

Money Market Funds during the March-April Episode

Thematic Note



IOSCO

**The Board of the International Organization of
Securities Commissions**

OR03/2020

NOVEMBER 2020

Copies of publications are available from:
The International Organization of Securities Commissions website www.iosco.org
© *International Organization of Securities Commissions 2020. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

Money Market Funds during the March-April Episode

Key takeaways

Money Market Funds (“MMFs”) can be described as investment funds that seek to preserve capital and provide daily liquidity, while offering returns consistent with money market rates. They are an important component of the short-term money markets; these markets are critical for financing governments, banks and non-financial companies. MMFs can be used by non-financial companies to invest excess cash. Financial companies, including other funds, use MMFs to manage their own liquidity demands (e.g. collateral management, margin calls etc.). MMFs are not homogeneous across jurisdictions and as such demonstrate a range of characteristics dependent on their structure, which is reflected in the regulatory approach adopted by different jurisdictions.

Decline in business activity worldwide and the high volatility in many markets, contributing to demand for cash and safe assets, may have led to some MMF investors redeeming their holdings, driven by a combination of cash needs and “flight-to-safety” behaviour (e.g. to USD government assets). Indeed, market turmoil in March and April primarily affected US and EU MMFs, though the effects varied by types of MMF, with significant outflows from MMFs holding primarily non-public debt and historic inflows into MMFs primarily holding government instruments.

In the US and the EU, USD denominated non-public debt MMFs experienced the most significant redemptions over the recent stress periods.

US prime MMFs recorded outflows of \$125 billion in March, representing 11% of their assets and faced challenges to maintain their weekly liquidity buffer. It seems that the potential application of gates – which could result if a fund dropped below the 30% liquidity threshold – may have accelerated outflows. These outflows happened at the same time that the underlying market (notably the commercial paper market) saw reduced liquidity preceding the announcement of the Federal Reserve liquidity facility (Money Market Mutual Fund Liquidity Facility (“MMLF”) and Commercial Paper Funding Facility (“CPFF”) in particular).¹ The announcement of the MMLF and CPFF helped to restore market confidence. CPFF eliminated much of the risk that eligible commercial paper issuers will not be able to repay investors (including Prime MMFs) by rolling over their maturing commercial paper obligations. MMLF directly benefitted Prime MMFs, together with the US SEC’s temporary relief permitting MMFs to transact with affiliated parties. Prime MMFs recovered their pre-COVID-19 level of assets under management by the end of April.

In the EU, USD denominated stable non-public debt Low Volatility Net Asset Value MMFs (“\$LVNAV”) recorded net large outflows from mid-March although the situation varied across funds (\$70 billion overall and around 25% of the total net assets of \$LVNAV overall). As for US prime MMFs, the potential application of fees and gates under certain conditions may have accelerated outflows. \$LVNAV partly used their weekly liquid assets to meet redemptions and also sold some of their securities in the secondary market, and, where lack of dealers did not allow that, they decided to not re-invest maturing money market instruments (“MMIs”). As these funds were excluded from the Federal Reserve programme, liquidity tensions lasted longer for \$LVNAV compared to US Prime MMFs. With volatility decreasing and the market stabilising, outflows fell from the beginning of April and have been replaced by inflows since then.

In the EU, EUR denominated non-public debt MMFs faced both inflows and outflows but overall experienced large net outflows (€44 billion for French-domiciled Variable Net Asset Value MMFs (“€VNAV”) by end-March and around 15% of the total net assets of €VNAV), although the situation

1 Please refer to box 2 on the Federal Reserve Programme.

varied across funds. Despite there being no suspensions, the European Central Bank (“**ECB**”) reminder that liquidity buffers² might be used by banks may have had a positive effect on the MMI market and alleviated pressures on MMFs as banks began providing some liquidity in their own paper. The ECB programme did not directly benefit MMFs but helped to restore confidence, primarily by supporting issuance of corporate commercial paper on the primary market from the end of March. By mid-July, standard €VNAV reached pre-COVID-19 levels in terms of assets under management.

By contrast, US government MMFs and EU public debt MMFs primarily invested into US short-term government debt securities recorded large inflows in March. Yields on US government MMFs declined in response to lower interest rates and higher demand for government assets supported by fund inflows. As markets stabilised, some outflows have been observed in government MMFs, which may also reflect seasonal effects.

It is important to note however that MMFs behaved differently – both across jurisdictions and, even within the same MMF category in a particular jurisdiction, and faced different contexts and issues as a result of their characteristics such as investor profiles, portfolio holdings and/or regulatory requirements.

Overall, central bank actions taken at the height of the crisis have had a positive impact on markets, including the functioning of specific market segments, but also more broadly on market sentiment. In some jurisdictions, central bank interventions directly supported MMFs, particularly the MMLF in the US combined with the CPFF which participated to restore market confidence. In other jurisdictions, the impact on the MMF sector was indirect. In all cases, the actions taken seem to have provided support to short-term money markets generally and not just the MMF portion of that market. The central bank actions to support bank intermediation in the short-term markets through regulatory relief on capital and leverage ratios and through encouraging the use of buffers has been no less effective. The global nature of actions taken, across North America, Europe and Asia was also an important element of the central bank support measures proving to be so effective. However, differences in the design of central bank interventions have had a differential impact on MMFs globally.

This analysis focuses, in the first instance, on a factual description of the events that took place across jurisdictions during March 2020 based on available data and sources. It describes where the MMF sector remained stable and where it came under stress, taking into account the differences between MMF type and currency. Finally, it suggests further analysis to strengthen the money markets’ ecosystem and MMFs’ regulatory framework.

The MMF sector represents a crucial link bringing together supply and demand of short-term money:

- They serve as an important source of short-term financing for financial institutions, corporates and governments.
- On the demand side, MMFs serve as a short-term cash management tool that provides a high degree of liquidity, diversification,³ limited volatility of value under normal market conditions as well as under reasonably stressed conditions. Depending on the jurisdiction, MMFs can be used by institutional and retail investors.

The MMF industry is significant in size, having reached approximately US\$ 6.9 trillion as of year-end 2019, or 13% of the \$54.9 trillion in overall mutual fund assets according to IIFA (compared to US\$

2 In this context, liquidity buffers refer to the stock of liquid assets that a bank is required to hold to enable it to meet expected and unexpected cash flows – including collateral needs – without affecting its daily operations.

3 In contrast with a bank deposit, a MMF is not exposed to the risk of one single counterparty and abides by strict diversification rules, both in terms of issuer and counterparty risk exposures.

4.7 trillion in assets under management at first quarter 2012 (around one fifth of the assets of Collective Investment Schemes worldwide at the time).⁴

Although there is no unique definition of MMFs across jurisdictions, they can be described as investment funds that seek to preserve capital and provide daily liquidity, while offering returns consistent with money market rates.⁵ MMFs are not homogeneous and as such demonstrate a range of characteristics dependent on their structure, which is reflected in the regulatory approach adopted by different jurisdictions. **Such differences are important, in particular when assessing the effect of market dislocations related to the COVID-19 events on MMFs in various jurisdictions.** As described in this note, some MMFs depending on their types, strategies and currencies were seen as safe investments during the recent market turmoil and recorded very large inflows while others have raised liquidity risk concerns and recorded substantial outflows, although a variety of behaviours have been observed even within the same type of MMF category, strategy and currency, either across jurisdictions and/or within the same jurisdiction. This heterogeneity indicates the need for further analysis before any firm conclusions can be drawn about the actions observed.

The differences across MMF category, strategy, and currency must also be considered when comparing the 2007-2008 crisis to the recent stress faced by MMFs. After the 2008 crisis and due to the systemic relevance of MMFs, IOSCO developed common standards for the regulation and management of MMFs across jurisdictions aiming at fostering the resilience of this industry and mitigating the potential negative impacts the sector may have on the wider financial system.⁶ The IOSCO 2012 Policy Recommendations for MMFs, endorsed by the FSB, have been instrumental in assisting the development of a global framework for MMF regulation, although regulations have varied from jurisdiction-to-jurisdiction to fit local market structures.⁷ **The MMF landscape has been reshaped consistently**, with jurisdictions' application of stringent requirements regarding, for example, the eligibility of the portfolios' assets, transparency due to both investors and supervisors, portfolio valuation and liquidity. **Therefore, the current MMF industry may not be directly compared with the industry in existence prior to the reforms.**

Although much more resilient, MMFs, like other financial entities, **were not able to anticipate nor adjust their portfolios in advance of the market dislocations due to its suddenness and the speed at which spreads of MMIs widened.** Redemption requests of non-public debt MMFs in some jurisdictions intensified in the second and third week of March, prompting some MMFs – despite liquidity buffers – to attempt to liquidate some of their holdings amidst an illiquid market.⁸

4 International Fund Association, Worldwide Regulated Open-End Fund Assets and Flows first quarter 2020, Available at [https://cdn.ymaws.com/iifa.ca/resource/collection/BD2DD483-21F4-4BA5-97D2-FFDD152D23ED/Worldwide Regulated Open-End Fund Assets and Flows - First Quarter 2020.pdf](https://cdn.ymaws.com/iifa.ca/resource/collection/BD2DD483-21F4-4BA5-97D2-FFDD152D23ED/Worldwide%20Regulated%20Open-End%20Fund%20Assets%20and%20Flows%20-%20First%20Quarter%202020.pdf)

5 The definition of MMF is included under Recommendation 1 (p.11) of the IOSCO 2012 Policy Recommendations for MMFs, available at <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD392.pdf>.

6 IOSCO published a report in October 2012 detailing 15 recommendations around key principles seeking notably to address vulnerabilities around the risk of run and first mover advantage in MMFs. Please refer to IOSCO Final Report on Policy Recommendation for Money Market Funds (see link to report included under footnote 5).

7 An assessment of the IOSCO 2012 Policy Recommendations for MMFs as compared to jurisdictional regulations is currently under review by IOSCO.

8 In a speech “Seven Moments in Spring: COVID-19, financial markets and the Bank of England’s balance sheet operation” given by Andrew Hauser, Executive Director, Markets, BoE, and published on June 4, 2020, Mr Hauser indicated: “*In total, Sterling MMFs saw outflows of some £25bn, or 10% of their total assets, in the eight days between 12 and 20 March. At first, they met these outflows by running down cash holdings. But as the outflows intensified, the MMFs tried to liquidate some of their certificates of deposits and commercial papers, only to find, just as we’d heard, that the market was effectively closed*”. In addition, and under its May 2020 Financial Stability Review and its piece on “the recent stress in money market funds has exposed potential risks for the wider financial system.”, the European Central Bank indicates that: “*Market and supervisory intelligence suggests that a number of MMFs had difficulties in raising sufficient cash from maturing assets and liquid positions during March, as liquidity deteriorated rapidly, also in the CP market.*”

For the second time in 12 years, national authorities and/or central banks intervened in the short-term funding market in some jurisdictions. Central bank actions taken at the height of the crisis have had an undeniably positive impact on markets, including the functioning of specific market segments but also more broadly on market sentiment. In some jurisdictions (the US in particular), central bank intervention contemplated direct support for MMFs while in others (the EU in particular) the impact on the MMF sector was indirect. The global nature of action taken, across North America, Europe and Asia was also an important element of the central bank support measures proving to be so effective. However, it is worth noting that short-term money markets are not solely composed of MMFs. As such, it seems reasonable to assume that these interventions were initiated to provide support to short-term money markets generally and not just the MMF portion of that market.

This note focuses on the causes and effects of market dislocations related to the COVID-19 events on MMFs in the main MMF jurisdictions⁹ and seeks to characterise the behaviour of MMFs (of varying types and currencies) across the main MMF jurisdictions. It includes a description of trends observed, in particular any “flight-to-safety” to public debt MMFs, and where possible, seeks to understand the reallocation of outflows from MMFs – if not reinvested in public debt MMFs. It also sets out a high-level description of the effects of central bank programs directly and/or indirectly on MMFs, notably when combined with regulatory relief provided by securities’ regulators. It also touches upon the effects of sponsor support and seeks to present some elements of information regarding any residual fragilities in the MMF sector, notably by looking into the evolution of MMFs’ portfolios following the easing of market tensions (e.g. increase of cash buffers and/or short-term maturity papers) and the potential impacts on issuers of MMIs.

The first section of the note discusses MMF markets where no issues have been observed. The second section focuses on the USD denominated public MMFs domiciled in the US and the EU, largely invested in US government securities and perceived by investors as low risk investments. Section 3 describes the stress observed in non-public debt MMFs during the recent period, either floating or stable NAV MMFs, denominated in USD, EUR and GBP, domiciled in the US and the EU/UK and composed of a variety of funds, operating under similar obligations. They behaved differently and faced different issues as a result of their characteristics. They all honoured redemptions without applying fees or gates.

This analysis focuses, in the first instance, on a factual description of the events that took place across jurisdictions during March 2020 based on available data and sources. It describes where the MMF sector remained stable and where it came under stress, taking into account the differences between MMF type and currency. Prior to describing any trends observed with regards to MMFs that faced pressures by type, strategy and currency during the recent market dislocations, it is worth noting that some key MMF markets seemed not to have been affected by the COVID-19 outbreak. This appears to be the case in the second largest MMF industry worldwide.¹⁰

I. The Chinese and Japanese MMFs: no apparent issues

In China, where retail investors held 63% of the total net assets of MMFs as of end-2019, net inflows were recorded during the first quarter of 2020.¹¹ It would appear that retail investors have slightly increased their exposures to MMFs due to heightened risk aversion, their search for capital preservation, and an increase of their savings in a period of very low household consumption. Banks in addition have also increased their exposures during the first quarter, as they usually do, following redemptions as of year-end.

9 As of end of 2019 and based on ICI data, US represents 55% of total AuM (\$3.6 trillion), China roughly 13.5% (circa \$1.17 trillion), EU roughly 22% (US\$1.5 trillion), split for the EU, among Ireland (9.4% of total net assets worldwide), Luxembourg (6.1% total net assets worldwide) and France (5.6% of the total net assets worldwide).

10 In China, most MMF are stable NAV MMFs. Their total net assets increased by 15% during the first quarter 2020.

11 Total net subscription of 1.08 trillion yuan (circa. 154 billion USD) were recorded as of end-Q1 2020, with 14.39 trillion yuan of inflows and 13.31 trillion yuan of outflows. The total net assets of MMFs reached 8.21 trillion yuan (circa 1.173 trillion USD) as of end-March 2020 compared to 7.12 trillion yuan (circa 1.017 trillion USD) as of end-2019.

Strong liquidity in the underlying market has also been observed for interbank certificates of deposit during the first quarter of 2020, which represents the largest portion of bond investments made by MMFs. In proportion to the total net assets, interbank certificates of deposits slightly decreased during this period due (i) to the reduction of issuance of these instruments during Q1 2020 and (ii) their relatively low rate of interest compared to the previous period. The proportion of reverse repurchase transactions increased mechanically during the same period, reducing portfolio duration and the exposure to low market interest rates.¹²

In Japan, sole Money Reserve Funds (MRFs) denominated in Japanese Yen are marketed to retail investors as MMFs. They are all stable NAV MMFs and are small in overall size with assets under management representing around €100 billion as of Q1 2020. They do not appear to play a central role in funding financial and non-financial institutions.¹³ Net outflows of 5% of total net assets were recorded between February and April 2020. Notably, the outflow spiked in mid-March which coincides with the significant fluctuation in the Japanese equity index. Some MRF market participants noted that the outflow from MRFs appeared to have been reinvested into equities, corporate bonds or investment trusts, invested into such instruments to take advantage of the low prices of such instruments.

II. The “flight-to-safety” to public-debt MMFs

A move towards public-debt MMFs, which may be interpreted as a form of “flight-to-safety”, has been observed in the US and the EU (where Ireland and Luxembourg are the main jurisdictions for public-debt MMFs). This trend was strongly driven by the main investment of public-debt MMFs: US government securities.¹⁴ These flows may reflect investors’ preference for reallocating investment portfolios towards what is perceived as safer short-term liquid assets. That same trend has also been observed **in Brazil**, where all MMFs are floating NAV public-debt MMFs. Brazilian MMFs are mainly invested in domestic short-term public government bonds, mostly via reverse repurchase transactions.¹⁵ They are mainly held by retail investors. From February to April 2020, MMFs have recorded net inflows of \$6.2 billion, representing an increase of 1.74% of their total net assets, due to disinvestment from bond funds reflecting a flight to safety movement.

In the US and the EU, public-debt MMFs are all permitted to operate as stable NAV MMFs. They are predominantly denominated in USD,¹⁶ mainly invested in US public debt and in particular US government securities and reverse repurchase transactions secured with government securities and offered to both retail and institutional investors. They are called government MMFs¹⁷ in the US, and USD denominated Public-Debt constant net asset value (“CNAV”) in the EU.¹⁸ With overall market

12 These changes in asset allocation had limited impact on the issuers of MMIs and the pricing of these instruments as MMFs only account for a small proportion of the overall market size for bond investment and reverse repurchase agreement.

13 As of Q1 2020, 32% of the assets of MRFs are in deposit, 25% in deposit-like instruments, 40% in commercial papers, 3% in reverse repo and 2% in short-term loans.

14 In this context, please note that “public debt MMFs” refers to government MMFs in the US and excludes tax exempt MMFs which also invest in public debt.

15 A reverse repurchase transaction is a transaction in which a MMF buys an eligible security – in the context of public debt MMF, a government security, from an eligible counterparty (the “Counterparty”), with an agreement to sell it back to the Counterparty at a specified price and at a specific time in the future. Those transactions are also referred to as sell and buy-back loans secured with collateral.

16 In Ireland and Luxembourg, non-USD denominated Public Debt CNAV represent a marginal portion of the total assets under management of Public-Debt CNAV domiciled. Please refer to Table 6. The UK does not have Public Debt CNAVs.

17 The US SEC regulations require government MMFs to invest at least 99.5% of its total assets in cash, government securities, and/or repurchase agreements that are collateralized by cash or government securities.

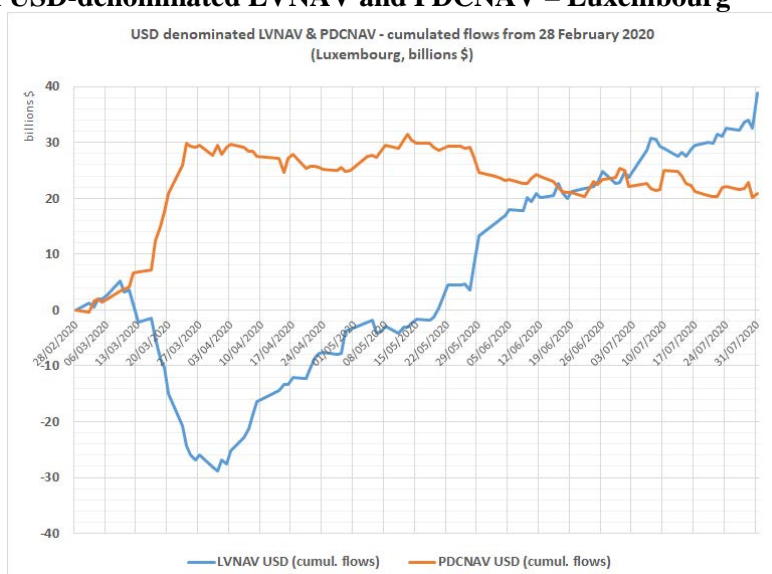
18 In accordance with article 2(11) of the EU Regulation 2017/1131 on money market funds, “Public Debt CNAV” shall invest at least 99.5% of their assets in government or public debt, reverse repurchase agreements secured with government debt and in cash.

volatility increasing and “flight-to-safety” behaviors intensifying, inflows to government MMFs increased in the second and third week of March, bringing the size of the sector to \$3.97 trillion as of end-April in the US, and \$179 billion in the EU as of end-March.

1. Luxembourg PDCNAV

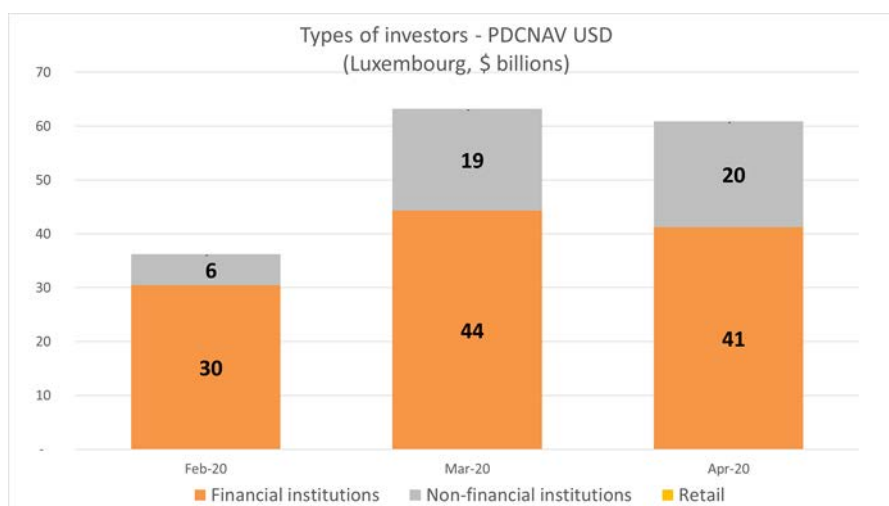
In Luxembourg, USD denominated public-debt stable NAV MMFs (“\$ Public-Debt CNAV” or “\$PDCNAV”) recorded about \$30 billion of inflows, with non-financial institutions contributing to approximately 45% (\$14 billion) of the increase and financial institutions to 55% (\$16 billion) (please refer to Table 1 and Table 2). The quasi-symmetry between outflows from \$LVNAV (circa. \$30 billion) and inflows in \$ Public-Debt CNAV (circa + \$30 billion) over the course of March suggests that the investors divested from the \$LVNAV may have re-allocated their investment to the \$PDCNAV.

Table 1 Flows in USD-denominated LVNAV and PDCNAV – Luxembourg



Source: CSSF data (based on a sample of 22 main MMFs accounting for about 70% of the total size of Luxembourg MMF industry)

Table 2 – Investors of PDCNAV – Luxembourg



Source: CSSF data (based on a sample of 22 main MMFs accounting for about 70% of the total size of Luxembourg MMF industry)

2. Ireland PDCNAV

In Ireland, large outflows from \$LVNAV (\$56billion) were observed from mid-March, mainly from financial (\$24billion) and non-financial institutions (\$23billion) (table 4). The reverse of this trend was seen in \$Public-Debt CNAV as they recorded inflows of about \$37billion during the same period, resulting partly from financial (\$21billion) and non-financial institutions (\$12billion). In a number of cases, the Central Bank of Ireland (“**CBol**”) observed large redemptions from an asset manager of \$LVNAV which coincided with a subscription of similar magnitude into the asset managers’ \$Public-Debt CNAV.

Table 3 Flows in USD-denominated LVNAV and PDCNAV – Ireland

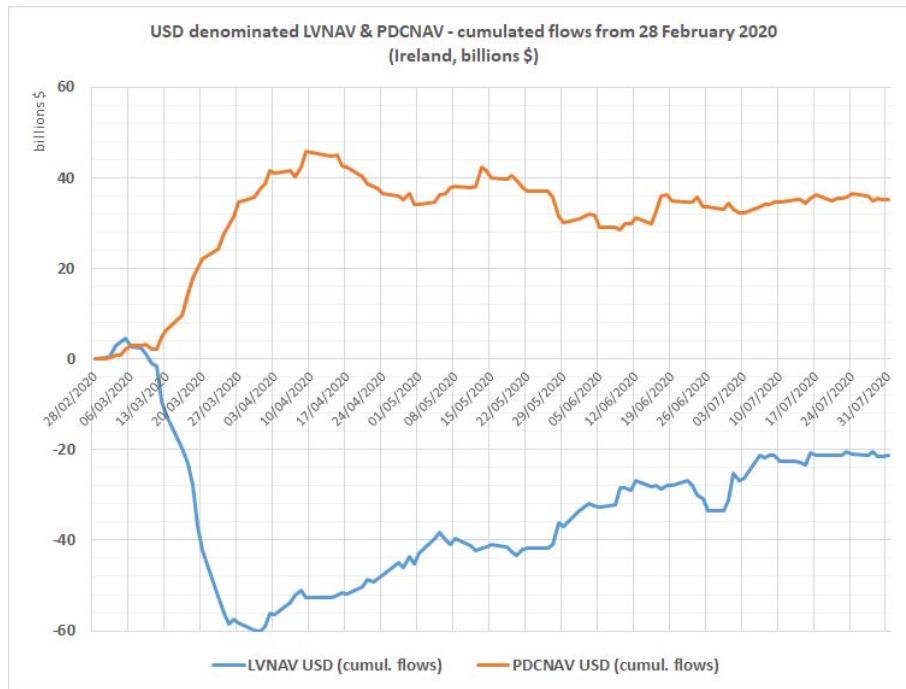
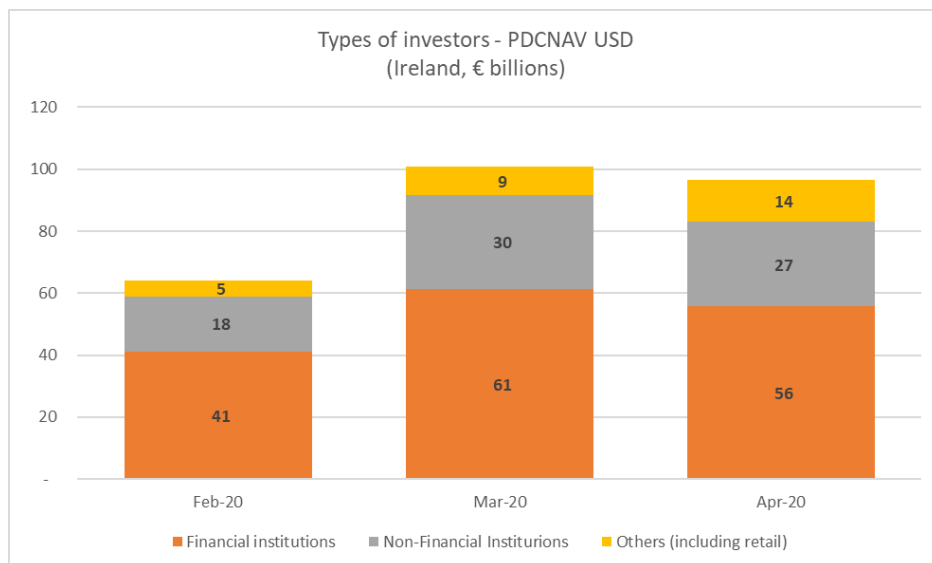


Table 4 – Investors of PDCNAV – Ireland

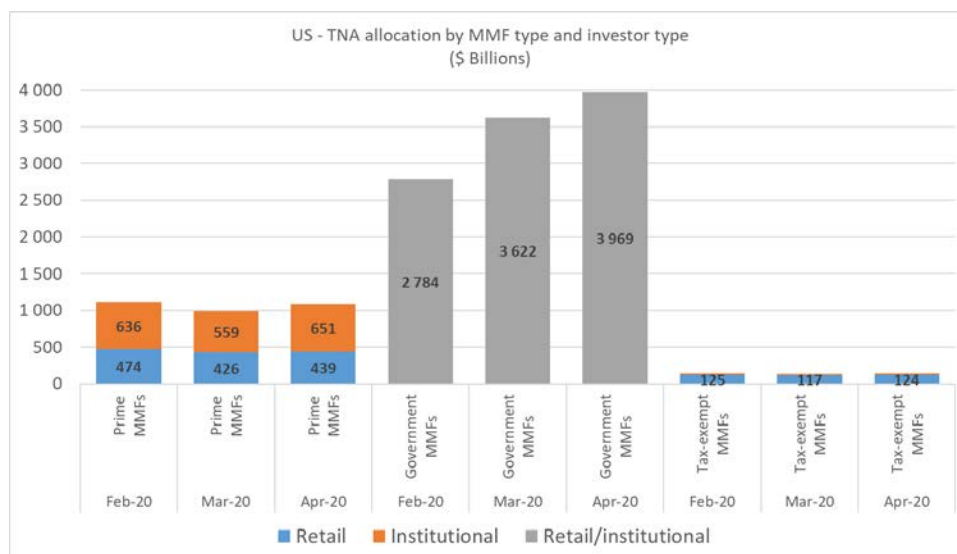


Source: CBol data

3. US government MMFs

In the US, government MMFs recorded inflows of \$838 billion in March, representing 30% of their net assets and an additional \$347 billion in April, representing a further 10% of the total net assets of government MMFs.¹⁹

Table 5 – US MMF landscape: the large predominance of government MMF



Source: US SEC Form N-MPF data

In March in particular, the proportion of reverse repurchase transactions secured with government securities increased markedly. In addition, yields of US government MMFs declined in response to the low interest rate environment.²⁰ Some US asset managers have in addition waived fees to protect investor returns, waivers which already have been applied by some US managers from 2008-2015 when policy rates hovered close to zero. A few US asset managers chose to close some of the government MMFs investing exclusively in Treasury securities to new investors, while existing investors could still make additional purchases or redemptions although many of these funds have now reopened.²¹

Some outflows have been recorded in US government MMFs from mid-May. This may be due to seasonal factors or to the current yield environment.

Stress in non-public debt MMFs

Non-public debt MMFs experienced the most significant redemptions over the recent period of market stress. Retail, financial and non-financial institutional investors redeemed some of their shares of non-public debt MMFs in March. **This trend has been observed in the US and Europe, including in the UK, although in different magnitudes depending on the currencies of the non-public debt MMFs. In the US, such funds are denominated in USD. If they are offered to**

19 This increase in inflow is similar in terms of magnitude to the creation of excess reserves by the Fed, although no direct impact may be conclusively drawn between the two trends.

20 On March 3, the Federal Open Market Committee (FOMC) cut its Fed Funds target range by 50 bps. On March 15, the FOMC made a second 100-bp cut of its target range to 0.00% – 0.25%, and asserted it expects to maintain its zero-bounded target range for Fed funds until the economy has strengthened.

21 “Funds face bear market on flight to quality” by Moody’s, published on April 16, 2020, indicates that “On March 31, Fidelity announced it would “soft close” three large MMFs that invest in US Treasury securities, after they became a haven for investors fleeing market volatility. While existing shareholders may continue to add to their accounts, other investors are not able to open new accounts in the funds. By closing these funds, Fidelity can slow the eventual decline of the portfolios’ yields.”

institutional investors, they are required to operate as floating NAV MMFs (“Institutional prime MMF”). If they are offered to retail investors, they are permitted to operate at a stable NAV per share (“prime retail MMFs”) (together “prime MMFs”). In the EU, they are either VNAV MMFs, mostly denominated in EUR (“€VNAV”) or LVNAV the vast majority of which are denominated in USD (\$LVNAV), Euro (“€LVNAV”) or GBP (“£LVNAV).

Some market participants pointed out that the regulatory constraints under which non-public debt MMFs operate in the US and the EU may have accelerated outflows. It was suggested that investors may have been concerned about the potential application of fees and in particular, of gates.^{22 23} This is not possible to ascertain at this stage, although in the US and before the end of March, both Moody’s and Fitch indicated that a temporary or permanent action to restrict investor liquidity would be deemed a breach of prime institutional MMFs’ objective that will trigger a downgrade of these MMFs to B-mf or lower upon the imposition of a liquidity fee or gate.²⁴ In the EU, Fitch indicated that a conversion of a LVNAV to VNAV (please refer to Box 1 below) would not, in itself, trigger a negative rating action but a downgrade would be likely if the temporary adoption of variable pricing led to outflows that resulted in severely reduced liquidity or gating of the fund.²⁵ Based on preliminary feedback from asset managers, potential conversion of \$LVNAV to VNAV did not raise questions or concerns from investors.

In the US, MMFs are used by both retail and institutional investors. In the EU, MMFs are mainly invested by institutional investors to efficiently manage cash on a short-term basis. Corporates use MMFs to invest their excess cash until a major expenditure, such as payroll, is due. Financial institutions use MMFs to manage their own liquidity demands (margin call, redemption or contract termination, daily cash sweep vehicle). In addition, some investors use MMFs to hold cash collateral against swaps or other derivative trades. Market volatility during the market turmoil would have affected the mark-to-market valuation of swaps and other derivative positions, resulting in investors needing to increase collateral positions, fuelling outflows.²⁶ **Outflows therefore may reflect the immediate liquidity needs of MMF investors.** Organizations of all sizes and in many sectors appear to have experienced an immediate revenue impact. It is possible that, as a response, some organizations redeemed their investment in non-public debt MMFs or other vehicles in order to increase cash on hand. **Outflows observed may also indicate that investors were keen to move from asset classes more sensitive to liquidity and credit risk and into the perceived safety of more highly rated sovereign debt.**

22 Please refer to BlackRock viewpoints on the “*Lessons learnt from COVID-19*” in the US and the EU, published in July 2020.

23 A recent paper from the Fed also shares those concerns (see “*Runs and Interventions in the Time of Covid-19: Evidence from Money Funds*” by Lei Li Yi Li, Marco Macchiavelli, Xing (Alex) Zhou, June 11, 2020).

24 “US prime money market fund outlook negative on liquidity challenges” published by Fitch Ratings on 23 March 2020

25 « What Investors Want to Know: European Money Market Fund Sensitivity to Coronavirus” published by Fitch Ratings on April 1, 2020.

26 Ibidem

Box 1 – Non-public debt MMFs in the US and the EU may be subject to different maturity, eligibility, diversity of the assets’ requirements and WAM and WAL.

To be noted:

In the EU, VNAV may belong to the short-term or standard category.²⁷ The standard MMF category does not exist in the US but is similar to short-term and ultra-short-term bond mutual funds in the US.

As for EU LVNAV, they may honor subscription and redemption at a stable value under strict conditions and in particular provided that the stable value per share does not deviate by more than 20 bps from the market value per share.²⁸ US prime institutional MMFs are offered at market-based NAV per share, while prime retail MMFs can be sold and redeemed at stable NAV per share.

In accordance with their respective applicable regulation, US prime institutional MMFs and EU LVNAV may have to consider imposing fees and gates under certain conditions.²⁹ EU LVNAV shall in addition impose fees or suspensions if the weekly liquid assets (“WLA”) fall below 10%.

Please refer to Annexes I and II on the US and EU MMF regulatory parameters for more information.

On the MMFs’ portfolio side, **the observed lack of asset liquidity may have been due to the severe disruption of short-term funding markets.** The commercial paper (“CP”) rates and benchmark rates for certificates of deposit (“CD”) spiked in the US, UK and the EU,³⁰ potentially indicating a lack of investor demand and a closure of such market. CDs and CPs are traditionally buy-and-hold instruments and therefore rarely traded on the secondary market. Banks or other money market issuers may provide liquidity for investors in their securities. Dealers of specific CP programs often intermediate trading in those CPs in the secondary market. As outlined by the ECB,³¹ “some banks accommodated the requests of MMFs, some responded with aggressive pricing in an attempt to discourage the requests for buybacks and a few simply denied the requests altogether as there is no contractual obligation to buy back.” This reluctance or inability by certain banks to buy back their own paper might also be the result of explicit restrictions imposed by prudential regulators and may be an area worth exploring further. It is also worth noting, in addition, that MMFs are an important, but not the only, investor in the CP market,³² prompting the need for an analysis and understanding of the broader market ecosystem. Higher rates in these market segments indicate higher funding costs for banks and corporate issuers.

27 Standard VNAV MMF may invest in the MMIs of the highest credit and liquidity quality that have a legal maturity of up to 2 years, as long as the WAM and WAL respectively are below 180 and 365 days. Please refer to annex 1, summing up the different categories of MMFs in the EU and the US as their main characteristics.

28 LVNAV may use the amortised cost method on assets having a legal or residual maturity of 75 days or less, provided that the stable value of an asset does not deviate by more than 10 bps from the mark-to-market price of such asset. LVNAV MMFs may subscribe and redeem shares at the constant value per share, provided that the constant value per share does not deviate by more than 20 bps from the market value per share.

29 In the US: if the weekly liquid assets (“WAL”) falls below 30% in the US, subject to the board’s discretionary decision. In the EU: if the WLA falls below 30% and the daily redemption requests amount for 10% or more to the total net assets of the fund in the EU, subject to the board’s discretionary decision. As for VNAV, they do not have to consider imposing fees and gates based on the MMF regulation.

30 Spread levels widened dramatically in money markets and short-end credit issuance due to the lack of liquidity in the market, and not as a result of credit concerns. A variety of bids for high-quality names which usually never surface for 1-year maturity paper were observed. Spread levels more than doubled in March on some papers.

31 ECB Financial Stability review: “*The Recent stress in money market funds has exposed potential risks for the wider financial system*” published in May 2020, available at https://www.ecb.europa.eu/pub/financial-stability/fsr/focus/2020/html/ecb.fsrbox202005_07~725c8a7ec8.en.html.

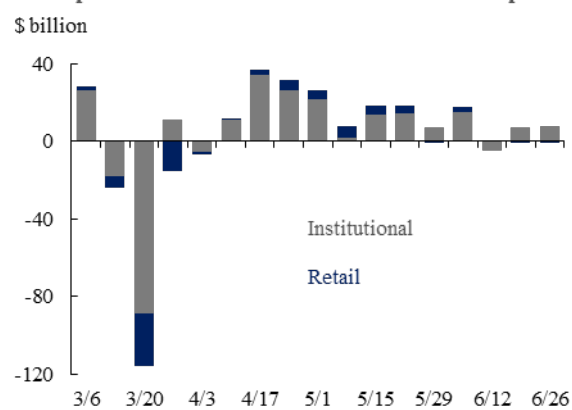
32 In the US for example, MMFs hold up to 21% of the CP market share available at <https://www.federalreserve.gov/releases/z1/20200611/html/1209.htm>

Despite the strains faced by non-public debt MMFs in March and based on the responses to the IOSCO Financial Stability Engagement Group (“FSEG”)³³ survey, it appears that all redemptions have been honoured, no MMFs have suspended redemptions, imposed fees and/or gates, or converted from LVNAV to VNAV.

A. US prime MMFs

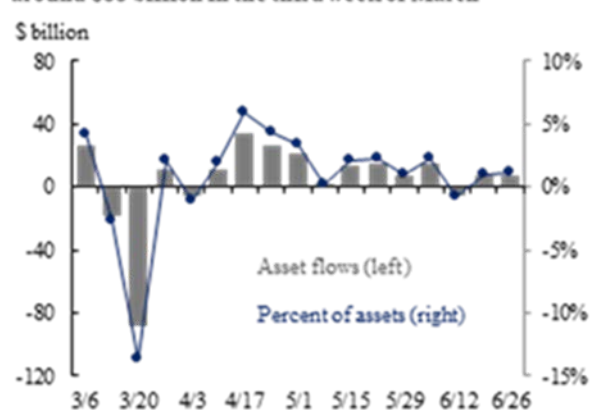
In the US, approximately \$125 billion (or approximately 11% of prime MMF assets) was withdrawn from prime MMFs in March. Prime MMFs invest in short-term debt issued by governments, financial and non-financial companies and repurchase agreements backed by such securities. Retail and institutional investors redeemed respectively 10% and 12% of the total net assets of prime MMFs from February to March. The sharp rise in daily outflows reduced funds’ liquidity levels and placed downward pressure on funds’ NAVs during this time. On March 18 and 23, Moody’s and Fitch respectively changed the outlook for prime institutional MMFs from stable to negative.

Figure 1: Prime institutional MMFs saw large redemptions in March and reversal of flows in April



Note: Weekly asset changes take into account asset flows and valuation changes.
Source: Form N-MFP

Figure 2: Prime institutional MMFs saw outflows of around \$8 billion in the third week of March



Note: Weekly asset changes take into account asset flows and valuation changes.
Source: Form N-MFP

One prime institutional MMF saw its weekly liquidity fall below the regulatory threshold of 30% of its total assets, in which case that MMF was restricted from acquiring any net asset other than a weekly liquid asset. No US MMF imposed fees or gates. The Federal Reserve liquidity facilities – in particular the MMLF (as detailed in Box 2) – restored market confidence when announced. Banks took advantage of the MMLF³⁴ to obtain loans to fund purchases of securities from eligible MMFs. SEC regulations permit MMF affiliates (such as sponsors) to purchase securities from MMFs subject to certain conditions,³⁵ and affiliated banks of three prime institutional MMFs did so.³⁶ The effects of the limited interventions of sponsors of the MMF is under analysis.³⁷

33 FSEG is a IOSCO Board-level group set up to enhance IOSCO’s approach to financial stability issues, including with regards to its engagement with the Financial Stability Board (“FSB”), international standard-setting bodies (“SSBs”), and other organizations.

34 While it appears that the Federal Reserve’s announcement of the MMLF helped the funding markets in which MMFs participate, the actual utilization of the facility has been lower than that of a similar facility in 2008.

35 Securities and Exchange Commission Investment Company Act of 1940 release no. 33821 / march 23, 2020: order under sections 6(c), 12(d)(1)(j), 17(b), 17(d) and 38(a) of the investment company act of 1940 and rule 17d-1 available at <https://www.sec.gov/rules/other/2020/ic-33821.pdf>.

36 “Fed’s intervention stems US Prime MMF liquidity strains” published by Fitch Ratings on April 8, 2020.

37 In the EU, the Money Market Fund regulation bans direct and indirect support to MMF as per its article 35. However, the regulation does not prevent MMFs to transact with related parties as long as (i) affiliates or related parties do not generally enter into transactions with money market funds managed by an asset management company belonging to the same group and (ii) transactions with affiliated or related parties are not purchased at an

Prime MMFs began to record modest inflows from the week of April 6, after six consecutive weeks of outflows from February 19, as the Federal Reserve’s intervention helped to improve market conditions. Inflows accelerated over the course of April to reach, by the end of April, total assets equivalent to those observed prior to the COVID-19 outbreak.

From mid-April, prime MMFs notably increased the proportion of US T-Bills in their portfolios to up to 50% of their total net assets for certain individual funds, likely reflecting the increase in T-Bill issuance over the same period.

Due to the recent market turmoil and despite markets stabilising, some managers announced that they had decided to liquidate some of their prime institutional MMFs or to reorganise prime MMFs into government MMFs.³⁸ Thus far, these announcements have not resulted in downward pricing pressures for short-term credit assets.

Box 2 – Federal Reserve programme

Since mid-March, the Federal Reserve has purchased a substantial amount of Treasury securities and agency mortgage-backed securities to support market functioning and established no fewer than 11 new facilities to support the flow of credit to households and businesses, including the MMLF, being the most relevant to US MMFs, and the CPFF as further detailed below.³⁹

The MMLF has allowed the Federal Reserve to lend to eligible borrowers (which include all U.S. depository institutions and bank holding companies as well as U.S. branches and agencies of foreign banks), taking as collateral certain types of assets purchased by the borrower from MMFs. On March 17, 2020, the Federal Reserve announced it was establishing a CPFF utilizing its authority under Section 13(3) of the Federal Reserve Act. Similar to that established during the 2008 financial crisis, the CPFF provides a liquidity backstop to U.S. issuers of commercial paper, including U.S. issuers with a foreign parent, through a Federal Reserve-financed special purpose vehicle which will purchase unsecured three-month U.S. dollar-denominated commercial paper (including asset-backed commercial paper (“ABCP”)) rated A1/P1/F1. In a change from the financial-crisis era CPFF, Treasury is also using the Exchange Stabilization Fund (“ESF”), which was used during the financial crisis in connection with the Temporary Guarantee Program for Money Market Funds, to provide a \$10 billion backstop to the Federal Reserve in connection with the CPFF. The announcement of the MMLF, CPFF and other Federal Reserve actions in mid-March restored market confidence. This helped stabilize outflows from prime MMFs.

The Federal Reserve has taken the following additional actions, by dates’ order:

***Cutting Interest Rates.** On March 3, 2020, the Federal Reserve lowered its target range for the federal funds rate by half a percentage point, which was its first unscheduled and largest interest rate cut since 2008. The 10-year US treasury*

inflated price and are executed at an arm’s length conditions. Please refer to ESMA public statement published as of 9 July 2020 for more information (<https://www.esma.europa.eu/file/56228/download?token=UJukzkLd>).

38 For background, on May 14, 2020, the board of trustees of the Northern Institutional Funds approved the closing and subsequent liquidation and termination of the Prime Obligations Portfolio available at <https://www.northerntrust.com/united-states/what-we-do/investment-management/northern-funds/funds-and-performance-institutional/money-market/NPAXX>. On June 18, 2020, the board of trustees approved a plan of liquidation for Fidelity Investments Money Market: Prime Money Market Portfolio and Fidelity Investments Money Market: Prime Reserves Portfolio available at <https://www.sec.gov/Archives/edgar/data/356173/000137949120002728/filing612203571.htm>. On August 27, 2020, the board of trustees of Vanguard Prime Money Market Fund approved a change in the fund’s designation to a government MMF.

39 According to Liberty Street Economics “Facilities that support liquidity in money markets (MMLF and the CPFF) and the availability of a backstop facility have all contributed to the improvements in market functioning, as has the general improvement in risk sentiment. However, it is hard to parse the effects that each facility has had in bringing about the improvement in market functioning, especially since changes in the terms of the facilities were also made after they were announced.” Marco Cipriani, Andrew Haughwout, Ben Hyman, Anna Kovner, Gabriele La Spada, Matthew Lieber, and Shawn Nee, “Municipal Debt Markets and the COVID-19 Pandemic,” Federal Reserve Bank of New York Liberty Street Economics, June 29, 2020 SECURITIES AND EXCHANGE COMMISSION INVESTMENT COMPANY ACT OF 1940 Release no. 33821 / March 23, 2020 ORDER UNDER SECTIONS 6(c), 12(d)(1)(J), 17(b), 17(d) AND 38(a) OF THE INVESTMENT COMPANY ACT OF 1940 AND RULE 17d-1 available at <https://libertystreeteconomics.newyorkfed.org/2020/06/municipal-debt-markets-and-the-covid-19-pandemic.html>.

experienced a 20bps rally in a matter of hours after the announcement. On March 15, 2020, it further lowered interest rates to 0–0.25%, an additional full percentage point cut.

Discount Window Access. On March 15, 2020, the Federal Reserve encouraged depository institutions to turn to the discount window to meet demands for credit, lowered the primary credit rate to 0.25% and extended the timeframe for borrowing to 90 days to support credit demands.

Large-Scale Asset Purchases. On March 15, 2020, the Federal Reserve announced that, over the coming months, it would purchase at least \$500 billion in U.S. Treasury securities and at least \$200 billion in agency mortgage-backed securities. The Federal Reserve will also reinvest all principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities.

Primary Dealer Credit Facility (PDCF): on March 17, 2020, the Federal Reserve Board established this facility to allow primary dealers (24 banks) to support smooth market functioning and facilitate the availability of credit to businesses and households. Loans are made available to primary dealers for a period of up to 90 days, at a rate equal to the primary credit rate in effect at the New York Fed offered to depository institutions via the Discount Window.

Central Bank Liquidity Swap Lines. On March 15, 2020, the Federal Reserve announced it was coordinating with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank and the Swiss National Bank to enhance the provision of liquidity via the standing U.S. dollar liquidity swap line arrangements. The central banks will lower the pricing for such arrangements by 25 basis points, such that the new rate is the U.S. dollar overnight index swap rate plus 25 basis points. The foreign central banks also agreed to offer additional maturities of U.S. dollars (84 days in addition to one week) to increase the swap lines' effectiveness.

Capital and Liquidity Buffers. On March 15, 2020, the Federal Reserve encouraged banks to use capital and liquidity buffers built up since the 2008 financial crisis to lend to households and businesses affected by the coronavirus. On March 17, 2020, the Federal Reserve, the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency reiterated in a joint statement that banks should use their buffers to support lending activity.

Restrictions on Distributions. On March 17, 2020, the Federal Reserve released an interim final rule focused on alleviating the possibility of sudden onset of restrictions on distributions if banks dip into their required capital buffers. All banking organizations will be able to calculate their distribution restrictions based on the greater of (1) a banking organization's net income for the four preceding calendar quarters, net of any distributions and associated tax effects, and (2) the average of a banking organization's net income over the preceding four quarters.

B. The European non-public debt MMF market

There are three main MMF jurisdictions in the EU: Ireland, Luxembourg and France, accounting respectively for 9.1%, 5.9% and 5.1% of MMFs' total net assets worldwide as of end-2019.⁴⁰ MMFs are included in the money-issuing sector and classified in the ECB's statistics together with credit institutions in the monetary financial institutions' sector. In addition to PDCNAV, they are composed of both LVNAV and VNAV.

The MMF industries of Ireland and Luxembourg present some similarities. USD and GBP denominated MMF represent the two main categories of MMF in terms of assets under management, with a predominance of USD denominated MMFs in both jurisdiction.⁴¹ Such MMFs are for the main part structured as LVNAV (respectively "\$LVNAV" and "£LVNAV"). Euro denominated MMFs are primarily structured as standard VNAV and are domiciled in France. In the UK, all MMFs are denominated in GBP and are structured as LVNAV, Standard VNAV and Short-term VNAV.

B.1. Dynamics of \$ and £ denominated MMFs during the market turmoil

Based on end of month data, £LVNAV assets under management remained relatively stable over the period, although a decrease was observed between 12 and 24 March amounting to £2.5billion (circa

40 EFAMA, Worldwide Regulated Open-ended Fund Assets and Flows Trends in the Fourth Quarter of 2019, available at <https://www.efama.org/Publications/Statistics/International/Quarterly%20International/20-03%20International%20Statistical%20Release%20Q4%202019.pdf>

41 In Luxembourg, USD denominated PDCNAV represent an equal share of the MMF segment compared to GBP denominated LVNAV in terms of assets under management.

5.5% of the total nets of such funds) in Luxembourg. In Ireland, £LVNAVs recorded outflows representing £12.7 billion (circa 8% of the total nets of such funds) in the week of 20 March. However, the outflow trend appeared to fall rapidly and then reversed in the week of 27 March, with inflows amounting to 8% of the total net assets of £LVNAV in both Ireland and Luxembourg (respectively circa 9% and 5% of the total net assets of the respective £LVNAV in each jurisdiction). The £LVNAV MMF market in the UK is dominated by one fund, so it would not be appropriate to draw conclusions from weekly flows, which might be due to idiosyncratic factors. However, for all types of UK-domiciled MMFs, assets under management remained fairly stable over this period. The largest net outflow – £630 million, or 2.9% of net assets – was observed in the week to 13 March, although there was some volatility in daily flows that caused concern from time to time.

Market participants have mentioned the need for leveraged investors – including other funds within the same group, and external funds – to find cash to meet margin calls. This effect may have been reinforced in the UK by certain investor segments managing end-of-year cash flows during this period.⁴²

Several fund managers who experienced inflows in March spoke of a “flight-to-safety”, with investors moving into lower risk investments, though this may already have started to unwind in April, as managers looked to take advantage of opportunities to reinvest in riskier asset categories after the market had fallen.

UK Local Authorities, in particular, redeemed some of their MMF holdings through March, but this pattern was reversed at the end of the month and into April as cash flowed in from the central UK Government in response to the COVID crisis. Other categories of investors, such as charities and universities, faced a financial squeeze and drew on their MMF holdings to meet operational costs.

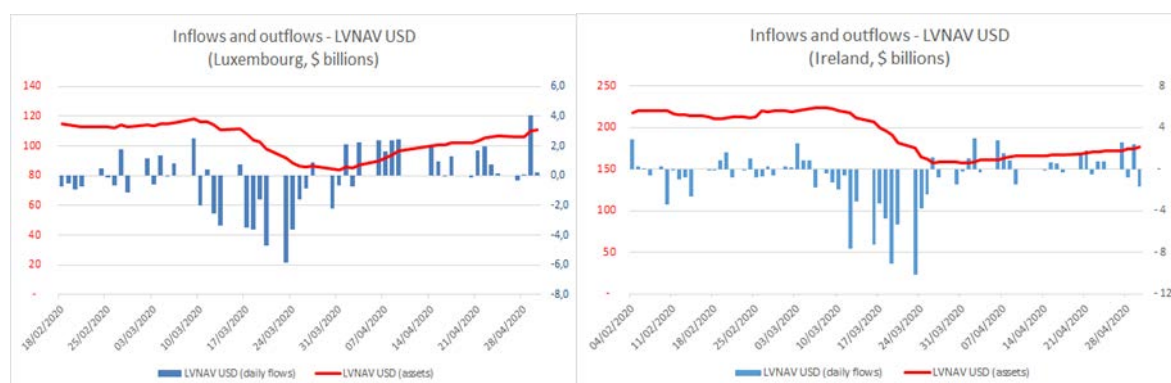
There was no specific Bank of England (BoE) facility to support UK-domiciled Sterling-denominated MMFs, or Sterling-denominated MMFs more broadly. The BoE launched a corporate asset purchase facility, to provide funding to the real economy. Financial paper, which £LVNAV MMFs predominantly hold, was excluded from the scope of this facility. However, large scale interventions by the BoE helped to stabilise the broader market and may have had a second-order positive impact on the MMF sector. Some fund managers have commented, however, that the improvement in liquidity in the sterling short-term credit market is not due to the BoE’s intervention and that market conditions have not yet returned to normal. Several fund managers stated that the rate cuts that the Bank announced in response to the crisis helped sterling MMFs because they made the return on MMFs more attractive, relative to bank deposits, though this advantage would erode over time.

The relative stability of £LVNAV compared to \$LVNAV behaviour may in part be explained by the potential absence of alternative investment in public debt MMFs. Alternatively, it may be due to different investor profiles in the two markets as Sterling denominated MMFs seem to be used heavily for internal cash management by financial institution.

\$LVNAV have been subject to the most stress in the recent market turmoil, recording aggregate outflows of \$43 billion in the week to 20 March 2020 and \$27 billion in the week to 27 March 2020, or 13% and 10% of prior week’s assets under management (AUM) respectively although magnitude of outflows of individual funds varied.

42 In the UK, financial year finishes at end-March.

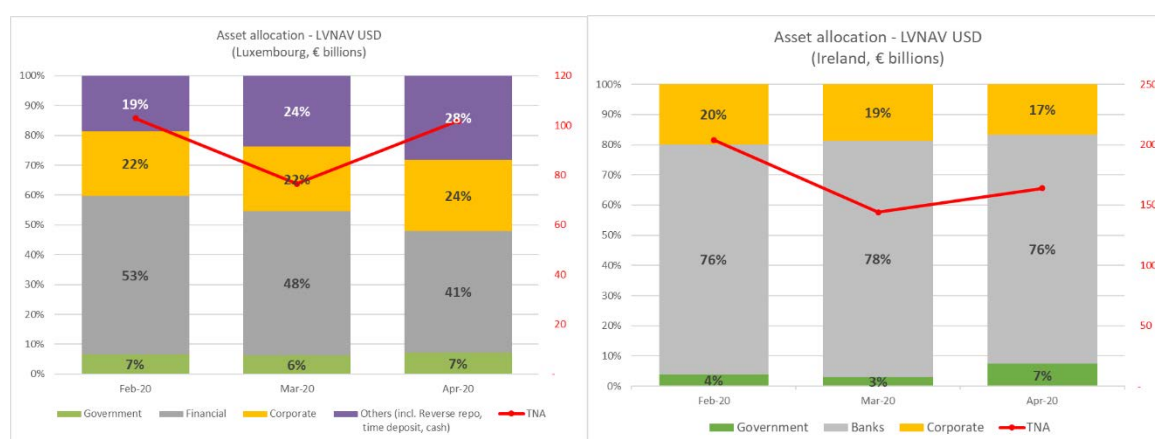
Table 6 – Flows of \$LVNAV– Luxembourg and Ireland



Source: CSSF data (based on a sample of 22 main MMFs accounting for about 70% of the total size of Luxembourg MMF industry) and CBoI data

\$LVNAV and £LVNAV exposures are split – for a majority of the assets – between financial and non-financial short-term debts, with financial short-term debts being the largest component. In March, financial short-term debts issued by US and EU based issuers decreased significantly.

Table 7 - \$LVNAV – holdings – Luxembourg and Ireland



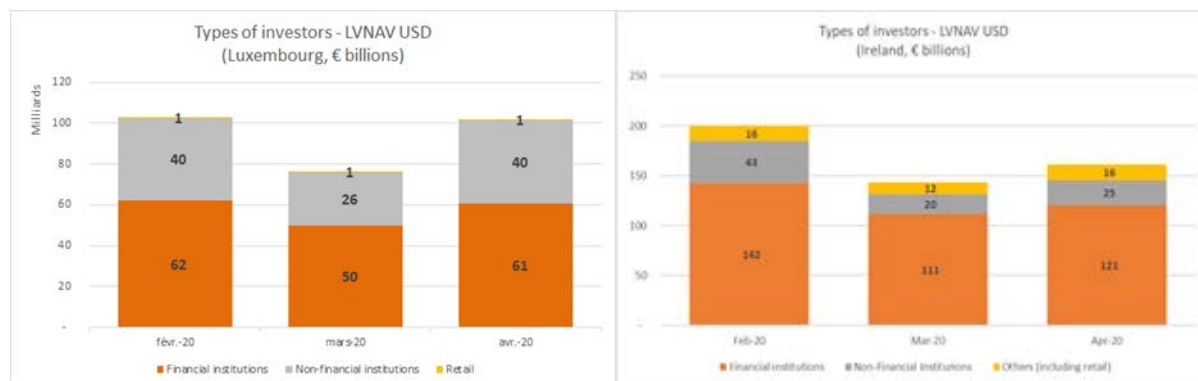
Source: CSSF data (based on a sample of 22 main MMFs accounting for about 70% of the total size of Luxembourg MMF industry) and CBoI data

While \$LVNAV experienced significant redemptions in March representing a 26% decrease of assets under management in Luxembourg and around 25% in Ireland, such global figures do not capture the heterogeneity across funds. Not all funds experienced large redemptions at the same time, and at certain points net inflows were recorded. Redemptions observed in some funds in addition seemed related to idiosyncratic factors.

Although the drivers behind these redemption flows are difficult to ascertain, it is probable that, in light of uncertainty about the ability of non-financial corporates to continue to generate cash flows, such corporates withdrew their holdings from MMFs. In some cases, the deterioration in trading conditions (or total ceasing of trading) may have created an immediate demand for cash as non-financial corporates were required to continue to meet their obligations, including debt servicing. In addition, investor sentiment generally worsened in March due to the deteriorating macro-economic outlook, heightened market volatility affecting the net asset values of LVNAVs and the increased potential for credit deterioration of underlying issuers. This may have contributed to the increase in

redemptions from MMFs. This move was so pronounced that it prompted Moody’s and Fitch (from March 24) to change their outlook on the European LVNAV market to negative from stable.⁴³

Table 8 – Investors in \$LVNAV – Luxembourg and Ireland



Source: CSSF data (based on a sample of 22 main MMFs accounting for about 70% of the total size of Luxembourg MMF industry) and CBoI data

To meet redemptions, some \$LVNAV lowered the weekly liquidity buffer below internal soft targets and pushed portfolio management teams to sell securities into the secondary market to enhance liquidity position. Some \$LVNAV used daily and weekly liquid assets, resulting in a limited number of individual funds consuming, at least partially, their 30% liquidity buffer in the course of March. The liquidity strains observed in the market prompted trade associations to ask for an extension of the ECB program to USD denominated instruments⁴⁴ in light of \$LVNAV being out of scope of the Federal Reserve MMLF. The Federal Reserve measures are likely to have had some indirect benefit due to the positive impact on funding markets generally. Liquidity remained highly challenging for many \$LVNAVs and more generally for EU domiciled MMFs facing large outflows in the period immediately following their introduction.

At the height of the crisis, deviations between stable and floating net asset values of \$LVNAV widened, but the 20bps threshold was not breached. However, in some cases, it approached the maximum authorised deviation. According to Fitch, the largest deviation observed in Fitch-rated \$LVNAV was 17bps as of March 26 and 27.

The subsequent net subscriptions registered overall in funds domiciled in the EU seen through April and into May was driven by generally improving financial market conditions and investors’ confidence, supported indirectly by the emergency programs introduced by the Federal Reserve. The extent to which these indirect impacts were material is difficult to determine quantitatively. Redemption activity across all major currency denominations of MMFs in Ireland and Luxembourg, began to stabilize from end-March 2020 although signs of continued strains in secondary markets were observed up to the beginning of May.

As markets stabilized and the effect of central bank measures started to emerge, the level of subscriptions into \$LVNAV (largely from corporates and banks) increased. The liquidity profile of Irish and Luxembourg \$LVNAV has changed as a result of the market stress experienced in March. They have increased the level of holdings with a residual maturity of less than 90 days, compared with the pre-COVID levels seen in February. Exposure to the US market also increased.

43 What Investors Want to Know: European Money Market Fund Sensitivity to Coronavirus published by Fitch Ratings on April 1, 2020.

44 Several actors referred to recent IMMFA letters that have been sent out to the BoE/Fed/ECB – the letters, in particular, mention the proposition to the ECB to include CP and CD across all currencies (not just certain CPs issued in EUR) and to extend the programme to financials, while the recommendation to the BoE was to include bank and financial institution’s papers, including EUR and USD issuance (not just limited to GBP).

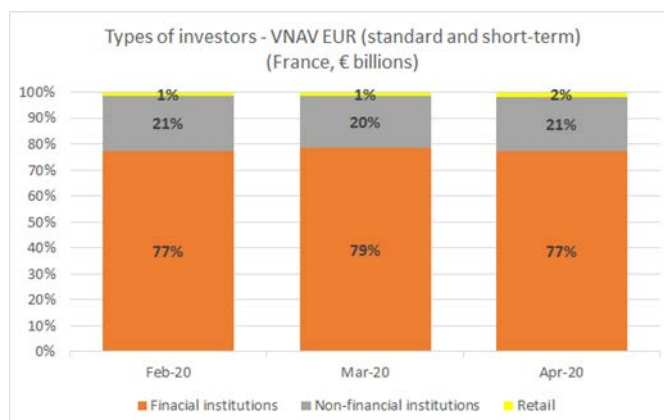
As of June, despite investor inflows and greatly improved market conditions, \$LVNAV holdings remain much more liquid than earlier in 2020, and are in many cases well beyond what is required by the regulations (i.e. the ratios of total assets maturing in a day or a week, of 10 and 30 per cent respectively). This altered liquidity profile may represent an increased level of caution among MMF managers, given the recent experience of low liquidity in money markets. On the asset side, managers are reluctant to invest cash in securities which may be difficult to sell if liquidity conditions deteriorate again. On the liability side, MMF investors are reassured by highly liquid holdings as it reduces the risk that assets will need to be sold at forced sale prices should a number of investors seek to redeem at once (e.g. during a subsequent period of market stress).

B.2. Dynamics of €denominated MMFs during the market turmoil

Euro denominated MMF are mainly domiciled in France (circa. 65% of the total net assets of the €MMF across the three main EU jurisdictions as of end 2019). Euro denominated MMFs are also domiciled in Luxembourg and Ireland. They are mainly structured – in decreasing order of total net assets – as €Standard VNAV, €LVNAV, €Short-term VNAV and €PDCNAV. Total assets of non € Standard VNAV remain limited, and do not seem to have the potential to affect the broader system.

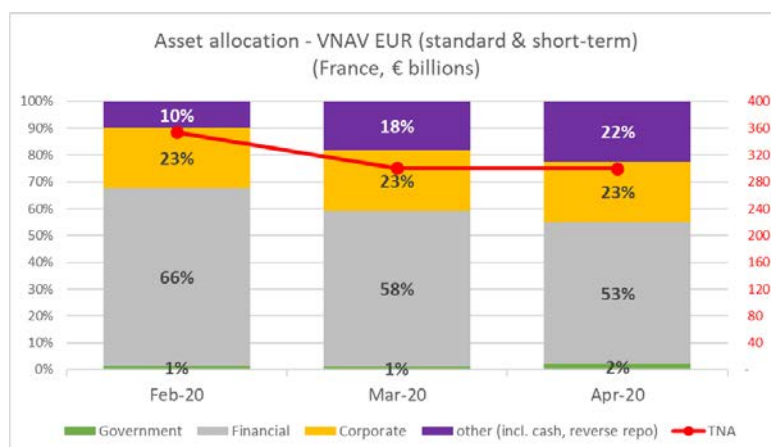
France-domiciled MMFs are predominantly held by investors, most of which are financial institutions (table 9). They are also predominantly invested in short-term dated papers issued by issuers of the EU zone area and are mainly exposed to debt issued by financial institutions (table 10).

Table 9 – Investors in €VNAV (standard and short-term) – France



Source: Banque de France data

Table 10 – Holdings of €VNAV (standard and short-term) – France

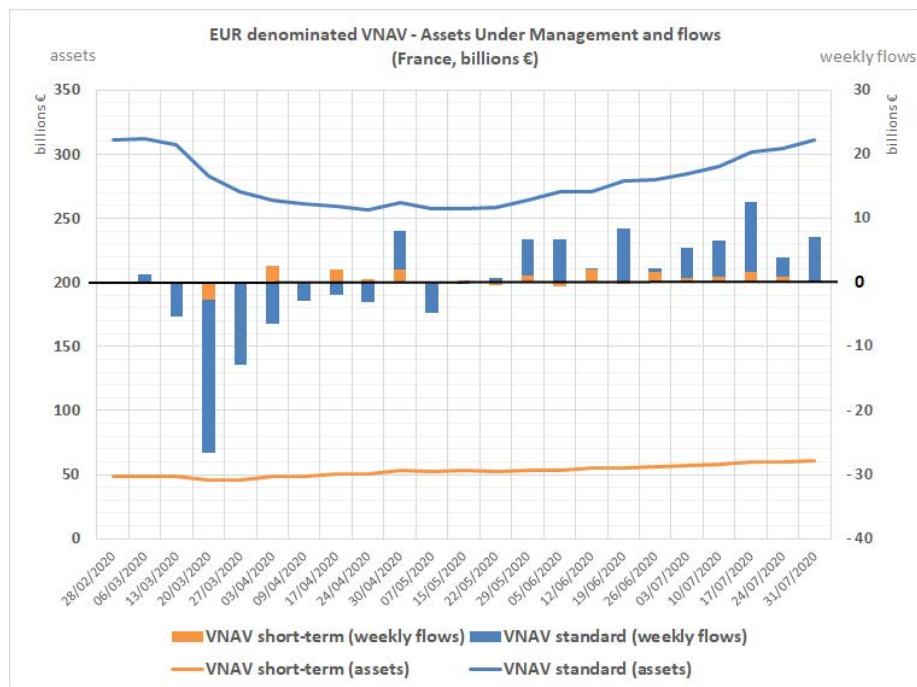


Source: Banque de France data

VNAV experienced both inflows and outflows during the market turmoil, with overall significant net outflows of approximately €44 billion between February 18 and the end of March. Most outflows

were observed in standard VNAV between March 15 and March 31, representing 15 % of their total net assets as of February 1.⁴⁵ In addition, some standard VNAV recorded both large net outflows and inflows during the period from one day to the next. It is difficult to explain why in detail. Investors may have arbitrated between VNAV based on their net asset values, or their main holdings (banks' MMIs vs corporates' one) or potentially other reasons which are still being investigated.

Table 11 - Flows of €VNAV (standard and short-term) - France



Source: AMF

To meet redemptions, VNAV have used their daily and weekly liquidity assets (“WLA”) until the week of March 24. Some VNAV used, to a large extent, the WLA instead of selling assets on the secondary market at forced sales prices.⁴⁶ Other VNAV have used their weekly liquidity buffer to a lesser extent and chosen to sell some of their securities (both bonds and CPs) on the secondary markets. The net asset value of some VNAV have been more affected than others as a consequence. The impacts may also have varied across VNAV depending on their investment strategies – with some MMFs being mainly exposed to bank MMIs, others to corporate MMIs. In the meantime, new CP issuance by financial and especially non-financial issuers has decreased while their issuance prices have increased, exerting downward pressure on VNAV net asset values. The ECB reminder to banks that the liquidity capital ratio is a buffer that they may use⁴⁷ may have played a role in easing the

45 In comparison, short-term VNAV recorded outflows of €2.5 billion until March 26 which were netted-off by new subscription by March 31.

46 This is especially the case on non-treasury short-term bond markets where spreads widened up to 200% spread between March 10 and 24.

47 ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus – March 12, 2020: “Capital and liquidity buffers have been designed with a view to allowing banks to withstand stressed situations like the current one. The European banking sector has built up a significant amount of these buffers. The ECB will allow banks to operate temporarily below the level of capital defined by the Pillar 2 Guidance (P2G), the capital conservation buffer (CCB) and the liquidity coverage ratio (LCR). The ECB considers that these temporary measures will be enhanced by the appropriate relaxation of the countercyclical capital buffer (CCyB) by the national macroprudential authorities. Banks will also be allowed to partially use capital instruments that do not qualify as Common Equity Tier 1 (CET1) capital, for example Additional Tier 1 or Tier 2 instruments, to meet the Pillar 2 Requirements (P2R). This brings forward a measure that was initially scheduled to come into effect in January 2021, as part of the latest revision of the Capital Requirements Directive (CRD V). The above measures provide significant capital relief to banks in support of the economy. Banks are expected to use the positive effects coming from these measures to support the economy and not to increase dividend distributions or variable

liquidity tensions as banks provided some liquidity on the secondary market on their own paper and/or – to a very limited extent – on paper whose programs referenced their names at spreads not bid to discourage sellers.⁴⁸

The temporary pandemic emergency purchase programme,⁴⁹ announced on March 18, helped to further ease the tensions by primarily supporting the issuance of corporate CPs on the primary market from end of March. Indeed, with increased levels of issuance and a “normalisation” of their prices, prices of outstanding MMIs adjusted, in turn positively affecting MMF net asset values. The extension of the Eurosystem eligible collateral to unsecured banks bonds, implemented in the course of April, seem to also have contributed to restoring market confidence while having a smaller indirect effect on MMFs.⁵⁰

Box 3 – The European Central Bank’s programmes

The ECB Pandemic Emergency Purchase Programme (PEPP) was announced on March 18, 2020 and implemented from March 26, 2020. The PEPP was initially announced with an overall envelope of €750 billion, which was subsequently supplemented with an additional €600 billion envelope on June 4, 2020, both in addition to existing asset purchase programme (APP) currently in place, which in turn comprise four separate programmes:

- *the corporate sector purchase programme (CSPP)*
- *the public sector purchase programme (PSPP)*
- *the asset backed securities programme (ABSPP)*
- *the third covered bond purchase programme (CBPP3)*

Under the PEPP, purchases of bonds are subject to eligibility criteria in place under the APP although the PEPP contains additional categories of purchasable securities. It covers bonds issued by corporates and countries within the Eurozone, expanding eligibility to specific member states and maturities that were not eligible under APP. The purchases will be conducted until at least the end of June 2021. Asset managers and non-bank financial institutions are not eligible counterparties. However, the Eurosystem offers its eligible counterparties the possibility to share offers of eligible securities on behalf of non-eligible counterparties, such as asset managers and non-bank financial institutions, under the APP and the PEPP. Although final responsibility for the offered assets remains entirely with the eligible counterparties, they can include them in the daily inventories of assets that they share with the Eurosystem, either by explicitly reporting which assets are offered on behalf of non-eligible counterparties or aggregating them with their inventories. In periods of heightened investor uncertainty, such as during the current coronavirus pandemic, this option can contribute to alleviating market tensions and supporting proper market functioning.

The Governing Council noted that purchases under the PEPP will be conducted in a flexible manner, allowing for fluctuations in the distribution of purchase flows over time, across asset classes and among jurisdictions given the current uncertain circumstances. The ECB’s announcement of the PEPP also contained a statement about the possibility of revising its “self-imposed limits”, if deemed necessary to fulfil its mandate of supporting the economy through the COVID-19 crisis.

The ECB has also expanded the range of eligible assets under the CSPP to non-financial commercial paper, making all commercial papers of sufficient credit quality eligible for purchase under CSPP. In this regard, on March 18, extension was granted to non-financial corporate paper with a minimum remaining maturity of 28 days at the time of purchase, provided they had an initial maturity of 365/366 days or less. Previously, only instruments with a residual maturity of 6 months were eligible for the CSPP.

On April 7 and April 22, the ECB announced a package of collateral easing measures aimed at pre-emptively forestalling a potential lack of collateral and therefore further liquidity strains in the euro-area banking system. This package includes:

remuneration.” Available at <https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200312~43351ac3ac.en.html>

48 Under its May 2020 Financial Stability review and its piece on “*the Recent stress in money market funds has exposed potential risks for the wider financial system*”, ECB indicates that “Some banks accommodated the requests of MMFs, some responded with aggressive pricing in an attempt to discourage the requests for buybacks and a few simply denied the requests altogether as there is no contractual obligation to buy back. At the same time, issuance in the CP market almost completely ceased, likely reflecting a lack of buyers”.

49 Please refer to Box 3.

50 When operationally implemented, MMFs were recording inflows.

The expansion of the acceptance of credit claims as collateral: Amongst other things, national central banks are now permitted to accept as collateral loans to small and medium-sized enterprises (SMEs) or self-employed individuals that benefit from recently announced government guarantee schemes.

Measures to mitigate the impact of potential rating downgrades: the Eurosystem will continue to accept as collateral marketable assets that were eligible for liquidity operations prior to the reference day (7 April 2020) – provided that the rating remains above a certain credit quality level. The Governing Council has agreed to set this threshold at credit quality step 5 (CQS5) for all marketable assets, with the exception of asset-backed securities (ABSs).

Increase of the Eurosystem's risk tolerance: The Eurosystem will temporarily tolerate more risk on its balance sheet by loosening its usual risk control measures. In particular, haircuts have been reduced proportionally, by 20%, for all eligible collateral assets, and additional haircut reductions have been applied for non-marketable assets.

Concentration limits for unsecured bank bonds: credit institutions were previously restricted to holding a maximum of 2.5% of their collateral pool in the form of unsecured bank bonds (UBBs) issued by a single banking group. The Governing Council has decided to increase this risk concentration limit for UBBs from 2.5% to 10%.

Waivers for Greek sovereign bonds: Greek government bonds were not eligible as collateral in Eurosystem liquidity operations because their credit rating did not meet the minimum requirements. This restriction has been temporarily waived for Greek government bonds.

In this environment, the proportion of bonds and CPs in VNAV portfolios increased in March compared to pre-COVID levels. This has particularly been the case for VNAV that recorded outflows of more than 20% from mid-March. Since the last week of March, redemptions have fallen, assets under management have stabilised until May 20 and have since then recorded inflows to reach pre-COVID 19 level from July 19.

New subscriptions and cash from assets maturing have primarily been used to raise weekly liquidity ratios, which have significantly increased from April 6 onwards, reaching in proportional terms levels not seen before. This, in association with investments in one to three-month CPs, probably signals that asset managers were at the time anticipating a new wave of redemptions, in particular in the case of any COVID-related second round effects. As mentioned earlier, the same trend has been observed for all EU-based MMFs that experienced significant outflows in March.⁵¹ This cautious behaviour in the course of April may have weakened the effects of the ECB programme on the funding costs of financial and non-financial issuers.

III. Main findings

This analysis demonstrates the varied nature of the MMFs sector, across fund type, currency and jurisdictions. In the US and EU, government funds generally saw inflows – particularly where they were USD-denominated – likely as a result of “flight-to-safety” behaviours while non-public debt MMF generally experienced outflows. Beyond “flight-to-safety” behaviours, other factors may also have influenced these outflows, such as the need to meet increased margin calls, collateral management and general business expenses. In particular, redemption requests by non-financial corporates may have been significant, because many other sources of revenue dried up as a result of the crisis. In other jurisdictions, these outflows have generally been more limited, as demonstrated by the data in the analysis. This is the case for example in Japan where retail investors seized market opportunities and reallocated, to a certain extent, some of their investments in MMFs into riskier asset classes such as, equity. In other jurisdictions, such as Brazil, retail investors increased their investments in MMFs. The March-April episode came as a surprise after the broad reform of the MMFs regulatory framework implemented after the 2008 crisis. It has brought to light some areas that merit further consideration such as the broader ecosystem and the functioning of the money markets, the behaviour of MMFs’ investors or elements of existing regulatory frameworks which may have played a role in accelerating flows out of certain types of money market funds as some commentators have posited.

51 Moody's – *European money market funds remain resilient amid coronavirus storm* – July 28: “European money market funds (MMFs) are maintaining cash reserves and prioritizing short-dated investments, amid continued uncertainty over the pace of the economic recovery from pandemic-related slowdown and over investor behaviour in the event of a resurgence in COVID 19 cases, says Moody's Investors Service in a new report.”

Annex 1– Select US MMF regulatory perimeters

US MMF landscape	NAV	Liquidity Fee	Redemption Gate	Daily Liquidity Requirement	Weekly Liquidity Requirement	Credit Quality
Government MMFs	Stable allowed	Government money market funds are not subject to the fees and gates provisions; however, these funds may voluntarily opt into them, after notice to shareholders.	Government money market funds are not subject to the fees and gates provisions; however, these funds may voluntarily opt into them, after notice to shareholders.	At least 10% of assets must be liquid assets	At least 30% of assets must be liquid assets	Must invest at least 99.5% of its assets in cash, government securities and/or repurchase agreements.
Prime retail MMFs	Stable allowed	Up to 2%	Up to 10 business days in a 90-day period	At least 10% of assets must be liquid assets	At least 30% of assets must be liquid assets	Securities may only present minimal credit risk
Prime institutional MMFs	Floating	Up to 2%	Up to 10 business days in a 90-day period	At least 10% of assets must be liquid assets	At least 30% of assets must be liquid assets	Securities may only present minimal credit risk

Annex II – EU MMF regulatory perimeters

EU MMF landscape	Short-term MMF			Standard MMF
Types of MMFs	Public Debt CNAV (PDCNAV)	VNAV	LVNAV	VNAV
Legal/residual maturity of the assets of the MMF ⁵²	< 397 days	< 397 days	<397 days	< 2 years
WAM of the portfolio	< 60 days	< 60 days	< 60 days	< 6 months
WAL of the portfolio	< 120 days	< 120 days	< 120 days	< 12 months
Daily liquidity ratio (daily maturing assets, reverse repurchase agreements that may be terminated by a one day notice, cash)	10%	7.5%	10%	7.5%
Weekly liquidity ratio (weekly maturing assets, reverse repurchase agreements that may be terminated by a five days' notice, cash)	30% (includes up to 17.5% of government debt with a legal or residual maturity of up to 190 days)	15% (includes up to 7.5% of money market instruments or shares of other MMFs that may be redeemed and settled within five working days)	30% (includes up to 17.5% of government debt with a or residual legal maturity of up to 190 days)	15% (includes up to 7.5% of market instruments or shares of other MMFs that may be redeemed and settled within five working days)
Liquidity Fee/ Redemption Gate	Optional if WLA falls below 30% and redemption requests reach 10% of the total net assets on any day. Mandatory if WLA falls below 10% as follows: liquidity fees shall adequately reflect the	None, unless at the discretion of the Fund and/or its asset management company, fees and gates are described under the prospectus	As for PDCNAV	None, unless at the discretion of the Fund and/or its asset management company, fees and gates are described under the prospectus

⁵² Such requirements apply to money market instruments and not to securitisations and ABCPs. MMF may invest in securitisations and ABCPs with a legal/residual maturity of respectively greater than 397 days and 2 years under certain conditions laid down in Article 11(2) and 11(3) of the MMFR.

	cost to the MMF of achieving liquidity and ensure that investors who remain in the fund are not unfairly disadvantaged when other investors redeem their units or shares during the period; suspension up to 15 working days			
NAV	Stable	Floating	Stable - Units in the fund are purchased or redeemed at a constant price so long as the value of the underlying assets do not deviate by more than 0.2% (20bps) from par (i.e. 1.00).	Floating