August 2021

Proposals to reduce prime MMFs vulnerabilities

A recent President's Working Group on Financial Markets (PWG) report on money market fund (MMF) reform described 10 potential regulatory options to address existing vulnerabilities in the sector given the events of March 2020.

1. Please discuss the primary drivers of the stress experienced by MMFs in March 2020, as well as any other inherent vulnerabilities that currently exist in the MMF sector.

2. How would the specific reform proposals presented in the PWG report be expected to impact the MMF industry and broader short-term funding markets, including the front-end of the Treasury market and Treasury repo, both under normal market conditions and during future episodes of market stress?

Executive Summary

Drivers of stress experienced by prime Money Market Funds (MMFs)

- Events of March 2020 show that despite significant reforms, prime MMFs still suffer from vulnerabilities in times of market stress
- Fees and gates have added a fundamental first-mover advantage for pre-emptive redemptions in times of stress. In addition, the Weekly Liquid Asset (WLA) requirement accentuates a reluctance to dip into Treasuries to fund redemptions
- Limited secondary market intermediation in credit products also puts prime MMF vulnerabilities in greater focus
- Another component of vulnerability is the significant dispersion among prime MMFs. Smaller sized funds have lesser allocation to Treasuries, lower WLA and show greater propensity for bar-belling portfolios
  - Redemptions that start at prime MMFs with riskier asset allocation can become industry wide episodes

President's Working Group on Financial Markets' proposal evaluation

- Listed proposals range from modest to those requiring aggressive changes
- Changes to prime MMFs should effectively balance the tradeoffs between attractiveness of yields in normal times and resilience in times of stress
- Proposals that strike the best balance, in our opinion, are:
  - *Weaken link between regulatory thresholds and gates/fees* - Provide greater flexibility to tap liquid assets to meet redemptions
  - *Reform conditions for imposing redemption gates* - Reduce incentive for investors to pre-emptively redeem
  - *Changes to liquidity management requirement* - Increase liquidity profile through additional categories like biweekly liquid assets
  - *Floating NAV for all Prime and Tax-exempt MMFs* – Improve transparency and set clearer expectations of fund risks for investors

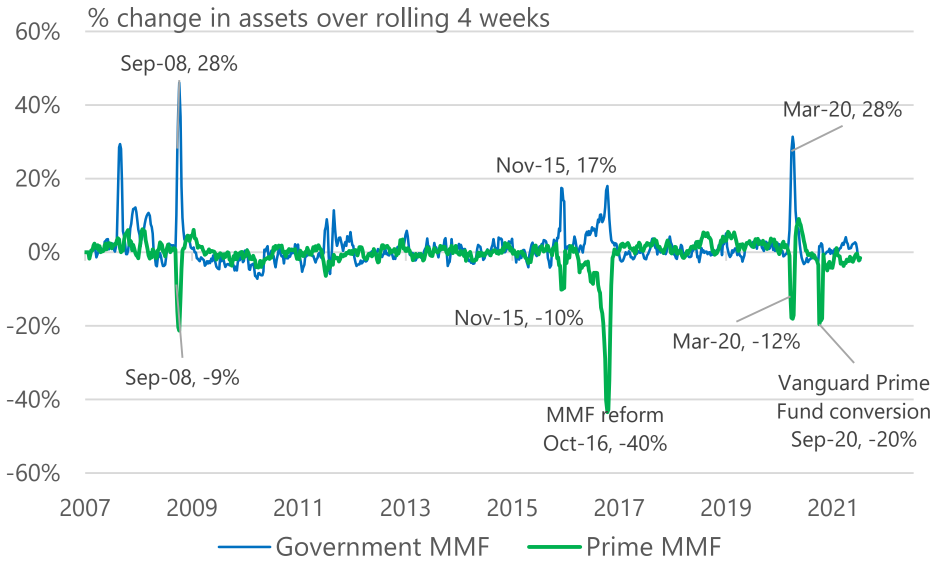
Other potential reforms for consideration

1. Given large variation in prime MMF profiles, proposals that seek to reduce dispersion in Treasury holdings and WLA between various funds would be a positive step
   - This would reduce odds of lower WLA funds being the focus of investors looking to benefit from first-mover advantage, and
   - Promote standardization in the industry benefiting investors
2. Prime MMFs have required multiple backstops while not offering investors much *net* yield pickup over government MMFs. Should regulators take steps to minimize or eliminate prime MMFs?

Primary drivers of stress experienced by prime MMFs

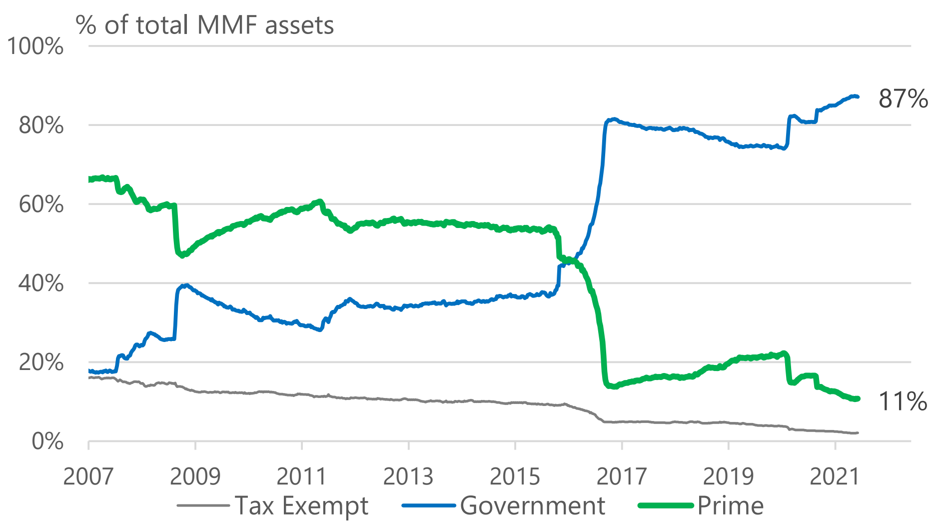
Prime MMFs remain susceptible to redemption pressures

Prime MMFs experienced greater redemption, as % of assets, in March 2020 than in 2008



Source: ICI

Prime MMFs are now a significantly smaller share of the money market universe



Source: ICI

- Prime MMFs remain susceptible to redemption pressures in times of stress. In Mar'20, prime MMFs lost 12% of assets, which was greater than in 2008
- Prime funds assets have shrunk significantly post 2014 reform and stand at ~$900bn in Jun'21, compared with $1.6trn pre-reform
- Prime inst'l funds are estimated to be ~$650bn with roughly 60% in non-public internal cash management funds

- In periods of stress, redemptions from prime MMFs correspond with roughly equal inflows into government MMFs
    - For example, ICI data show that $186bn outflow in 4wk period in September 2008 coincided with $260bn inflow into government MMFs
    - Likewise, $145bn outflow from prime funds in November 2015 coincided with $180bn inflow into government MMFs. Same experience was repeated in October 2016 (MMF reform)
    - From Treasury's perspective, this translates into additional demand for short-term Treasuries as government MMFs hold ~60% of assets in Treasuries, compared with 18% at prime MMFs

Prime MMFs do not rely on Treasuries to fund redemptions, even post reform

How have prime MMFs funded redemptions in previous large episodes

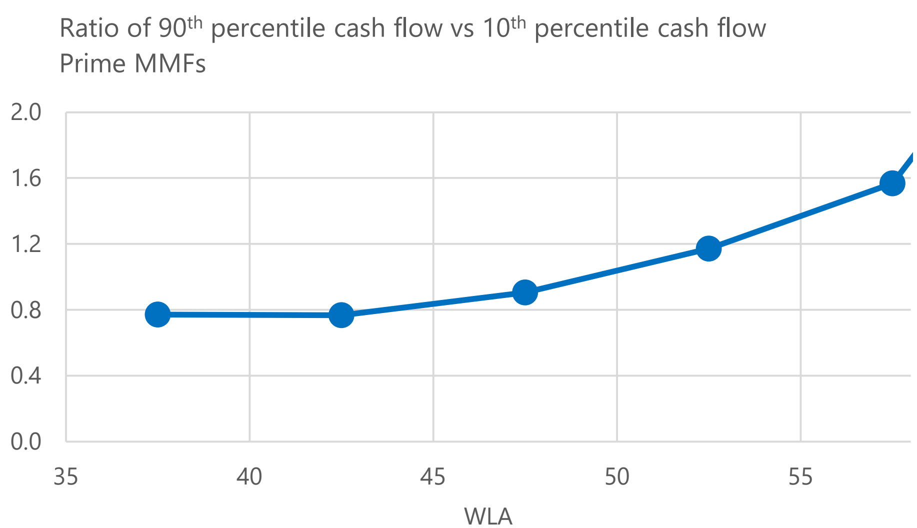
Nov15 Episode (pre-reform)	Assets	Treasuries	Agencies	Repo	CD	CP	Other
Pre-drawdown (Oct'15), $bn	$1,382	$44	$121	$330	$455	$240	$192
Redemption (Nov'15) , $bn	$1,240	$38	$60	$194	$477	$241	$230
Change, $bn (%)	-$142	-$6 (-13%)	-$61 (-50%)	-$136 (-41%)	$22 (5%)	$1 (1%)	$38 (20%)
MMF reform		Treasuries	Agencies	Repo	CD	CP	Other
Pre-drawdown (Feb'16) , $bn	$1,236	$58	$60	$165	$487	$223	$243
Drawdown (Mar-Oct'16) , $bn	$374	$28	$5	$69	$151	$61	$60
Change, $bn (%)	-$862	-$30 (-52%)	-$55 (-92%)	-$97 (-58%)	-$336 (-69%)	-$162 (-72%)	-$183 (-75%)
Mar20 Episode		Treasuries	Agencies	Repo	CD	CP	Other
Pre-drawdown (Feb'20) , $bn	$1,089	$88	$67	$210	$286	$262	$175
Drawdown (Mar'20) , $bn	$930	$96	$42	$182	$239	$230	$141
Change, $bn (%)	-$159	$8 (9%)	-$25 (-37%)	-$28 (-13%)	-$47 (-17%)	-$33 (-12%)	-$35 (-20%)
Prime fund conversion		Treasuries	Agencies	Repo	CD	CP	Other
Pre-drawdown (Jul'20) , $bn	$1,122	$326	$75	$152	$202	$218	$149
Drawdown (Oct'20) , $bn	$959	$268	$62	$156	$149	$173	$152
Change, $bn (%)	-$163	-$58 (-18%)	-$13 (-17%)	$4 (2%)	-$53 (-26%)	-$45 (-21%)	$3 (2%)

Source: Crane Data

- In four large redemption episodes since 2008, the common theme is that prime MMFs were reluctant to sell Treasuries to fund redemptions when risk aversion was high
- Specifically,
  - In Nov’15, prime MMFs total assets declined by $142bn (by 10%). Treasury holdings were largely unchanged and redemption was funded through a decline in Repo/agency holdings
    - CP holdings were unchanged, and CD share of holdings increased. This highlights lack of secondary market intermediation in these instruments
  - During money market reform driven redemptions in 2016, prime MMF assets declined ~$850bn (by 70%). Given the structural asset realignment, all assets declined roughly pro-rata, with Treasuries falling $30bn
    - Allocation to Treasuries increased post reform and Weekly Liquid Assets (“WLA”) metric increased
  - In Mar’20 (pandemic), despite having higher liquidity profile, prime MMFs did not rely on Treasuries when faced with $160bn (or 15% of assets) in redemptions in Mar’20 (pandemic).
    - Rather, Treasury holdings actually increased $8bn. CP and CD holdings, as percent of assets, declined far less than agencies
  - Several large sponsors, such as Vanguard, Fidelity and Northern Trust, tilted their MMF offerings more toward a government portfolio in Q3-Q4’20. Given that this was also a structural shift like 2016, all holdings declined roughly pro-rata
  - In times of high risk aversion, prime MMFs are reluctant to sell Treasuries to maintain the liquidity profile and keep dry powder for possible further redemptions

Alignment of WLA thresholds with gates/fees often serve as triggers for action

Prime fund redemptions tend to pick up at lower WLAs ….

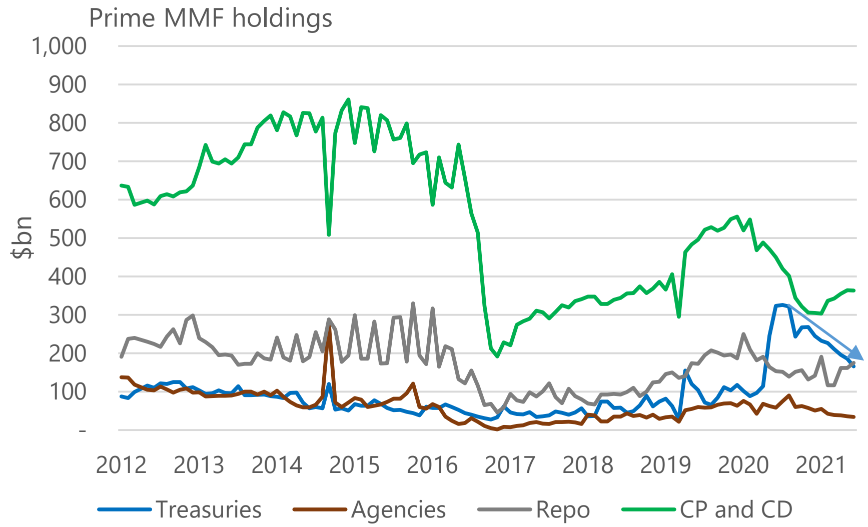


- Prime MMFs investor behavior shows greater redemption pressure at lower WLA levels
- The chart plots the ratio of 90th percentile cash flow and 10th percentile cash flow at various levels of WLA
- At lower WLA, the size of the "chunkier" outflows is significantly larger than the size of chunkier inflows. This is not true at higher WLAs
- This demonstrates that investors tend to pre-emptively withdraw larger amounts as funds approach WLA levels where imposition of gates/fees is a possibility
- Under the gates/fees provisions provided in the 2014 money market reforms, boards of MMFs funds are permitted to impose a liquidity fees of up to 2% or to temporarily suspend redemptions if the fund's WLA falls below the 30% minimum threshold.
    - Funds must impose a 1% liquidity fee if WLA falls below 10% threshold, unless the fund's board determines that imposing the fee is not in the best interests of the fund
- These provisions linked levels of liquidity with redemption gates/fee, and exacerbated first-mover advantage for pre-emptive redemption (notably institutional investors)
- Therefore, proposals that reform conditions for imposing redemption gates/fees, such as through a biweekly WLA, might result in more stable cash flows at prime MMFs

Source: Crane data

Prime MMFs holdings of Treasuries are not significant, even as those of CP/CD are

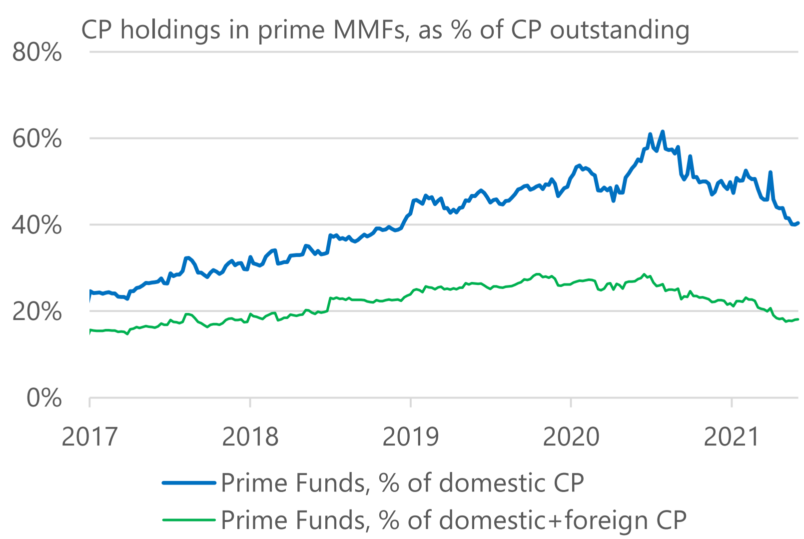
Prime MMFs hold relatively small amounts of Treasuries and Treasury Repo



Source: Crane data data

- As total assets in prime MMFs have shrunk over the past year, Treasury holdings have reduced relative to CP (commercial paper)/CD/repo holdings, reversing the earlier trend
  - This is likely driven by competitive pressures in a low yield environment
- Prime MMFs hold a small amount of Treasuries ($160bn), relative to government MMFs ($2.2trn). For context, there are $4.3trn T-bills and $21.7trn marketable Treasury debt outstanding
- Therefore, the vulnerability of prime funds to "run-like" behavior is not a challenge to the Treasury market from a macro perspective

While prime MMFs hold a small share of Treasuries outstanding, their holdings of CP are significant



Source: ICI, Federal Reserve

- However, prime MMFs are a much larger presence in non-Treasury short-term funding markets
- Prime MMF CP holdings are 40% of domestic CP outstanding and 20% of total CP outstanding
- As spreads on these assets widen in times of stress, prime funds with large allocation to these assets experience redemptions, worsened by the first-mover advantage and limited secondary market intermediation

President's Working Group (PWG) on Financial Markets' Proposal Evaluation

PWG’s potential reform options for money market funds - Effective in presenter’s view

Proposal	Details	SIFMA AMG Response	Presenter’s View
Removal of tie between MMF liquidity and fee and gate thresholds	Remove link between the 30 percent and 10 percent WLA thresholds and the imposition of fees and gates	“Strongly supports”, “most directly and meaningfully addresses”	Very effective – greater flexibility to tap liquid assets
Money market fund liquidity management changes	New categories of liquidity requirements (bi-weekly liquid assets - BWLA), additional liquidity thresholds	“Does not generally oppose”, “Focus on [funds] that experienced higher redemptions”	Effective in conjunction with above proposal We believe that delinking WLA requirements from imposition of gates/fees is the most effective reform. This can be best achieved in combination with liquidity management changes that create a “gap” between gates/fees and liquidity thresholds Proposals such as the following would improve the resilience of prime MMFs • mandating a minimum holding of Treasuries/government securities, • limiting CP exposure, • maturity cap on CP purchases (for example 3m), and • shortening the weighted average life limit from 120days
Floating NAV for all prime and tax-exempt money market funds	Retail prime MMFs and tax-exempt MMFS sell and redeem shares at market prices	“Generally oppose”, “did not prove effective”	Effective in promoting transparency Floating NAVs are generally much more transparent than most other measures such as MBR and swing pricing. Given that shadow NAV’s are published daily, they are effectively another trigger Floating NAVs will likely force a reallocation of risk, and thereby, make the industry more resilient Downside is that it likely increases funding costs for CP issuers, assuming the market does not evolve and create non-MMF sources of funding for credit issuers
Reform of conditions for imposing redemption gates	Notify the SEC prior to imposing gates, Consider liquidity fee before gates, lower WLA threshold to 10% for gates, soft/partial gates	“Less effective”	Effective when combined with liquidity management changes that result in a higher liquidity profile

PWG's potential reform options for money market funds - Ineffective in presenter's view

Proposal	Details	SIFMA AMG Response	Presenter's View
Minimum Balance At Risk ("MBR")	A portion of balance is available for redemption only with a time delay	"Strongly opposes"	Less effective. This proposal will explicitly apportion a certain amount of assets that are not available for immediate liquidation. In the event of a loss, redeeming shareholders would lose their MBRs first Implementation hurdles would be determining the size of the MBR and communication challenges around its calibrated, and assessment over time
Countercyclical WLA requirements	Minimum WLA requirements could automatically decline in certain circumstances	"Less effective policy measure", "Potential to create a bright line test"	Less effective. Allowing WLA requirements decline during times of stress seems much less effective and less straightforward than simply de-linking WLA requirements and the trigger for fees and gates Both measures endeavor to diminish the run-risk created by the WLA threshold
Swing pricing requirement	Adjust fund's NAV downward when net redemptions exceed a threshold	"Does not support", "significant costs and burdens associated with implementation"	Less effective. This proposal would adjust NAVs downward for transactions cost when net redemptions exceed some threshold, and presumably this netting occurs at the end of day It seems redundant considering that MMFs can already charge liquidity fees. They both achieve the same outcome Operational hurdles in implementing swing pricing: • It has not been tested in a cash settlement environment, and if the swing price is determined on a net basis, same day settlement will be difficult, if not impossible, due to timing issues. • This change could impair same day liquidity • Some MMFs strike NAVs intraday. So, it's not clear how swing pricing can be overlaid in this context
Capital buffer requirements	Dedicated resources within or alongside a fund to absorb losses	"Strongly opposes"	A buffer designed to absorb credit and liquidity risk could be significant, and therefore, reduce the attractiveness and viability of prime funds
Require Liquidity Exchange Bank ("LEB") membership	Prime MMFs required to be members of a private liquidity exchange bank	"Strongly opposes"	Presumably there is a significant cost associated with membership as the potential size of the support could be significant. The impact is similar to capital buffers. This proposal reduces product viability
New requirement governing sponsor support	A regulatory framework governing sponsor support to clarify who bears MMF risks	"Strongly opposes"	Mandating sponsor support would likely increase cost for investors, and similar to capital buffers and LEB membership, reduce the viability of prime funds

Tradeoffs in presented prime MMF reform proposals

Proposal	Ease of implementation	Impact on prime MMFs in normal times	Impact on prime MMFs in times of stress	Shift towards Gov't MMFs
Removal of tie between MMF Liquidity and Fee and Gate Thresholds	+	O	+	O
Money Market Fund Liquidity Management Changes	+	-	+	O
Floating NAV for all Prime and Tax-exempt Money Market Funds	O	O	+	+
Reform of conditions for imposing Redemption Gates	+	O	+	O
Minimum Balance At Risk ("MBR")	-	-	+	+
Countercyclical WLA Requirements	-	O	+	O
Swing Pricing Requirement	-	-	+	O
Capital Buffer Requirements	-	-	+	+
Require Liquidity Exchange Bank ("LEB") Membership	-	-	+	+
New Requirement Governing Sponsor Support	-	-	+	+

+: positive, -: negative, o: neutral

Summary of proposal evaluation

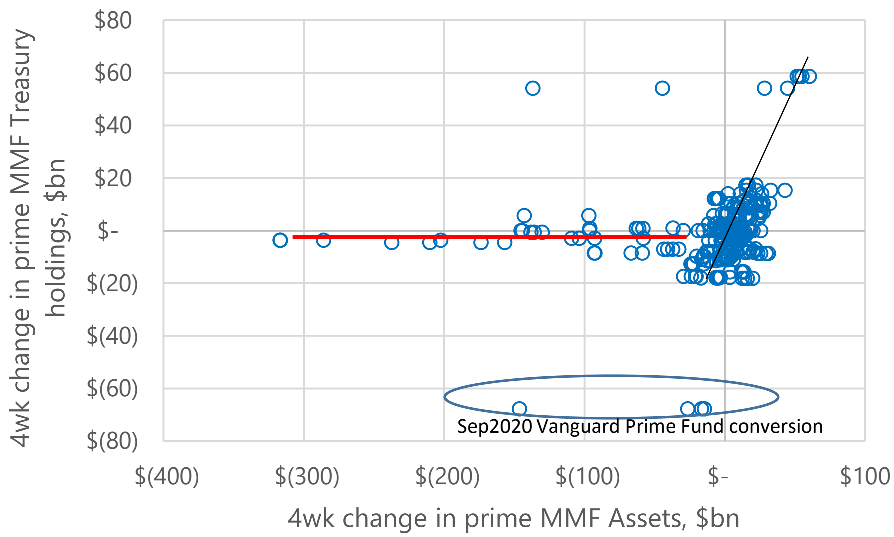
- Proposals presented in the President's Working Group on Financial Markets range from modest but easily implementable to those requiring aggressive changes
- Changes to prime MMFs should effectively balance the tradeoffs between attractiveness of yields in normal times and resilience in times of stress
    - However, proposals that promote greater liquid holdings also tend to lower yields and reduce the gap between prime and government MMFs
    - Proposals that seek to reduce the first-mover advantage in redemptions through liquidity or credit cost sharing often are complex to administer or costly to institute and achieve the stated goals only partially

- Overall, the following proposals appear to strike the best balance:
    - *Weaken link between regulatory thresholds and gates/fees* - Provide greater flexibility to tap liquid assets to meet redemptions
    - *Reform conditions for imposing redemption gates* - Reduce incentive for investors to pre-emptively redeem
    - *Liquidity management requirement changes* - Increase liquidity profile through additional categories like biweekly liquid assets
    - *Floating NAV for all Prime and Tax-exempt MMFs* – Improve transparency and set clearer expectations of fund risks for investors

- Other proposals, in our opinion, might face greater challenges in their implementation
    - *Minimum balance at risk and swing pricing requirement* - Complex and hard to administer
    - Likewise, implementation of *countercyclical WLA requirements* would be challenging, while addressing the pre-emptive redemption incentive problem only partially
    - *Capital buffers*, *liquidity exchange membership* and *new requirements for sponsor support* are challenging from appropriate sizing and cost perspective and can reduce product viability

Proposals promoting dipping into Treasuries in times of stress could be effective

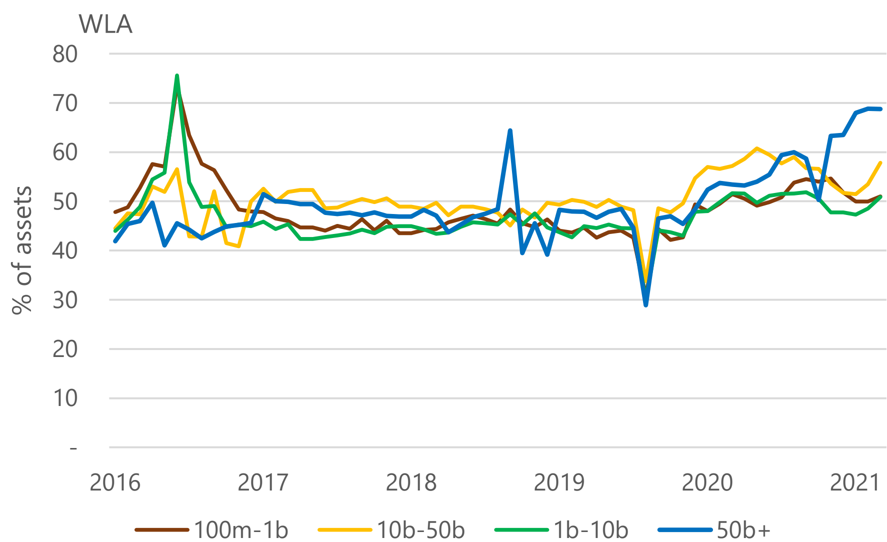
Prime MMFs tend not to dip into Treasury holdings to fund large redemptions



Source: ICI

- The chart on the left plots changes in Treasury holdings for prime MMFs vs changes in assets over a rolling 4 week period
- It shows that prime MMFs are reluctant to dip into Treasury reserves to fund large redemptions
- Concerns around dipping below the WLA threshold and triggering gates, which would further prompt investor redemptions, contribute to this behavior
- Therefore proposals that weaken the tie between regulatory thresholds and gates/fees are attractive

WLA metrics show large gap between larger and smaller prime MMFs

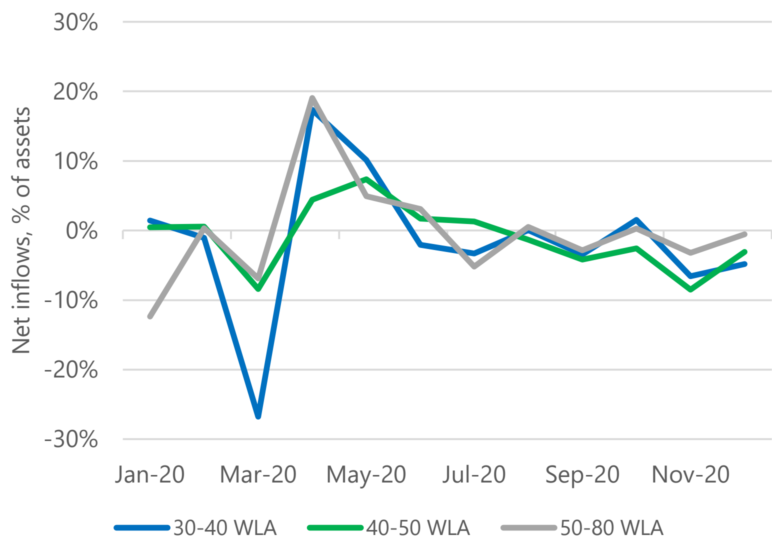


Source: Crane data

- WLA holdings at prime funds differs significantly by size of the fund, with larger funds typically holding higher WLAs
- Proposals that set WLA thresholds higher would standardize the prime MMF industry more and aid in weakening the tie between regulatory WLA thresholds and gates/fees
- This is likely to create a cushion for prime MMFs to dip into Treasuries to fund redemptions in times of stress

Additional recommendation 1:
Proposals promoting higher liquidity thresholds, and thereby reduced dispersion, are likely to be effective

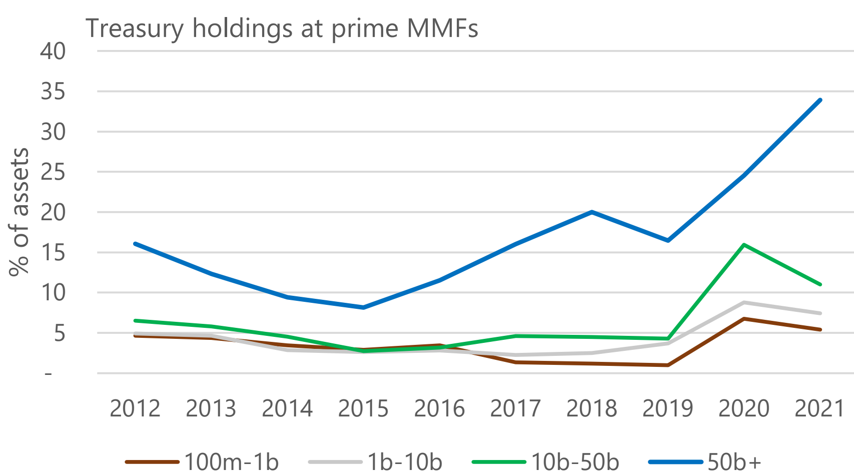
Even though lower WLA funds saw greater redemption, higher WLA funds experienced redemptions too



Source: Crane data

- Redemptions that start at prime MMFs with riskier asset allocation in times of stress can become industry wide episodes
- For instance, even though 30-40% WLA funds saw greater redemptions as % of assets, even 50-80% WLA funds had outflows
- This necessitates a focus on dispersion between prime MMFs
  - Funds with AUM larger than $50bn on average allocate 35% of assets to Treasuries . For funds smaller than $50bn in assets, allocation to Treasuries has increased since 2019 but still remains at 5-10%
  - WLAs at larger funds are meaningfully higher
  - Smaller funds have a greater inclination for bar-belling portfolios

Larger prime MMFs have significantly greater % of assets in Treasuries



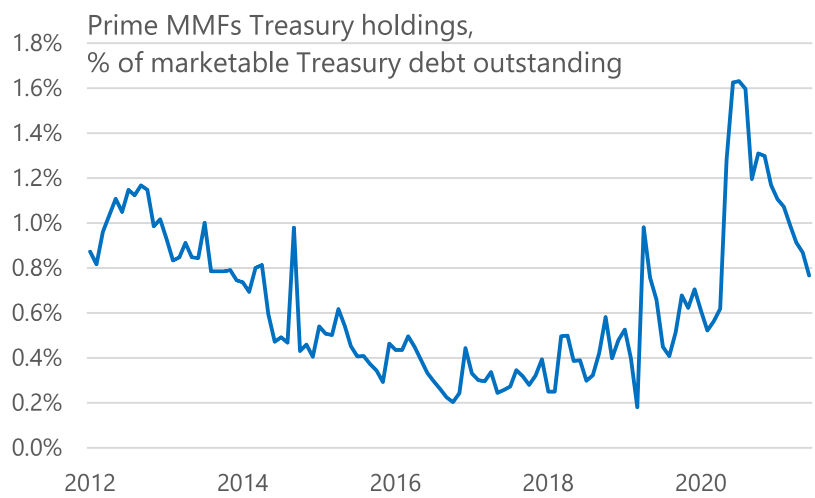
Source: Crane data

- In this context, regulations that reduce the highlighted dispersion would be a positive step
- These regulations could raise the liquidity profile of prime funds to a greater threshold - perhaps even mandating allocation to Treasuries and Treasury repo
- If all prime funds allocated the same proportion of assets to Treasuries as $50bn+ sized funds, it would increase demand for short-term Treasuries by $170bn (4% of T-bills outstanding)

Additional recommendation 2

Should regulators take steps to minimize or eliminate prime MMFs?

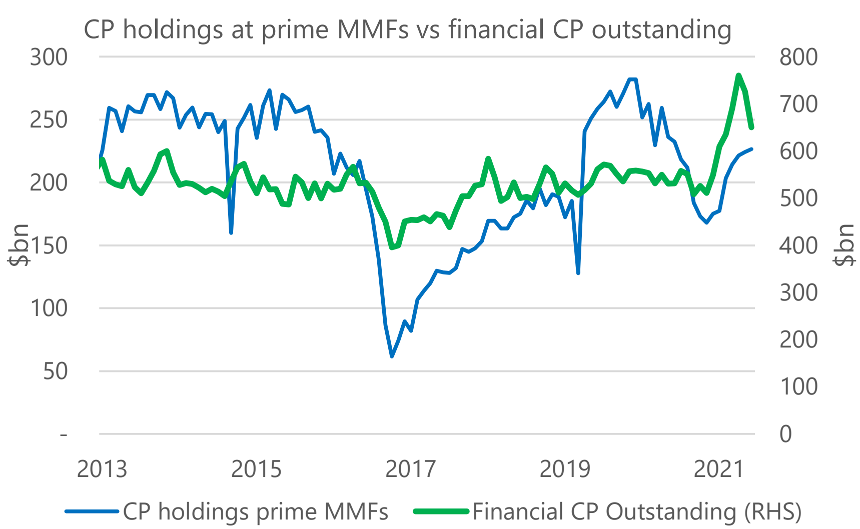
Prime MMFs hold relatively small share of Treasuries outstanding



Source: Crane data, Bloomberg

- Prime MMFs have required multiple government backstops over the past fifteen years, despite meaningful reforms
- At the same time, high expense ratios have limited the pass through of higher yields (vis a vis government MMF) to final investors
- Proposals that make prime MMFs more liquid also necessarily make them more "government MMF" like
- Therefore, should regulators take steps to minimize or eliminate the existence of prime MMFs?
- Some of the PWG proposals being considered could have this impact due to the operational complexity or costs associated with implementation

Financial CP outstanding remained steady even as prime MMFs' CP holdings declined post 2014 reform and then recovered



Source: Crane data, Macrobond

- Impact of prime MMF industry shrinking further:
  - From Treasury perspective, $1 lesser AUM in prime MMFs would translate into extra $0.40 demand for short-term Treasuries, assuming this dollar shifts to government MMFs and static allocation
  - Experience post 2014 reform shows that financial CP outstanding remained relatively steady even as CP holdings of prime MMFs declined.
    - The impact on non-financial CP was even lesser
  - In addition, short-term securities issued by corporate/other sponsors can potentially be purchased by mutual funds whose mandate includes a short-term allocation. On the margin, this might encourage the issuing entities to further term out debt

Case study: Market reaction to closure of prime MMFs in late Q3'20 was minimal

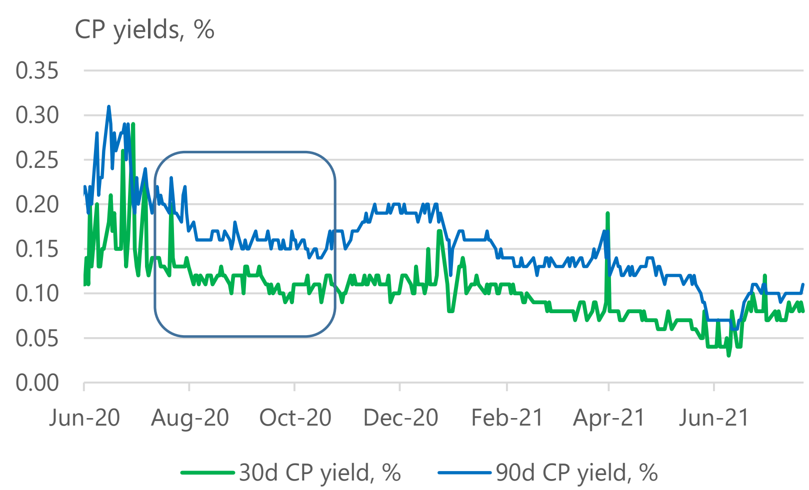
Prime MMF assets declined 18% in Sep'20

$bn	Jul'20	Nov'20	Current (Jun'21)	Change from Jul'20 to Nov'20	Change from Jul'20 to Jun'21
Prime MMF Assets	$1,122	$924	$900	-$199 (-18%)	-$222 (-20%)
Prime Institutional	$678	$637	$672	-$41 (-6%)	-$6 (-1%)
Prime Retail	$444	$287	$228	-$157 (-35%)	-$216 (-49%)
Treasury holdings	$326	$268	$166	-$58 (-18%)	-$160 (-49%)
Repo holdings	$152	$132	$175	-$20 (-13%)	$23 (15%)
CP holdings	$218	$168	$227	-$50 (-23%)	$8 (4%)

Source: Crane data

- Prime assets shrank 18% in late Q3'20, driven by a 35% decline in retail funds. Several large sponsors, such as Vanguard, Fidelity and Northern Trust, tilted their MMF offerings more toward a government portfolio[1]

In the period where prime MMF CP holdings declined sharply, CP yields actually declined



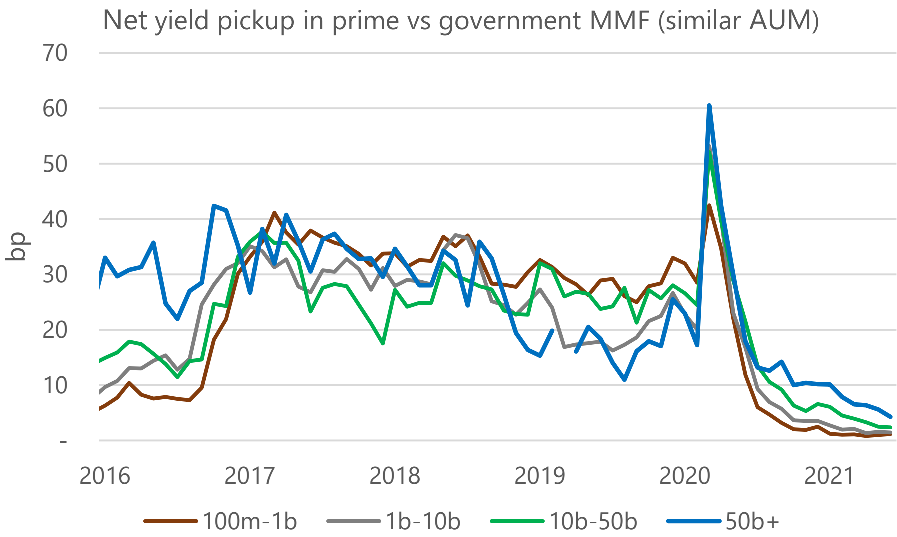
Source: Bloomberg

- This time period offers a window to assess impact of prime assets declining, as these outflows were not driven by a risk-off environment
  - In this period, Treasury holdings of prime MMFs declined by $58bn and have declined by $160bn (~50%) cumulatively from July'20 to date
  - This decline of $160bn does not appear material in the context of $4.3trn in marketable bills outstanding and $2.2trn Treasury bills holdings at government MMFs
  - Amid the decline in prime assets, CP holdings shrank by 23% of assets. However, 30day and 90day CP yields actually declined in this time period, likely as financial CP outstanding declined as well.

1:https://institutional.vanguard.com/VGApp/iip/site/institutional/researchcommentary/article/NewsInstInfo08272020

Prime MMFs yield advantage over government funds has shrunk post pandemic

Prime MMFs offer increasing smaller yield pickup over similar sized government MMFs



Source: Crane data

- Prime MMFs yield pickup over similar sized government MMFs has shrunk in the current low yield environment
  - In the higher yield environment of 2016-20, prime MMFs offered 20-30bp yield pickup versus similar sized government funds, but this has shrunk significantly to sub 5bp post Fed easing in the pandemic
  - A low yield environment benefits funds with economies of scale and low expense ratio

Source: Crane data