

Lessons from COVID-19:

The Experience of European MMFs in Short-Term Markets



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Introduction

The COVID-19 crisis has posed unprecedented challenges for global economies. At the time of writing, the crisis itself – a public health and humanitarian crisis – is still ongoing. But it is still the right time to draw select lessons from the March market turmoil. As markets tried to find equilibrium in the early stages of lockdowns across the US and Europe, severe price and liquidity dislocation occurred in many markets. At the peak of the dislocation in March, banks and investors alike concentrated their actions on reducing risk and preserving liquidity. This led to substantial performance pressure and deteriorating trading liquidity across nearly all markets and many investment instruments.

During this period, European short-term markets experienced acute strains. Money Market Funds (MMFs) faced extremely challenging conditions on all sides: many of the underlying investors were experiencing market stresses in ways that impacted their need to build up or draw down liquidity; at the same time, a near-complete evaporation of secondary market liquidity forced MMFs to manage these flows with limited ability to sell money-good securities at non-stressed prices.

Central bank interventions around the world were critical in underpinning confidence and effectively putting a floor on markets broadly. This contributed greatly to easing some of the cash flow fluctuations many MMFs experienced.

Equally, direct asset purchases of commercial paper by central banks ensured continued access to funding for certain eligible issuers. However, the impact of central bank actions on secondary market liquidity and functioning varied across jurisdictions. This was of key importance both for MMFs and for the segments of issuers that were not supported directly through asset purchases.

That MMFs themselves managed these pressures to the extent they did is a strong affirmation of the recent European regulatory reforms which increased the resilience of MMFs across the industry.

Nevertheless, regulatory regimes should reflect the best possible understanding of how market events can impact regulated entities. With that in mind, it is clear that the March market turmoil should be a key consideration in reviewing the regulatory regimes for the various entities at the centre of events in short-term markets in March; in particular, banks and MMFs.

This paper sets out the experience of the various entities and products in European short-term markets during the March turmoil. It describes the short-term markets ecosystem in Europe, and provides commentary on the market conditions in March. It sets out the European MMF universe post the implementation of the EU Money Market Fund Regulation (MMFR) in 2019, and the experience of MMFs during the crisis; both in terms of inflow and outflow pressures for the different currencies and the secondary market conditions they faced.

The opinions expressed are as of July 2020 and may change as subsequent conditions vary.

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Finally, it compares the impact of the various bank and market support measures from public authorities in the US and in Europe and makes policy recommendations to improve the functioning of the short-term markets, increase the counter-cyclical effectiveness of prudential regulation, and suggests potential policy reforms targeted at MMFs themselves.

We recognise that while there were pressures on MMFs in both Europe and the US, the experiences were very different. This paper is intended to complement our assessment of events in the US short term markets “Lessons from COVID-19: US Short-term money markets”.

Executive Summary

- Short-term markets are an important funding source for a wide range of issuers: from banks and the underlying clients they serve, to public authorities and national governments, as well as non-financial corporates who tap the markets directly. Equally, a wide range of investors use short-term markets to manage their cash and liquidity positioning.
- The overall size of European short-term markets, as well as the composition of the issuer and investor base is, at best, opaque. MMFs are the most visible entities in short-term markets due to their regulatory regime and the existence of a data ecosystem around them as financial products. This presents a challenge as MMFs represent less than half of European CP and CD markets and make up even a far smaller portion of European banks' overall short-term liabilities.
- In March 2020, broader market turmoil placed acute strains on short-term markets.
- Short-term markets, which are largely buy-to-hold, OTC markets, rely on bank dealers to provide secondary market liquidity. As banks prioritised their balance sheet commitments in other areas, short-term market liquidity broke down.
- MMFs faced this breakdown of underlying markets at the same time as flow pressures from their clients was increasing (resulting in both strong inflow and outflow pressures at various moments).
- Above and beyond end investors' heightened need for working cash and liquidity caused by the physical lockdowns and business circumstances, there were specific pressures that warrant particular consideration. These varied in volume and underlying drivers by currency.
 - In Euro and Sterling MMFs, much of the flow pressures were driven by margin requirements related to the broader market turmoil and central bank interest rate moves.
- In US Dollar MMFs, a strong investor reaction to the uncertainty of whether or not redemption fees or gates might be imposed on a US-based prime fund spilled over into European US Dollar MMFs.
- Dramatic central bank interventions calmed markets. Asset purchase programmes in the US and Europe moved to ensure corporates could maintain access to capital markets across the range of different maturities. In short-term markets, this meant direct purchase of corporate CP.
- In Europe however, the vast majority of issuance in the short-term market comes from banks and public authorities (agencies) – financial CP or CDs were not included in asset purchases by the ECB or BoE, and effective coverage of agency paper shorter than 1 year maturity was limited.
- While the US Federal Reserve's direct purchases supported both corporate and financial issuers, it was their support for short-term secondary markets which was most important. In particular, one programme included a provision for relief from capital and liquidity requirements for dealer banks specifically for secondary market purchases. Without similar action in Europe, the short-term markets took several weeks to return to less stressed conditions.
- In the end, all European MMFs were able to meet redemption requests during the market turmoil, despite market conditions. Most met redemptions by retaining the cash from maturing securities (rather than reinvesting them in new CP/CD paper) to build up their already high daily and weekly liquidity levels, and in some cases selling securities in stressed secondary markets. Only a handful of Short-Term MMFs did so by drawing on a small amount of their 30% weekly asset buffer, although presumably this was conceived to enable funds to meet redemptions in periods of heightened outflow pressure.
- Overall, the crisis highlighted areas that could be improved across both the structure and functioning of short-term markets as well as with the regulatory framework for MMFs themselves. In this paper, we have broken our policy recommendations down into three pillars:
 1. Short-term market structure
 2. Bank capital and liquidity rules
 3. MMF product regulation

Pillar 1: Recommendations on short-term market structure

Well-functioning short-term markets benefit issuers, who use them for funding; investors, who use them to manage liquidity; and public officials, who need better visibility in this space to form a more complete picture of the resilience of financial institutions and capital markets as a whole.

With that in mind, we recommend that policymakers:

- Consider improvements to short-term market structure, with particular focus on improving liquidity, price transparency and in particular, data quality, as well as potential ways of reducing market reliance on bank balance sheet capacity.
- Convene a short-term markets ‘contact group’ to increase dialogue between market participants and public authorities similar to the ECB bond market contact group.

Pillar 2: Recommendations on bank capital and liquidity rules

Banks play a critical role in providing secondary liquidity in short-term markets – but providing this liquidity is discretionary. Trading in short-term markets is, for a bank, a high-volume, low-margin, capital-intensive business; when faced with strong and sudden liquidity demands, much of it contractual, across their entire client base and in a range of different markets, it is in some ways understandable that they did not prioritise discretionary liquidity provision to short-term markets.

The March market turmoil is a clear example of the challenges faced by other market participants when banks step back from providing liquidity in times of market stress. To ensure that banks can continue to play a cornerstone role in short-term markets, even in times of stress, we recommend that policymakers:

- Consider adjusting bank capital rules to allow the highest-rated CP to be considered High-Quality Liquid Assets (HQLA) for the purposes of the Liquidity Coverage Ratio (LCR)

Without a permanent fix, future market stress risks a repeat of significant bank balance sheet constraint and subsequent deterioration in secondary market liquidity. In such a circumstance, it may be necessary to institute targeted relief measures to the secondary market; for example, providing capital relief for banks to buy back their own CP or CD, or creating a specific programme to allow banks to provide liquidity to the wider market.

Pillar 3: Recommendations on MMF product regulation

Some MMFs experienced the strains of the market dislocation acutely: market movements created pressures on underlying investors resulting in sharp changes in flow patterns (both inflows and outflows); at the same time, dealer banks pulled back from providing secondary market liquidity limiting funds’ ability to sell assets to manage liquidity.

Given MMFs’ importance to both issuers and many end-investors in short-term markets, further reinforcing their resilience using the lessons learned from how they coped with these conditions should be a key focus. With that in mind, we recommend that policymakers:

- Consider the strong behavioural incentives created by liquidity buffers combined with fees and gates and mark-to-market (MTM) triggers:
 - Despite outflow pressures, very few MMFs dipped below the minimum 30% weekly liquid asset buffer. The reluctance to draw on these buffers had a pro-cyclical effect and strongly highlighted the need to clarify how liquidity buffers should be used. Remove the explicit connection between a breach of the 30% weekly liquid asset requirements and the escalation of a Board decision on redemption fees and gates;
 - LVNAV MMFs have a 20bp MTM collar: on breaching this collar, they are required to function fully as VNAV MMFs. For all currencies, the MTM movement was greater on the upside (i.e. 1.0000-1.0020) than on the downside (i.e. 1.0000-0.9980). Remove the LVNAV collar to the upside as a breach could trigger outflows by incentivising investors to try to realise mark-to-market gains.
- Move towards regulatory approval for MMF units being posted as collateral, both under cleared and uncleared bilateral margin rules, as this would mean clearing puts less pressure on MMFs and short-term markets to raise cash for margins. Using MMF units as collateral would mean that investors in MMFs would not have to redeem from the fund to raise cash for margins, and subsequently, the counterparty would not need to then reinvest the cash elsewhere in short-term markets.
- Consider whether Standard MMFs (which have lower liquidity requirements and longer portfolio maturities) should continue be used as cash and cash equivalents.

Understanding European short-term markets

Short-term markets are an important funding source and cash flow management tool for a wide variety of issuers. They're also an important way in which an equally wide variety of investors manage their cash and liquidity – either directly or through pooled investment solutions like money market funds (**MMFs**).

In Europe, short-term markets generally refer to markets for debt securities shorter than 397 days to maturity. They are made up primarily of instruments such as commercial paper (**CP**), certificates of deposit (**CDs**), short term bonds (bank, corporate, agency and sovereign), T-Bills, but also bank deposits and repurchase agreements (repo and reverse repo). CP-issuing entities include financial and non-financial institutions; the largest issuer base is from the Sovereign, Supranational and Agency (**SSA**) sector. CDs

are issued purely by credit institutions. While CP issuance can be an important tool for corporate issuers, they make up a relatively small proportion of the market in Europe (see **Exhibit 1**) with financial issuers making up the bulk of the remaining issuance.

This in many ways reflects the much higher reliance in Europe on bank credit intermediation than in the US, where more corporate issuers access capital markets directly. While the Capital Markets Union (CMU) initiative is intended to make capital markets a more attractive and viable funding source for corporates directly, today the short-term markets reflect the reality that most corporate funding is bank intermediated. Equally, while some sovereigns do issue debt in the short-end of the maturity curve (T-Bills), this is a much smaller relative proportion to the overall market than in longer-maturity debt markets (see **Exhibit 2**)

Exhibit 1: Top financial CP/CD issuers versus corporate CP issuers

1.1 Top 20 banks, as of end 2018

Issuer	Combined CP & CD outstanding (EUR)
Crédit Agricole	114.37bn
BNP Paribas	98.10bn
Crédit Mutuel	57.93bn
Groupe BPCE	50.28bn
Handelsbanken	47.60bn
Nordea	46.77bn
ING	45.61bn
Société Générale	37.63bn
Banco Santander	27.44bn
HSBC	27.12bn
Barclays	26.15bn
Rabobank	25.13bn
Standard Chartered	20.67bn
Lloyds	19.78bn
DNB (Nor)	17.73bn
ABN AMRO	15.80bn
KBC	15.58bn
SEB	13.89bn
Swedbank	13.87bn
DZ Bank	13.45bn

Source: EBA¹, BlackRock

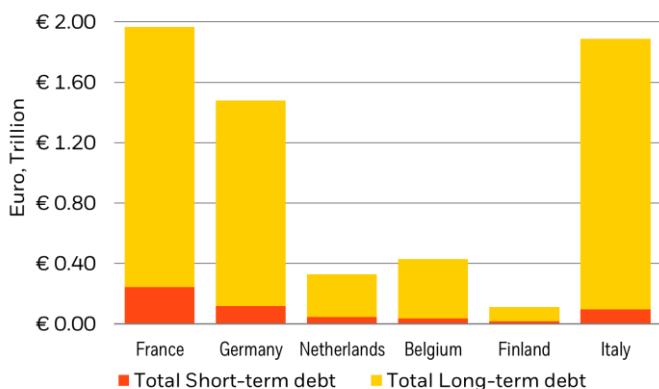
1.2 Top corporate CP issuers (incl. credit ratings), as of Sept. 2019

Issuer	Credit rating (M/S/F)	CP outstanding (USD equivalent)
Nestle	Aa3s/AA-s/A+s	14bn
Volkswagen (multi-issuer)	A3n/BBB+n/BBB+s	6bn
Total Capital Canada	Aa3n/A+n/AA-s	6bn
Reckitt Benckiser	A3n/A-n	4bn
Iberdrola	Baa1s/BBB+s	3bn
Henkel AG & Co KGaA	A2s/As	3bn
LVMH	A1a/A+n	2bn
Schlumberger	A2n/An	2bn
BAT Int'l Finance	Baa2s/BBB+s/BBBs	2bn
Daimler	A3n/BBB+n/BBB+s	2bn
Repsol	Baa2n/BBBs/BBBs	2bn
BP Capital Markets	A1n/A-s/As	2bn
Deutsche Bahn	Aa1n/AA-n/AAs	2bn
GlaxoSmithKline	A2n/As/A-s	2bn
Unilever	A1s/A+s/As	2bn
ENI Finance	Baa1s/A-n/A-s	2bn
Électricité de France	A3n/BBB+s/A-n	2bn
ENGIE	A3n/BBB+s/As	2bn
EssilorLuxottica SA	A2s/As	2bn
Telefonica	Baa3s/BBBn/BBBs	2bn

Source: Citi; Bloomberg, DTCC, Dealogic, CMD Portal

Exhibit 2: Short-term issuance from select Eurozone sovereigns

Long-term vs. Short-term issuance outstanding



Source: Eurostat, European Commission. note: 'short-term' = <1y maturity at issuance, 'long-term' = >1y maturity at issuance

In comparison to the US, data about the European short-term market is difficult to source. As such, it is difficult to put a precise figure on the total size of these markets. While there are reported volumes of bank, corporate and sovereign/ SSA, the real volume of outstanding issuance is likely far higher.

The issuer perspective

Europe's short-term money markets serve a diversity of needs for all types of issuers that use it as a funding source. It is an important way to diversify the issuer's investor base, for ease of access and flexibility in timing to meet funding needs and for non-bank issuers, to provide a competing, often lower-cost, source of funding in relation to traditional bank credit.

For bank issuers, it is especially important to maintain multiple sources of funding to support confidence-sensitive balance sheets. Given the short-term nature and high-velocity of a bank's trading book, the short-term funding markets are an efficient tool in funding a bank's market-making activities. While money market instruments are short-term in nature, the funding relationships are generally longer-term as investors tend to roll over this short-term funding. In the case of a small bank, which may be an infrequent issuer in term markets, short-term markets can enable bank treasuries to maintain their connections with investors and maintain market coverage and familiarity.

For non-financial corporates, short-term money markets have become integral to managing liquidity and funding working capital needs. Because of the ease with which a corporate can issue from an existing programme, a corporate can issue new commercial paper as the need for cash arises, and at tenors in line with corporate needs. This

flexibility allows these corporates to avoid holding costly excess liquidity. Commercial paper funding can also help corporates fund seasonal flows in working capital, avoiding more costly term and bank funding to meet short-term fluctuations in inventory and other interim demands.

Short-term markets can be important incubators for longer-term funding opportunities. For bank treasuries, commercial paper can help fund a mortgage pipeline ahead of being securitised, while an auto manufacturer's captive bank may use commercial paper to efficiently fund an auto lease pipeline prior to securitisation.

The flexibility of tapping short-term markets is not only reserved for corporates and banks. For example, the Danish Central Bank recently highlighted the key role that Denmark's T-bill and commercial paper programme is playing to support its Covid-19 aid packages². By making use of the commercial paper market, the Danish debt office was able to ease pressure on bond issuance plans, giving evidence to the importance of a diversified funding programme for one of Europe's highest credit quality sovereign borrowers.

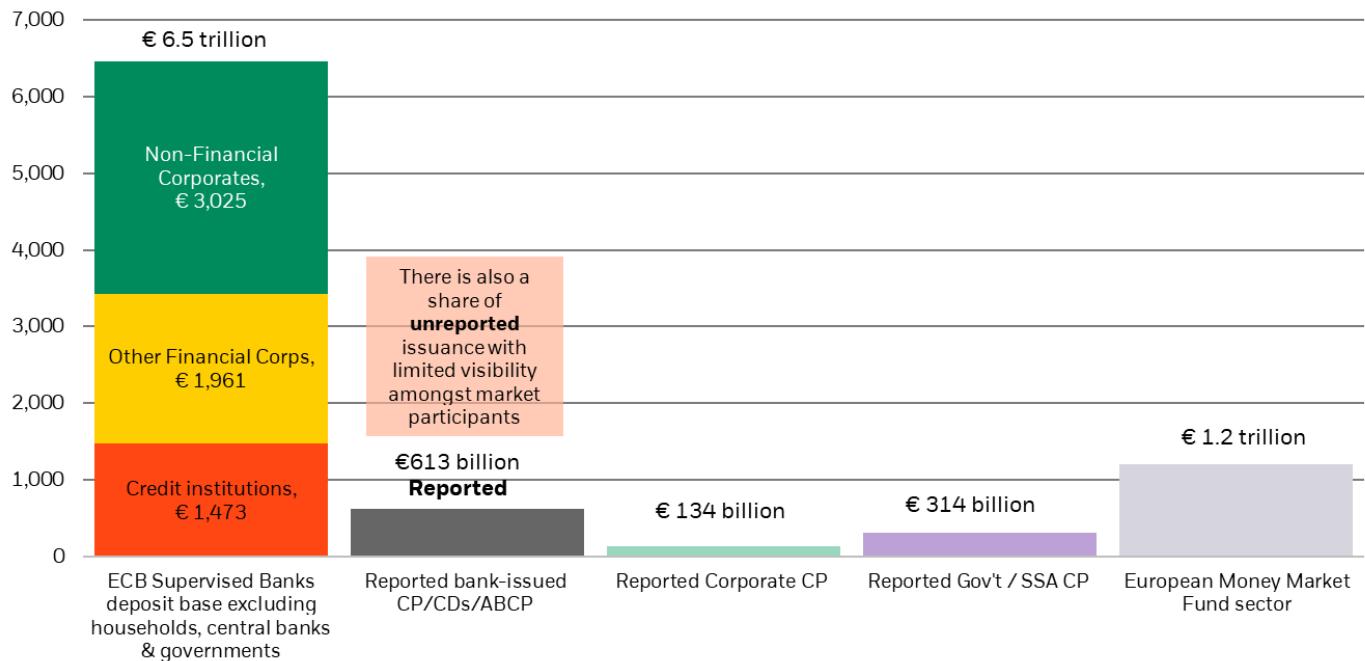
The investor perspective

Investors rely on short-term markets to manage their cash and liquidity positions which they hold to meet a variety of different cash needs. Because government deposit protection generally covers only retail depositors, companies are taking counterparty risk by holding cash in a bank account. These investors look to diversify their counterparty risk by instead holding short-term credits from a diverse set of issuers.

Like the issuer base, the investor base is diverse. Due to opaque markets and poor data quality, it is impossible to break down the composition and relative size of the investor base in great detail. Generally speaking, investors are a range of different entities with cash management needs – such as large financial institutions, corporates, pension funds, charities and public authorities – who manage short-term liquidity investments directly through their own in-house treasury functions. Many investors outsource some or all of this function to third part asset managers who provide liquidity management solutions through dedicated separate accounts or pooled liquidity funds (MMFs).

MMFs are often referred to as analogous to the short-term market investor base as a whole. This is most likely because they are highly-regulated entities with data ecosystems around them to provide transparency to their investors and to the market. It is challenging to say with certainty, but we believe holdings across all types of MMFs account for less than half of the market for CP and CDs in Europe and represent an even smaller proportion of overall short-term liabilities of European banks (see **Exhibit 3**).

Exhibit 3: Comparative size of the European short-term market landscape



Source: ECB, CMD, June 2020; sector level detail for combined ECP/ ECD/NeuCP/STEP reported issuance

The “money market” in Europe is in practice a very large organism with many components of which the MMFs play a part, albeit an important one. They provide investors with operational efficiencies, easy access to the market, scale and transparency along with the reassurance of regulatory oversight. One of the most important features of MMFs is that they provide comingled liquidity where investors both large and small can receive the benefits of a highly diversified, highly rated portfolio of assets, including a large proportion of overnight cash, provisioning for same day access to funds.

The alternative to MMFs is for more investors to participate directly in the short-term markets, managing the diversification, and credit and liquidity oversight in their portfolios themselves (or outsourcing it to a third party manager to retain expert managers’ credit expertise and market access, albeit at greater cost and likely lower liquidity profile than a pooled fund would provide).

This would lead to a more fractured and less efficient outcome for both issuers and those investors, as daily cash requirements for the investor would have to be met by liquidating investments for basic cash management purposes. Term deposits and repo are not easily “broken”, offering little liquidity optionality beyond the maturity date. Thus, MMFs play a critical role to bridge issuers and underlying investors.

Trading in the short-term markets

Although sharing many similarities with other fixed income markets, the short-term markets have unique elements that set them apart from credit markets with longer-dated maturities such as the broader corporate bond market.

Investment generally takes place on a buy-and-hold basis given the short-term nature of the securities – and as a result, there is a less active secondary market. In fact, primary issuance is by far the largest source of investments in CP and CD markets.

Both primary and secondary markets take place on a bilateral, OTC basis. This has important pricing and liquidity implications. Dealer banks are critical for secondary market liquidity, whether issuing directly or as an intermediary, this means they are central in both price discovery as well as liquidity in the market.

Up to and during the Global Financial Crisis (GFC) and Eurozone crisis, dealer banks operated on a “no name give up” basis to the issuer (the buyer of the CP remained anonymous). The issuer could not easily work out which buyers held their CP, and consequently, expected the dealer bank to provide secondary market liquidity in their CP as a condition of the dealer remaining in their CP programme. Following the two crises, issuing entities, primarily banks, became much more focused on understanding their buyer base, including MMF managers. Many banks began trading directly with buyers of their paper rather than (or as well as) using intermediary dealers.

This change had an important implication. Bank dealers' liquidity provision in short-term markets is discretionary. Trading in short-term markets is, for the bank, a high-volume, low-margin, and highly capital-intensive business area. **Where once the commercially-disciplining factor of needing to provide secondary market liquidity as a condition of doing business with the issuer existed, in today's more disintermediated market, the commercial incentive for banks to provide liquidity in all market conditions is not as strong.**

What happened in short-term markets in March 2020?

During the March market turmoil, secondary market liquidity in short term markets deteriorated dramatically. In fact, the secondary market in Europe remained highly stressed for several weeks, with banks' ability or willingness to make markets in short-term paper severely diminished.

As dealer balance sheet capacity was constrained by the crisis, banks did not bid for even short-term paper unless they had a buyer on the other side of the deal and were purely intermediating.

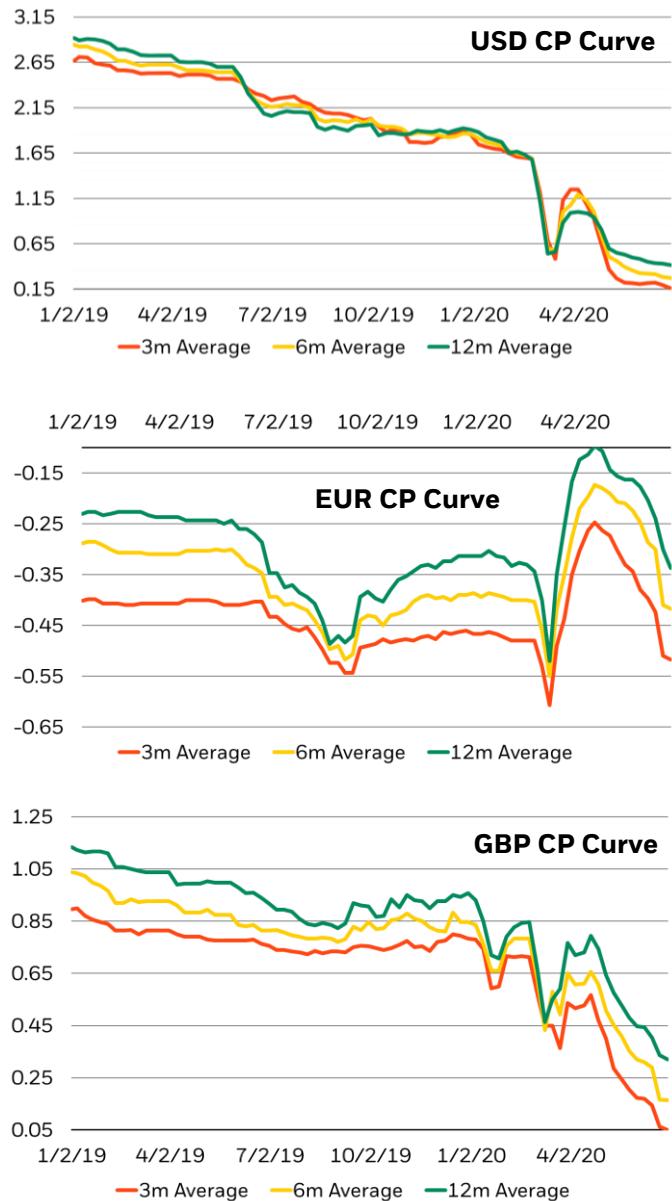
In recent years, the market has become accustomed to specific periods where bank balance sheets are predictably constrained. In periods such as year and quarter ends, MMFs and other short-term market participants can position accordingly to remove some of the risks of diminished liquidity. However, in March, the stress was sudden and unanticipated and balance sheet availability was removed almost immediately. This had a dramatic market impact. Bank balance sheets became stretched as corporates drew on their available cash resources through contractual credit facilities, variation margin was called and, concurrently, funding channels dried up.

In the last two weeks of March, many European banks faced a shortage of US Dollar funding which prompted their collective take up of more than \$112bn liquidity³ from the ECB's funding programme. This was necessary to enable these banks to support the dollar-based commitments which included asset-backed commercial paper (ABCP) programmes they have outstanding (we estimate that there was roughly \$100bn+ of US Dollar ABCP issued from European banks outstanding at the start of the market turmoil).

In the first weeks of the crisis, many corporates were drawing on their revolving credit facilities (RCF). When this happens en-masse, it creates a significant liquidity demand on banks. Throughout this significant client demand for liquidity, banks were still seeking to maintain high liquidity ratios themselves, despite the accommodation announced by the SSM (see Section V for further detail), given uncertainty over the depth and duration of liquidity pressures at that point in time.

MMFs were one of the short-term market participants that stopped buying CP and CDs as they focused on preparing for possible redemptions and supplying vital liquidity to the many clients in actual and potential need of immediate funding through the March liquidity crisis. The focus from a significant part of the investor base (MMFs, and we assume other investors in short-term markets exhibited similar behaviour) on building up short-term liquidity (<1 week maturity) at the expense of longer-dated paper had a perceptible impact on bank funding costs, especially in euro (see **Exhibit 4**).

Exhibit 4: Impact of market turmoil on CP rates



These tables represent yield from 3, 6, and 12 month CP from a basket of high-quality financial issuers in each currency, scales represent the yield ranges relative to each. As many investors began building up liquidity positions in the end of March, increased appetite for only the shortest-maturity paper drove 3, 6 and 12 month yields up. While these began to normalise over the course of April in USD and GBP, they remained elevated in EUR for some time. Source: BlackRock

Although typically buy-and-hold investments, when MMFs experience redemptions and have less overnight and weekly liquidity than is desired, or want to change their maturity profile, they sell CP and CDs back to the dealer community, most often the dealer they originally bought from. In the circumstances in March, however, bank balance sheet scarcity and constrained secondary market liquidity greatly limited MMFs' ability to sell CP and CDs.

This phenomenon was experienced in almost all markets: corporate bonds and even top-tier sovereign bond markets suffered as market participants moved to cash. Holders of assets in most, if not all, markets looked to sell, and relief was only given when central bank facilities were initiated to provide liquidity directly via swap lines (FX), and broader central bank market interventions put a floor on selling pressures.

Although short-term markets were helped indirectly by the introduction of many central bank liquidity facilities and expanded asset purchases, most of the European short-term CP and CD markets did not receive direct relief. In contrast to the US, where the Federal Reserve put in place targeted support measures aimed at both primary and secondary short-term markets, in Europe, expanded asset purchase programmes focused largely on non-financial corporate issuance (financial institution and <1year maturity SSA issuances that make up the majority of the market were not included; the ECB expanded eligibility for SSA paper by reducing the minimum maturity to 70 days, although market feedback suggests this has not yet translated to perceptible changes in purchase patterns.

The outcome in European short-term markets was that, for some time (and well after central bank stimulus had resolved liquidity issues in other parts of capital markets), banks were unable or unwilling to bid on high quality commercial paper, even at extremely short residual maturity. This included their own CP – clearly underlining the point that the seize up in secondary markets was an issue of balance sheet capacity.

Exhibit 5: Comparing the size and structure of US and European MMFs

US Domestic MMF by structure (28 February 2020)



Source: iMoneyNet and Morningstar

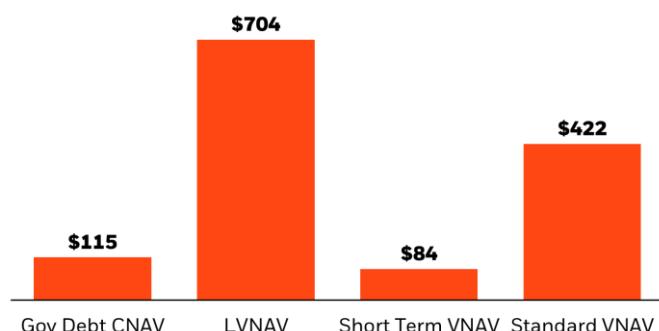
The Evolution of European Money Market Funds (MMFs)

The European and US MMF industries have evolved in many ways separately – and as a result, look quite different (see **Exhibit 5**). In addition to historical differences, the 2012 Financial Stability Board (FSB) and International Organisation of Securities Commissions (IOSCO) recommendations on MMFs resulted in significant regulatory reform in both the US and EU which led to further divergence.

The US market historically had been built around Constant-NAV (**CNAV**) MMFs that invested in either US Government securities (including Treasuries and Agencies) or broader credit (including both bank and corporate debt). These latter funds are referred to as "**prime**" funds. When US MMF reforms were implemented, five categories of MMFs were created: Government, Retail Prime, Institutional Prime, Retail Municipal, and Institutional Municipal. This construct reflected the presence and behavioral differences of institutional versus retail investors. Based on the data from the GFC, the Institutional funds were required to use a floating NAV (FNAV).

The European industry historically grew around two different types of funds, more clearly defined by 2010 ESMA Guidelines⁴: **Short-term MMFs** and **Standard MMFs**. The key difference between these funds is the duration of the underlying assets. Short-term MMFs are limited to investments with remaining maturity of 397 days and Standard MMFs can invest out to two year maturity. Likewise, the maximum average maturities across the portfolio are much shorter in Short-Term versus Standard MMFs. Both Short-Term and Standard MMFs focus primarily on bank debt. While not perfectly overlapping with US "**prime**" funds given the stronger focus on banks in the EU funds, these funds are often referred to in shorthand as "**prime**" funds). In contrast to the US market where there is a large retail investor base for MMFs, the European industry is largely institutional.

European MMF by structure (28 February 2020)



Until recent EU reforms were implemented in 2019, Short-term MMFs were predominantly CNAV funds which valued their underlying assets using amortised cost and sought to maintain a constant share price of 1.00. Standard MMFs were variable NAV (**VNAV**), meaning their share price could fluctuate with the value of the underlying assets, which were generally valued using mark-to-model pricing.

Short-Term CNAV funds grew around the three main European trading currencies (Euro, Sterling, US Dollar), whereas Standard VNAV funds were largely Euro-based.

Following the 2007-08 financial crisis, some Short-Term CNAV funds were launched as pure public debt funds.

While Government MMFs have become the dominant form of MMFs in the US, these funds have gained limited traction in Europe.

The EU Money Market Fund Regulation (MMFR), which was agreed in 2017 and implemented in 2019, established a regulatory classification of different fund structures for both Short-Term and Standard MMFs (see **Exhibit 6**). MMFR allowed the small segment of government debt focused CNAV funds to continue using a Constant NAV, but required Short-Term 'prime' CNAV MMFs to convert to a new fund structure, called a Low Volatility NAV (**LVNAV**) MMF.

The MMFR also introduced a range of requirements beyond the fund structures themselves – for example, portfolio diversification rules, maximum maturity thresholds for both Short-Term and Standard MMFs, and daily and weekly

liquidity buffers which vary across different fund structures (CNAV/ LVNAV and VNAV).

The MMFR introduced specific provisions around liquidity fees and redemption gates for Government CNAV and LVNAV funds, above and beyond existing UCITS provisions. These tools were intended to be used to help an MMF to manage significant outflows. The point at which the fund Board is required to convene and take a decision as to whether to use these tools is tied to breaches of the minimum weekly liquidity levels, coupled with 10% daily outflows from the fund.

What did MMFs experience during March 2020?

In March 2020, most segments of both US and European capital markets experienced severe turbulence. In Europe, rapidly changing end-investor need for cash and liquidity, coupled with a nearly-complete breakdown of secondary markets in the short-term space left most MMFs having to manage strong competing pressures.

Underlying flows (both to and from MMFs) were caused by several factors for different client segments and sectors. While the broader economic circumstances understandably impacted the need for cash and liquidity amongst investors (for example, many companies had liquidity requirements in the latter half of March as revenues dried up but cost bases, such as payroll, did not), we see two notable drivers

Exhibit 6: Summary of European MMF structures

	Short-Term MMFs			Standard MMFs
	Public Debt Constant NAV (CNAV)	Low Volatility NAV (LVNAV)	Short-Term Variable NAV	Standard Variable NAV
Pricing	Constant NAV	Rounded NAV (if conditions met ¹)	Variable NAV	Variable NAV
Liquidity Fees and Gates	Yes ²	Yes ²	UCITS Rules ³	UCITS Rules ³
WAM / WAL Limits	60 / 120 days	60 / 120 days	60 / 120 days	180 / 365 days
Max Maturity	397 days	397 days	397 days	2 years
Min Daily / Weekly liquidity	10% / 30% Breach requires Board review ²	10% / 30% Breach requires Board review ²	7.5% / 15%	7.5% / 15%

1 LVNAV funds are able to deal at a rounded NAV of 1.00 provided the unrounded mark-to-market NAV remains within a tolerance of 20bps (0.9980 to 1.0020); if the mark-to-market NAV falls outside of the prescribed tolerance, the LVNAV fund must deal at the mark-to-market NAV share price.

2 If weekly maturing assets of the fund fall below 30% of total assets AND daily net redemptions exceed 10% of total assets in a single working day, the Board has the discretion to implement liquidity fees and/or redemption gates or take no action. If the weekly maturing assets of a fund fall below 10% of total assets, the Board is obliged to decide whether to implement liquidity fees and/or redemption gates

3 Although fees and/or gates are not prescribed for VNAV funds as part of the EU MMFR, they are required to be included within funds' prospectuses under UCITS and AIFMD rules.

that stand out above and beyond the ‘normal’ (circumstances considering) liquidity needs observed across the market. These two drivers should be the main focus of the effort to understand and draw policy conclusions from the experience of MMFs in March:

- Inflows and outflows due to end-clients’ own margin pressures were notable in both Euro and Sterling MMFs. In the period immediately preceding the liquidity crisis in March, many MMFs saw derivative margin-related inflows on the back of gains in investors’ derivative positions, in particular interest rate swaps. A sudden and drastic turn in the underlying market led to significant margin calls which subsequently led to many pension funds and insurers withdrawing liquidity from MMFs to meet these margin calls. This pressure has since reversed.
- For European Corporates with US Parents, there was a relatively large volume of movement from USD Short Term ‘Prime’ (LVNAV) MMFs into US Treasury (Public Debt CNAV) funds, in line with broader corporate treasury policies driven by the US experience. We believe this was the only significant ‘flight to safety’ pattern within European MMFs, and was in many ways driven by spillover from the investor reaction to pressures on US MMFs. Much of the outflows reversed once global markets stabilised.

Some commentators have settled on the broad narrative that “prime” money market funds in the US and Europe experienced heavy client redemption pressures during the second half of March. While at a macro level and compared to other asset classes, this is true, the aggregate view masks the experience of various funds and therefore is of limited use in drawing conclusions and considering potential remedies. As such, it warrants some perspective and a clearer breakdown.

- Firstly, events in the US and in Europe were clearly different. In the US, a ‘flight to safety’ put pressure on

prime MMFs as cash moved from funds exposed to the corporate sector to the safe haven of US Government Debt CNAV funds.

- Secondly, even within Europe, the flow patterns from MMFs were as varied as the range of different currencies and fund structures that are features of the markets (see **Exhibit 7**). This highlights uneven pressures across the market, with different underlying drivers, as opposed to a uniform move for investors to redeem cash from MMFs across the board.
- Investors were, for the most part, using MMFs to meet their own volatile liquidity needs – not redeeming from funds over concerns about the funds themselves
- Finally, to put this in perspective, when compared to their regulatory liquidity buffers (10% daily and 30% weekly liquid assets for most short term MMFs), the aggregate outflow in Europe was well within the levels that the EU regulatory framework expected of MMFs throughout the March turmoil.

Breaking down the European MMF experience

In times of market stress, as was the case in March, end-investors often react by de-risking, thus raising their liquidity reserves and moving to a more conservative position. As can frequently be observed when central bank rates move (as they did in dollar on 3 March (1.75 to 1.25%) and 15 March (1.25 to 0.25%) and sterling on 10 March (0.75 to 0.25%) and 19 March (0.25% to 0.10%), or when markets wrongly anticipate a rate cut, as when the ECB held rates on 12 March, MMFs across the various fund structures can see flow pressures due to cash needs from clients having to place cash received from margin, or draw cash to fund margin calls. Both of these reactions to market developments can explain in large part the inflows and outflows observed across European MMFs in March.

Exhibit 7: Overview of flows by type of fund in 2020

	Govt Debt CNAV			LVAV			Short-term VNAV			Standard VNAV		
AUM at Structure Level Feb 2020	\$115B ¹			\$704B ¹			\$84bn ²			\$421.7bn ³		
Net Flows Mar 2020	+\$69.8B			-\$84.4B			-\$0.4B			-\$43B		
Net Flows Apr 2020	-\$7.7B			+\$67.7B			+\$12.4B			-\$8.1B		
	\$	€	£	\$	€	£	\$	€	£	\$	€	£
AUM by Currency (USD) Feb 2020	\$109B	\$81M	\$5.7B	\$330B	\$97B	\$277B	\$22B	\$60B	\$2.3B	\$26.4B	\$386.7B	\$8.6B
Net Flows Mar 2020	+\$68.8B	+\$8M	+\$1.1B	-\$91B	+\$4.2B	+\$2.8B	-\$2.2B	\$1.8B	0	-\$1.7B	-\$41B	-\$0.3B
Net Flows Apr 2020	-\$8.1B	+\$17M	+\$0.4B	+\$45.4B	+\$2B	+\$20.3B	+\$1.4B	+\$10.9B	-\$0.1B	-\$7.4B	+\$0.5	-\$1.2B

¹ Source for Public Debt CNAV and VNAV AUM is iMoneyNet

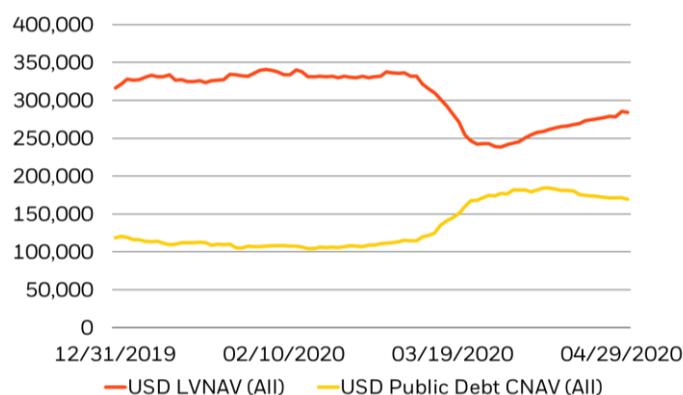
² Source for LVNAV and STVNAV AUM is iMoneyNet and Morningstar French domiciled Short Term MMF

³ Source for Standard MMF AUM is Morningstar for USD & GBP Standard MMF and French EUR domiciled Standard MMF

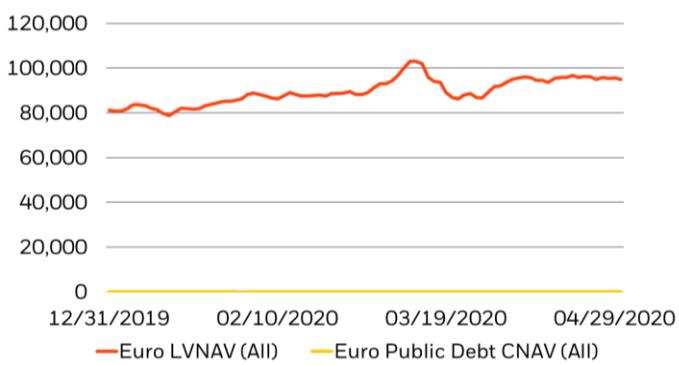
In contrast to the US, where the vast majority of MMFs are Treasury funds, in Europe, the vast majority of MMFs invest in corporate (largely financial) debt (see **Exhibit 5**). Furthermore, the only scalable product offering in European Public Debt CNAV funds exists in USD, which made up approx. 24% of the European USD MMF ecosystem at the end of February. The respective Euro and Sterling proportions are <1% and ca. 2%, respectively. The US market developments could be characterised as a strong 'flight to safety' by some institutional investors from US Prime funds to US Treasury funds. While we saw a somewhat more muted 'mirroring' of that behaviour in European USD funds, we did not observe this behaviour in either Euro or Sterling funds to any notable degree.

Exhibit 8: Flows in LVNAVs and Government CNAV (by currency)

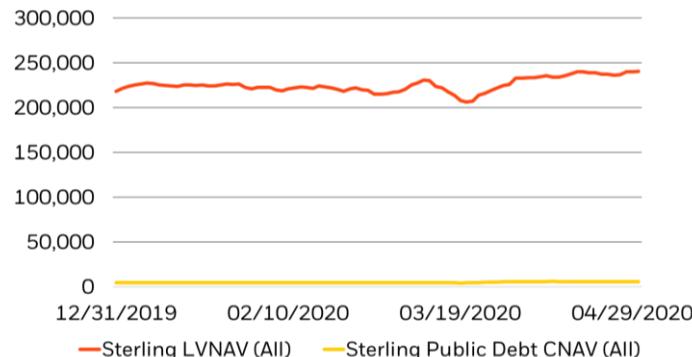
USD



EUR



GBP



Source: iMoneyNet

It is instructive to break down the flows and drivers we observed across different currencies (see **Exhibit 8**):

- **In Euros**, MMF investors generally choose between Short-Term LVNAV MMFs and Standard MMFs. We would typically suggest that daily liquidity balances are invested into Short-Term MMFs (LVNAV) while longer term cash holdings are held in Standard MMFs (VNAV).

In the early stages of the crisis, when end-investor's need for margin call-related cash was most acute, same day liquidity sources such as LVNAV funds were naturally the first port of call. Interestingly, industry AUM in EUR LVNAV funds first increased by 17% on the back of margin-related inflows between the end of February and their high point on 12 March, before the ECB surprised markets by keeping rates unchanged, triggering a sharp reversal in derivative positions and spike in associated margin calls. This started a 7-day period of outflows across the industry, amounting to a 16% drop in AUM, before inflows from corporates building their liquidity provisions started to offset net outflows.

Given LVNAV MMFs are typically managed above their 30% weekly liquidity buffer thresholds, they were in a good position to handle outflows of this magnitude. However, given the broader uncertainty in the market, managers tried to increase the liquidity buffers in anticipation of more persistent potential outflows. Struggling to get bids from banks in the secondary market, they build liquidity by not re-investing maturing CP/CD.

We also observed outflows from Standard MMFs as clients sought to move to more liquid options, e.g. EUR Short-Term LVNAV MMFs or bank deposits. Standard MMF have longer maturity limits and lower liquidity buffer thresholds, and same-day liquidity is often provided on a 'best efforts' basis only.

- **In Sterling**, the vast majority of industry AUM is allocated to LVNAV funds (>97%), with only a small portion allocated to Public Debt CNAV and ST-VNAV funds. The Sterling LVNAV MMF industry experienced a similar pattern as the Euro LVNAV MMFs, with 7 consecutive days of outflows (the same outflow period as in Euro funds), amounting to 11% of industry AUM, following inflows of 8% between the end of February and the start of the crisis.

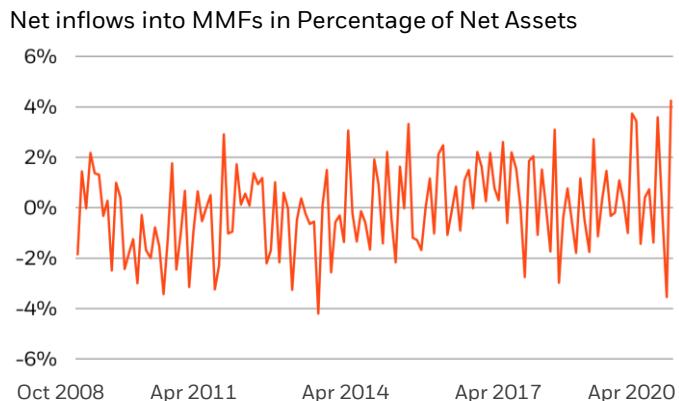
While again, flows were well within the prescribed regulatory weekly liquidity buffers for almost all funds, the deteriorating secondary market liquidity was concerning.

- **US Dollar MMFs** experienced the highest levels of stress for the longest period. AUM in European-domiciled USD MMFs leading into the crisis was near all-time high levels and split between Public Debt CNAV funds (25%)

and LVNAV funds (75%). USD LVNAV outflows across the industry were approximately 29% over a 19-day period; over 60% of these outflows represented a shift into Public Debt CNAV funds. Based on our own experience, a large proportion of these flows were driven by global corporates who aligned their treasury activities in Europe with those in the US where stress in the smaller (relative to the overall market) prime space led to moves into the much larger USD Treasury CNAV alternative. News of money market fund sponsors stepping in to support certain US-domiciled prime funds concerned clients further and accelerated these moves in Europe as well, even though sponsor support is not permitted under the MMFR.

While individual MMF flows were indeed volatile, *in aggregate*, they were not marked outliers based on historical trends (see **Exhibit 9**). Investors were, for the most part, using MMFs to meet their own volatile liquidity needs – not redeeming from funds over concerns about the funds themselves. And the liquidity buffers introduced by the MMFR were sufficient to ensure that investor redemptions could be met.

Exhibit 9: Putting net flows 2020 in historical context



Source: EFAMA; net flows encompass all European MMFs (Government CNAV, LVNAV, ST-VNAV + Standard VNAV) in aggregate

Assessing the LVNAV structure in the market turmoil

In both the US and Europe, the effects of the market turmoil were most acute in 'prime' funds (those that invest in corporate and financial credit, as opposed to sovereign debt). As a result, in Europe, the stresses were primarily concentrated in standard VNAV funds, and in short-term LVNAV funds (see **Exhibit 7**). The LVNAV in particular, because it has stricter regulatory protections than standard funds, merits closer focus to see how these protections (principally, the strict liquidity buffers and redemption fee and gate provisions, as well as the mark-to-market price 'collar') held up in the market stress.

We observed most clients closely monitoring the regulatory liquidity threshold levels as well as the mark-to-market prices of LVNAV funds throughout the market turmoil. Several clients highlighted a lack of comfort if MMFs were to utilise their 30% weekly buffers given the potential to trigger a fund board meeting which could lead to the imposition of redemption fees or gates. The possibility of such a scenario occurring (despite the flexibility MMF managers and Boards have to manage breaches) influenced investor behaviour and, in turn, prompted MMF managers to avoid using the 30% weekly liquidity levels to meet redemptions, with most funds selling assets at levels below normal fair value instead of drawing down the buffer. In fact, many funds sought to increase their liquidity positions to levels of 40% or even 50% weekly liquid assets and above while meeting redemptions. This undermined the countercyclical intent of the buffer.

Ultimately, few LVNAV funds fell below 30% weekly liquidity during the March market turmoil, most very slightly (see **Exhibit 10**), all redemptions requests were met, and no funds imposed redemption fees or gates at any point.

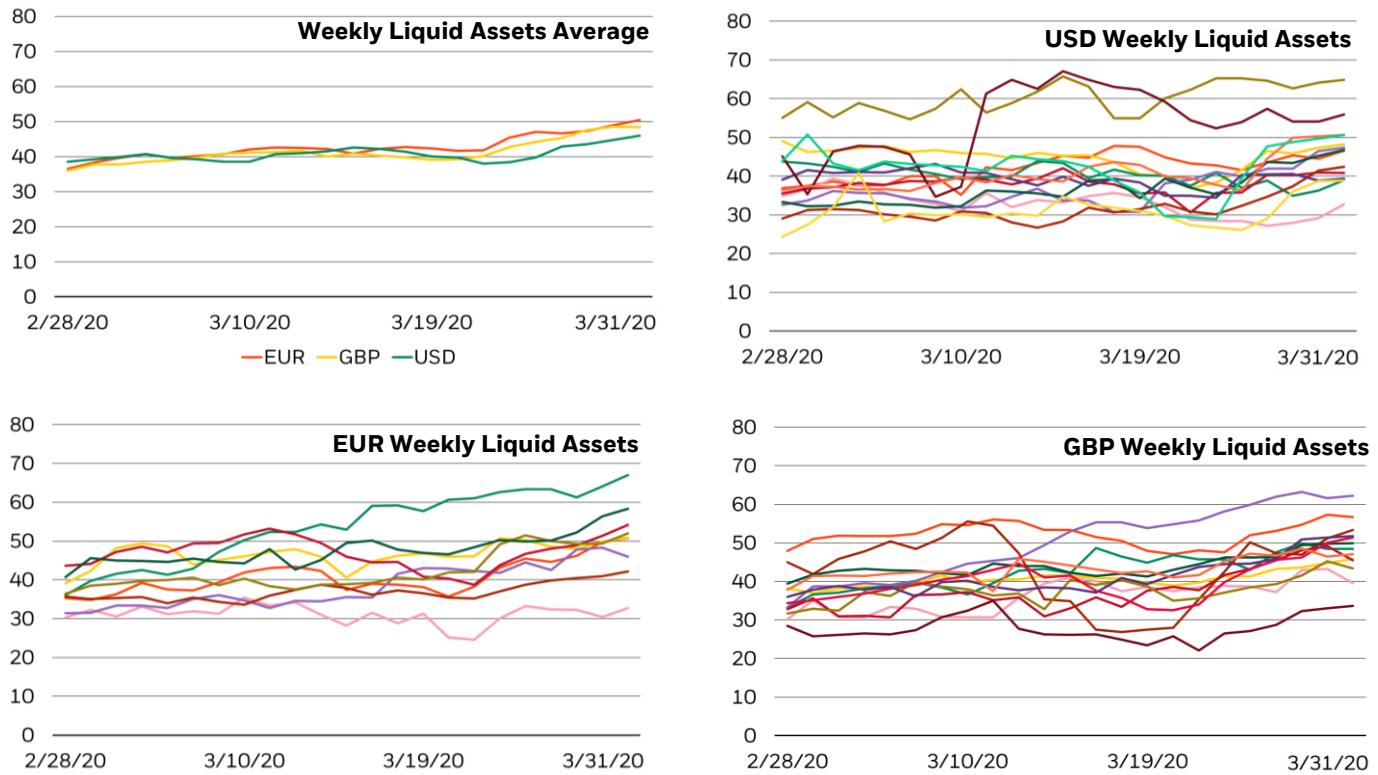
Most MMFs across the different fund structures have responded to the crisis by lowering their maturity profile and raising liquidity buffers well beyond those required by regulation to compensate for the lack of secondary market liquidity.

This highly elevated level of liquidity provisioning by MMFs, while making them far more resilient and able to weather considerable future market turbulence, does have an impact on money markets broadly and the cost of funding for banks and other corporates that issue into this space, as we have outlined in the previous section. This has since returned to normal, but not without significant central bank easing – for example, in the EU, the TLTRO IV – to make up for the change in investor demand patterns.

Related to the concern around redemption fees and gates, investors were also anxious about a breach of the LVNAV's 20bps 'collar', worrying that a breach could lead to accelerated outflows which, in turn, would ultimately trigger a redemption fee or gate scenario. While there is no evidence that this would be the case, the concern undoubtedly influenced investor behaviour – likely because the relative novelty of the LVNAV structure means that no fund has ever breached this threshold.

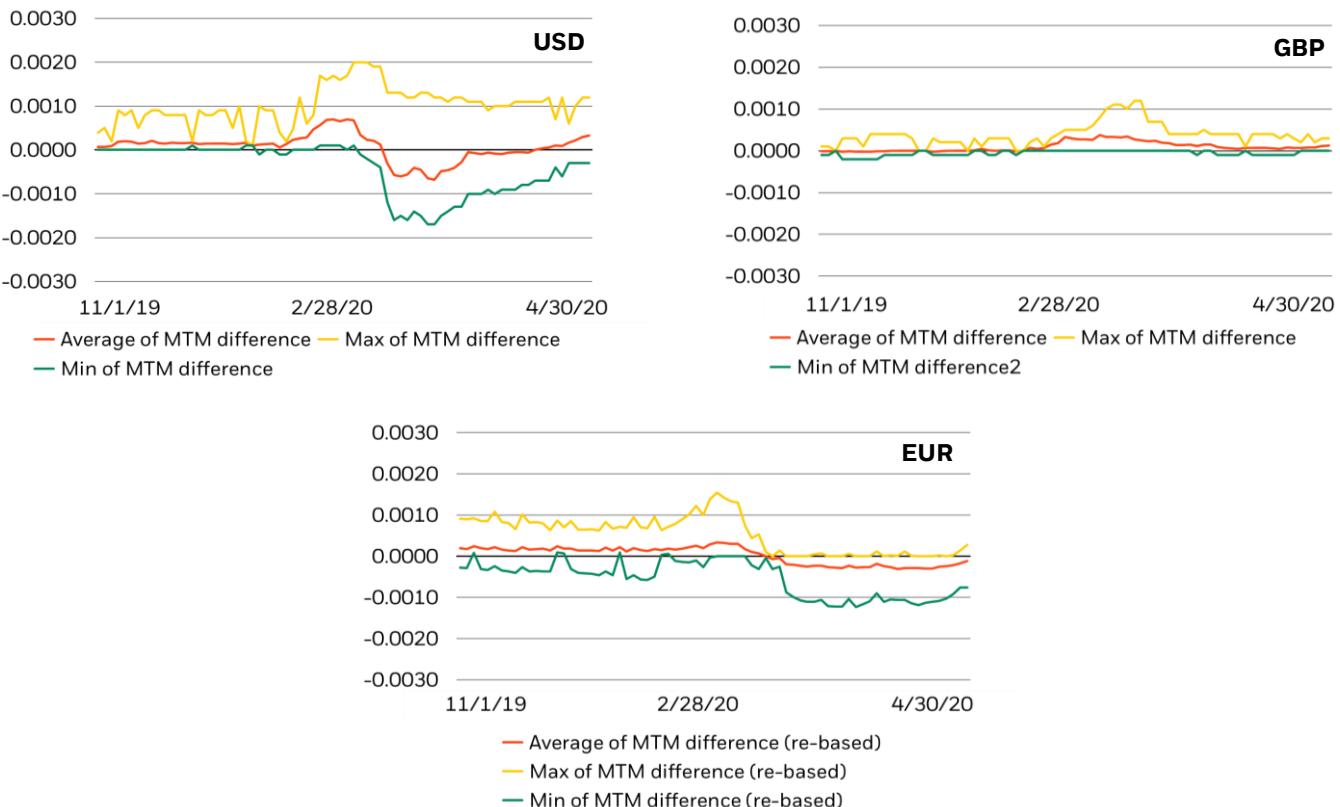
In LVNAVs, Mark-to Market (MTM) NAVs were a concern for a prolonged period, first to the upside, later to the downside, driven by valuation issues due to market dislocation (see **Exhibit 11**). While no LVNAV funds breached the collar at any point, it is interesting to note that the most acute pressure came on the upside rather than the downside (the scenario in mind in the design of the LVNAV – which was conceived as a mechanism to avoid the perceived 'break the buck' risk in prime CNAV funds).

Exhibit 10: March 2020 weekly liquidity levels in LVNAV funds (in aggregate and individually by currency)



Source: iMoneyNet; covering the 37 (of 50 total) LVNAV funds that report data to iMoneyNet

Exhibit 11: MTM NAV deviation (average and maximum deviation) amongst LVNAV funds



Source: iMoneyNet

Consequently, client concern was more focused on a possible breach of collar to the upside as the MTM prices of many funds spiked following the substantial rate cuts by central banks. It became clear that, were an LVNAV fund forced into dealing at the elevated market price NAV, clients would be incentivised to redeem their MMFs in such an event, effectively selling at a price of above 1.00 to crystallise unrealised gains, very much to the detriment of investors remaining in the fund

Central Bank programme and regulatory relief impact on short term markets

At the same time that many MMFs were experiencing redemption pressures, as outlined previously, the secondary market in short term debt came under severe strain as well. Reliant upon dealer banks to make markets, the markets effectively shut down for weeks as banks conserved liquidity.

Intervention by public authorities was unquestionably key to helping thaw the markets – but the impact was felt in different ways and at varying speeds across regions and currencies.

From early on in the COVID crisis, policymakers moved swiftly and aggressively to counteract the health and economic impacts of the virus. Complementing large fiscal injections from governments – aimed at protecting businesses, individuals' jobs, and incomes – central bank stimulus has aimed to prevent a health crisis from turning into a financial crisis, with monetary easing in the form of lower interest rates, purchase programmes, more permissive collateral rules, and expanded refinancing operations. Overall, central bank interventions have lowered borrowing costs, eased liquidity conditions, and supported the provision of credit.

In the US, as part of these broad measures, the Federal Reserve and the US Treasury moved decisively to alleviate pressure on short-term markets.

On 17 March, both the Primary Dealer Credit Facility⁵ (PDCF) and the Commercial Paper Funding Facility⁶ (CPFF) were announced.

- The PDCF offered overnight and term funding with maturities of up to 90 days to primary dealers of the Federal Reserve Bank of New York in exchange for collateral (eligibility included a range of investment grade debt securities, such as commercial paper and municipal bonds, as well as a range of equity securities). While important to support primary markets, this did not have direct impact on MMFs, nor on secondary market liquidity, as the dealers did not receive any relief on capital or liquidity.

- The CPFF provided a liquidity backstop through the purchase of highly rated US dollar-denominated 3-month commercial paper directly from eligible issuers. As with PDCF, this programme was important for the CP market and the ability of issuers to borrow; but it did not have a direct impact on MMFs or the secondary market.

The following day, a more targeted measure to relieve the strains on MMFs which were not able to sell certain securities in secondary markets to meet redemptions was announced.

- The Money Market Mutual Fund Liquidity Facility⁷ (MMLF) made loans available to eligible financial institutions that had to be secured by high-quality assets which the financial institution purchased from MMFs. This was not a direct purchase of money market instruments, but allowing banks to pledge these assets as collateral to the Fed. Importantly, in this programme, banks are not subject to risk weighted capital or leverage capital charges from purchases of money market instruments through the MMLF. This final feature made the programme directly beneficial to the secondary market, and hence provided substantial (though indirect) relief to MMFs.

While it took several weeks for banks to become operational with the MMLF, the announcement of this programme had the immediate impact of significantly slowing institutional prime funds withdrawals, and at the same time improving secondary market liquidity.

The Federal Reserve noted that in March⁸, constraints on dealers' intermediation capacity, including regulatory constraints, were possible reasons for deterioration in liquidity. **It was the announcement of this relaxation of capital standards for banks participating in the MMLF that, more than any other factor, was the key to the success of this program in stabilising the short-term markets.**

In Europe, the ECB and BoE announced significant asset purchase increases to support the economy, and in particular, government and corporate issuers. The support for money markets was far less direct. Asset purchases overwhelmingly focused on longer maturity instruments, and within the short-term space, did not include financial debt, the overwhelming stock of issuance in Europe. As a result, the impact of the purchase programmes took some time to work their way into eased conditions in short term markets (even at time of writing, while liquidity has indeed improved, European short-term credit markets have not returned to 'normal' conditions).

- The ECB was an early mover in asset purchases, announcing on 12 March an extra EUR 120bn via the asset purchase programme⁹ (APP) quantitative easing measures over the course of 2020. This was later complemented on 18 March by a EUR 750bn

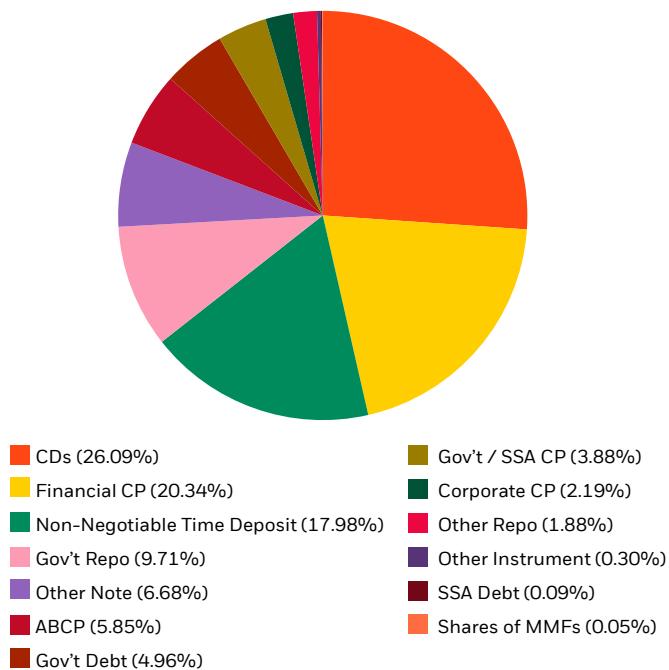
Pandemic Emergency Purchase Programme¹⁰ (PEPP) targeting all assets eligible under the APP, without conventional country-level and maturity restrictions and including Greek-issued securities. The PEPP also extended the eligible assets to include non-financial commercial paper to support corporate financing.

The ECB also took a more accommodative stance in its Targeted longer-term refinancing operations⁹ (TLTRO III) programme, extending financing to banks linked to household and non-financial corporate lending. This was later complemented by a series of non-targeted pandemic emergency longer-term refinancing operations ('PELTROs').

- For Sterling markets, the BoE announced on 19 March an additional GBP200bn in direct purchases of government and non-financial corporate bonds (although the latter accounted for only 5% of the total purchases). The BoE's COVID Corporate Financing Facility¹¹ made direct purchases of corporate non-financial commercial paper of up to one year's maturity.

While both programmes gave helpful support to the eligible firms, their impact on wider money markets was limited: the proportion of non-financial commercial paper to financial commercial paper issued across Euro and Sterling markets is relatively small, as outlined in Section I. The proportion of MMF investments in corporate CP is also relatively small (see **Exhibit 12**) due to the fact that many corporate issuers are rated below the credit quality rating that most short-term MMFs focus on (see **Exhibit 1**).

Exhibit 12: EU LVNAV portfolio breakdown



Source: Crane data

As a result, the assets held by European MMFs which were eligible for either of the central bank purchase programmes was negligible. Similarly, bank refinancing operations were aimed at easing conditions for lending to non-financial corporations not necessarily at allowing banks to provide liquidity to markets in a broader sense.

While the asset purchase programmes provided relief for some primary market issuance (again, for a segment of the market), there was no direct relief for MMFs provided by these programmes. Ongoing bank capital constraints meant there was no relief in secondary markets as the US MMLF provided.

This is not to say, however, that capital relief was not a strong feature of the European policy response (see **Exhibit 13**). Early on in the crisis, European bank supervisors sought to provide guidance on the use of countercyclical buffers and allowed banks to temporary relief from some regulatory capital requirements. But these did not provide observable relief to short term markets, perhaps due to a reluctance by banks to make use of this leeway.

“ There could be a concern from banks to be seen as the first to delve into the buffers, or seen as deviating from their peers, so there could be a little reluctance to go into the buffers, which is really a test also for the new regulator framework... to build the buffers in good times and allow these buffers to be used not to reduce the lending capacity in times of stress”

**Andrea Enria,
Chairman ECB Single Supervisory Mechanism
27 May 2020¹²**

In our view, the very specific regulatory relief given to dealer banks by the US Federal Reserve through the MMLF was the single most important policy response to the liquidity issues in short-term markets. The main reason why European markets took so long to effectively return to some semblance of operation was the lack of a similarly focused rule that allowed dealer banks to make markets in at least some short-term credit securities. Even capital relief for buying back only their own CP or CDs would have had a tremendous impact on the ability of short-term markets to function properly.

Exhibit 13: Select COVID-19 banking relief measures in Europe

Agency/Entity	Date	Description
National Banking Supervisors	-	Countercyclical Capital Buffer (CCyB): All major European (including UK and Switzerland) banking supervisors released the macroprudential CCyB for their supervised banks.
European Central Bank	12/03/2020	Temporary capital & operational relief for banks¹³: 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). Banks also allowed to partially use capital instruments that do not qualify as Common Equity Tier 1 (CET1) capital.
European Banking Authority	02/04/2020	Non-performing loan criteria¹⁴: Guidelines for public or private sector repayment holidays that can avoid triggering NPL criteria, and therefore impact on bank capital.
European Central Bank	17/04/2020	Bank capital calculations¹⁵: Banks to reduce the qualitative market risk multiplier, in order to avoid a spike in Risk-Weighted Assets caused by market volatility.
Bank of England	20/04/2020	Q&A on the use of Liquidity and Capital Buffers¹⁶: Banks given the flexibility to draw down prescribed capital and liquidity buffers
European Commission	28/04/2020	"Quick fix" banking package¹⁷: Capital relief via flexibility in how capital provisions are calculated and the ability to delay eventual hits to capital buffers from impaired loans / delayed repayments. EU estimated that this could support an extra EUR 450bn in lending.

Source: BlackRock

“ As the demand for liquidity grew and market participants drew down their investments in money markets, MMFs saw substantial withdrawals. However, as many funds tried to liquidate their assets (largely commercial paper) to meet redemptions, they found the markets effectively closed. [...]

We need to look at whether despite the post crisis reforms, investors conceive of MMFs as equivalent to deposit accounts and whether MMFs have the resilience to meet the consequent liquidity demands in a severe stress. We should also explore the liquidity characteristics under stress of some of the underlying assets, like bank commercial paper, on which MMFs depend for liquidity.

As well as looking at what drove and amplified the search for liquidity, we will I think need to examine why the core funding markets were overwhelmed by the demand, amplifying further the pressures in the system. There have been warning signs that these markets might prove unable to transmit liquidity under stressed conditions.”

Jon Cunliffe, BoE Deputy Governor, 9 June 2020¹⁸

Observations and recommendations

Despite the severe dislocation in markets, European MMFs managed to weather the stress without being forced to suspend subscriptions or redemptions. That very few short-term MMFs even dipped below their required weekly liquidity buffers both highlights the fact that they were well-positioned to meet outflow pressures, and raises questions as to why they were not meeting these outflows by using the buffers, as intended.

That said, **it is clear that unprecedented intervention by the US Federal Reserve put a floor on markets and alleviated redemption pressures on most US dollar denominated MMFs**, which had been subject to the most acute stresses. In Europe, **while programmes by the ECB and BoE did not have the same direct effect on short term market liquidity, they helped shore up investor confidence, and eventually did help relieve the worst of the liquidity conditions in secondary markets.**

Policy conclusions can and should be drawn from the market events of March 2020. We see three areas for further reflection:

- How to improve the functioning of short-term markets,
- Understanding the role of banks as intermediaries, and;
- Lessons to be drawn about the regulatory framework for MMFs

Reflections on improving the resilience of short-term markets

The first, and most obvious, conclusion is that industry and policymakers should take a closer look at the functioning of the short-term credit markets overall. These markets,

which rely on dealer bank balance sheets for secondary liquidity, do not function properly under acute stress. This breakdown in functioning can have procyclical effects, something which has already been identified as an area for further focus by policymakers.

Market structure changes

We believe that further consideration should be given to how best to improve the short-term market structure – with a focus on promoting greater liquidity and price transparency. We do, however, recognise that this is not a question with an easy answer.

Nevertheless, examining whether market structure adaptations that could more easily match buyers and sellers (for example, all-to-all electronic venues that have become more popular in longer-maturity fixed income markets in recent years), provide greater price transparency, or reduce the market's reliance on bank balance sheet capacity for secondary market liquidity would each be impactful.

In addition, as we have underlined throughout this paper, quality market data about short-term markets is difficult to source. This is an impediment for both market participants and for public authorities. The latter arguably have an even greater need for comprehensive data: to more clearly assess the resilience of banks who raise considerable funding in these markets and who, in normal times, provide liquidity to a range of market participants. Equally, a better, data-driven understanding of short-term markets can help monetary policymakers understand how short-term markets transmit monetary policy.

We recommend that the appropriate public authorities convene a group representatives of short-term markets – issuers (banks, corporates, and public authorities), dealer banks, and different types of investors – to help advise public authorities on how best to modernise the short-term market structure to make it more resilient in times of stress.

A standing advisory body to promote proper short-term market functioning

In longer-dated fixed income markets, the ECB maintains a 'Bond Market Contact Group' to keep connectivity to primary and secondary bond markets. In normal times, this group meets quarterly, but in times of market stress, they convene far more regularly to help bridge the information gap between market participants and public authorities. The Bank of England similarly maintains both formal and informal standing groups to source market intelligence from market participants – one focused specifically on Money Markets (though focused more on broader repo and securities lending market functioning).

Given the importance of short-term markets to issuers and users – both from a 'real economy' and financial stability perspective – we believe more formal standing group structures focused on short-term markets including both sell-side and buy-side representatives should be constituted.

An ECB 'Contact Group' for short-term markets, and either an expansion of the BoE's Money Markets Committee, or the creation of a new group focused on wider short-term markets would be enormously valuable to both market participants and public authorities. Closer cooperation is key in helping to find solutions to periods of stress or dysfunction.

Promoting effective bank intermediation in short term markets

Because banks' provision of liquidity in secondary markets is discretionary, rather than a contractual obligation, it was not immediately impacted by the massive public support given to European banks during the crisis. Instead, the banks understandably focused their firepower on their contractual obligations, and in other, more profitable, parts of the market.

In recent years, short-term markets have grown accustomed to periods of bank balance sheet constraints caused by bank prudential rules and the impact these periods (quarter- and year-end) have on markets. Because these periods are predictable, market participants are generally able to plan for them. In contrast, the March market turmoil afforded no such opportunity.

In the US, market conditions necessitated that the Fed provided targeted capital relief for dealer banks who purchased securities in short-term secondary markets. In Europe, absent such intervention, one idea that was proposed by MMF managers was at least temporary capital relief for banks to buy their own CP or CDs in the secondary market. Neither of these are likely permanent solutions to what is a structural problem.

The prudential rules that have the strongest impact on banks' ability and willingness to provide liquidity to short-term markets have emerged in response to the role that liquidity risk in the banking sector played in the GFC. In particular, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) have impacted banks' appetite for exposure to short-term markets by increasing the capital costs associated with these activities, and further by decreasing the value of funding raised from these markets as a way to meet these costs. This is a strong positive for the resilience of the banking sector and the financial system overall – but has had knock-on effect on market liquidity, especially in times of stress.

We believe that the March market turmoil presents an opportunity to reflect on whether these rules merit further consideration. While their primary objective (stability of banks as institutions and the banking system as a whole) was fulfilled, the unintended consequences of a contraction of market liquidity in short-term markets merits consideration as to whether a targeted recalibration would be beneficial for broader market stability.

We recommend that prudential regulators consider changes to bank capital requirements so that the highest-credit quality CP and CDs are considered HQLA.

Under the LCR, banks must maintain a certain amount of High-Quality Liquid Assets (HQLA) relative to their projected net cash outflows. The Basel Committee describes HQLA as having certain general characteristics, including being low risk, easily valued, listed on an exchange, having an active and sizeable market and having low volatility. The European implementation of the LCR defines three categories of HQLA: level 1, level 2A, and level 2B liquid assets. Examples of level 1 liquid assets (the most liquid) are cash or highly-rated sovereign debt issued in own currency. Some CP is already considered to be HQLA Level 2A and some is 2B.

We recommend that all CP and CDs that meets the highest credit rating for short-term instruments (A1/P1/F1) should be considered HQLA level 2A.

Assuming market structure reforms are made, such as a shift to an all-to-all trading platform, liquidity in these securities would increase and further underpin the rationale for this change. Treating CP and CDs as a HQLA (with the highest quality, short-dated paper free of haircuts) would allow banks to hold it on their balance sheets more easily. While these assets faced liquidity challenges during the March market turmoil, alleviating a strong disincentive for banks to buy CP and CDs would inherently prevent many of these issues from surfacing in a future crisis, since one of the main drivers of the liquidity challenges was banks' reluctance to buy these assets.

Without a permanent structural fix, it is likely that a repeat of the market stress experienced in March would result in a similar withdrawal of bank liquidity in short-term markets. Given there is still considerable uncertainty around the duration and trajectory of the COVID-19 crisis, the possibility of further market stress cannot be ruled out. If banks are again constrained from providing liquidity, it may be necessary for authorities to intervene to help support secondary market liquidity; for example, through **capital relief for banks to buy their own CP or CDs in the secondary market, or through a dedicated programme, which would grant targeted capital relief to banks for assets they buy in the short-term secondary market and pledge back to a central bank** (such as the MMLF did in the US specifically for MMFs).

Lessons for the regulatory structure for MMFs

Given the role that MMFs play in short-term markets, lessons must be drawn about how well MMFs themselves were equipped to deal with market conditions and whether further measures may be needed to underpin the resilience of these funds moving forward. That European MMFs were able to weather the storm demonstrates that the MMFR reforms were positive – in particular, the high levels of liquidity that funds are required to hold under the Regulation put funds in a better position to meet client redemptions. Nevertheless, we have identified several aspects of the regulatory framework for MMFs that should be reviewed:

- Structural features of LVNAV MMFs – focusing on liquidity buffers and the MTM ‘collar’;
- The use of MMFs as tools to support clearing, and;
- How investors use MMFs.

A focus on LVNAV structural features

For LVNAVs the dual pressure of heightened redemptions and the extreme illiquidity in the secondary markets left funds in a difficult situation. Funds needed to choose between (i) meeting redemptions using the liquidity buffers which risked triggering an escalation of a decision on redemption fees or gates to the Board (with potential market/ investor confidence implications), or (ii) selling assets at prices below normal fair value, and in extreme situations, with a potential to impact the LVNAV’s ‘collar’ (the tolerance around MTM price deviation from 1.00).

These safeguards in the MMFR were conceived of as tools to respond to idiosyncratic events in specific funds – not system-wide liquidity stress. The COVID-19 Crisis raised concerns that breaches of the buffers in a particular fund, if perceived to be caused by overall market conditions, could trigger client outflow stresses in other funds if investors assume market conditions will eventually (or imminently) trigger the same remedial actions in other funds.

Liquidity buffers

The direct link between a breach of the 30% weekly liquidity threshold and the trigger of a decision-making process around imposing redemption fees and gates became a focal point for MMFs during the market turmoil. In Europe, if a CNAV or LVNAV fund falls below 30% weekly liquid assets and experiences 10% net outflows on a given day, the fund Board must consider whether or not to impose fees or gates. The pressure – whether explicit or implicit – to avoid breaching these thresholds was an important driver of events. In thinking through the policy implications of the recent market events, we think it is important to reflect on the rules around MMF liquidity buffers to ensure they have the countercyclical effect that is intended.

Few LVNAV funds dipped below the 30% weekly liquidity thresholds. Those that did were barely under and it is not known if they also had 10% outflows on a day coinciding with this dip. Many managers were hesitant to use the buffers to meet redemptions. It was unclear how long the period of market stress would continue, so at the same time that they were experiencing outflow pressures, many managers were actively seeking to increase their liquidity positions. In addition, there were concerns in some parts of the market that dipping below regulatory liquidity levels would cause client concerns and actually increase outflow pressure, thereby making an escalation to the fund Board to consider fees or gates more likely.

With that in mind, **assessing the regulatory framework for MMFs should include looking at the possibility that the direct tie to liquidity fees and gates can reduce the countercyclical potential of liquidity buffers** (assumedly, their intended purpose). We think that strong liquidity buffers themselves are essential – and indeed, the high regulatory minimum requirements are a key reason why European MMFs performed as well as they did during the market turmoil – but that there are lessons to learned and applied as to why they weren't used.

One way to address this may be to set out a clearer intermediate step in between a drawdown of weekly liquidity and the escalation of a redemption fee or gate decision. For example, the first recourse should be for the fund to get back within the liquidity buffer. This is the sole remedy for both Short-Term and Standard VNAV funds breaching their weekly liquidity levels under the MMFR (they must only buy assets thereafter that get them back within their weekly liquidity levels), where there are no prescribed redemption gate or fee mechanisms. We do not think it coincidental that VNAV funds were more likely to use their liquidity buffers to meet redemptions than LVNAV funds.

MTM collar

The LVNAV essentially runs dual NAVs and share prices: one rounded value and the other a variable, unrounded, mark-to-market price. The LVNAV can deal using rounded share price, provided the unrounded mark-to-market price is within 20bps tolerance of the stable price on either side. For the end user, this has the desirable effect of dampening market volatility up to a point – in normal market conditions, they are not forced to take unrealised gains or losses from the underlying securities in the portfolio each time they subscribe or redeem. From a fund resilience perspective, it provides a 'pressure release' whereby well before a CNAV fund would 'break the buck', it would convert to a VNAV fund and investors would crystallise any losses or gains when they redeemed from the fund.

During the crisis, no LVNAVs breached the 20bps collar and so none were forced to commence dealing at a full mark-to-market price. However, market participants watched this potential development closely, given the fund structure is relatively new and had never been tested before during market stress. The daily, or often intraday, publication of mark-to-market NAVs in LVNAVs aided stability in exactly the way envisaged by regulators: by allowing transparency for investors without the need to realise small gains or losses in the MTM movement, where securities held by the portfolio remained 'money good.'

One important observation is that some LVNAVs came closer to breaching the 20bps collar *on the upside* (e.g. the mark-to-market value per share rising above 1.0020) during the week of central bank rate cuts than they came to breaching to collar on the downside the following week when they experienced heavy outflows.

The financial stability value of a mechanism which forces funds into operational change when their assets temporarily rise in value, is questionable. Were an LVNAV fund to 'flip' to dealing at the full (elevated) mark-to-market NAV in this circumstance, it could incentivise clients to redeem in an effort to crystallise unrealised gains to the detriment of remaining shareholders.

MMFs and their role in clearing ecosystems

The COVID-related market turbulence was the first period of sustained market stress under the clearing and margining rules put in place following the GFC. One of our principal observations is that a significant driver of redemption pressures that euro and sterling MMFs faced during the period of acute stress in late March was due to end-investors who themselves faced liquidity pressures to post margin.

While there are undoubtedly conclusions to be drawn about margin rules helping contribute to market-wide institutional resilience in the market turmoil of March 2020, there is equally a debate to be had about whether margin rules increased procyclical pressures at specific points in the system.

One such point is the MMF sector. Indeed, one of the most significant causes of flow, both redemptions from and subsequent subscriptions to MMFs during March and April, was due to the requirement of cash reinvestment and subsequent posting of cash collateral.

We would recommend a closer look at approvals of MMF units being posted as collateral for margin purposes.

This would mean that, instead of an investor needing to redeem from a MMF to raise cash for posting margin, the investor's MMF units could be posted directly as margin.

Were these to be accepted by clearing counterparties and CCPs, it would significantly ameliorate needless pressure on MMFs during times where system-wide margin pressures are likely to already be evidence of market stress.

This is a live and ongoing discussion amongst regulators in the EMIR discussion, and we think that a workable solution here would most effectively address one of the most significant issues that European MMFs experienced during the March 2020 market turmoil.

Investor use of MMFs as cash and cash equivalents

As we have outlined in this paper, MMFs clearly fulfill a useful role for many investors who rely on the benefits they bring as a tool to manage cash and liquidity needs. Marked inflows to and outflows from MMFs in March reflected this utility.

There are different types of MMFs for this very reason: managing cash in different currencies, with different structural features or investment focuses (government debt versus credit or 'prime' funds) better suited different purposes. Equally, investors turn to Short-Term and Standard MMFs for different purposes: reflecting unique trade offs between yield and liquidity. Standard MMFs, due to their longer maturity and lower liquidity thresholds, offer higher yields (all things being equal) than Short-Term MMFs, which focus more on high levels of liquidity. The differences between portfolio construction also tends to mean than Short-Term MMFs can provide intraday

liquidity, whereas Standard MMFs tend to settle on a next day basis.

This trade-off between yield and liquidity needs is ultimately something investors themselves need to consider closely. However, given the outflow pressures were strong on both Short-Term and Standard MMFs, we think **there is a strong argument to be made for considering whether Standard MMFs should continue to be considered as cash and cash equivalents.**

Conclusion

The March COVID-19 related market turmoil presents a valuable learning opportunity for both market participants and public authorities alike. In short-term markets, it was the most acute test to date of a suite of new rules instituted since the GFC that impacted key participants in these markets, including banks, MMFs, and end investors. While these rules undoubtedly increased the resilience of both individual banks and individual MMFs to a great extent, they also changed behavioural incentives, and as a result, created specific stresses in other ways.

This paper is an attempt to provide an initial assessment of events from the perspective of a market practitioner. We hope this can be the beginning of a constructive dialogue with public authorities and other market participants to share ideas and draw conclusions about how the resilience and robustness of short-term markets can be strengthened moving forward.

Endnotes

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