

Lessons from COVID-19: Market Structure Underlies Interconnectedness of the Financial Market Ecosystem



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The real economy depends on both bank finance and market-based finance. While banks provide credit and make loans, market finance complements bank finance by providing equity capital and debt funding to businesses, governments, and infrastructure projects. As depicted in Exhibit 1, the financial market ecosystem includes banks, asset owners, investment managers, custodians, financial intermediaries, liquidity providers, exchanges, electronic trading platforms, central clearing platforms, index providers, and rating agencies, each of which play important roles. The various market participants interact with each other, creating a highly interconnected global system.

The COVID-19 pandemic fundamentally tested the resilience of the global capital markets ecosystem in March 2020, and policy makers are working to identify the nodes and channels of risk transmission in the system. This work will help to further inform how risk is magnified, absorbed, and managed. While understanding the vulnerabilities to financial stability from the banking sector is necessary, we

also need to understand how the various elements of the ecosystem relate to each other and how market structure impacts the system overall. As part of this review, it is helpful to explore how evolving regulations and market practices in one area of the ecosystem impact asset owners and other market participants.

In this *ViewPoint*, we discuss the evolving market ecosystem and examine how market infrastructure contributed to the short-lived but intense liquidity crisis of March 2020. Part I reviews market-based finance to provide an understanding of the various market participants and how regulations and technology are transforming this space. Part II examines the market experience during March 2020, focusing on the US Treasury market, central clearing counterparty (CCP) margin, and fixed income market structure. We also provide key observations and recommendations to improve market structure resilience. We conclude by reinforcing the key role that market structure plays in a highly connected ecosystem.

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

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Exhibit 1: Financial market ecosystem



Key Observations from March 2020

- Multiple specialized businesses and services come together in today's highly interconnected financial markets ecosystem, which is constantly evolving.
- Market structure differs significantly across equities, fixed income, and derivatives. The differences across these categories inform how market structure could be evolved in each category.
- Changes in regulation have impacted market structure. For example, central clearing has been introduced in the past decade for swaps, and other products, resulting in increased transparency and enhanced risk management.
- In some cases, regulation aimed at one aspect of the financial market ecosystem has also impacted other aspects of the system. For example, banking regulation strengthened the banking system while reducing bank capacity for market intermediation. Likewise, risk management for CCPs led to repeated and unanticipated increases in initial margin requirements that amplified the liquidity crunch across markets.
- Another key driver of change in market structure is the application of technology. For example, electronic trading has evolved rapidly and its adoption has taken hold in the more liquid fixed income markets. Given the

pace of change in technology, additional developments are expected over the next several years.

- Asset owners provide necessary capital to companies, governments, and infrastructure projects. Over 75% of assets are managed directly by asset owners.¹ Regulatory reforms need to consider the broad investor base with a goal of instilling investor confidence in markets as a key element of maintaining financial stability.

Key Recommendations for Policy Makers and Market Participants

Bank Regulation

While banks entered this Crisis with strong capital and liquidity, they were not able to use their excess liquidity to support market intermediation.

1. We recommend bank regulators incorporate guidance into the regulatory framework delineating when banks can use their capital and liquidity buffers to provide liquidity to the markets.
2. In the event central banks intervene in stressed markets in the future, we recommend banks should not be subject to risk-based or leverage capital charges from purchases of instruments in central bank programs.

US Treasury Market

The changing landscape of liquidity providers and heightened bank capital and liquidity regulations led to a lack of liquidity during the March 2020 market volatility.

1. We believe expanding Treasury market clearing could improve resilience and warrants further study and consideration.
2. Given the bifurcation of Treasury market liquidity provision between the interdealer and dealer-to-customer markets, further evolution of all-to-all trading in the UST market would improve market efficiency and resiliency.
3. We recommend policymakers consider the scope of reporting requirements to increase transparency in the UST market.

Central Clearing & Margin Requirements

Dramatic, unexpected spikes in margin calls during March showed that CCPs need to improve their margin modelling to enhance financial stability and mitigate procyclicality.

1. We recommend regulators ensure that CCPs size initial margin requirements conservatively using appropriate model assumptions to mitigate the potential for future procyclical initial margin moves.
2. To alleviate unintended liquidity pressures from margin calls, we recommend expanding acceptable collateral in both cleared and uncleared markets to include MMFs.
3. Given the proven liquidity of ETFs, we recommend that shares of qualifying ETFs be eligible as collateral.

US Fixed Income

The combination of stale price feeds and unprecedented volatility led many brokers to disable or reduce utilization of their algorithms that, up until that point, had provided automated pricing. The fragmentation of electronic trading further exacerbated the lack of liquidity in fixed income markets in March.

1. We recommend market-driven improvements to algorithms in fixed income to enable models to function during market stress.
2. We recommend that electronic trading venues offer more comprehensive, equities-style access to liquidity.

European Market Data

European fixed income markets similarly experienced stale data which contributed to a lack of liquidity.

1. As the EU moves forward with Capital Markets Union, we recommend a consolidated tape for fixed income to improve transparency, assist decision-making and provide market insights to end-investors, large and small.

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Part I. Market-Based Finance

Heterogeneity of the Ecosystem

Financial 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 are many firms and products, reflecting significant heterogeneity. 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 legal entity (e.g., open-ended funds (OEFs), exchange-traded funds (ETFs), 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). Market-based finance – capital that is invested in the real economy, either directly or through commingled investment vehicles such as funds – provides an important diversifier to bank finance.²

The financial ecosystem is governed by a regulatory framework that involves numerous regulators in multiple jurisdictions around the world (see Exhibit 2) as well as multilateral standard setters such as the Financial Stability Board (FSB), International Organization of Security Commissions (IOSCO) and the Committee on Payments and Market Infrastructures (CPMI). Some of these regulators focus on banking regulation which often includes broker-dealers; some focus on markets and

securities regulation; some focus on market infrastructure; and some have multiple mandates across various types of entities and functions.

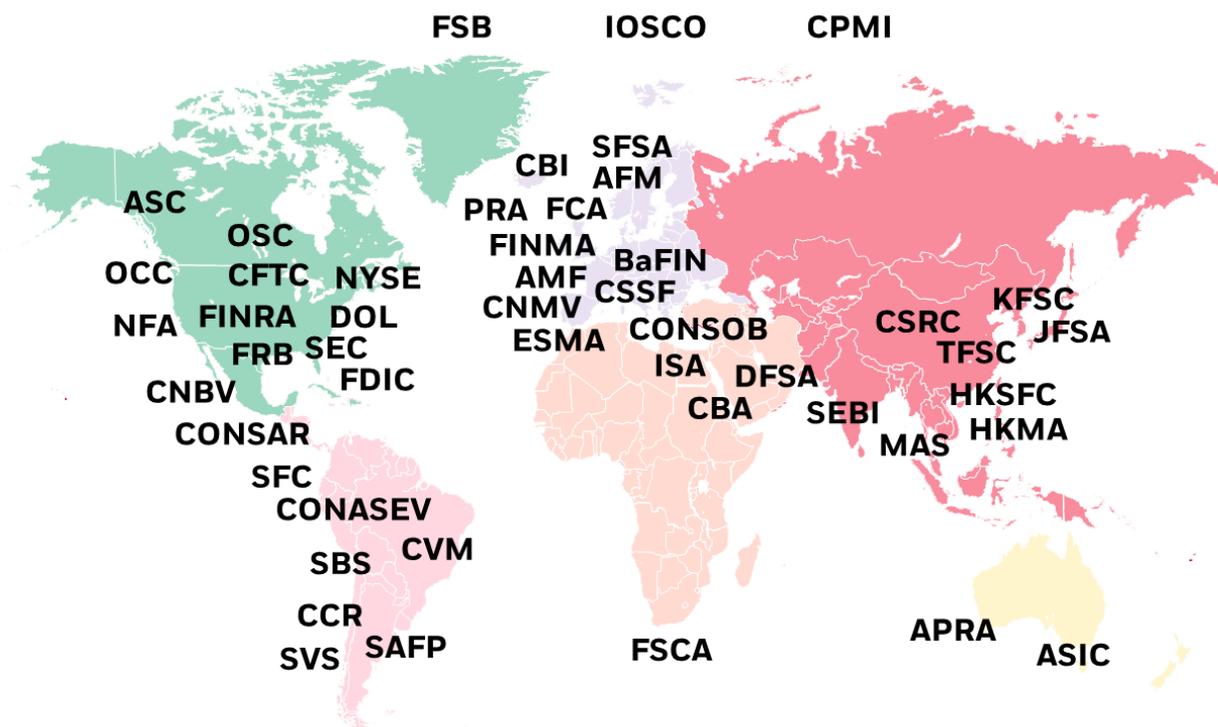
Evolution of the Ecosystem

Evolution within the financial market ecosystem is a constant. This includes changes both in regulations and in the private sector. Some of these changes are closely related to each other, or even causal.

Following the Great Financial Crisis (GFC), policy makers reviewed the existing ecosystem and instituted a host of new rules to improve resiliency, including sweeping regulatory changes to banks and market infrastructure. The Basel III framework specified new capital and liquidity rules for banks. In addition, rules were introduced around the world to move from bilateral swap agreements with dealers to CCPs. The latter initiative led to standardization of swap contracts, increased transparency, and enhanced risk management. However, it also concentrated risk in a small number of CCPs, creating a new systemic risk.

Non-bank products were similarly transformed.⁴ After an extensive review of asset management, the FSB and IOSCO concluded in 2015 that a products- and activities-based approach was the best way to address systemic risk.⁵ Legislators and markets regulators around the world, including the US Securities and Exchange Commission (SEC) and the European Commission, introduced new rules

Exhibit 2: Financial market regulators³



This graphic is meant to show examples of financial regulators for illustrative purposes only and is not intended to be all inclusive. As of November 2020

for MMFs, OEFs, and ETFs⁶ addressing the tools available for liquidity risk management, the use of derivatives and leverage, and the structural characteristics of certain funds. In addition, a host of new rules increased data collection from asset managers, providing transparency to regulators and others. These rules include the registration of private or alternative funds, the reporting of MMF and OEF portfolio data, the reporting of the use of derivatives in separate accounts and funds, the reporting of data on the use of market indices in Europe, and new reporting for ETFs and their authorized participants (APs) in the US. Markets-related regulatory changes over the past decade were not limited to the GFC review; many changes were a response to evolving markets. For example, the SEC instituted significant changes to equity markets in the US and the Markets in Financial Instruments Directive (MiFiD) was introduced in Europe. Industry changes and new regulations in equity markets resulted in more objective standards, mechanisms to manage extraordinary volatility, enhanced technology infrastructure requirements, and increased transparency from regulatory reporting.

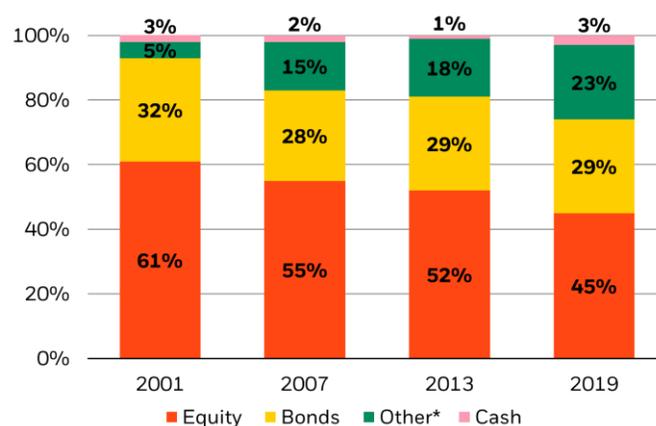
Likewise, the private sector developed new products and services to meet the demands and preference of investors. Catalysts for change include the use of technology throughout the value chain, new and revised regulations, levels of interest rates, changes to accounting rules, and new market entrants. Numerous innovations have been introduced in both market infrastructure and investment products. For example, ETFs have revolutionized how equity and fixed income are traded, digital advice has altered the financial advice landscape and the products used by financial advisors, and electronic trading has largely replaced floor trading for equities and derivatives and is making inroads in fixed income. The evolution of investment products reflects the interplay of innovation to meet end-investor demand and the relevant regulatory framework. To put this in perspective, in the US 3,429 mutual funds and ETFs were launched in the past 5 years and 3,181 mutual funds and ETFs were closed or merged into other funds during this period.⁷ In Europe, 5,087 funds were launched, and over 10,000 funds were liquidated or closed during the 2015-2019 period.⁸

The Role of End-Investors

End-investors are a critical component of the ecosystem. The investment objectives and constraints differ significantly across investor types, and their investment preferences change over time. For example, many investors struggling with the low interest rate environment have shifted their bond allocations to higher yielding securities including lower credit quality bonds, private securities instead of publicly traded bonds, and/or stocks paying high dividends. Similarly, accounting changes⁹ led many

corporations to shift their pensions towards asset-liability matching strategies, sometimes called liability driven investment (LDI) strategies, and the Pension Protection Act in 2006 led to a massive shift in US defined contribution plans from allocations to cash and company stock into target date funds (TDFs) with a multi-asset class focus. These shifts are illustrated in Exhibit 3. Over time, changes in pension plan asset allocations have resulted in a change in the underlying ownership of various asset classes; Exhibits 4 and 5 reflect the changing ownership mix in US Treasuries and corporate bonds. In addition to longer-term strategic shifts, from time to time, asset owners may undertake short-term tactical rebalances. The rapid and severe decline in equity markets in March triggered a sizable amount of rebalancing from fixed income to equities (see Box – *The Great Pension Plan Rebalance*).

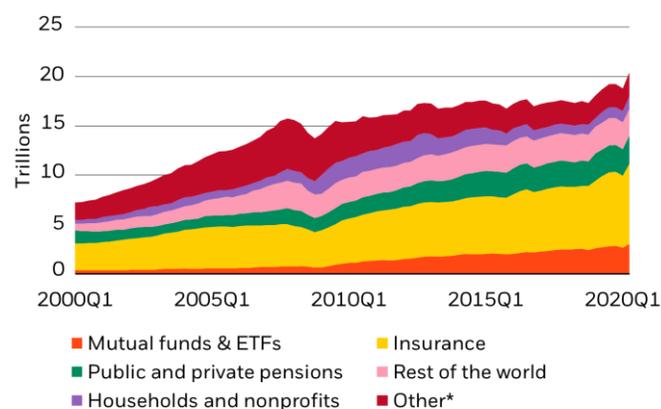
Exhibit 3: Global pension asset allocation



* Real Estate, Private Equity, Infrastructure & Other Alternatives

Source: Thinking Ahead Institute, "Global Pension Assets Study – 2020"

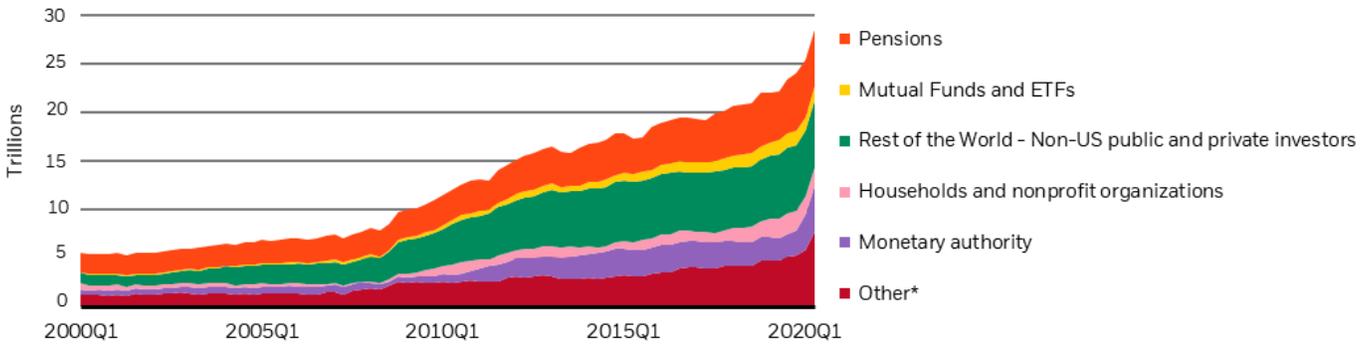
Exhibit 4: Corporate bond holders



* Federal, state, and local governments; depository institutions; money market funds; finance companies

Source: Federal Reserve financial accounts of United States - Z.1

Exhibit 5: Holders of Treasury securities



* Depository institutions, insurance, state and local governments, money market funds, foreign banking offices in the US, non-financial institutions, GSEs etc.

Source: Federal Reserve financial accounts of United States - Z.1

The Great Pension Plan Rebalance

Institutional asset owners, including pension plans, generally have an investment policy statement (IPS) that is critical to the governance of their portfolio. A typical IPS lists the various eligible assets classes and sets both a target allocation and a range around that target. The target allocation, in essence, establishes a benchmark against which the pension plan performance will be judged. For example, a pension plan may permit cash, bonds, equities, private equities, and a series of alternative assets such as private credit, real estate, hedge funds and infrastructure.

Asset allocation strategies generally differ for various groups of asset owners such as public defined benefit plans, corporate defined benefit plans, foundations, endowments, reserve funds and sovereign wealth funds, to reflect the different investment objectives and constraints of these asset owners. The differences become apparent in the IPS target allocations and the ranges. Even within a single category such as defined benefit plans, the targets may vary widely based on the plans' respective funded status. As an example, a typical public defined benefit plan may have a target range between 35% and 50% in equities and a target range of 20% to 30% in fixed income with the remainder spread across other asset classes. In terms of rebalancing rules, the range is most relevant, with pension plans having a range as tight as 3% or as wide as 10%.

These ranges become more important in volatile markets. Most institutional asset owners use the bands as the maximum limit within which the investment staff has

discretion on rebalancing. Once a plan hits that limit, rebalances become mandatory unless the investment staff seek and receive explicit permission from their investment committee or similar governance group to exceed their bands. In most cases, investment staff will automatically rebalance as part of their normal investment discipline. In March 2020, equity markets declined sharply and swiftly with price declines significantly exceeding price declines in fixed income. As a result, many asset owners found their asset allocation at or beyond the acceptable range in their investment policy statement thus triggering a mandatory rebalance.

Pension plans, and other asset owners, looked for opportunities to rebalance their portfolios and promptly get back into compliance with their policy statement. This led to significant selling of fixed income securities and purchases of equity securities. Furthermore, given that March coincided with quarter-end, many pension plans used fixed income as a source of cash to make benefit payments and to move the asset allocation back towards the target allocations. Notably, many plans received capital calls on private investments (e.g., private credit and private equity funds) without receiving offsetting cash distributions which required them to raise additional cash. While it is difficult to obtain hard data on the rebalances, the sheer size of holdings by pension plans of sovereigns and corporate bonds suggests a significant contribution to the selling volumes experienced in March.

Part II: Market Experience in March 2020

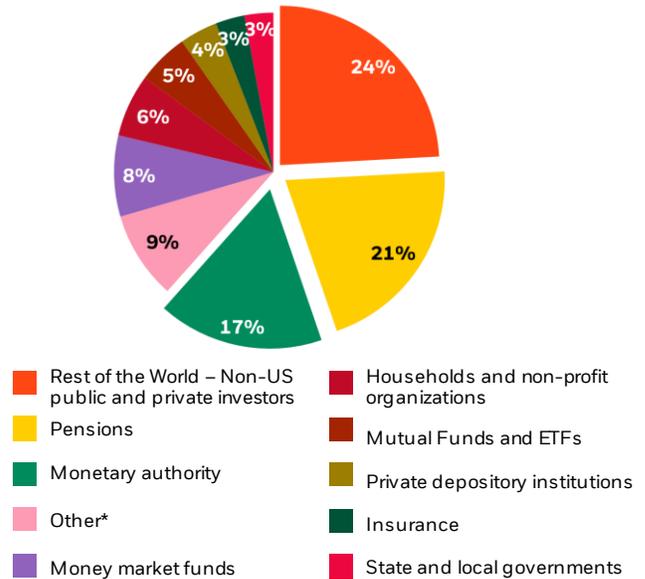
Most market sectors experienced volatility in March 2020 as the “dash for cash” led to a liquidity crisis, ultimately requiring central banks to step in. The US Treasury (UST) market was the eye of the storm, as liquidity in the world’s deepest market dried up, raising questions about underlying market structure. Procyclical CCP margin calls exacerbated the liquidity crunch across markets, particularly USTs and short-term markets. The lack of standardization and reliable data in fixed income markets contributed to the market volatility. This section reviews the market experience in March, focusing on the US Treasury market, the impact of CCP margin calls, and vulnerabilities in fixed income market structure.

US Treasury Market

The \$18 trillion UST market is the world’s most liquid. Treasuries are a key financial market benchmark and are considered a risk-free asset for investors around the world. Treasury securities are used to finance the US government, manage interest rate risk, and implement monetary policy. USTs are widely held by all types of investors and by banks as collateral to meet liquidity requirements; they are also treated as cash equivalents for the purposes of many regulations. For example, under the Liquidity Coverage Ratio (LCR), banks must maintain a certain amount of high-quality liquid assets (HQLA) relative to their projected net cash outflows.¹⁰ In addition, under Rule 2(a)-7, all taxable MMFs have daily and weekly liquidity requirements and must hold a certain percentage of highly liquid assets, including USTs. Exhibit 6 shows the breakdown of investors in the UST market as of October 2020.

Exhibit 6: US Treasury market investors

Holder of Treasury Securities, 2020Q2



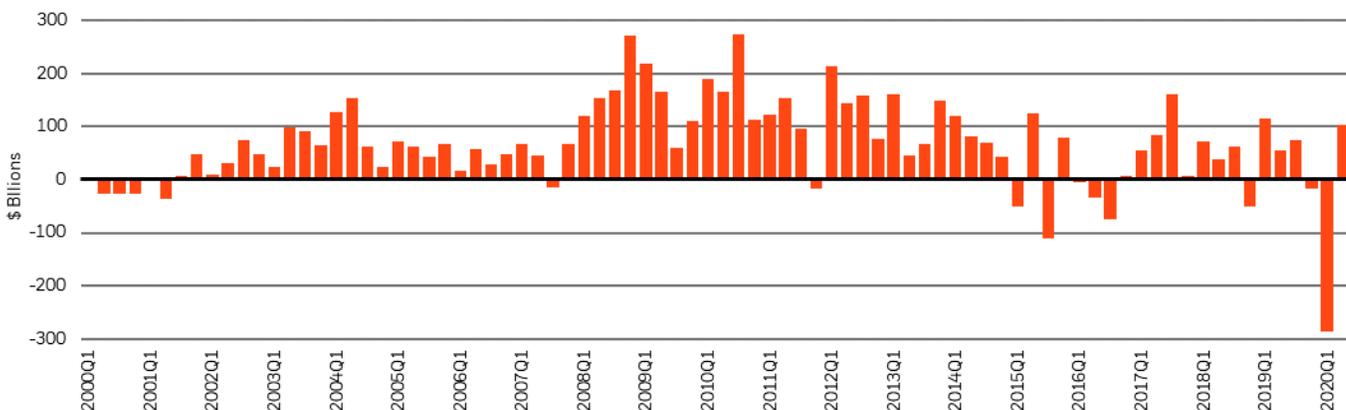
*US depository institutions, foreign banking offices in the US, GSEs etc.

Source: Federal Reserve

Selling Pressure

Many types of investors sold USTs during March to meet liquidity demands. Foreign institutions were among the largest sellers. The Federal Reserve estimates that foreign investors sold a record amount of more than \$400 billion of Treasury securities in March. The Fed notes, “More than half of this...reflected liquidations by foreign official institutions, as foreign central banks sought to raise US dollar cash in order to hold precautionary liquidity and to intervene in foreign exchange markets.”¹¹ Exhibit 7 shows the significant selling from foreign investors in March.

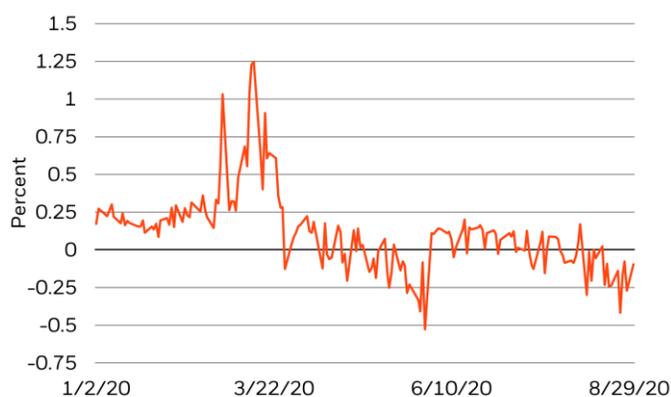
Exhibit 7: Quarterly net transactions in Treasuries, non-US holders



Source: Federal Reserve

Some have suggested that hedge funds unwound cash-futures basis positions as they became uneconomical, which contributed to selling pressure. Exhibit 8 shows the widening in the spread between Treasury futures and cash prices in March, which created significant basis risk and reduced the efficacy of duration hedge positions. However, it is difficult to measure the full extent of the impact from any unwind given the lack of data on basis positions. In a recent speech, Lorie Logan of the Federal Reserve Board of New York (FRBNY) noted the difficulty in identifying the impact of hedge funds' selling activity in March, saying, "Some research papers attribute a significant degree of the stress to hedge funds unwinding cash-futures basis positions, while others question whether these strategies were a meaningful contributor to the dynamics. This is difficult to judge, in large part because the available data on hedge fund holdings and transactions are incomplete."¹² OFR likewise acknowledges the lack of transparency, noting, "We do not have high-frequency or precise data on hedge funds' balance sheets or data on their substantial borrowing in the uncleared bilateral portions of the repo market."¹³ In its recent Financial Stability Report, the Federal Reserve concluded, "The reduction in hedge fund Treasury positions may have contributed notably to Treasury market volatility in mid-March amid a massive repositioning by a wide range of investors. However, so far, the evidence that large-scale deleveraging of hedge fund Treasury positions was the primary driver of the turmoil remains weak."¹⁴ **It is important to note that the primary mechanism that provides US Treasury trade information is the Trade Reporting and Compliance Engine (TRACE) that is administered by FINRA, and it is limited to data submitted by FINRA regulated entities.** Therefore, hedge fund and other trading firms' trade patterns are not transparent to the market or to the regulatory community.

Exhibit 8: Treasury cash-futures basis



Source: Aladdin

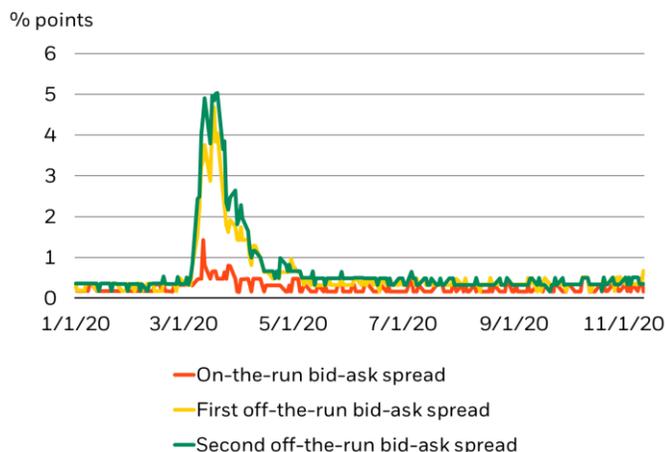
Note: 5-year futures contract implied repo rate spread to 3-month OIS (overnight interest rate swap; reference contract changes at the end of February and May due to contract rolls.

Liquidity Providers

Liquidity providers, which are another critical piece of the financial market ecosystem, have undergone a significant evolution over the past decade. US Treasuries present a clear and dramatic example of this change. Banks were historically responsible for liquidity provision in the UST market as the primary market-makers, especially in on-the-run Treasuries – US Treasury securities that are the most recently issued bonds or notes of a particular maturity. A combination of regulation and technology, including the rise of electronic trading, has shifted market-making in on-the-run Treasuries toward principal trading firms (PTFs).¹⁵ Former Counselor to the US Treasury Secretary Antonio Weiss noted that high-frequency traders (HFTs), which are PTFs, have exerted competitive pressure on traditional players in cash Treasury markets by tightening pricing parameters and creating informational advantages.¹⁶ Bank-dealer activity in the "interdealer" market now accounts for a significantly smaller share of market intermediation.¹⁷ While it is difficult to show PTFs' total market share, since many do not submit TRACE reports, the Federal Reserve has estimated that PTFs accounted for over 60% of total activity on electronic interdealer broker platforms.¹⁸ Essentially, this shift began with technology advances and the electrification of markets and then accelerated when post-GFC capital and liquidity requirements reduced the capacity of banks to perform market-making functions (discussed further in "Regulatory Constraints on Bank Intermediation" below).

USTs are actively traded in the secondary market; they are divided into on-the-run and off-the-run issues where the former are generally more liquid than the latter. During the COVID-19 Crisis, the presumption of continuous UST liquidity was challenged as investors sold Treasuries to raise cash while both banks and PTFs stepped back from the markets. Dealers typically play a leading role in the market-making of off-the-run Treasuries by using their balance sheets to intermediate buyers and sellers, while PTFs play a leading role in the on-the-run interdealer market. Volatility occurred in both on-the-run and off-the-run markets; however, the off-the-run market was particularly vulnerable given that these securities were already traded less frequently in normal times and dealers' ability to intermediate was limited due to capital and liquidity constraints. The lack of intermediation caused yields to spike, spreads to widen, and liquidity to evaporate. At the same time, PTFs largely stepped back from on-the-run securities due to increased market-making risk. Exhibit 9 shows the increased bid-ask yield spreads for 10-year UST on-the-run vs. off-the-run securities, showing a higher spread for off-the-run.

Exhibit 9: 10-year Treasury indicative bid-ask spreads



Source: Bloomberg

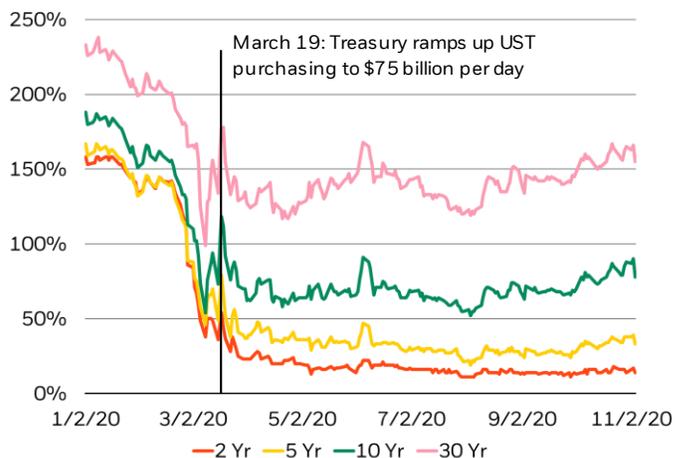
Treasury Yields

UST yields were higher in early 2020, then decreased with the announcement of COVID in multiple countries as market participants began the flight to quality, then dropped sharply in March when the Fed cut rates. Yields then rose sharply in March with increased trading volumes and volatility, before declining and stabilizing after Fed intervention as shown in Exhibit 10. On March 19, 2020, the NY Fed began purchasing approximately \$75 billion per day in Treasury purchases.²⁰ This direct liquidity provision and the dollar swap lines extended by the Fed (discussed further in “Central Bank Intervention” below) were critical to stabilizing the US Treasury markets, especially for off-the-run Treasuries.

Settlement Failures

Settlement failures occur when a party to a trade fails to deliver either the securities or the cash on the agreed due date or “settlement date,” and failures result in unintended, unmargined counterparty credit risk. While settlement

Exhibit 10: Daily UST yields 2020

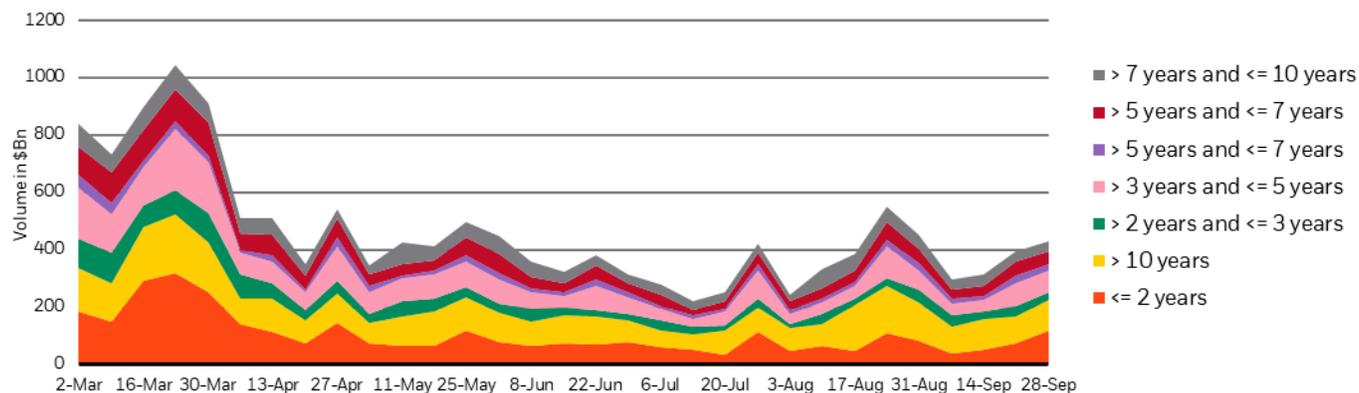


Source: US Treasury daily yield curves: <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=realyield>

failures can be caused by an isolated operational issue, they often arise due to simple timing mismatches, where a seller may not have a particular security to deliver on the settlement date. Global regulators carefully monitor settlement trends, as they are often an indicator of underlying market conditions and may point to a more systemic vulnerability in market structure. Settlement fails increased sharply during March across markets, reflecting market volatility, large volumes, higher margin calls, and general stressed market conditions.²¹

In the Treasury market, the increased sale of off-the-run Treasuries by customers who normally purchase and hold Treasuries (shown in Exhibit 11), significantly contributed to the fails in the system. Given their long holding horizons, most of these customers have securities lending arrangements where securities are out on loan and are rarely recalled.²² Sales of these securities during March were unprecedented in size, creating a need to quickly recall a significant amount of securities on loan which resulted in a short-term increase in settlement fails.

Exhibit 11: Off-the-run Treasury volume traded from dealer to customer



Source: TRACE

Note: TRACE began making data on off-the-run Treasury sales publicly available starting in March 2020, therefore data is not available before then.

USTs that were settled through the Fixed Income Clearing Corporation (FICC)²⁴ experienced substantially fewer fails than bilaterally settled trades.²⁵ The FICC settles dealer to dealer trades in US Treasury securities and nets settlement across all its dealer participants. In March 2020, it cleared over \$40 trillion in US government securities, a 20% increase from the start of the year.

Settlement failures are often an indication of stressed market conditions. This was seen in the UST market as the increase in off-the-run UST sales led to an increase in settlement failures. The comparatively fewer settlement failures in FICC-related transactions demonstrates the value of central clearing in Treasury markets.

Regulatory Constraints on Bank Intermediation

Banks have long served as intermediaries and liquidity providers across markets. Post-GFC, policy makers around the world introduced sweeping reforms to strengthen the banking system and to address the causes and transmission of systemic risk. The Basel Committee on Banking Supervision (BCBS) developed the Basel III capital and liquidity standards to respond to prior weaknesses in the banking sector, such as excessive leverage and inadequate liquidity buffers.²⁷ These reforms have been implemented across jurisdictions and further enhanced over the past 10 years, creating a robust Basel Framework to provide a foundation for a resilient banking system.²⁸ A full table of bank capital and liquidity rules is included in Appendix B.

As a result of these reforms, individual banks and the global banking system entered the COVID-19 Crisis in a much stronger position than during the GFC, with reduced risk taking, stronger balance sheets, higher-quality capital and ample liquidity. However, banks did not have capacity to absorb the large sell imbalance of USTs onto their balance sheets, given the need to adhere to strict capital and liquidity requirements. Specifically, because of the increased selling during March, banks had trouble offloading USTs they purchased from clients, thereby increasing their balance sheet utilization. This came at a time when banks needed to “monetize their HQLA” or sell Treasuries to meet liquidity demands. The inability of banks to deploy that capital and liquidity during times of market stress exacerbated the volatility in March 2020.²⁹

According to an ISDA study, “both the buy and sell side felt that credit-crisis-era financial reforms ultimately made the banking system safer and better able to weather this current storm. However almost as many swaps market participants also felt that those reforms reduced the capacity of the banks to provide liquidity to the markets and to extend balance sheet to businesses. Further, more investors felt this negative impact (57%) than did the dealers themselves (48%), reflecting their collective market experience rather than hopes for less stringent rules to boost business.”³⁰

Recommendations to enhance US Treasury markets

The UST market remains the deepest and most liquid in the world. However, the changing landscape of liquidity providers and heightened bank capital and liquidity regulations led to a lack of liquidity during the March 2020 market volatility. We make the following recommendations to improve the resiliency of the UST market.

- **Central clearing and all-to-all trading:** Some in the industry have proposed expanding central clearing generally, including for US Treasuries, based on the events of March 2020.²⁶ Counterparty risk, which central clearing addresses, is already limited to a few days of exposure in the UST market, and therefore was not necessarily the primary issue driving the volatility in March. However, central clearing has the potential to improve financial stability by improving transparency. It also has the potential to reduce the need to warehouse trade flows on dealer balance sheets if dealers can net their trades through the CCP, thereby providing some potential relief to the intermediation crunch witnessed in March. Finally, the fact that FICC-related settlement failures were much lower than settlement failures generally in the UST market suggests central clearing may improve market structure to prevent settlement failures in times of market stress. **We believe expanding Treasury market clearing warrants further study and consideration.** Additionally, given the bifurcation of Treasury market liquidity provision between the interdealer and dealer-to-customer markets, **further evolution of all-to-all trading in the UST market would improve market efficiency and resiliency.**
- **Transparency:** During the March market volatility, many market participants did not have clear insights into UST market transactions, given incomplete data sets. **We recommend 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 provide more transparency to market participants on Treasury holdings. Increased transparency could also increase participation in the UST market.

While the actions in March by banking regulators to grant targeted relief for bank capital and liquidity rules created some additional balance sheet capacity, more comprehensive measures to temporarily ease requirements would have allowed banks to safely contribute more liquidity to the system.³¹ For example, the US prudential regulators provided relief from the supplementary leverage ratio (SLR), but not from the tier 1 leverage ratio.³² Under the SLR, most banks are required to hold 3% of tier 1 capital relative to their leverage exposure.³³ The tier 1 leverage ratio is broader and measures the ratio of tier 1 capital to average total consolidated assets, irrespective of the composition of these assets. As a result, banks could not buy highly liquid, low-risk USTs because adding them to their balance sheets would have pressured their tier 1 leverage ratio. Relief from the tier 1 ratio would have provided more comprehensive relief to all banks.

Perhaps the largest constraint to dealers were the common equity tier 1 (CET1) capital rules which the US prudential regulators did not relax.³⁴ Under Basel III, banks must maintain a minimum CET1 to risk-weighted assets (RWA) ratio of 4.50%.³⁵ US Treasuries typically have a risk weight of 0% and UST repo positions facing the client have zero haircut. However, most banks offset client trades in the dealer market (in order to run a matched book), and the dealer leg is cleared through the FICC, which does require a haircut. This mismatch contributed pressure to banks' RWA calculation. As a result, marginal UST repo offered to clients significantly added to banks' CET1 requirements during March 2020.

The broader relaxation of capital and liquidity requirements in Europe helped ease liquidity challenges. In March, the ECB announced it would temporarily allow banks to operate below the level of capital defined by the Pillar 2 Guidance, the capital conservation buffer, and the LCR and noted the measures would be enhanced by the relaxation of the countercyclical capital buffer (CCyB) by the national macroprudential authorities. Banks were also allowed to partially use capital instruments that do not qualify as CET1 capital to meet Pillar 2 Requirements. In announcing the relief, the ECB stated, "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."³⁶ Bank of England Governor Andrew Bailey commented in October that banks had a "natural unease" about dipping into their capital reserves, but he noted that "the capital buffers are there to be used."³⁷ Bank of England Deputy Governor Jon Cunliffe noted in October the need to further encourage banks to tap into their capital, saying, "Looking to the future, we may want to revisit the balance between the

various capital buffers, with a view to having more in countercyclical buffers that are releasable by regulators, and less in the fixed buffers."³⁸

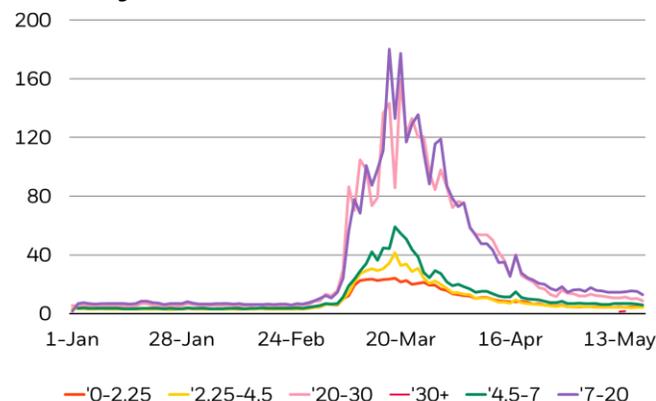
Still, in Europe and in the US, banks were hesitant to use prudential buffers or liquidity, even where regulators encouraged them to do so. The use of prudential buffers is complicated by the linkage to dividend distributions, AT1 coupon payments,³⁹ executive compensation and potential rating agency actions.

Central Bank Intervention

Without dealer banks' ability to carry out their core function of market making, lending and liquidity programs offered by central banks were essential to stabilize the markets. The Federal Reserve's purchasing of USTs and mortgage-backed securities (MBS) was critical. From March 19 through the end of the month, the NY Fed bought approximately \$75 billion in Treasury purchases per day.⁴⁰ Between mid-March and the end of June, the Fed purchased \$1.6 trillion in Treasury securities and \$719 billion in agency securities.⁴¹ OFR highlighted the importance to the UST market of Fed purchasing coupled with liquidity programs, noting, "Federal Reserve expansions of Treasury purchases provided an additional source of demand for off-the-run Treasuries, while expansions of the central bank's repo facility reduced financing risks associated with providing liquidity to Treasury markets."⁴²

When the Fed increased their purchasing of Treasury securities,⁴³ banks then had an offsetting counterparty, providing balance sheet relief. Thus, further liquidity could be provided to clients. Exhibit 12 depicts the widened UST bid-ask spreads in March and the subsequent tightening when the markets resumed functioning after the purchases began and several Fed programs were announced and operationalized.

Exhibit 12: Treasury bid-ask spreads (by maturity)



Source: BVAL

Given the massive selling by foreign investors in the UST market, the Fed extended dollar swap lines to other central banks. These actions were important to stabilizing the Treasury market.⁴⁴ The Bank of England commented on the importance of the swap lines in stabilizing not only the UST market, but the global financial system—Andrew Hauser, Executive Director of Markets at the Bank of England stated in a speech, **“The dollar swap lines may be the most important part of the international financial stability safety net that few have ever heard of [emphasis added].** Global trade and investment relies on the dollar. In normal times, firms and local banks located outside the United States can easily secure these dollars using FX swaps, provided by international banks with access to US markets, to exchange their local currency for dollars. In times of turbulence, however, these markets can become impaired, or even seize up altogether, as the international banks batten down the hatches. Trading firms who cannot secure dollars will either have to cease trading altogether, or try to raise dollars in other ways, for example by liquidating dollar-denominated assets. That selling pressure, if allowed to take hold, could trigger, or amplify, global financial instability.”⁴⁵

While some programs had little take-up, notably, swap lines were used heavily. The total US dollars extended to central banks under swap lines reached \$447 billion as of June 3, 2020.⁴⁶

By contrast, there was little take-up of many of the Fed’s liquidity facilities. However, the announcement of these facilities was critical in improving broad market sentiment. Those that had the greatest impact on reducing market volatility were those that showed the Fed’s commitment to providing liquidity to the short-term markets, such as the Money Market Liquidity Facility (MMLF) and the Commercial Paper Funding Facility (CPFF), even if the participation rate was modest.⁴⁷ A key factor to the success of the MMLF was that banks were not subject to risk-based or leverage capital charges from purchases of money market instruments through the MMLF. Specifically, under the interim final rule published on March 23, 2020, banking organizations were permitted “to exclude non-recourse exposures acquired as part of the MMLF from a banking organization’s total leverage exposure, average total consolidated assets, advanced approaches-total risk-weighted assets, and standardized total risk-weighted assets, as applicable.”⁴⁸ The announcements of the Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF) on March 23, 2020 to support credit to companies through bond and loan issuances were also important to improving investor sentiment in the credit markets. The PMCCF was designed to ensure issuers had access to financing as new issuance markets were shutting down, while the SMCCF

directly targeted the secondary market to restore investor confidence. The signaling power of the CCFs to stabilize markets has been significant, illustrated by the low take-up rates (e.g., the PMCCF has not yet been tapped as of October 2020) and the Fed has been steadily decreasing SMCCF purchases due to improved market conditions.

Recommendations to enhance bank regulation

While regulators relaxed some liquidity and capital requirements in the US, more comprehensive action would have been beneficial, following the example of the EU’s approach to temporarily relieving capital and liquidity requirements, including relaxing the CCyB. Specifically, broader relief from the tier 1 leverage ratio and CET1 capital rules in the US would have helped banks continue to intermediate the UST market through the period of market stress.

- **We recommend bank regulators incorporate guidance into the regulatory framework delineating when banks can use their capital and liquidity buffers to provide liquidity to the markets.** This guidance should not be regulatory relief granted in a crisis, but rather a provision built into the banking regulatory framework to provide direction on the use of capital and liquidity accumulated during normal market periods to continue stable operations in times of market stress. We believe this will mitigate potential market dislocation in future short-term crises, while still protecting financial stability in the long run by continuing to ensure strict capital and liquidity requirements during normal market conditions. This approach will also avoid the perception of a stigma being associated with using buffers on a countercyclical basis.
- We believe providing guidance on when banks can use their capital and liquidity in a future crisis should significantly reduce the likelihood that central banks would need to intervene in the future as market makers of the last resort. However, contingency planning would suggest establishing rules in case intervention is required. In the US, we note that the MMLF had an explicit provision making purchases balance sheet neutral. In the event central banks intervene in stressed markets in the future, **we recommend banks should not be subject to risk-based or leverage capital charges from purchases of instruments in central bank programs.**

Central Clearing & Margin Requirements

During the GFC, over-the-counter (OTC) derivatives contracts (e.g., swaps) were a major source of systemic risk. Given the bilateral nature of these agreements, no one had a full picture of the size of the market or the exposure to various counterparties. Each contract was bespoke and collateralization levels varied tremendously. The combination of opacity, complexity, and inconsistent risk management needed to be addressed. Policy makers agreed that OTC derivatives contracts should be cleared through CCPs. Today, while there are some bespoke bilateral contracts, many swaps that would have historically been negotiated and settled bilaterally are standardized and are required to be cleared through CCPs which has long been the market practice for futures contracts. CCPs are regulated entities and they subject swaps and futures contracts to risk management oversight similar to that which has benefitted the exchange-traded futures and options markets for more than a century. The use of CCPs provides the market and regulators with improved transparency and reduces (but does not eliminate) counterparty credit risk.⁴⁹

Risk management is core to both cleared and bilateral OTC derivatives, and margin is core to risk management. Margin includes both initial margin and variation margin. Initial margin (IM) is collected upon trade execution and is calibrated to cover potential market moves that could occur between the last receipt of variation margin and liquidation. Variation margin (VM) is collected on a daily (and often intraday) basis to reflect the actual change in market prices. If a party does not pay VM when required, the CCP has the right to liquidate the trade, thus preventing an accumulation of losses that could result in a counterparty credit loss. In this section, we examine variation margin and initial margin for both cleared and bilateral contracts and we highlight the issues which arose during March with a focus on initial margin on futures contracts.

Variation Margin

VM reflects actual market price changes. Market participants have various ways to manage the risk of market price changes in their portfolios, and strong risk management dictates that portfolios be prepared to cover unexpected price changes with available cash. As market volatility spiked, and asset prices fluctuated accordingly, CCPs and bilateral swap counterparties naturally increased

VM calls, resulting in large volumes of cash moving between market participants. It is important to note that at a macro level, derivatives ultimately result in a zero-sum outcome: one party's loss is another party's gain. As such these large VM calls simply moved gains and losses among market participants, redistributing liquidity in the market, and were not the cause of market disruption.

Initial Margin

IM is calculated using a statistical prediction of market moves that each CCP estimates using proprietary models. While IM is subject to broad international standards and guidelines,⁵⁰ CCPs retain significant flexibility in designing and implementing their individual margin methodologies. This includes having the ability to unilaterally raise or lower IM requirements. **During the COVID-19 Crisis, rapid changes in IM, particularly for futures contracts, created a need for larger amounts of collateral and put significant pressure on already stressed short term markets.** While VM represents a redistribution of liquidity between market participants, IM moves in cleared markets are one directional, resulting in a flow of liquidity away from market participants and into CCPs.

Uncleared OTC Derivatives

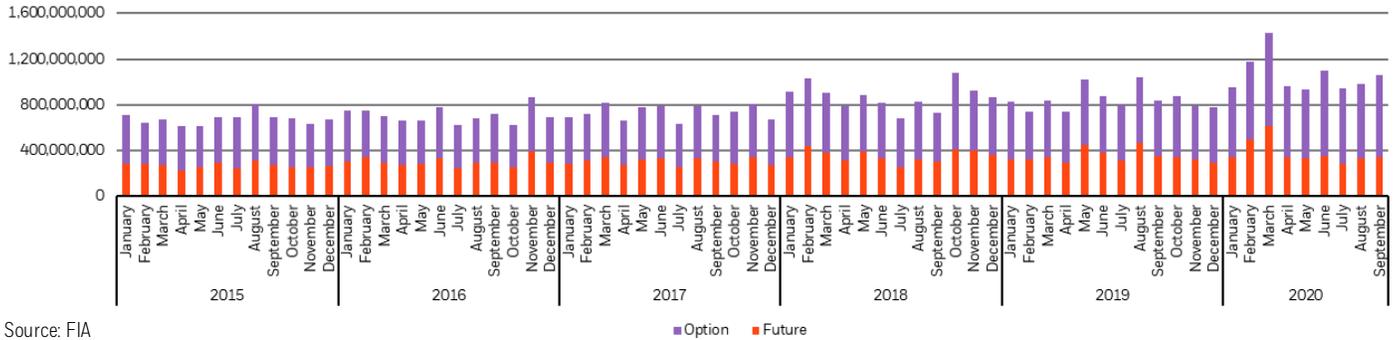
In addition to mandating clearing for standardized derivatives, the global regulatory community agreed that margin, as a core element of counterparty credit risk management, should be required for participants with large uncleared, bilateral, trades.⁵¹ Accordingly, both VM and IM requirements are being phased in over time by regulators across major financial markets in order to minimize counterparty credit risk that remains bilateral (i.e., that is not put into a CCP).⁵² Importantly, IM requirements for uncleared trades are generally determined by transparent and replicable statistical methodologies that are agreed upon ex ante by both parties to the trade.⁵³

March 2020 Experience

Overall, both swaps and futures performed well during the COVID-19 Crisis, as measured by record volumes traded and cleared in US markets. At the July 21, 2020 meeting of the Market Risk Advisory Committee (MRAC) to the CFTC, FIA presented data showing the number of futures and options traded on US exchanges reaching 1.43 billion contracts—the highest volume on record, as shown in Exhibit 13.⁵⁴

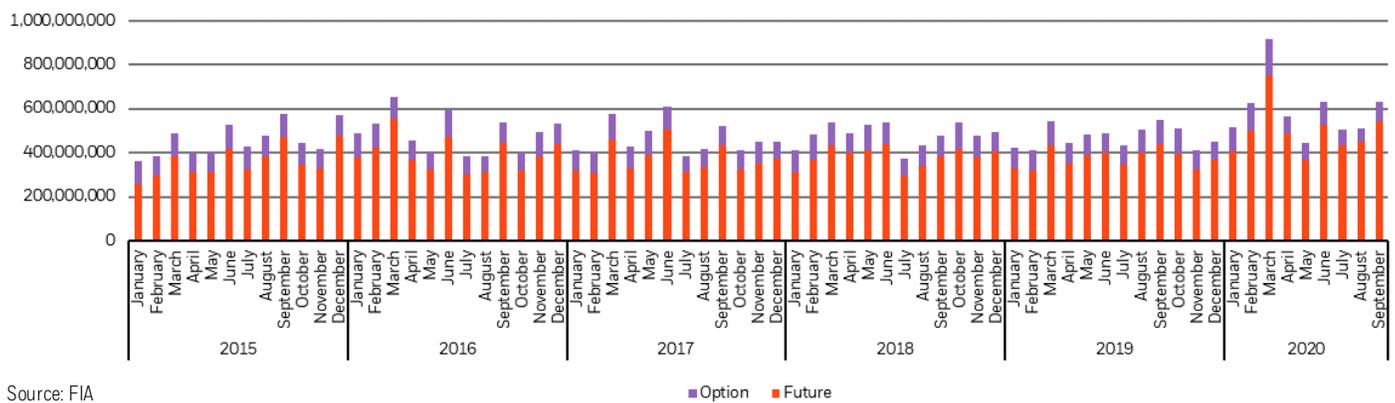
Exhibit 13 Futures and Options Traded on Exchanges

US Monthly Volume of Futures and Options



Source: FIA

EMEA Monthly Volume of Futures and Options



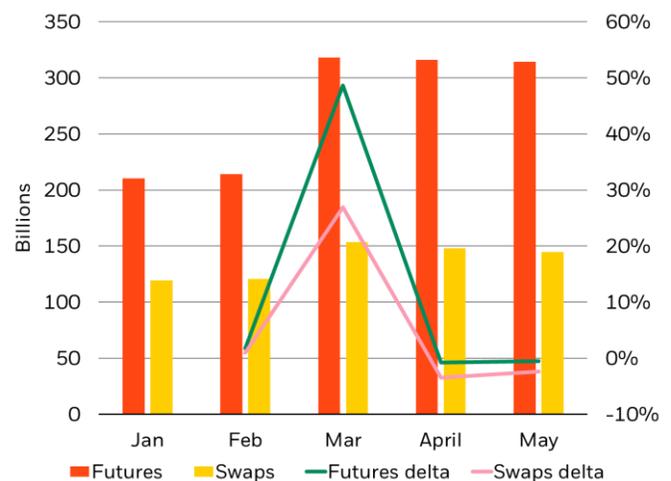
Source: FIA

However, CCP IM models, particularly in futures, were extremely reactive to market moves, resulting in large, sudden, and unpredictable spikes in IM calls from across CCPs. While the level of market moves in March 2020 was beyond most statistical model predictions, the magnitude and volume of the resulting IM changes, particularly on exchange traded products, suggests that the margin models may not have been sufficiently calibrated. For example, as shown in Exhibit 14, IM required for exchange traded contracts by CFTC-regulated US CCPs (as reported by clearing members, called Futures Commission Merchants (FCMs)) increased nearly 50% in March, resulting in a record amount of customer margin held at US CCPs. Importantly, cleared swap IM increases were more muted, increasing by just over 25%, underscoring the need for additional scrutiny on exchange traded margin models. Similar IM increases were seen in other jurisdictions, with UK CCPs showing a 31% increase⁵⁵ and major CCPs across the globe reporting record amounts of IM held.⁵⁶

These margin spikes ultimately exacerbated liquidity constraints across markets. As the SEC explained in a recent report, VM “is a redistribution of liquidity in the system from one counterparty to another,” while increases in IM “drew short-term liquidity away from market participants.”⁵⁷ Similarly, a recent paper published by the Bank for International Settlements highlights these margin spikes, noting that “the procyclicality of leverage embedded

in margining models might have played a role in the events of mid-March...Margin models of some CCPs seem to have underestimated market volatility, in part because they have relied on a short period of historical price movements from tranquil times. These CCPs had to catch up and increase margins at the wrong time, squeezing liquidity when it was most needed.”⁵⁸ For example, **increased IM required for Treasury futures likely drove some investors to sell,**

Exhibit 14: US FCM Required Customer Funds: Futures and Swaps



Source: CFTC

affecting the prices of underlying Treasury securities. Additionally, given the limited acceptability of MMFs as collateral, the increased margin calls forced counterparties to liquidate MMFs to raise funds for margin calls, increasing pressure on the short-term cash markets.

The increased levels of IM collected during March of 2020 imply a persistent underestimation of the CCP's predicted price movements, particularly in futures, which may require a review of the current guidelines.

Recommendations to enhance central clearing and margin

Dramatic, unexpected spikes in initial margin calls during March indicate that CCPs need to improve their initial margin modelling to enhance financial stability and mitigate procyclicality. These margin calls exacerbated volatility at a time when liquidity across markets was drying up and market participants needed to access additional cash and cash-equivalents, causing negative effects across markets. Spikes in initial margin calls also made it difficult for asset managers to predict liquidity in portfolios. Moreover, the lack of transparency from CCPs regarding margin changes made it difficult for investors to make informed investment decisions in a timely manner.

We recommend that regulators ensure CCPs size IM requirements conservatively using appropriate model assumptions to mitigate the potential for future procyclical initial margin moves.⁵⁹ To do this, CCPs should:

- Incorporate appropriate assumptions on the time it takes to liquidate a portfolio of trades (referred to as the “margin period of risk”);
- Include relevant historical market trends (referred to as “look back period”);
- Address concentration risk through appropriate margin adjustments (referred to as “margin add-ons”);
- Scrutinize correlation assumptions when offering portfolio margining (referred to as “margin offsets”); and
- Provide enhanced transparency to the market on specific margin rate changes to allow investors to pinpoint the contracts impacted.

While much regulatory guidance exists on IM standards through the Principles for Financial Market Infrastructure (PFMIs) and at an individual jurisdictional level, the experience in March underscores the need to either enhance the standards themselves or review their implementation and compliance. These adjustments will likely result in higher margin requirements during “peacetime” but should provide the market with more stability during “wartime” or market stress. Financial stability is better

served by shifting the balance to a more conservative margin approach. Our recommendations regarding IM models as well as other recommendations to address CCP resilience are discussed in the joint industry paper, “[A Path Forward for CCP Resilience, Recovery, and Resolution.](#)”

As uncleared margin rules come into effect across financial markets, and to further reduce the impact of CCP margin calls, **we recommend MMF units be allowed as collateral for both cleared and uncleared margin.** This would reduce the interplay between increased initial margin requirements and pressure on MMFs and short-term markets, as participants would not be forced to raise cash for margin, which eases the pressure during times of market stress. In addition, using MMF units as collateral would mean that investors in MMFs would not have to redeem from the fund to raise cash for margin, and subsequently, the counterparty would not need to then reinvest the cash elsewhere in the short-term markets.

Currently, CCPs limit the use of MMFs as eligible collateral and uncleared margin rules in the US significantly restrict the use of MMFs as eligible collateral by requiring that “assets of the fund may not be transferred through securities lending, securities borrowing, repurchase agreements, reverse repurchase agreements, or other similar means...”⁶⁰ Virtually all US MMFs either engage in some form of these activities or have the ability to do so. The CFTC’s Global Market Advisory Committee adopted a report in May by the subcommittee on margin requirements for non-cleared swaps which, among other things, recommended eliminating these restrictions on the eligibility of MMFs.⁶¹

Finally, **we recommend CCPs expand their acceptance of ETFs as margin collateral, and that regulators clarify that ETFs which hold eligible assets can be treated as eligible collateral under uncleared margin rules.** This would further alleviate the impact of margin calls and is consistent with the policy rationale of margin rules.⁶²

US Fixed Income Markets

Market data plays a pivotal role in both price formation and the functioning of electronic trading. From a trading perspective, the March 2020 experience highlighted the importance of high-quality data and well calibrated electronic trading tools. Equity markets with a high degree of electronic trading and standardization proved resilient, whereas fixed income markets with more fragmentation and less standardization experienced more challenges.

Dealer Algorithms & Market Data

The lack of reliable market data and price discovery impeded automation as dealers disabled or reduced the use of algorithms and some banks reverted to voice dealing. In the OTC fixed income markets, dealers use algorithms to present an automated response to a “request for quote.” However, in March 2020, much of corporate bond automated market making was disabled or reduced, leaving the response to be priced manually. This resulted in slow, delayed, and often times out-of-market-context quotes and, at times, a lack of response altogether.

The lack of trading in underlying bond markets decreased price transparency, which was reflected in market data feeds in which the most recent prices and bid-ask spreads were sometimes several days old. This contributed to the loss of dealer confidence in the input data for their algorithms. It became evident that dealers did not have enough data points to provide systematic liquidity at scale, and quotes in benchmark instruments became less reliable. These issues spanned corporate bond markets and off-the-run Treasury securities. According to an ISDA study, “a much larger portion of volume in US Treasuries in March was traded over the phone – 42% in March, compared to 29% in February, which speaks to customers working directly with dealers to both source liquidity and understand market dynamics, given the market uncertainty.”⁶³

Investors often use electronic channels for executing their high-volume low-risk activity, which enables them to focus manual trading time on higher-risk trades that require more attention. Reducing the use of and shutting down algorithms further exacerbated liquidity problems around client flows. For example, in US investment grade corporate bond markets, without full access to algorithms, market participants set aside smaller trades and focused on larger trades during the COVID-19 Crisis. Shutting down algorithms also put greater strain on trading desks that had to return to manual execution – most often in a remote working environment – after they had evolved their business to rely heavily on automation.

In the absence of better data, market participants turned to ETFs for price discovery. 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 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.⁶⁴

Electronic Trading

Further exacerbating the lack of liquidity in the fixed income markets during March was the fragmentation of electronic trading.

In equity and currency markets, transparency, standardization, and high-quality market data has resulted in heavily automated and robust market making systems. As a result, electronic trading channels proved resilient in these markets and electronic channels were utilized by market participants despite the high-volatility and operationally challenging environment. The liquidity available in electronic trading channels ensured that equity and currency markets continued to function smoothly, albeit at higher levels of volatility and at lower levels of market depth.

Electronic trading did not fare as well in markets which are still in more nascent stages of electronification. Fixed income markets have traditionally relied on manual workflows and electronic trading adoption varies by fixed income sector.⁶⁵ Over the past decade, electronic trading in fixed income has evolved, with increasing reliance on automation, dealers introducing new proprietary trading platforms (single dealer platforms), electronic trading firms such as MarketAxess and Tradeweb broadening their product offerings, and new platforms emerging. While electronic trading has increased, fragmentation and the lack of standardization limits the efficiency that typically comes with electronification. Liquidity in fixed income electronic trading is fragmented among many different venues, and market participants do not have a comprehensive view of the market and a lack of pre-trade transparency, making trading more difficult. This exacerbated the liquidity crunch during March, as alternative venue liquidity grew substantially but was not readily accessible as in the equity market, given the fragmentation. By contrast, equity markets offer standardized (FIX or API) connectivity to execution management systems allowing for consolidated access to many venues.

Recommendations to enhance US fixed income markets

We make the following recommendations to improve trading and resilience in the US fixed income markets, but these could also be applied in time to European markets, which are at an earlier stage of evolution:

- **We recommend market-driven improvements to algorithms in fixed income markets** to enable models to function during market stress. The combination of stale price feeds and unprecedented volatility led many brokers to turn off their algorithms that, up until that point, had provided automated pricing. Improvements to algorithms so that they can function during market stress would allow for continued liquidity provision even during times of market volatility.
- **We recommend market-driven improvements to electronic trading in fixed income markets.**

Specifically, **we recommend that electronic trading venues should offer more comprehensive and uniform, equities-style access to liquidity.** As fixed income markets continue to the shift toward electronic trading adoption, automated market making has grown in relevance for intermediaries to efficiently respond to substantial growth in trading inquiry. However, electronic trading is highly fragmented across venues, preventing a consolidated view of liquidity. In contrast, equity markets offer standardized connectivity to execution management systems allowing for consolidated access to many venues. Allowing this type of access in fixed income will improve pre-trade transparency and allow for more liquidity availability through alternative venues.

European Fixed Income Markets

European fixed income markets are further behind in the evolutionary path compared to their US counterparts. This is due to the highly fragmented nature of European capital markets, significant heterogeneity in issuance practices, and a regulatory framework that is evolving.

Greater transparency in OTC bond markets and other “non-equity” asset classes is one of the key objectives of European markets regulation implemented through the Markets in Financial Instruments Directive and Regulation, respectively MiFID II and MiFIR. However, MiFID II has yet to fully achieve its objective of creating greater transparency. A key reason for this is the lack of a central database to aggregate the various post-trade data sources into a single view: also referred to as a “consolidated tape.” Instead, post-trade data is fragmented across the different Authorised Publication Arrangements (APAs) or data aggregators, with inconsistent presentation formats and

differing modes of machine readability. Poor data quality poses a further challenge.

The International Capital Markets Association (ICMA) discussed in a report how a post-trade bond consolidated tape would give market participants the confidence to use post-trade bond data for pre-trade price discovery. Specifically, during the March market volatility, “a fully functioning post-trade bond consolidated tape would have assisted decision making. With timely post-trade bond data, investors would have had the confidence to know the prices they were seeing were not stale prices. Furthermore, bond algorithms which rely on post-trade bond data may not have broken down, as witnessed in Covid-19 markets. Lastly, ICMA members believe a trustworthy post-trade bond consolidated tape would have helped risk managers during Covid-19 analyse bond markets, potentially mitigating or transferring risks.”⁶⁶

Recommendations to enhance European market data

BlackRock and European market participants more generally **support the goal of a fixed income consolidated tape. A tape would improve transparency, assist decision-making and provide market insights to end-investors, large and small.** Adoption of the appropriate structure would benefit the whole market, by providing a centralised, high quality, affordable, trustworthy and comprehensive market view. This would bring immediate benefits to the professional bond market but could also benefit the retail sector more widely. A consolidated tape would represent the most important evolutionary step for European fixed income market structure, helping to offset some of the stresses that were evident through March 2020.

Specifically, a fixed income consolidated tape would provide an overview of the bond market (taking into account deferrals) with raw (unenriched) post-trade data which is available to the public. In achieving this objective, relevant and necessary changes to level one of MiFID II are required. **BlackRock is supportive of the ICMA's proposals to develop a fixed income consolidated tape,**⁶⁷ in particular:

- Analysis on market liquidity prior to and following any introduction of consolidated tape, to understand impact on fixed income markets;
- Gradual roll-out of the consolidated tape by (sub)asset class;
- Uniformity of reporting requirements and publication of technical specifications;
- Analysis of data to maintain robust data quality standards prior to public dissemination of data;
- Testing and phase-in procedures for introduction of changes (such as new reporting fields);
- Communication and consultation with stakeholders to validate changes on a technical level.

Regulators, market participants and end-investors agree on the case for a pan-European consolidated tape in fixed income, as well as in equity and ETFs. **We urge that the tapes be brought forward as part of the European Commission's Capital Markets Union (CMU) framework and take effect following further revisions to MiFID II and MiFIR.**

Part III: Conclusion

Market infrastructure generally proved its resilience at a time of unprecedented stress during the COVID-19 crisis, validating many of the reform efforts following the GFC. However, the extreme liquidity challenges of March 2020 underscored gaps between regulation and some areas of market structure. These gaps resulted in the need for government intervention to restore investor confidence in key asset classes, especially the US Treasury market. This experience reinforces the need for clear and coordinated communication from authorities to the market in times of stress and highlights the need for further market structure reforms in some products and sectors to keep pace with market structure evolution. It also provides several important insights for future financial regulatory reforms:

- Products traded on all-to-all trading platforms, like equities and futures, benefitted from standardization, enabling these markets to experience continuous trading and liquidity even during the height of volatility. Similarly, bond ETFs experienced a spike in volume on the exchanges and continued trading efficiently even when the underlying bond market was either frozen or trading with unusually high transaction costs. In contrast, markets that predominantly function on a bilateral basis or have fragmentation among liquidity providers, such as US Treasuries and commercial paper, experienced extraordinary volatility.
- Access to high quality data and modern technology to provide price transparency were critical to general resilience of the equity markets. In contrast, fixed income markets, which are generally more fragmented experienced challenges.
- Regulatory flexibility was essential to the continued functioning of many market sectors through the stressed market conditions. Temporary relief from specific banking regulations helped allow banks to intermediate in certain markets.

As policy makers look to enhance market structure, we encourage them to keep in mind that it is the end-investors and the asset owners who provide necessary capital to companies, governments, and infrastructure projects. Given the interconnectedness of financial markets, policy makers must consider the interconnectedness of their regulatory choices. In our view, regulatory reforms must consider the broad investor base with an eye toward instilling investor confidence in markets as a key element of maintaining financial stability.

Endnotes

1. McKinsey Performance Lens Global Growth Cube. Data as of year-end 2017.
2. BlackRock, ViewPoint, Taking Market-Based Finance Out of the Shadows: Distinguishing Market-Based Finance from Shadow Banking (Feb. 2018), available at <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-taking-market-based-finance-out-of-the-shadows-february-2018.pdf>.
3. See Appendix A for glossary of regulator names
4. Discussed further in BlackRock *ViewPoint*, "The Decade of Financial Regulatory Reform: 2009 to 2019."
5. FSB, "Next Steps on the NBNI G-SIFI Assessment Methodologies." July 30, 2015
6. In Europe, ESMA implemented ETF Guidelines in 2012; in the US, the SEC approved its ETF rule in 2019
7. 2020 ICI Fact Book
8. Source: Lipper: <https://www.internationalinvestment.net/opinion/4009952/european-fund-industry-review-2019>. Note, this dataset is broader than that used for the US figures in the previous sentence. EU data includes bond, equity, mixed, money market, and other funds. US data only includes mutual funds and ETFs.
9. Key accounting changes included the FASB Statement of Financial Accounting Standards No. 158 in 2006 and International Accounting Standard 19 in 2011.
10. Department of the Treasury, OCC, Federal Reserve, FDIC Final Rule "Liquidity Coverage Ratio: Liquidity Risk Measurement Standards." October 2014. Note: the final rule was amended in 2019 to implement the Economic Growth, Regulatory Relief, and Consumer Protection Act and treat municipal obligations as HQLA that is a level 2B liquid asset if that obligation is liquid and readily-marketable and investment grade. 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. In the US, the LCR defines three categories of HQLA: level 1, level 2A, and level 2B liquid assets and sets forth qualifying criteria for HQLA. Examples of level 1 liquid assets (the most liquid) are cash or US Treasuries
11. Federal Reserve, "Financial Stability Report." November 2020
12. Speech by Lorie Logan, Executive Vice President, Markets Group of the Federal Reserve Bank of New York, "Treasury Market Liquidity and Early Lessons from the Pandemic Shock." October 23, 2020
13. OFR, "Basis Trades and Treasury Market Illiquidity." July 16, 2020
14. Federal Reserve, "Financial Stability Report." November 2020
15. US Department of the Treasury, Board of Governors of the Federal Reserve System, Federal Reserve Bank of New York, US Securities and Exchange Commission, US Commodity Futures Trading Commission, "Joint Staff Report: The US Treasury Market on October 15, 2014," July 13, 2015.
16. Remarks by Counselor to the Secretary Antonio Weiss at The Brookings Institution (Aug. 3, 2015), available at <https://www.treasury.gov/press-center/press-releases/Pages/jl0136.aspx>.
17. US Department of the Treasury, Board of Governors of the Federal Reserve System, Federal Reserve Bank of New York, US Securities and Exchange Commission, US Commodity Futures Trading Commission, "Joint Staff Report: The US Treasury Market on October 15, 2014," July 13, 2015.
18. Board of Governors of the Federal Reserve System, FRED Notes, "Principal Trading Firm Activity in Treasury Cash Markets." August 4, 2020
19. There were two rate cuts: 50bps on March 3, 2020 and 100 bps on March 16, 2020.
20. FRBNY Open Market Trading Desk planned purchase amounts and schedules
21. ESMA's "Report on Trends, Risks, and Vulnerabilities." 2020 shows increased settlement fails in various asset classes. The Federal Reserve's primary dealer statistics also show increased fails across asset classes
22. Securities lending refers to the lending of stocks, bonds, and other assets. Lenders are typically large asset owners and asset managers. Borrowers are typically larger financial institutions, which in turn lend the borrowed assets to their end clients. These borrowers typically use the loaned stocks or bonds to settle a trade, as collateral in another transaction, or to facilitate a short sale. The borrower pays the lender a fee for the security as well as the equivalent of any income generated by the lent security, such as bond interest or stock dividends.
23. A presentation by Lorie Logan, Executive Vice President, SOMA Manager, Federal Reserve Bank of New York: "The Federal Reserve's market functioning purchases: from supporting to sustaining." figure 5, shows a longer timeline of off-the-run sales.
24. The FICC is a subsidiary of the Depository Trust & Clearing Corporation (DTCC). See <https://www.dtcc.com/about/businesses-and-subsidiaries/ficc>.
25. Darrell Duffie, "Still the World's Safe Haven? Redesigning the US Treasury Market After the COVID-19 Crisis." June 2020
26. One example is a proposal by Darrell Duffie, Dean Witter Distinguished Professor of Finance, Stanford Graduate School of Business in "Still the World's Safe Haven? Redesigning the US Treasury Market After the COVID-19 Crisis," June 2020. Under Duffie's proposal, "The federal government should initiate a comprehensive and rigorous cost-benefit analysis of clearing secondary market trading in US Treasury debt at a central counterparty, a clearinghouse, similar to those used to clear trades in derivatives and equities.
27. Key reforms in the Basel III framework included a capital conservation buffer, a countercyclical capital buffer, a leverage ratio, the Liquidity Coverage Ratio, the Net Stable Funding Ratio and enhancements to the calculation of capital requirements and risk-weighted assets.
28. In addition, further regulations have been adopted globally to help ensure the safety and soundness of banks, including heightened stress testing, and expanded authority for central banks over Systemically Important Banks (G-SIBs).
29. For example, banks stepped back from the commercial paper market in March, which heightened volatility across the short-term markets, as discussed further in our *ViewPoint*, "Lessons from COVID-19: US Short-Term Money Markets."
30. ISDA, "The Impact of COVID-19 and Government Intervention on Swaps Market Liquidity," Q2 2020

Endnotes

31. Appendix C shows the relief provided by banking regulators in the US
32. On May 15, 2020, the Federal Reserve, FDIC, and OCC announced an interim final rule to permit depository institutions to choose to exclude US Treasury securities and deposits at Federal Reserve Banks from the calculation of the supplementary leverage ratio. In the interim final rule, the agencies noted, “The tier 1 leverage ratio is not affected by this interim final rule.”
33. Global systemically important banks (G-SIBs) are also subject to enhanced supplementary leverage ratio (eSLR) standards established by the prudential regulators in 2014. Under the eSLR standards, GSIB depository institution subsidiaries must maintain a 6% SLR
34. Regulatory capital under Basel III includes CET1, additional tier 1 capital (AT1), and tier 2 capital. AT1 also provides loss absorption on a “going-concern” basis, although AT1 instruments do not meet all the criteria for CET1. Tier 2 capital is “gone-concern” capital—when a bank fails, Tier 2 instruments must absorb losses before depositors and general creditors do. CET1 is a component of tier 1 capital and is the highest quality of regulatory capital as it absorbs losses immediately when they occur. CET1 is comprised of common stock and surplus, retained earnings, accumulated other comprehensive income, and qualifying minority interest.
35. Bank for International Settlements, “Definition of capital in Basel III – Executive Summary,” June 27, 2019
36. ECB press release, “ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus,” March 12, 2020
37. Financial News, “Bank of England tells lenders to dip into capital buffers during pandemic,” October 8, 2020
38. Reuters, “Bank of England says bank buffers may need change to boost lending,” October 15, 2020
39. An additional Tier 1 contingent convertible (AT1 or CoCo) bond is a tradeable 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.
40. Federal Reserve Bank of New York, Treasury Securities Operational Details. Operation Announcements and Results
41. Federal Reserve <https://www.federalreserve.gov/monetarypolicy/2020-06-mpr-part2.htm>
42. Office of Financial Research, “Basis Trades and Treasury Market Illiquidity,” July 16, 2020
43. “Federal Reserve Issues FOMC Statement,” March 15, 2020 – The Fed announced they would increase their holdings of Treasury securities by at least \$500 billion.
44. A currency swap line is an agreement between two central banks to exchange currencies. This allows a central bank to obtain foreign currency liquidity from the central bank that issues it – usually because they need to provide this to domestic commercial banks. For more information: European Central Bank, “What are currency swap lines?” See Federal Reserve, “Coordinated Central Bank Action to Enhance the Provision of US Dollar Liquidity,” March 15, 2020; Federal Reserve, “Federal Reserve announces the establishment of temporary US dollar liquidity arrangements with other central banks,” March 19, 2020; and Federal Reserve, “Coordinated central bank action to further enhance the provision of US dollar liquidity,” March 20, 2020.
45. Speech by Andrew Hauser, Executive Director, Markets, Bank of England, “Seven Moments in Spring: Covid-19, financial markets, and the Bank of England’s balance sheet operations,” June 4, 2020
46. Federal Reserve: <https://www.federalreserve.gov/monetarypolicy/2020-06-mpr-part2.htm>
47. Eight weeks after the Fed’s announcement of the MMLF and CPFF facilities in 2020, assets in those facilities were about \$40 billion, which is only 13% of the assets of the comparable facilities eight weeks after their inception in 2008, according to ICI data.
48. Federal Reserve, Office of the Comptroller of the Currency, and Federal Deposit Insurance Corporation, “Regulatory Capital Rule, Money Market Mutual Fund Liquidity Facility”
49. For further discussion on the evolution of central clearing, see BlackRock ViewPoint, “An End-Investor Perspective on Central Clearing: Looking Back to Look Forward,” September 2018
50. Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions’ (CPMI-IOSCO), “Principles for Financial Market Infrastructures,” and “Resilience of central counterparties (CCPs): Further guidance on the PFMI” set out broad standards and guidelines for CCPs’ margin systems, including considerations for managing procyclical margin movements.
51. For example, <https://www.federalregister.gov/documents/2020/04/09/2020-06625/margin-requirements-for-uncleared-swaps-for-swap-dealers-and-major-swap-participants>
52. BCBS-IOSCO Requirements for non-centrally cleared derivatives
53. The ISDA Standard Initial Margin Model (SIMM) is a common methodology market participants use to calculate initial margin for uncleared derivatives.
54. FIA presentation to the CFTC Market Risk Advisory Committee, “Impact of COVID-19 Pandemic on Derivatives Clearing,” July 21, 2020
55. Bank of England, “What role did margin play during the COVID-19 shock?” June 10, 2020
56. FIA, “Revisiting Procyclicality: The Impact of the COVID Crisis on CCP Margin Requirements,” October 2020
57. SEC Division of Economic and Risk Analysis, “US Credit Markets Interconnectedness and the Effects of the COVID-19 Economic Shock,” October 2020
58. Wenqian Huang and Elod Takáts, “BIS Bulletin: The CCP-Bank Nexus in the Time of Covid-19,” May 11, 2020
59. Additional relevant recommendations were recently presented by the Futures Industry Association in the paper, “Revisiting Procyclicality: The Impact of the COVID Crisis on CCP Margin Requirements” (October 2020)
60. See § 23.156(a)(1)(ix)(C), 17 C.F.R. § 23.156(a)(1)(ix)(C) (emphasis added); see also 12 C.F.R. 45.6 (Comptroller of Currency eligible collateral); 12 C.F.R. 45.7 (Comptroller of Currency segregation of collateral); 12 C.F.R. 237.6 (Federal Reserve eligible collateral); 12 C.F.R. 237.7 (Federal Reserve segregation of collateral); 12 CFR 349.6 (FDIC eligible collateral) 12 C.F.R. § 349.7 (FDIC segregation of collateral); 12 C.F.R. 624.6 (FCA eligible collateral); 12 C.F.R. 624.7 (FCA segregation of collateral); 12 C.F.R. 1221.6 (FHFA eligible collateral); 12 C.F.R. 1221.7 (FHFA segregation of collateral).

Endnotes

61. Report to the CFTC's Global Markets Advisory Committee by the Subcommittee on Margin Requirements for Non-Cleared Swaps, "Recommendations to Improve Scoping and Implementation of Initial Margin Requirements for Non-Cleared Swaps," May 19, 2020. The report noted that "MMFs are highly regulated short-term investment vehicles that are subject to liquidity and diversification requirements under US and European MMF regulations."
62. For further detail, see BlackRock comment letter RE: "[Margin and Capital Requirements for Uncleared Swaps for Covered Swap Entities](#)," December 9, 2019
63. ISDA, "The Impact of COVID-19 and Government Intervention on Swaps Market Liquidity," Q2 2020
64. We discuss ETFs further in our *ViewPoint*, Lessons from COVID-19: ETFs as a Source of Stability (Jul. 2020), available at <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-lessons-from-covid-19-etfs-as-a-source-of-stability-july-2020.pdf>.
65. According to JPMorgan, "FICC Market Structure: Global Insights," Q2 2020: "The inter-dealer market for US interest rate futures is almost exclusively electronically traded, with a SIFMA report suggesting 70% of the market is now executed electronically." Additionally, "Electronic execution in the dealer-to-client market has significantly increased this year, even in more traditionally illiquid off-the-run treasuries." Data from a 2018 Greenwich Associates survey and discussed in SIFMA Insights, "[Electronic Trading Market Structure Primer](#)," October 2019 shows that 79% of total FX volumes of those surveyed were executed electronically in 2018; up from 43% in 2007. However, the take-up rate of electrification in the fixed income markets varies by asset class and market participant, largely due to lack of standardization. For example, corporate bond electronic trading varies widely by region, with 60% total investment grade and high yield volumes traded electronically in Europe vs. only 15% in the US. Within the US, 30% of investment grade bonds are traded electronically and only 12% of high yield bonds, although this has increased from 8% and 2%, respectively in 2013.
66. ICMA, "[High Level Forum Report on the Capital Markets Union: ICMA Feedback](#)," June 2020
67. See ICMA: <https://www.icmagroup.org/assets/documents/Regulatory/MiFID-Review/EU-Consolidated-Tape-for-Bond-Markets-Final-report-for-the-European-Commission-290420.pdf>

Part IV: Appendices

Appendix A: Glossary of Financial Market Regulators

Abbreviation	Regulator Name	Abbreviation	Regulator Name
AFM	Dutch Authority for the Financial Markets	FINRA	Financial Industry Regulatory Authority (US)
AMF	French Financial Markets Regulator	FRB	US Federal Reserve Board
APRA	Australian Prudential Regulation Authority	FSB	Financial Stability Board
ASC	Alberta Securities Commission (Canada)	FSCA	South Africa Financial Sector Conduct Authority
ASIC	Australian Securities and Investments Commission	HKMA	Hong Kong Monetary Authority
BaFIN	German Federal Banking Supervisory Authority	HKSFC	Hong Kong Securities & Futures Commission
CBI	Central Bank of Ireland	IOSCO	International Organization of Securities Commissions
CCR	Chilean Risk Rating Commission	ISA	Israel Securities Authority
CFTC	US Commodity Futures Trading Commission	JFSA	Japan Financial Services Agency
CMA	Capital Markets Authority of Saudi Arabia	KFSC	Korea Financial Services Commission
CNBV	National Banking and Securities Commission of Mexico	MAS	Monetary Authority of Singapore
CNMV	National Securities Market Commission of Spain	NFA	National Futures Association (US)
CONASEV	Peruvian National Supervisory Commission of Companies & Securities	NYSE	New York Stock Exchange (US)
CONSAR	Mexican Pension Fund Supervisory Authority	OCC	US Office of the Comptroller of the Currency
CONSOB	Italian Securities Commission	OSC	Ontario Securities Commission (Canada)
CPMI	Committee on Payments and Market Infrastructure	PRA	UK Prudential Regulatory Authority
CSRC	China Securities Regulatory Commission	SAFP	Chilean Superintendency of Pension Fund Administrators
CSSF	Financial Supervisory Authority Commission of Luxembourg	SBS	Peruvian Superintendency of Banks, Securities, and Pension Fund Administrators
CVM	Securities and Exchange Commission of Brazil	SEBI	Securities and Exchange Board of India
DFSA	Dubai Financial Services Authority (UAE)	SEC	US Securities and Exchange Commission
DOL	US Department of Labor	SFC	Financial Superintendent of Columbia
ESMA	European Securities and Markets Authority (EU)	SFSA	Sweden Financial Supervisory Authority
FCA	UK Financial Conduct Authority	SVS	Chilean Superintendency of Securities and Insurance
FDIC	US Federal Deposit Insurance Corporation	TFSC	Taiwan Financial Supervisory Commission
FINMA	Swiss Financial Market Supervisory Authority		

Appendix B: Bank Capital and Liquidity Rules

Rules	Basel Committee Standards	European Union (CRD/CRR)	United States
Capital			
Minimum risk-based capital requirements (or own funds requirements)	<ul style="list-style-type: none"> Common Equity Tier 1 (CET 1): 4.5% of risk weighted assets (RWA) Tier 1 capital: 6% of RWA Total capital: 8% of RWA 	<ul style="list-style-type: none"> Common Equity Tier 1 (CET 1): 4.5% of RWA Tier 1 capital: 6% of RWA Total capital: 8% of RWA 	<ul style="list-style-type: none"> Common Equity Tier 1 (CET 1): 4.5% of RWA for all banks Large banks (above \$100 billion in total assets) are under the obligation to comply with an additional stress capital buffer of at least 2.5% depending on each bank's stress test results Tier 1 capital: 6% of RWA Total capital: 8% of RWA
Capital conservation buffer	Capital conservation buffer of CET 1 capital set at 2.5% of total RWA. Constraints to discretionary distributions imposed in case of non-compliance.	Capital conservation buffer of CET 1 equal to 2.5% of total risk exposure. If a bank does not comply with this buffer, it will have to limit or stop payments of dividends or bonuses.	Capital conservation buffer (composed of CET1 capital) equivalent to 2.5% of risk-weighted assets in addition to the minimum CET1, tier 1, and total capital ratios.
Countercyclical capital buffer	As decided by each Basel Committee member jurisdiction - Between 0 and 2.5% of RWA	<ul style="list-style-type: none"> As decided by each Basel Committee member jurisdiction - Between 0 and 2.5% of RWA Each Member State has a designated authority which is responsible for setting the CCyB rate in their jurisdiction. The ESRB issues guidance to national authorities on its implementation. 	Set by the Federal Reserve Board (however, has not been used - not raised above 0% to this date)
Systemic risk buffer		Member States may require banks to hold a systemic risk buffer of CET1 capital from 1% to 3% for all exposures and up to 5% for domestic and third country exposures.	
Global systemically important institutions' buffer	Higher loss absorbency requirement depending on a bank's scores of systemic importance, as per the bucketing approach.	<ul style="list-style-type: none"> For G-SIIs: mandatory surcharge between 1 and 3.5% of CET1 capital of RWA. Other systemically important institutions (O-SII) buffer – applicable to domestically important institutions and other institutions of EU importance – of a maximum 3% of RWA. Competent authorities can require a higher O-SII buffer based on European Commission approval. 	G-SIIs comply with a capital surcharge of at least 1% depending on their systemic importance.
Leverage			
Leverage ratio	<ul style="list-style-type: none"> Banks must meet a 3% leverage ratio minimum requirement at all times - Calculated by dividing the capital measure with the total exposure measure For G-SIIs (applicable from 1 Jan 23): Leverage ratio buffer to be set at 50% of a G-SII's higher loss-absorbency risk-based requirements. 	<ul style="list-style-type: none"> 3% minimum ratio of Tier 1 capital against total exposure 50% of the G-SII buffer will be applied on top of the LR baseline and only to G-SIIs as per Basel standard. 	<ul style="list-style-type: none"> Basel standard implemented as a 3% minimum ratio of tier 1 capital relative to total leverage exposure for large banks ('Supplementary Leverage Ratio') G-SIIs must maintain a leverage buffer of at least 2% above this requirement for a total of 5% Insured depository subsidiaries of US G-SIIs must maintain at least a 6% leverage ratio.

Appendix B: Bank Capital and Liquidity Rules (cont'd)

Rules	Basel Committee Standards	European Union (CRD/CRR)	United States
Liquidity			
Liquidity Coverage Ratio	Banks should hold enough High Quality Liquid Assets (HQLA) to cover their total net cash outflow over 30 days under stress conditions (100% coverage minimum).	The liquidity coverage ratio is the ratio of the liquidity buffer to the net liquidity outflows over a 30-day stress period, as per Basel standard.	The LCR is the ratio of a company's high-quality liquid asset (HQLA) amount to its projected net cash outflows over a 30-day period, in line with the Basel standard.
Net stable funding ratio	The ratio is the amount of available stable funding (ASF) relative to the amount of required stable funding (RSF). It should be equal to at least 100% and reported quarterly.	Implemented as per the Basel standard with a slightly more lenient treatment (lower RSF factor) for securities financing transactions and a simplified regime for smaller and less complex institutions.	Proposal issued in 2016 in line with Basel standard – not adopted yet.
Large Exposures			
Large exposure limits	<ul style="list-style-type: none"> Standard applicable to all internationally active banks – the sum of all exposure values of a bank to a single counterparty or a group of connected counterparties must not exceed 25% of its Tier 1 capital at all times. For G-SIIs, the sum must not exceed 15% of their Tier 1 capital. 	<ul style="list-style-type: none"> An institution's exposure to a client or group of connected clients cannot exceed 25% of its eligible capital. If the client is another institution, the value of the exposure should not exceed 25% of the institution's eligible capital or €150 Million. Maximum exposure between globally systemic banks was reduced from 25% of Tier 1 capital, to 15%. 	<ul style="list-style-type: none"> A bank holding company with \$250 billion or more in total consolidated assets is restricted to an exposure limit of no more than 25 % of its Tier 1 capital to a counterparty. Similar limits for foreign banks operating in the US. A G-SII is limited to a credit exposure of no more than 15% of its tier 1 capital to another systemically important financial firm. A G-SII is limited to a credit exposure of no more than 15% of its tier 1 capital to another systemically important financial firm.

Appendix C: US Banking Regulatory Relief

Agency	Date Introduced	Relief
Fed, FDIC, OCC	March 15 and 16, 2020	Statement encouraging banks to utilize the Discount Window and intraday credit extended by Reserve Banks.
Fed, FDIC, OCC	March 15 and 17, 2020	Statement encouraging banks to use their capital and liquidity buffers and reducing reserve requirement ratios to 0%
Fed, FDIC, OCC	March 19, 2020	Interim final rule revising the definition of eligible retained income for banks to incentivize the use of capital buffers for lending activities.
Fed, FDIC, OCC	March 19, 2020	Interim final rule permitting banks to exclude non-recourse exposures acquired through MMLF from banks' total leverage exposure, average total consolidated assets, advanced approaches-total-risk-weighted assets, and standardized risk-weighted assets
Fed	March 23, 2020	Interim final rule to gradually phase in the automatic restrictions on TLAC buffer requirements
Fed	March 24, 2020	Statement reducing examination activity and extending remediation periods for existing supervisory findings
Fed, FDIC, OCC	March 27, 2020	Allowed early adoption of SA-CCR for measuring counterparty credit risk and interim rule allowing banks to mitigate effects of CECL accounting standard
Basel Committee	March 27, 2020	Deferral of Basel III implementation
Fed, FDIC, OCC	March 30, 2020	Agencies will calculate credit concentrations using tier 1 capital plus the appropriate allowance for loan and lease losses (ALLL) or allowance for credit losses (ACL) as the denominator
Fed	April 1, 2020	Interim final rule temporarily excluding Treasury securities and deposits at the Fed from the supplementary leverage ratio calculation
Fed, FDIC, OCC	April 6, 2020	Two interim final rules requiring federal regulatory agencies to temporarily lower the Community Banking Leverage Ratio (CBLR) to 8% through the end of 2020 and plans to return the CBLR to 9% by 2022
Fed, FDIC, OCC	April 9, 2020	Interim final rule on the PPPLF, neutralizing regulatory capital effects for participating lenders by giving all PPP loans a 0% risk weighting
Fed, FDIC, OCC	April 22, 2020	Final rule that makes the technical changes in the interim final rule announced on March 27, 2020, allowing banks to mitigate effects of CECL accounting standard
Fed	April 23, 2020	Suspended uncollateralized intraday credit limits (net debit caps) and waived overdraft fees for institutions eligible for the primary credit facilities; permitted streamlined procedure for secondary credit institutions to request collateralized intraday credit (max caps)
Fed, FDIC, OCC	May 5, 2020	Interim final rule modifying the agencies Liquidity Coverage Ratio (LCR) to support banks' participation in the MMLF and PPPLF
Fed, FDIC, OCC	May 15, 2020	Interim final rule permitting exclusion of US Treasury securities and deposits at the Fed from supplementary leverage ratio (SLR) calculations

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