

# Lessons from COVID-19: Overview of Financial Stability and Non-Bank Financial Institutions



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## Introduction

The COVID-19 crisis has posed unprecedented challenges for global economies. While the public health and humanitarian crisis is ongoing, we can begin to draw select lessons from the March 2020 market turmoil. The outbreak of the pandemic resulted in a liquidity crisis that was different from the credit crisis experienced in the Global Financial Crisis (GFC). Market volatility increased sharply, and market liquidity deteriorated significantly, including in markets traditionally seen as liquid and low risk. As many countries moved into lockdown to contain the pandemic, issuers, banks and investors concentrated their actions on reducing their risk exposure and preserving their liquidity. The COVID-19 outbreak was an extreme stress event that demonstrated the effectiveness of the many improvements to financial market resilience made over the past decade and highlighted areas that require attention.

This *ViewPoint* summarizes key takeaways from our series of *ViewPoints* on Lessons from COVID-19 and considers the implications of the COVID-19 crisis across capital markets. In this paper, we review the key market events in March and

the official sector's interventions. We set out the lessons we have drawn from COVID-19, identifying what worked and what we believe needs to be addressed, and we conclude with policy recommendations and areas for future consideration.

## Background

The capital markets ecosystem is dynamic and diverse, involving numerous types of market participants and products. Market participants include banks as well as non-banks such as insurers, pension plans, sovereign wealth funds, asset managers, foundations, endowments and family offices. Within each of these categories, there is a variety of participants, and products are similarly heterogeneous. Asset management products, for example, are diverse both in terms of asset class (e.g., equity, fixed income, derivatives, cash, real estate, private equity) and entity (e.g., open-ended mutual funds (including exchange-traded funds (ETFs) and money market funds (MMFs)), hedge funds (HFs), real estate investment trusts (REITs), collateralized loan obligations (CLOs), and private funds for equity and credit and real estate).

## Core principles underpinning our recommendations

1. Policymaking should be data driven.
2. Policymaking must be guided by a holistic view of the ecosystem and connectivity among its various elements.
3. Finally, lessons drawn should include both what worked and what needs to be addressed; both are valuable and should be factored into future reforms.

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

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## Top 10 Lessons from COVID-19

- 1 **BANKS** entered the crisis with strong liquidity and capital positions. HOWEVER, post-GFC capital regulation constrained balance sheets even after some regulators allowed use of prudential buffers. The 'no bid' environment exacerbated problems in short-term markets.
- 2 **OTC DERIVATIVES'** move to central clearing improved transparency and risk management. HOWEVER, margin calls were pro-cyclical and opaque. Collateral for US futures rose \$104 billion (49%) over the month of March, adding to the pressure in short term markets.
- 3 **ETFs** demonstrated their ability to deliver incremental liquidity and price discovery when underlying markets seized up. Nevertheless, we have recommendations for further improvements.
- 4 **EQUITY MARKET STRUCTURE** reforms improved resiliency of critical utilities: Market-Wide Circuit Breakers (implemented four times in two weeks) and Limit-Up-Limit-Down halts (triggered several times) worked – markets were volatile but orderly.
- 5 **US TREASURY MARKET** had unprecedented liquidity issues reflecting shifts from broker-dealers to principal trading firms and hedge funds as liquidity providers. One remedy being explored is central clearing for USTs, which could reduce reliance on other intermediaries.
- 6 **MMF REFORM** proved beneficial in some areas – including higher quality, shorter maturity, more liquid portfolios; and increased reporting. HOWEVER, 30% weekly liquidity buffers' linkage with redemption gates and fees became the new 'breaking the buck' and should be addressed.
- 7 **MUTUAL FUND REFORMS** brought broader liquidity risk management toolkit, helping nearly all funds to meet redemptions in full. HOWEVER, some funds experienced stress. Main difference between US and Europe is that swing pricing is widespread in the latter; anti-dilution measures should be available in every jurisdiction.
- 8 **INDEX PROVIDERS** voluntarily delayed all or part of their March fixed income rebalance. Even with elevated 'fallen angels' and robust new issuance, the rebalance at April month-end went smoothly, justifying the decisions made in March.
- 9 **CREDIT DOWNGRADES** remain high on the viewfinder. HOWEVER, concerns about mutual funds' 'forced selling upon downgrade' are overblown – many can hold 'fallen angels' beyond the downgrade and beyond their removal from the index, and are often incentivised to from an investment perspective. Likewise, asset owners are often opportunistic buyers during periods of dislocation.
- 10 **OPERATIONAL RESILIENCE** reflected extensive BCP. WFH pivot was quick for global ecosystem (broker-dealers, custodians, asset managers and 3<sup>rd</sup> party vendors). HOWEVER, likely contributed to early market issues with chains of command and decision-making impeded. Outsourcing concentrations have been noted, and specific functionalities should be assessed for improvements.

## Key recommendations for reforms

### BANKS

#### Capital and liquidity buffers

Incorporate into the regulatory framework guidance on when banks can use capital and liquidity.

#### Central bank support conditionality

Make participation in central bank purchase programs balance sheet neutral for banks.

#### Commercial Paper regulatory treatment

Give Commercial Paper 'High Quality Liquid Asset' status for the purposes of the Liquidity Coverage Ratio

### MARKET STRUCTURE

#### Treasuries

Consider expanding scope of reporting and expanding clearing.

#### Short-term markets

Convene participants to advise on modernizing market structure, and a longer-term 'contact group' of buy- and sell-side

#### Fixed income markets

Encourage electronic, equity-style trading; and improve calibration of broker algorithms to increase resiliency

#### Central Clearing Counterparties

Encourage more conservative and less procyclical margin requirements, and include MMF units as eligible collateral

#### Equities

Market wide circuit breaker rules should be harmonized and the resumption of trading after a halt should be facilitated

#### Indices

Consider whether industry guidelines for index providers on addressing future rebalancing modifications are necessary

#### Data

Continue refining TRACE reporting in the US, and establish a pan-European consolidated tape for equity, ETFs, and fixed income

### PRODUCTS & ACTIVITIES

#### MMF buffers

Decouple 30% liquid asset requirement for MMFs from redemption gate and liquidity fee triggers, and provide guidance for use of buffers during stressed periods

#### Fund liquidity risk management tools

Make the broadest set of liquidity risk management tools for open-ended funds available to fund managers in all jurisdictions

#### Fund liquidity stress testing

Ensure that fund managers have stress tested contingency plans and enhanced data to prepare for crisis situations

#### Enhancements to ETFs

Develop a clearer Exchange-Traded Product (ETP) classification to help end-investor distinguish between products and how certain products behave during stressed periods

#### Non-bank ecosystem monitoring

Accelerate efforts to collate better data across the non-bank financial ecosystem, including all market participants, and differentiating between shadow banking and market finance

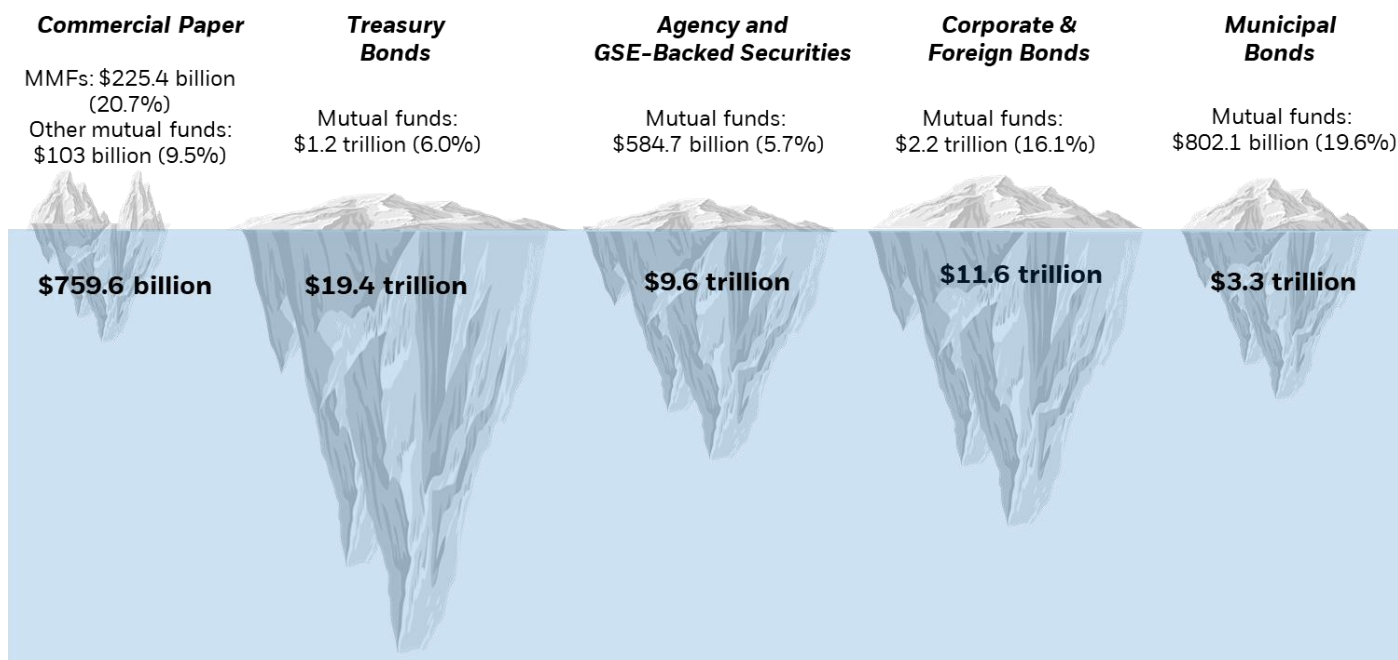
In the decade since the GFC, policymakers focused significant attention on the functioning of the banking system and capital markets, along with the roles played by various market participants and products. Numerous changes were made to improve financial stability. For example, new rules mandated central clearing of OTC derivatives in place of bilateral agreements, which has led to standardization, more transparency and better risk management – but has also concentrated risk in a handful of central clearing counterparties (CCPs).<sup>1</sup> Equity market structure enhancements, many of which were industry-led, included more objective standards, mechanisms to manage extraordinarily volatility, enhanced technology infrastructure requirements and regulatory reporting.<sup>2</sup> After an extensive review of asset management, the Financial Stability Board (FSB) and International Organization of Securities Commissions (IOSCO) concluded that a products- and activities-based approach was needed to reduce systemic risks in market finance. Fund reforms included specific rules for MMFs, an expansion of liquidity risk tools and detailed liquidity risk management and stress testing for mutual funds and new rules on the use of leverage and derivatives in funds. Likewise, a host of new rules increased data collection from asset managers, providing transparency to regulators and others. These rules include the registration of private funds, the reporting of MMF and other mutual fund portfolio data, the reporting of the use of derivatives in separate accounts and funds, and the reporting of data on ETFs and their authorized participants (APs).<sup>3</sup>

## Core principles underpinning our recommendations

First, policymaking should be data driven. Post-GFC reporting requirements and multiple market events have created a wealth of new data and case studies, allowing policymakers to evaluate past hypotheses. One such hypothesis was that ETFs would increase market volatility, and that market makers and APs would step away in times of market stress. The pandemic presented ETFs with their most significant test to date. Contrary to the hypothesis, more APs became active in ETF primary markets, ETFs were a source of liquidity as investors increasingly turned to them to adjust their asset allocations and ETFs became a source of real-time price discovery.

Second, policymaking must be guided by a holistic view of the ecosystem and connectivity among its various elements. The actions of banks, non-banks – including CCPs, exchanges, trading platforms, asset owners and asset managers – and policymakers collectively shaped the COVID-19 financial experience. The events in March demonstrated both market structure strengths and weaknesses. A holistic view of the ecosystem requires ecosystem-wide data. Too often, policy debate focuses on where data is most readily available. The discussion around non-bank finance, for example, often focuses on asset management, where data availability is relatively strong, despite asset managers representing only about a quarter of ecosystem assets.<sup>4</sup> Mutual funds, for which data is more readily available, are an even smaller component of the ecosystem. Exhibit A shows the percentage of debt held by mutual funds relative to other bondholders.

### Exhibit 1: Mutual funds in the US: Just the tip of the iceberg



Source: Federal Reserve Z.1 data as of June 2020, available at: <https://www.federalreserve.gov/releases/z1/20200611/z1.pdf>. Graphic not to scale.

Finally, lessons drawn should include both what worked and what needs to be addressed; both are valuable and should be factored into future reforms. These lessons should be based on a careful differentiation between market risk and systemic risk. For example, credit rating downgrades are a valuable source of market information and not an example of systemic risk. Market risk reflects price volatility which is expected by and disclosed to investors. In contrast, systemic risk is the risk that the failure of one entity will result in a domino effect across firms and markets. There is broad agreement that systemic risk should be mitigated, which necessarily requires a close review of the entire ecosystem.

## **March 2020: Capital markets highlights and official sector intervention**

There were several events during March that underscored the extent of financial market stress. The US Treasury market froze and bid-ask spreads for off-the-run US Treasuries peaked at 188 basis points (bps).<sup>5</sup> This reflected the lack of liquidity as banks were disinclined to use their balance sheet capacity for discretionary trading activity, and proprietary trading firms (PTFs) retreated from the market. Bond market volatility reached its highest level for 15 years: the dealer run count (i.e., the number of electronic messages that list the securities that dealers are willing to buy or sell) fell significantly in the US, limiting the amount of trading information, which in turn increased price uncertainty, and hence transaction costs.<sup>6</sup> The spreads for high-yield bonds had in recent years varied between 300bps and 600bps in the US, but exceeded 1000bps in March.<sup>7</sup> We observed similar trends for bank loans and municipal bonds, and new issuance fell across the board. ‘Fallen angels’ (i.e., bonds being downgraded from ‘Investment Grade’ to ‘High Yield’) ticked up sharply as COVID-19 changed the outlook for many corporate issuers. Short-term markets experienced acute strains as liquidity evaporated. Sudden, unpredictable spikes in initial and variation margin across CCPs exacerbated volatility, at a time when liquidity across markets was drying up and market participants were acting to preserve liquidity.

Against this backdrop, fixed income ETF secondary market trading volumes spiked as investors turned to ETFs to allocate capital and to manage risk. In the US, fixed income ETF volumes reached an average of \$33.5 billion per day in March 2020, which is more than three times the 2019 daily average.<sup>8</sup> Similarly, in Europe, the combined average daily volume of the five largest UCITS corporate bond ETFs reached \$265 million in March, nearly double the 12-month average.<sup>9</sup> The shutdown of short-term markets

presented MMFs with challenges: US domiciled Prime MMFs – those investing in corporate paper – saw outflows of approximately 30% in March. In Europe, outflows from Sterling and Euro MMFs were more muted: assets in Euro Standard MMFs fell 10%, Euro Low Volatility Net Asset Value (LVNAV) MMFs 5% and Sterling LVNAV MMFs 1% over the month, although the latter two saw outflows of 16% and 11%, respectively, during the most acute seven day period.<sup>10</sup>

Outflows from investment funds increased across a wide range of asset classes as end investors moved their money to build liquidity or reposition portfolios. These outflows were generally a small percentage of fund assets but were more elevated for high-yield bond funds, bank loan funds and municipal bond funds. Outflows from high yield bond funds averaged 1.8% in the US in the week to March 18, for example, and outflows from US high-yield municipal bond funds reached \$11.6 billion or approximately 9% of assets under management over the entire month of March.<sup>11</sup> To externalize transaction costs to redeeming investors, France and Luxembourg’s securities regulators approved the use of ‘swing prices’ higher than the maximums disclosed in fund prospectuses. Swing pricing is a mechanism that allocates the cost of market liquidity to clients redeeming from or subscribing to investment funds, removing the potential for a first-mover advantage and protecting the remaining investors.

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**“ Capital and liquidity buffers have been designed with a view to allowing banks to withstand stressed situations like the current one... Banks are expected to use the positive effects coming from these (relief) measures to support the economy”**

European Central Bank (ECB) Press Release, “ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus” (March 12, 2020)

Central bank interventions were effective in calming markets and restoring confidence. Exhibit 2 lists the key primary and secondary market facilities designed to maintain funding access for issuers. To the same end, central banks in some regions gave banks relief to temporarily draw down their capital buffers (Countercyclical Capital Buffer and Capital Conservation Buffer) and their liquidity buffers (Liquidity Coverage Ratio).

## Exhibit 2: Selected official sector programs announced in March and April 2020

### 03/12

- **ECB Asset Purchase Programme** expanded by €120 over 2020
- **ECB** increases lending volumes and cuts rates for targeted longer-term refinancing operations (**TLTRO III**)
- **SSM** allows banks to operate below regulatory **capital and liquidity buffers**

### 03/17

- **Fed** implements **Primary Dealer Credit Facility**
- **Fed** implements **Commercial Paper Funding Facility**

### 03/18

- **Fed** implements **Money Market Mutual Fund Liquidity Facility**
- **ECB Pandemic Emergency Purchase Programme** adds €750 billion to Asset Purchase Programme purchases
- **ECB** expands **Corporate Sector Purchase Programme** eligible assets, including non-financial CP
- **Bank of England COVID Corporate Financing Facility** purchases non-financial CP

### 03/23

- **Fed** implements **Primary Market Corporate Credit Facility** and **Secondary Market Corporate Credit Facility**
- **Fed** implements **Term Asset-Backed Securities Loan Facility**

### 03/25

- **Bank of England** announced an extra 200 billion in **QE purchases**, split between Gilts and corporate bonds

### 04/02

- **Bank of England** confirms 10 billion of 03/25 **QE purchases** will be corporate bonds

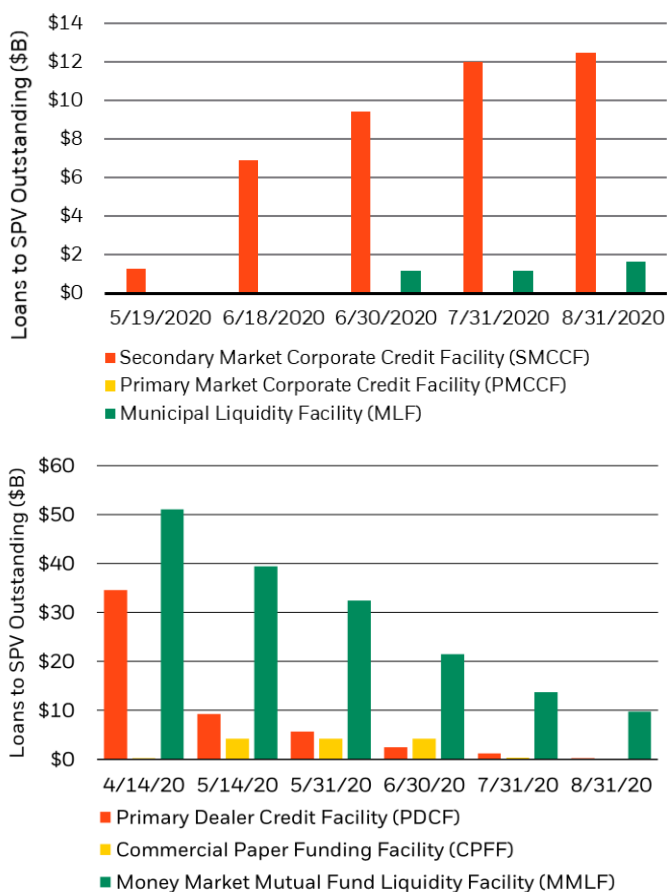
### 04/09

- **Fed** implements **Municipal Liquidity Facility**

In the US, the Federal Reserve has released data on the take up of its programs. Looking at the corporate credit facilities, the Secondary Market Corporate Liquidity program has grown in recent months since the program's launch, with \$12.47 deployed for the purchase of corporate debt and bond ETFs on the secondary market as of August out of an initial \$25 billion allocation. In contrast, while the Primary Market Corporate Credit Facility is operational, no transactions have been made as of August.<sup>12</sup> The Municipal Liquidity Facility, which became operational in late May, had extended \$1.65 billion as of August. Take up of the Money Market Mutual Fund Liquidity Facility and the Primary Dealer Credit Facility peaked in April, with \$51.09 billion and \$34.55 billion in outstanding loans, respectively. The facilities' outstanding loans have decreased in recent months as markets have normalized and collateral came to term. The Commercial Paper Funding Facility's holdings were around \$4 billion in May and June, with less than \$400 million in loans issued in April and July.<sup>13</sup>

In the Eurozone, the ECB has released some data on purchases under the Pandemic Emergency Purchase Programme (PEPP). As of July 31, 2020, cumulative purchases from the PEPP had totaled €440 billion, of which €34.8 billion (8%) were (non-financial) commercial paper, €17.6 billion (4%) were corporate bonds, and €3 billion were covered bonds (1%) – the remaining 87% being public sector securities.<sup>14</sup> In the UK, the Bank of England (BoE) has reported that as of September 9, 2020, gilt purchases totaled £661 billion, of which £18.4 billion was corporate bonds. Under the Corporate Financing Facility, the BoE has purchased £17.7 billion in commercial paper.<sup>15</sup>

## Exhibit 3: Take up of Federal Reserve facilities



Source: Federal Reserve, "Reports to Congress Pursuant to Section 13(3) of the Federal Reserve Act in response to COVID-19"



## COVID-19 lessons: What worked and what needs to be addressed

The March 2020 financial markets experience taught us a great deal about the performance under stress of different market structures, market participants, asset classes, fund vehicles and financial services policies. Below, we present our most important lessons to date.

**LESSON 1. Banks and the banking system entered the COVID-19 crisis in a strong position**, with reduced risk-taking, stronger balance-sheets, high-quality capital and ample liquidity. **HOWEVER**, post-GFC capital and liquidity requirements left some banks unable or unwilling to use their balance sheets, exacerbating the volatility. In Europe and in the US, banks were hesitant to use prudential buffers or liquidity, even where regulators encouraged them to do so. The use of prudential buffers is complicated by the linkage to dividend distributions, AT1 coupon payments,<sup>16</sup> executive compensation and potential rating agency actions. When the US Federal Reserve granted dealer banks explicit capital relief for secondary market purchases of commercial paper (CP) from MMFs, banks immediately became willing to intermedicate. The absence of similar actions in Europe meant short-term markets remained stressed for several weeks, impacting issuers and investors.

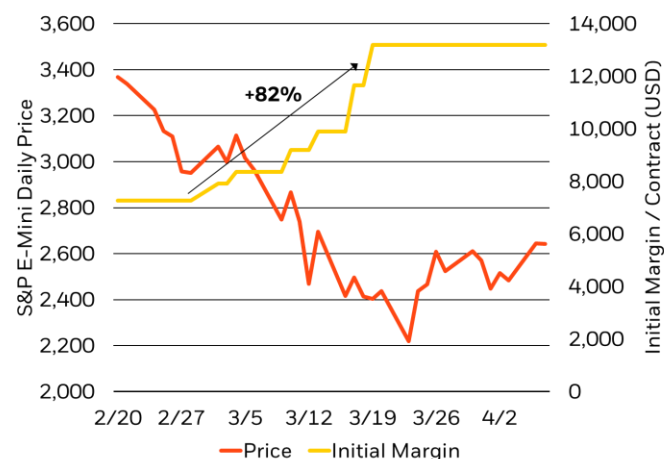
**“ There is a point which the banks are raising to us quite a lot, which is: you – the ECB – are now making these buffers available. But if you switch them on again in the future, we could be in trouble. So they are reluctant to use them.”**

Andrea Enria, Chairman ECB Supervisory Board, Media Briefing on June 9, 2020)

**LESSON 2. OTC derivatives’ move to central clearing improved transparency and risk management.** These reforms proved effective: centrally cleared US futures and options hit an all-time high of 1.43 billion contracts in March.<sup>17</sup> **HOWEVER**, margin calls were pro-cyclical, unpredictable, and opaque. Collateral for US futures rose \$104 billion (49%) over the month of March. Heightened margin requirements and related cash-raising needs by a wide variety of market participants and corporates added pressure to short-term markets in already challenging conditions.<sup>18</sup>

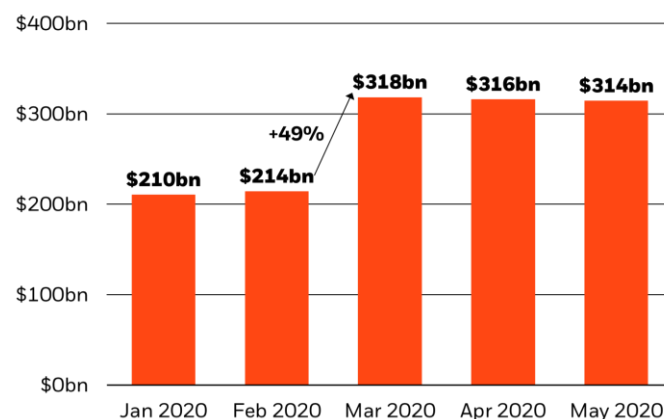
**LESSON 3. ETFs provided investors access to liquidity and facilitated price discovery.** ETFs deliver an incremental layer of liquidity to the bond market because

## Exhibit 4: S&P E Mini daily price vs. initial margin



Source: Bloomberg, CME. Initial margin shown looks at the active change in IM which represents the CCP’s decision to increase/decrease the outright rate.

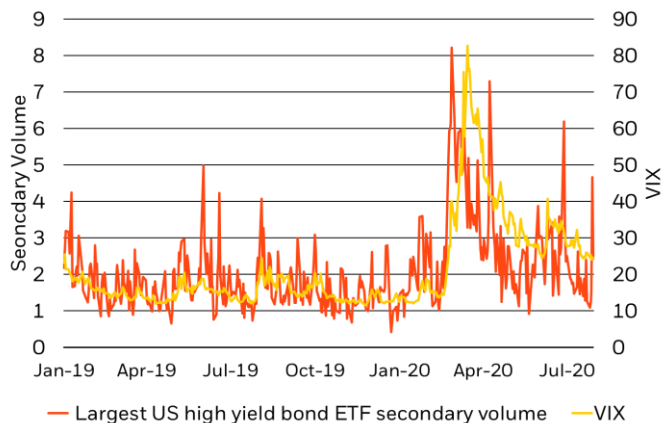
## Exhibit 5: US Futures Commission Merchant (FCM) required customer funds



Source: CFTC, available at: <https://cftc.gov/MarketReports/financialfcmdata/index.htm>.

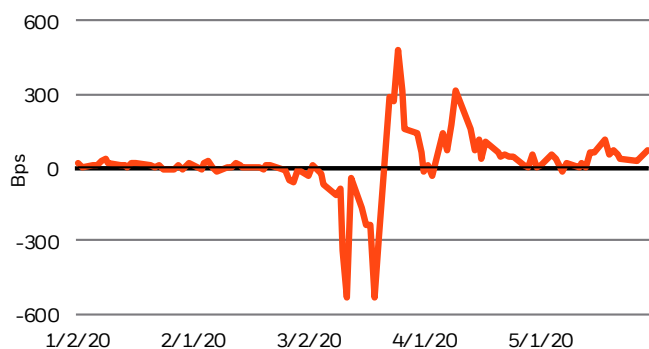
buyers and sellers can trade shares of the ETF on exchange without having to buy or sell the underlying bonds. ETFs provided real-time transparency into bond market prices when cash bond markets were frozen or difficult to trade. This resulted, at times, in ETFs trading at market prices (i.e. the price on exchange), that were lower than (at a discount to) the Net Asset Value (NAV) of the ETF’s underlying portfolio, as the NAV is calculated from the day’s prices and estimated prices. In many instances, it was cheaper to trade the ETF than the basket of underlying securities. In Europe, for example, credit markets were especially stressed, with bond bid-ask spreads widening by a factor of 2-3 times compared to normal market averages. The cost of trading corporate bonds averaged 55 basis points between March 9 and March 20. In comparison, bid-ask spreads in the five largest corporate bond ETFs by AUM averaged 24.4 basis points over the same period.<sup>19</sup>

### Exhibit 6: Largest US high yield bond ETF vs. CBOE volatility index



Source: BlackRock, Bloomberg. Data as of March 24, 2020.

### Exhibit 7: Divergence between investment grade ETF price and NAV



Source: Bloomberg. As of June 1, 2020. Data for the largest by assets under management of a US investment grade corporate bond ETF.

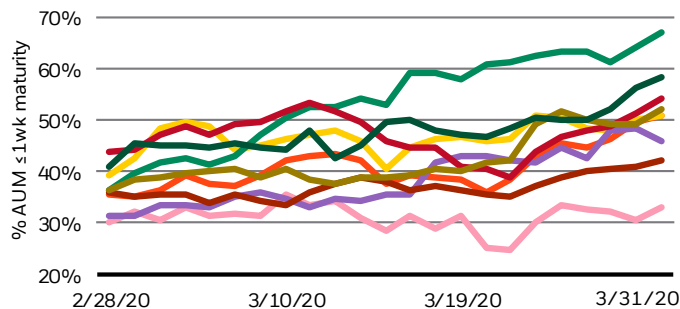
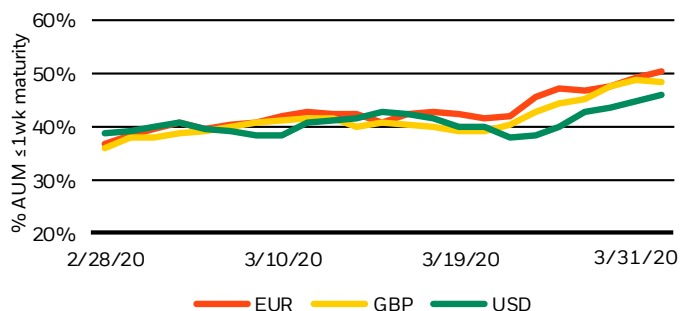
**LESSON 4. Equity markets, with a high degree of electronic trading and standardization, were volatile but orderly.** Market structure reforms over the past decade improved trading venue resiliency as both Market-Wide Circuit Breakers (implemented four times in two weeks) and Limit-Up-Limit-Down (halts were triggered numerous times) were effective.

### LESSON 5. The \$18 trillion US Treasury (UST) market experienced unprecedented liquidity challenges.

Following post-GFC regulatory changes and technological advances, PTFs and hedge funds are responsible for the largest share of market-making in USTs; both retreated from making markets. Meanwhile, the heightened trading demand for USTs overwhelmed the balance sheet capacity of banks given their need to adhere to stricter capital and liquidity requirements. One idea under consideration to address this issue is the expansion of central clearing for USTs, which would reduce reliance on banks and PTFs.

**LESSON 6. MMF reform proved beneficial in many areas**, including higher quality, shorter maturity, more liquid portfolios and increased reporting. The US and European MMF industries have different fund profiles reflecting different issuer and investor needs, and the profile of fund flows differed during March. **HOWEVER**, the crisis highlighted a problem with MMF rules. In both regions, funds that faced the threat of redemption gates and liquidity fees experienced similar problems. Clients regarded the 30% weekly maturing asset buffer as a floor, since breaching it permits fund governance bodies to consider imposing redemption gates and liquidity fees. In contrast, MMFs with a minimum liquid asset buffer that did not have such a link to redemption gates and liquidity fees (such as Standard MMFs in Europe) were able to use their cash buffers in the way policymakers intended.<sup>20</sup>

### Exhibit 8: March 2020 weekly liquidity levels in LVNAV MMFs (in aggregate and for Euro denominated MMFs)



Colored lines in bottom chart depict individual Euro-denominated MMFs. Source: iMoneyNet. As of March 31, 2020.

**LESSON 7. Post-GFC mutual fund reforms brought a broader liquidity risk management toolkit** with higher standards, more robust fund stress testing and greater transparency to regulators. These proved crucial for handling redemptions: levels of outflows were elevated but remained within a range most asset managers had anticipated. Bond funds, for example, saw high absolute outflows, but these represented a manageable percentage of fund AUM, and even high-yield bond funds were able to navigate flows.

While 100% of US bond funds met their redemptions, a small number of funds domiciled outside the US suspended redemptions. In nearly all cases, this was not due to the volume of outflows but to ‘material valuation uncertainty’. Open-end real estate funds in the UK were suspended for this reason, as were briefly some Danish fixed income and equity mutual funds. Although the latter were mutual funds listed on an exchange, their price is not determined by the continuous buying and selling of shares in secondary markets, as with ETFs, but rather by the fund administrator determining their value at least three times daily. Where fund administrators determined they could not accurately value mutual funds, they suspended them. Some Swedish bond funds suspended redemptions when local managers could not access accurate pricing for some securities – likely attributable to fragmented liquidity and dealers’ unwillingness to trade some OTC instruments in particular. Most suspensions lasted between one day and two weeks, with some funds being liquidated later on.

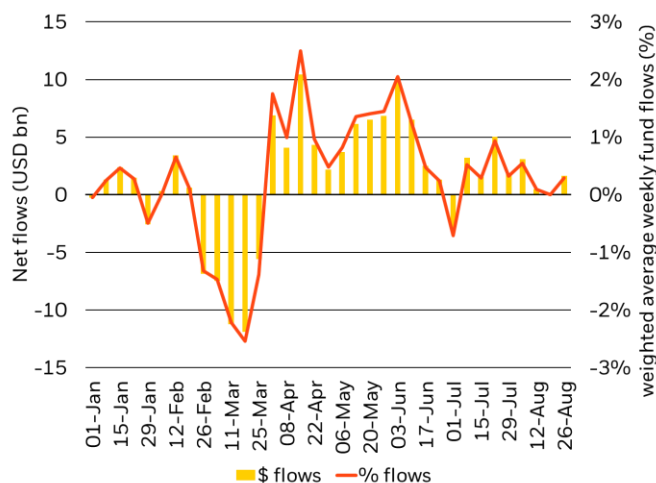
**HOWEVER**, the main difference between the US and Europe was swing pricing, which is permissible and available in most (not all) countries in Europe. Asset managers in Europe increased significantly both the

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**“ The FCA understands that certain Standing Independent Valuers have determined that there is currently material uncertainty over the value of commercial real estate (CRE). In such situations, a fair and reasonable valuation of CRE funds cannot be established. As a result, some managers of open-ended CRE funds have temporarily suspended dealing in units of these funds and others are likely to follow for the same reason. Suspensions can be used by managers of open-ended funds, in line with their obligations under applicable regulations. In these circumstances, suspension is likely to be in the best interests of fund investors.”**

UK Financial Conduct Authority, Statement on Property Fund Suspensions (March 18, 2020)

### Exhibit 9: High yield bond fund flows: Aggregate outflows and average percentage outflows



Source: EPFR fund flow data. Covers high yield bond funds domiciled in all jurisdictions globally. This data is representative of funds globally but is not comprehensive. As such the data should be treated as indicative, and absolute-terms dollar outflows should not be taken as exact measures.

frequency of swing pricing adjustments in March and the size of the swing factors across a variety of strategies, notably in fixed income and multi-asset funds. In contrast, swing pricing is legal in the US, but the ecosystem does not support its operationalization.

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**“ ESMA also notes that during the first half of 2020, suspensions “were linked to valuation uncertainty in corporate bonds, OTC derivatives and real estate markets, rather than difficulties in meeting investors’ outflows.”**

ESMA Report on Trends, Risks and Vulnerabilities (September 2, 2020)

**LESSON 8.** Index providers voluntarily delayed all or part of their March fixed income rebalance to avoid unnecessary turnover at a time of market uncertainty and limited liquidity. Had the index providers gone ahead with the rebalancings, the selling pressure – especially in short-term bonds – would have undermined central bank actions to add liquidity to the short-term markets. Even with an elevated number of ‘fallen angels’ and robust new issuance, the rebalance at April month-end proved orderly and efficient, justifying the decisions made in March.<sup>21</sup>



## Exhibit 10: Fixed income index rebalancing decisions, month-end March 2020

Index Provider	March Month-End Rebalancing Status Summary	<1y Securities	Inclusion New Issues	Fallen Angels
<b>Bloomberg</b>	Rebalance proceeded with reduced turnover due to postponement of removal of securities with <1 year to maturity	Delay	Proceed	Proceed
<b>ICE</b>	Postponed rebalance (bond and preferred)	Delay	Delay	Delay
<b>Markit</b>	Postponed majority of rebalance	Delay	Delay	Delay
<b>JPM</b>	Rebalance proceeded, but limiting amount of turnover	Delay	Partial Delay	Delay
<b>FTSE</b>	Postponed rebalance	Delay	Delay	Delay
<b>S&amp;P</b>	Rebalance proceeded	Proceed	Proceed	Proceed

Source: BlackRock, Bloomberg, ICE, Markit, JPM, FTSE, S&P. As of March 26, 2020.

**LESSON 9. Credit downgrades remain high on the viewfinder** due to the high percentage of BBB bonds in the investment grade universe and concerns that ‘fallen angels’ could trigger forced selling by mutual funds. While downgrades have been increasing, these are two distinct issues. Concerns about ‘forced selling upon downgrade’ are misplaced as most mutual funds are able to hold ‘fallen angels’, and most investors are motivated to stay invested in them. In many cases, downgrades of higher quality names have represented an investment opportunity, especially for opportunistic investors.<sup>22</sup>

**LESSON 10. Operational resilience reflected extensive business continuity planning (BCP).** The work from home (WFH) pivot was quick across the global capital markets ecosystem, including at broker-dealers, custodians, asset managers and third-party vendors. **HOWEVER**, WFH likely contributed to early market issues with chains of command and decision-making impeded. In addition, outsourcing concentrations have been noted and specific functionalities should be assessed for improvements.

### Recommendations to enhance the resilience of capital markets

The lessons drawn from the experience of financial markets in March highlight the need for policy reform and industry enhancements around three pillars: (i) bank regulation, (ii) market structure and (iii) specific products and activities. We recommend a holistic approach, as policy action is needed across all three pillars. Pursuing reform in one pillar without the other two will undermine the outcome of greater financial stability.

#### Recommendations regarding banks

Banks were considerably strengthened by the financial reforms following the GFC. They could, however, have played a more impactful role in channeling funding to

companies during March 2020 with additional regulatory flexibility.

The swift and coordinated response from central banks was decisive and effective. Regulatory relief offered to the banks during this time allowed banks in some regions to expand their balance sheets. However, regulatory buffers became an effective floor for some banks, limiting their discretionary activities and restricting their intermediation in markets. More comprehensive relief across regions would have allowed for greater bank intermediation when liquidity was most needed across markets. We recommend several policy reforms below which seek to achieve a balance between safety (highly constrained bank balance sheets) and smoother market operations through times of market stress. Without such reforms, in future market stress events, we risk a repeat of significant bank balance sheet constraints contributing to a deterioration in secondary market liquidity.

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**“ All elements of the buffers banks now have are intended to be usable in stress. Whether banks continue to draw down on their capital buffers to maintain lending – or whether they react defensively and deleverage to conserve capita (...) will be a key area for regulators to watch in the coming months.”**

Sir Jon Cunliffe, Deputy Governor Financial Stability, Bank of England, “Financial System Resilience: Lessons from a real stress” (June 9, 2020)

**Recommendation 1: Policymakers should incorporate into the regulatory framework guidance on when banks can use their capital and liquidity buffers to provide liquidity to the markets.** Ideally, this approach would address bank concerns about potential implications of breaching prudential buffers.

**Recommendation 2: Policymakers should make participation in central bank purchase programs balance sheet neutral for banks.** The only central bank program that succeeded in unblocking short-term markets was the Fed’s MMLF; it was the capital neutrality that encouraged greater bank intermediation in markets.<sup>23</sup>

**Recommendation 3: Policymakers should give high quality CP “High Quality Liquid Asset” status for the purposes of the Liquidity Coverage Ratio (LCR).** This would ensure that banks can continue to play a central role in short-term markets, even in times of stress.<sup>24</sup>

## **Recommendations regarding market structure**

Market structure needs modernization. Many elements were resilient and worked well, but some must evolve to reduce the reliance on bank balance sheet capacity.<sup>25</sup>

The post-GFC banking system was not designed to have the capacity to cope with the unprecedented supply of long-dated fixed income securities coming onto the market and the simultaneous unprecedented demand for cash that was experienced during COVID-19. Modernization is especially important for the Treasury, CP and other fixed income markets. Enhancements in other asset classes would also be beneficial. In addition, March 2020 highlighted the importance of high-quality data and well calibrated electronic trading tools for price discovery and trading. In equity and currency markets, market participants are familiar with data driven electronic execution and, as a result, liquidity remained in these electronic trading channels and the equity and currency markets continued to function smoothly throughout March, albeit at higher levels of volatility. In contrast, electronification is still nascent in fixed income markets. Even where electronic trading is used, liquidity is fragmented across different venues, preventing the consolidated access to liquidity available in equity markets. In addition, broker algorithms that could not handle the market volatility were turned off, further damaging liquidity. Dealers also turned off algorithms due to a lack of confidence in third party market data streams. Pricing algorithms rely on transparency in underlying transactional data as a primary input. Centralized, timely, high-quality pricing data in fixed income markets is needed for algorithms to continue evolving. The lack of data is a serious impediment for market participants and for policymakers in short-term markets. Improved data would allow public authorities to more clearly assess the resilience of banks who raise considerable funding in these

markets and to understand better how short-term markets transmit monetary policy.

## **Treasuries**

**Recommendation 4: Policymakers could consider the scope of reporting requirements to increase transparency in the UST market.** This would allow regulators to more closely examine risk in the system and give more transparency to market participants on Treasury holdings.

**Recommendation 5: The expansion of Treasury market clearing warrants further study.**

## **Short-term markets**

**Recommendation 6: We recommend that the appropriate policymakers convene an ad hoc group of participants in short-term markets to help advise on how best to modernize the short-term market structure and make it more resilient in times of stress.**<sup>26</sup> This group should include issuers (banks, corporates, and public authorities), dealer banks and different types of investors. It should consider improvements to short-term market structure, with a focus on improving liquidity, price transparency and, in particular, data quality, as well as potential ways to reduce market reliance on bank balance sheet capacity. Examining 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 or greater standardization of CP issuance – would be impactful.

**Recommendation 7: Policymakers should expand or constitute standing advisory bodies focused on short-term markets, comprised of both sell-side and buy-side representatives.**<sup>27</sup> We draw inspiration from the ECB’s ‘Bond Market Contact Group’ which ensures connectivity in the longer dated primary and secondary bond markets. In normal times, this group meets quarterly, but in times of market stress, it convenes far more regularly to help bridge the information gap between market participants and public authorities. Similarly, the SEC’s advisory committees, in particular, the Fixed Income Market Structure Advisory Committee,<sup>28</sup> convenes a variety of market participants to discuss and provide recommendations on key market and regulatory issues. Given the importance of short-term markets to issuers and users, from a ‘real economy’ and financial stability perspective, such a group would be enormously valuable especially in times of market stress.

## **Fixed income markets**

**Recommendation 8: Policymakers should encourage electronic trading venues to offer more comprehensive, equities-style access to liquidity to overcome the fragmentation in fixed income markets and provide access to pre-trade transparency.**

**Recommendation 9: The broker community should take steps to improve the resilience of fixed income market-making algorithms.** Had these algorithms been better calibrated and held up in the period of high volatility, they would have had the potential to improve liquidity, relieve system stress and increase operational capacity, rather than reducing liquidity when they were turned off.

### Central clearing counterparties (CCPs)

**Recommendation 10: Policymakers should require CCPs to enhance margin modelling to be more conservative and reduce procyclicality.**<sup>29</sup> Regulators should ensure that CCPs size initial margin requirements conservatively to cover, with a high degree of confidence, any potential loss that a CCP could incur in liquidating an individual portfolio. This will likely result in higher margin requirements during “peacetime” but should provide the market with more stability during “wartime.”

**Recommendation 11: MMF units should be approved as collateral under cleared and uncleared bilateral margin rules.**<sup>30</sup> In March, many Euro and Sterling market participants faced significant margin requirements as a result of the stressed markets and central banks’ interest rates positioning. This in turn put pressure on short-term markets, including MMFs, to raise cash as collateral. Finding a regulatory and operational solution to allow use of 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.

### Equities

**Recommendation 12: Market wide circuit breaker (MWCB) rules should be harmonized and the resumption of trading after a halt should be facilitated.**<sup>31</sup> While MWCBs functioned well in March, the experience highlighted that select refinements would further promote market stability, including improving the interaction of single stock and market-wide guardrails.

### Indices

**Recommendation 13: The industry should consider whether guidelines for index providers on addressing potential future rebalancing modifications are necessary.**<sup>32</sup> The financial markets experience in March was highly unusual in many ways, and it highlighted the importance of indexes as part of the market ecosystem.

### Data

**Recommendation 14: We recommend a continued refinement of TRACE reporting methodology to improve data accuracy for pricing algorithms and to increase transparency for fixed income market participants.**

We support the SEC’s Fixed Income Market Advisory Committee’s work to improve TRACE.<sup>33</sup>

**Recommendation 15: Europe needs a pan-European consolidated tape to establish a single authoritative record of prices and volumes.**<sup>34</sup> Post-trade data is an essential input into price discovery, but in Europe it remains fragmented and is generally of low quality. A consolidated tape for fixed income securities, equities and ETFs would drive transparency, aiding better investor decision making and liquidity management and helping to deliver a Capital Markets Union in Europe.

### Recommendations regarding asset management

Asset management products and activities have been considerably strengthened by post-GFC reforms, but certain elements should be revisited and others further enhanced.

The FSB and US Financial Stability Oversight Council (FSOC) pivoted in 2015 and 2014, respectively, towards a products and activities approach as the most effective way of mitigating risks in asset management. For asset management, such an approach includes (i) regulators collecting and monitoring extensive data on mutual funds, allowing them to screen outliers and monitor risks and (ii) liquidity risk management, that includes detailed provisions on liquidity and leverage management in investment funds together with the provision of a broad range of tools for fund managers to mitigate risks (e.g., swing pricing, stress testing, gating). Prior to this, policymakers had been considering an entity-based approach that would have focused on designating a small number of large investment funds or asset managers as systemically risky. After analyzing the asset management industry, policymakers recognized that such designations would simply shift rather than mitigate risks – problems in asset management are not correlated to ‘large firms’ or ‘large funds’, as events have demonstrated.<sup>35</sup> In order to address systemic risk in asset management, regulators need to apply the same requirements industry-wide for specific activities and products. As with other instances, during the COVID-19 market turmoil, funds experiencing issues were not necessarily the largest funds or funds from the largest sponsors

**Recommendation 16: Decouple the 30% weekly liquid asset requirement of MMFs from the redemption gates and liquidity fee triggers, and provide guidance for the use of buffers during stressed periods.**<sup>36</sup> The coupling of these requirements had strong behavioral incentives, as very few MMFs subject to these requirements dipped below the minimum buffer during COVID-19 despite outflow pressures.

**Recommendation 17: Make the broadest set of liquidity risk management tools for open-ended funds available to fund managers in all jurisdictions.** As set out in Lesson 7 above, fund managers in many – but not *all* – jurisdictions were able to use swing pricing, and to increase the degree of the swing factor where needed to ensure redeeming clients bore the liquidity cost of their redemption. We recommend that all funds have anti-dilution tools, such as swing pricing, that assign transaction costs to the transacting investors. In jurisdictions where swing pricing and other liquidity management tools are available, policymakers should ensure that they can be operationalized with appropriate upgrades to distribution structures and dealing protocols as well as making improvements to underlying market structures. Alternatively, policymakers should consider implementing other anti-dilution measures in jurisdictions where it may not be practical to operationalize swing pricing. Policymakers should consider the trade-offs associated with various ideas, including redemption fees or other measures. As noted in Recommendation 15, centralized, timely, high-quality pricing data in fixed income markets would further improve risk management and swing pricing models, as would greater data on underlying investor characteristics.

**Recommendation 18: Ensure that fund managers have stress tested contingency plans and enhanced data and are fully prepared for crisis situations.** Policymakers should ensure that fund managers have contingency plans in place and have tested the underlying procedures on how to use the full range of available liquidity management tools in a crisis situation. Finally, policymakers should act to improve fund manager access to data and data analytics to improve the liquidity stress testing models used to predict the liquidity needs to a fund.<sup>37</sup>

**Recommendation 19: While ETFs were resilient during March 2020, they could further add to stability with a few enhancements.** These include clarification around redemption settlement requirements for US-listed ETFs when underlying markets are closed and greater flexibility in redemption fees for US ETFs in times of extreme volatility. In addition, recent market events have underscored the need for a clearer exchange traded product (ETP) classification system to help end-investors distinguish among different types of ETPs, including the way certain products behave during periods of market volatility and the risks involved.<sup>38</sup> “ETF” has become a blanket term for any product that offers exchange-tradability. However, some products use leverage to deliver a return that is a multiple of the index the fund tracks or, in the case of exchange-traded notes, have exposure to the creditworthiness of the issuer of the underlying debt. Certain ETPs are tied to commodities, such as oil, which can be quite volatile. A classification framework is needed to distinguish various types of ETPs from ETFs.

**Recommendation 20: Policymakers should accelerate efforts to collate better data across the Non-Bank Financial Intermediation (NBFI) ecosystem, as the significant transparency around asset management and investment funds currently provides only a partial view.**

The FSB should continue to collate all the data it now does and should start to break out market-based finance from shadow banking to better reflect the different risks of each and to focus on the areas that warrant additional focus. Currently, the broad and narrow measures of NBFI aggregate very diverse elements of the financial system and fail to distinguish between positive and negative practices.<sup>39</sup>

Non-banks are diverse entities with differing investment objectives and constraints. For example, during March, many pension plans sold bonds to make benefit payments and to rebalance into equities given equities had underperformed.

### **Concerns with macroprudential controls**

Some commentators suggest that there is a mismatch between open-ended funds and their liabilities. They advocate for greater alignment of fund liquidity terms with underlying asset liquidity and/or call for macroprudential tools to be applied to investment funds.<sup>40</sup> The ECB, for example, has called for mandatory liquidity buffers and a mandatory leverage limit for mutual funds.<sup>41</sup>

We agree that inherently illiquid asset classes, such as direct investments in real estate, should not be offered in daily dealing open-ended funds. The UK FCA has recognized this, recently creating a ‘Funds Investing in Inherently Illiquid Assets’ (FIIA) category.<sup>42</sup> For publicly listed asset classes such as corporate bonds, however, best practice liquidity risk management tools – such as levies, redemption fees and gates, and redemptions in-kind – are most effective in aiding investment funds to manage market volatility. Financial stability is best served by ensuring the major fund domiciles allow the broadest set of liquidity risk management tools. More work is needed here to make these tools universally available.

The case for ex-ante macro-prudential tools fails, on the one hand, to differentiate between bank funding liquidity risk and mutual fund redemption risk and, on the other, conflates market liquidity with fund liquidity. A focus on the funding of activities is needed to understand the source of the different risks in banking and asset management, and in turn the most appropriate way to mitigate them. Bank runs occur because deposits are short-term liabilities, as depositors can demand their money back in short order. The short-term nature of these liabilities embeds a first-mover advantage, as depositors at the front of the queue will receive their cash in full, but depositors at the back of the line could receive nothing.

This potential for run risk is known as funding liquidity risk and can lead to insolvency if improperly managed. In contrast, redemption risk in mutual funds is the risk that a fund might have difficulty meeting investor requests to redeem their shares for cash within the timeframe required by fund constituent documents and/or regulation without unduly diluting the interests of remaining shareholders. Because mutual fund shares reflect equity ownership of the underlying assets, the potential for redemption risk does not represent an asset-liability mismatch and does not present systemic risk.

Fund liquidity should be differentiated from market liquidity. Market liquidity is outside the managers' direct control and can pose challenges for mutual funds as volatility in credit markets in March 2020 demonstrated. In contrast, fund managers have several tools to manage fund liquidity, including deliberately building into funds layers of liquidity (e.g., a high-yield bond fund will hold cash, treasuries, investment grade bonds as well as ETFs and potentially derivatives to ensure the fund is able to meet redemptions under stressed conditions), mechanisms to externalize transaction costs (e.g., swing pricing) and mechanisms to avoid becoming a forced seller (e.g., suspensions or gates).<sup>43</sup> Funds were able to use these liquidity management tools to manage redemptions in March 2020, when 100% of US bond funds were able to meet redemptions, and only a small minority of European funds had to suspend redemptions, mainly due to material valuation uncertainty.

Macro-prudential tools applied to mutual funds would be at best ineffective and at worst procyclical and are likely to curtail the appetite of investors to invest their capital in markets. For example, some have proposed a cash buffer for mutual funds, under which a fund would hold a 'high' proportion of cash in good market conditions to meet redemptions in stressed markets. Such a buffer would, in practice, be ineffective (insufficient to meet redemptions in highly stressed markets), pro-cyclical (liquid assets would need replenishing once the buffer is exhausted) and would disadvantage the end investor by introducing a cash drag on performance.

Some have suggested that central banks provide a liquidity facility for mutual funds via repo. While the presence of a liquidity backstop would likely reduce the inclination of investors to redeem, this approach raises several fundamental issues. The explicit presence of central bank liquidity in a mutual fund creates the potential for significant moral hazard where asset managers might have

less incentive to actively manage the liquidity of funds, and asset owners might expect central banks to participate in the downside of their investments. Importantly, a central bank facility for funds would blur the line between bank deposits that government guarantees to ensure return of \$1.00 and mutual fund investments where the return of capital is not guaranteed as the net asset value reflects market conditions. Consequently, this approach would socialize risk across the system. Finally, there are questions around the pricing of the facility, the requirement for capital which would impact the viability of many funds, and the imposition of potentially conflicting regulations. As noted earlier, a better solution is a robust liquidity risk management program that includes the broadest set of liquidity risk tools available.

## Conclusion

In the decade since the GFC, wide-ranging policy reforms have been implemented across the capital markets ecosystem, targeting greater financial resilience. The COVID-19 outbreak has created serious challenges for health care systems, the broader economy and financial markets. March 2020 provided an extreme stress event that demonstrated the effectiveness of the many improvements that have been made and highlighted several areas that require attention. In this paper, we begin to draw lessons from the market turmoil in March. Underpinning our recommendations for future policy debate are three core principles. First, policymaking should be data driven, benefiting from the wealth of new data available since the introduction of post-GFC reporting requirements. Second, policymaking must be guided by a holistic view of the ecosystem and the connectivity between its various elements. And finally, lessons drawn should include both what worked and what needs to be addressed; both are valuable and should be factored into future reforms. These lessons should be based on a careful differentiation between market risk and systemic risk in order to avoid inappropriate application of centralized, macroprudential policy measures, which would erode the very dispersion of risk that is a key source of stability provided by market finance. Given COVID-19's impact on the economy, businesses, and individuals, it is important that we identify long-term solutions that will enable individuals to develop personal financial resilience and companies to have access to diverse sources of finance to enable them to return to growth. We encourage a dialogue inclusive of official sector and private sector parties to find robust solutions to the issues outlined here.



## Glossary of Key Terms

**AMF:** Autorite des Marches Financiers

**AP:** Authorized Participant

**AUM:** Assets under management

**AIFMD:** Alternative Investment Fund Managers Directive

**BCP:** Business continuity planning

**BPS:** Basis points

**CCP:** Central clearing counterparty

**CLO:** Collateralized loan obligation

**CP:** Commercial paper

**CRE:** Commercial real estate

**CSSF:** Commission de Surveillance du Secteur Financier

**ECB:** European Central Bank

**ESMA:** European Securities and Markets Authority

**ETF:** Exchange-traded fund

**ETP:** Exchange-traded product

**FCA:** UK Financial Conduct Authority

**FCM:** Futures commissions merchant

**FIIA:** Funds investing in inherently illiquid assets

**FSB:** Financial Stability Board

**FSOC:** Financial Stability Oversight Council

**GFC:** Global Financial Crisis

**HF:** Hedge fund

**HQLA:** High quality liquid asset

**IG:** Investment grade

**IOSCO:** International Organization of Securities Commissions

**LCR:** Liquidity Coverage Ratio

**LVNAV:** Low volatility net asset value

**MMF:** Money market fund

**MWCB:** Market-wide circuit breaker

**NAV:** Net asset value

**NBFI:** Non-bank financial institution

**OTC:** Over-the-counter

**PTF:** Proprietary trading firm

**REIT:** Real estate investment trust

**SEC:** Securities and Exchange Commission

**SSM:** Single supervisory mechanism

**TLTRO III:** Targeted longer-term refinancing operations

**TRACE:** Trade reporting and compliance engine

**UCITS:** Undertakings for the Collective Investment in Transferable Securities

**UST:** US Treasury

**WFH:** Work from home

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# Endnotes

1. For more information, see our *ViewPoint*, "[An End-Investor Perspective on Central Clearing: Looking Back to Look Forward](#)" (September 2018).
2. For more information, see our *ViewPoint*, "[Mark-to-Market Structure: An end-investor perspective on the evolution of developed equity markets](#)" (February 2019).
3. Our *ViewPoint* "[The Decade of Financial Regulatory Reform: 2009 to 2019](#)" (January 2020) details the rules that were introduced in asset management sector and identifies policy areas that warrant continued focus.
4. See McKinsey Performance Lens Global Growth Cube (YE 2017); FSB "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities" (January 12, 2017), available at <https://www.fsb.org/wp-content/uploads/FSB-Policy-Recommendations-on-Asset-Management-Structural-Vulnerabilities.pdf>; and McKinsey & Company, "Strong Performance but Health Still Fragile: Global Asset Management in 2013. Will the Goose Keep Laying Golden Eggs?" (July 2013).
5. A basis point is one hundredth of one percent. Source: BlackRock, Bloomberg, NYSE. As of March 31, 2020.
6. "[UST] Bond volatility in particular reached its highest level in the past fifteen years for the five days ending March 19, and volatility on March 19 was the second highest for a single day over the same period (with March 18, 2009 the highest)". See the Federal Reserve Bank of New York's *Liberty Street Economics* blog post "Treasury Market Liquidity during the COVID-19 Crisis" (April 17, 2020), available at <https://libertystreeteconomics.newyorkfed.org/2020/04/treasury-market-liquidity-during-the-covid-19-crisis.html>.
7. One notable exception to normal high-yield bond spreads was during the commodity crisis of 2016.
8. BlackRock *ViewPoint*, "[Lessons from COVID-19: ETFs as a Source of Stability](#)" (July 2020).
9. *Ibid.*
10. See BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Short-Term Money Markets](#)" (July 2020); BlackRock *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-Term Markets](#)" (July 2020).
11. High Yield bond fund flows are an estimate from EPFR data. For municipal bond fund flows, see BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Municipal Bond Market](#)" (July 2020).
12. Federal Reserve, "Reports to Congress Pursuant to Section 13(3) of the Federal Reserve Act in response to COVID-19". Available at: <https://www.federalreserve.gov/publications/reports-to-congress-in-response-to-covid-19.htm>
13. *Id.*
14. ECB, Pandemic Purchase Program (updated September 11, 2020), available at <https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html>.
15. Bank of England, Results and Usage of Facilities (as of September 9, 2020), available at <https://www.bankofengland.co.uk/markets/bank-of-england-market-operations-guide/results-and-usage-data>.
16. An Additional Tier 1 Contingent Convertible (AT1 or CoCo) bond is a tradable security with a regular coupon payment, issued by a bank. The coupon is the AT1 bond's rate of interest expressed as a percentage of the face value, and it is paid at a predefined frequency. The coupon is a fixed or a variable rate.
17. FIA presentation to the CFTC Market Risk Advisory Committee, "Impact of COVID-19 Pandemic on Derivatives Clearing" (July 21, 2020).
18. CFTC, available at: <https://cftc.gov/MarketReports/financialfcmdata/index.htm>.
19. BlackRock, *ViewPoint*, "[Lessons from COVID-19: ETFs as a Source of Stability](#)" (July 2020).
20. See BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Short-Term Money Markets](#)" (July 2020); BlackRock *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-Term Markets](#)" (July 2020)
21. For more information, see our *ViewPoint*, "[Fixed Income Index Rebalancing](#)" (July 2020)
22. BlackRock *ViewPoint*, "[Lessons from COVID-19: US BBB Bonds and Fallen Angels](#)" (July 2020); BlackRock *ViewPoint*, "[Lessons from COVID-19: European BBB Bonds and Fallen Angels](#)" (July 2020).
23. See BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Short-Term Money Markets](#)" (July 2020); BlackRock *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-Term Markets](#)" (July 2020).
24. *Id.*
25. See BlackRock *ViewPoint*, "[Mark-to-Market Structure: An End-Investor Perspective on the Evolution of Developed Equity Markets](#)" (February 2019); PWC report "[ETFs: Unlocking further potential: Developing Europe's ETF trading infrastructure to drive further improvement and growth](#)" (July 2020).
26. See BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Short-Term Money Markets](#)" (July 2020); BlackRock *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-Term Markets](#)" (July 2020).
27. *Ibid.*
28. See SEC, Spotlight on Fixed Income Market Structure Advisory Committee (FIMSAC) available at <https://www.sec.gov/spotlight/fixed-income-advisory-committee>.
29. See ABN Amro Clearing Bank N.V., Allianz Global Investors, Barclays, BlackRock, Commonwealth Bank of Australia, Citigroup Inc., Credit Suisse, Deutsche Bank AG, Franklin Templeton, Goldman Sachs Group Inc., The Guardian Life Insurance Company, Ivy Investments, Nordea Bank Abp, JPMorgan Chase, Societe Generale, State Street Global Markets, TIAA, T. Rowe Price, UBS AG, and The Vanguard Group, "[A Path Forward for CCP Resilience, Recovery, and Resolution](#)" (March 10, 2020).
30. For more information, see BlackRock *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-Term Markets](#)" (July 2020).
31. See BlackRock *ViewPoint*, "[Mark-to-Market Structure: An end-investor perspective on the evolution of developed equity markets](#)" (February 2019).
32. See BlackRock *ViewPoint*, "[Lessons from COVID-19: Fixed Income Index Rebalancing](#)" (July 2020).
33. See FIMSAC Technology and Electronic Trading Subcommittee, "[Preliminary Recommendation Regarding Additional TRACE Reporting Indicators for Corporate Bond Trades](#)" (presented at February 10, 2020 FIMSAC meeting). Also see FINRA Regulatory Notice 20-24, "[FINRA Requests Comment on Proposed Changes to TRACE Reporting Relating to Delayed Treasury Spot and Portfolio Trades](#)" (July 16, 2020).
34. See BlackRock *ViewPoint*, "[Mark-to-Market Structure: An End-Investor Perspective on the Evolution of Developed Equity Markets](#)" (February 2019);
35. PWC report "[ETFs: Unlocking further potential: Developing Europe's ETF trading infrastructure to drive further improvement and growth](#)" (July 2020).
36. See BlackRock [Letter to FSOC re: Comments on Proposed Interpretive Guidance, Authority to Require Supervision and Regulation of Certain Non bank Financial Companies](#) (May 13, 2019).

# Endnotes

36. For more information, see BlackRock *ViewPoint*, "[Lessons from COVID-19: U.S. Short-Term Money Markets](#)" (July 2020); BlackRock, *ViewPoint*, "[Lessons from COVID-19: The Experience of European MMFs in Short-term Markets](#)" (July 2020).
37. See BlackRock, [Letter to SEC, Open-End Fund Liquidity Risk Management Programs: Swing Pricing; Re-Opening of Comment Period for Investment Company Reporting Modernization Release](#) at 26-28 (Jan. 13, 2016).
38. See BlackRock, Charles Schwab Investment Management, Fidelity Investments, Invesco, State Street Global Advisors, and Vanguard d "[Multi-firm letter to Cboe, Nasdaq, and the Intercontinental Exchange re: ETP Classification](#)" (May 13, 2020).
39. See BlackRock *ViewPoint*, "[Taking Market-Based Finance Out of the Shadows: Distinguishing Market-Based Finance from Shadow Banking](#)" (February 2018).
40. See Bank of England Financial Stability Report (August 2020), available at: <https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2020/august-2020.pdf>.
41. See speech by Luis de Guindos, Vice-President of the European Central Bank, entitled "Building the Financial System of the 21st Century" (July 22, 2020), available at: <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200722-338ac4a611.en.html>.
42. See FCA Policy Statement "Illiquid assets and open-ended funds and feedback to Consultation Paper CP18/27" (September 2019), available at: <https://www.fca.org.uk/publication/policy/ps19-24.pdf>.
43. On the difference between market and fund liquidity probability, see BlackRock *ViewPoint*, "Addressing Market Liquidity" (July 2015).

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