MMF investors are in danger.
  - By making ordinary MMF shares safer, reduces both strategic and panic-based motives for runs.

- Capital also preserve the status quo, fixed NAV user experience for ordinary MMF shareholders.
Capital Buffers for MMFs

• Conduct a calibration exercise to size the necessary buffer.

• Use the workhorse Vasicek (2002) model of portfolio credit losses.
  • This procedure also underlies Basel II bank capital regulations.

• Basic inputs:
  • Probability of default for each issuer
  • Loss given default for each issuer
  • Correlations between issuers

• Given these inputs, we can compute the distribution of losses on a credit portfolio.
  • Then choose a tolerance: probability of breaking the buck we are willing to allow.
  • Find the amount of capital so that the probability that portfolio losses exceed capital is less than tolerance.
Capital Buffers for MMFs

- Solve for the capital requirements assuming normally distributed returns and perfectly diversified portfolio (i.e., individual exposures are infinitesimal).

- Use inputs meant to capture the properties of highly-rated, non-government unsecured paper.
  - Calibration only applies to such assets.
  - Secured exposures (repo) and government-backed assets would receive lower capital charges.

- Input values:
  - **Probability of default**: 0.03% per year, Moody's estimates of the default probability for paper with the highest short-term rating.
  - **Loss given default**: 100%, for financial issuers losses given default in excess of 90% are common.
  - **Correlation**: 50%, asset correlation implied by correlation of unlevered financial firm stock returns.
  - **Tolerance**: 99.9%, same as Basel II.
## Capital Buffers for MMFs

### Obligor Default Probability ($\pi$), % per annum

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<th>Correlation ($\rho$)</th>
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- Using these inputs, we estimate that the capital buffer should be roughly 3-4% of risk-weighted assets for a diversified MMF portfolio.

- In practice, MMFs have concentrated portfolios.
  - As in Basel II, there should be a capital add-on for such undiversified portfolios.
  - Add-on could be substantial for highly concentrated portfolios.
  - Might reduce capital requirements by tightening portfolio concentration limits.
Capital Buffers for MMFs

- What return would capital providers require?
  - MMF capital is long-term and cannot be withdrawn, while MMF portfolio assets are largely exposures to financial firms.
  - MMF capital bears the long-term risk that any firm in the MMF portfolio defaults on its short-term paper.
    → Risk of subordinated MMF capital is comparable to a long-term, unsecured A-rated or BBB-rated bond issued by a financial firm.
  - This heuristic argument squares with model-based calculations

- Suggests that subordinated MMF shares would need to offer investors is in the range of 1.00% to 1.50% over default-free short-term government debt.

- This means the yield to the ordinary MMF shares would be reduced by 5 basis points (0.05% = 4% × 125 ÷ 96%).
Capital Buffers for MMFs

• Criticisms of capital seem overstated.

• **Objection #1:** Previous calculations essentially assume that Modigliani-Miller (1958) holds, but MMF capital may be subject to financial frictions.
  • Even if frictions double the costs of subordinated capital, they are still small.

• **Objection #2:** Capital will not stop a run once the run is already in progress—i.e., once the MMF suffers a crippling loss and capital has been wiped out.
  • Capital reduces the ex ante probability that investors ever suffer such a major loss in the first place.
  • Moreover, a capital buffer, while not eliminating the possibility of a run, helps to weaken strategic run incentives following modest MMF losses.
Minimum Balance at Risk

• Basic idea is that some fraction of each investor’s investment in a fund must serve as loss-bearing subordinate capital.
  • That fraction must remain in the fund for 30 days after the investor redeems shares.

• Main difference between capital buffers and MBR is who provides the capital and when they provide it
  • MBR: existing MMF investors provide capital *ex post*
  • Capital buffer: other investors or fund sponsor provide capital *ex ante*

• Costs and benefits of each approach
  • *Ex ante* risk taking: MBR may discourage ex ante risk taking more effectively because MMF investors themselves bear the costs of chasing yield
  • *Ex post* reaction to losses: MBR assigns losses to less risk tolerant investors, and thus may not be as effective at discouraging runs
Floating NAV

• Require MMFs to report their true NAVs every day, just like other mutual funds.

• **Potential benefit #1:** Could lower the probability of runs by reducing the strategic motive for runs.
  • Currently, if asset value falls, investors who redeem early receive $1.00, while those who redeem late receive less.

• **Potential benefit #2:** Could reduce the probability of panic-based runs.
  • Floating NAV will make investors reclassify MMFs from “safe” to “slightly risky” in normal times.
  • Investors will be more aware of risk-taking by fund managers.

• **Potential benefit #3:** Reduce the likelihood future government support.
  • Floating NAV removes the government imprimatur of safety that MMFs currently enjoy.
Floating NAV

• Our analysis suggests these benefits are likely overstated.

• Strategic incentives to run remain: Incentives to run come from potential fire sales of illiquid assets, not just stable $1.00 NAV.
  - Investors who redeem early get full value, but consume liquid assets.
  - Investors who redeem late receive depressed fire-sale value of illiquid paper.
  - The Diamond-Dybvig (1983) problem is not simply an accounting issue!

• Moreover, existing rules will allow MMFs under floating NAV to operate almost exactly as they do now:
  - Amortized cost accounting (i.e., stable NAV) for assets with maturity < 60 days = 80% of assets.
  - NAV will fluctuate between $0.999 and $1.00 until a crisis hits.
  - Institutional investors are already aware of risk taking and appear to encourage it.
  - Gross yield is a near-perfect measure of fund risk taking.
Conclusion

• In the aftermath of the crisis, the broad question is where we want to draw the line between:
  • Investment products that can be left largely unregulated.
  • Core financial/payment services that require regulatory protection.

• The debate on MMF reform reflects this broad question.
  • Floating NAV proposals hope to move MMFs firmly into the investment category.
  • Capital proposals will bring MMFs further under the regulatory umbrella.

• Our analysis suggests that the combination of demandability and illiquid assets means that capital is likely to be more effective.
Introduction

• If the main goal of MMF reform is to promote financial stability and protect the payment system, this has two parts:
  1. Reduce *ex ante* incentives for excessive risk-taking.
  2. Increase the ability of MMFs to absorb losses *ex post* without triggering system-wide runs.

• Our analysis suggests that capital buffers best accomplish these goals:
  • Provides loss absorption capacity, reducing the likelihood that losses on MMF assets trigger a run.
  • Directly and explicitly exposes investors to loss, reducing incentives to take excessive risk (i.e., to “chase yield”).

• Other proposals, including switching to a floating NAV regime, are unlikely to accomplish these goals:
  • Floating NAV does not alter *ex ante* incentives for risk taking.
  • Floating NAV is unlikely to reduce the risk of a widespread run on MMFs.
Roadmap

- Background on MMFs
- Goals of MMF Reform
- Capital Buffers
- Floating NAV
- Other Potential Reforms
Prior Reforms

• 2010 changes to Rule 2a-7.
  • Higher portfolio quality
  • Reduced reliance on credit rating agencies
  • Stricter maturity limits
  • Liquidity buffers → increase demand for short-term debt
  • Disclosure
  • Gating → can exacerbate runs

• Dodd-Frank
  • Orderly Liquidation Authority (OLA) may effectively protect the short-term creditors of US financials, providing some protection to MMF investors.
  • However, many MMF assets are issued by non-US banks.

• Basel III Liquidity Regulation.
  • Reduce financial firms’ over-reliance on unstable, short-term funding.
  • Market failures create excessive demand for this funding → creates incentives to circumvent the Basel III liquidity regulations
Other Reform Proposals: Transparency

• Increased disclosure of fund portfolios is frequently proposed as a solution to problems with MMFs.
  • Currently, portfolio composition is disclosed monthly.

• Main benefit is that investors will be able to more carefully monitor MMFs.
  • And discipline funds by redeeming if there is excessive risk taking.

• Issue #1: Risk is already (almost) perfectly observable.
  • Nearly all differences in gross yield across MMFs are due to differences in risk-taking.
  • Unlike other types of mutual funds, there is virtually no scope for skilled managers to generate excess risk-adjusted returns through careful portfolio selection.

• Issue #2: Behavior of institutional investors suggests that they want their MMFs to take risk.
  • Demandability insulates them from consequences of risk taking.
Other Reform Proposals: Gating

• Allow MMFs to operate as they currently do in normal times, but impose fees or restrictions on redemptions if certain conditions are met.
  • BlackRock proposed that investors pay a liquidity fee for redemptions when a MMF’s NAV falls below $0.9975 or when its 1-week liquidity level falls below 7.5%.

• Main potential benefit is discouraging redemptions in extremis.

• **Issue #1:** Exacerbates spillovers across funds
  • News that one fund has suspended redemptions is likely to increase redemptions at other funds.

• **Issue #2:** Exacerbates *ex ante* incentives to redeem.
  • Incentivizes investors to redeem their shares at the first indication of trouble out of fear that their cash could be trapped in the fund if it suspends redemptions.
  • This problem grows worse the more effective gating is *ex post* → Discouraging redemptions *ex post* requires high fees, which encourages redemptions *ex ante*. 