

Lessons from COVID-19: U.S. Short-Term Money Markets



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“Cash is King” is the common thread that runs through both the Great Financial Crisis (GFC) in 2007-2008 and the COVID-19 Crisis in 2020. However, the root causes of the two situations were quite different. During the GFC, shocks and surprises in fixed income assets eventually became a deep banking and financial crisis, whereas the COVID-19 Crisis arose from a pandemic and the unprecedented shocks to the real economy. The reaction to the fears generated by the pandemic and the steps required to mitigate the spread of the virus created massive and unanticipated demand destruction and supply chain disruption as well as uncertainty across the world. This uncertainty arose almost instantaneously and abruptly halted a robust economy that had been performing at historically high levels of employment and economic output.

In times of rapidly increasing unanticipated uncertainty, investors will reallocate away from high return but potentially impaired assets into riskless assets. In such an environment, in doing so, investors and issuers will increase their liquidity. In these situations, they will move quickly and indiscriminately to reduce risk and increase liquidity by raising cash at the first sign of stress.

The COVID-19 Crisis is the latest example of what swiftly became an urgent quest for riskless assets and liquidity, and, in this case, investors and issuers worldwide chased the same goal simultaneously. As a result of this sudden demand for liquidity, short-term markets froze quickly, and governments around the world were compelled to act swiftly to meet the unprecedented, simultaneous demand from

every group: individuals, municipalities and small, medium, and large businesses. Fortunately, many of the policy levers that were developed in response to the GFC were able to be quickly and decisively implemented. Central banks and financial regulators around the world introduced a host of monetary policy measures and market liquidity programs to help ensure the continued functioning of markets and to prevent contagion.¹

Post-GFC reforms were designed to avoid a repetition of many of the market stresses that arose during the COVID-19 Crisis. Some of those reforms worked reasonably well, such as the requirements that banks hold more capital. That said, the COVID-19 Crisis revealed other challenges. We should take this opportunity to learn from this latest crisis and implement changes that will make the system more resilient in future stress events. This ViewPoint explores the US short-term money markets during the COVID-19 Crisis and begins a dialogue for developing solutions to challenges that have been identified.

Short-term funding markets are critical for financing governments, banks, and non-financial companies. Likewise, these markets provide important investment opportunities for investors seeking some level of return on near-risk free assets. However, in mid-March, as investors came to understand the devastating worldwide impact of COVID-19, short-term funding markets essentially closed down. For close to two weeks, there was no bid in the secondary market in the US for much of the commercial paper (CP), bank certificates of deposits (CDs) or municipal (muni) debt. Even Treasury bills came under pressure and

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

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primary issuance for corporate issuers and municipal issuers abruptly halted. In normal markets, banks play a critical role as intermediaries and liquidity providers for both the primary and the secondary markets. However, as the potential impact of the COVID-19 Crisis became clearer, banks understandably withdrew from the short-term markets to protect their own capital and liquidity and to maintain compliance with their regulatory requirements.

In assessing short-term markets in March of 2020, the structural aspects of the overall market need to be considered in addition to the performance of its individual components. For instance, one might ask, “Why could you buy/sell bitcoin when you faced *no-bid* on commercial paper?” The answer is that bitcoin is traded on an exchange rather than through a highly regulated intermediary using its own leveraged balance sheet. Similarly, fixed income exchange-traded funds (ETFs) were trading in March, even when the underlying bonds in which they invest were not.

The derivatives market also performed well, given the post-GFC reform that required the over-the-counter (OTC) derivatives market to move from primarily bilateral contracts to central clearinghouses (CCPs). This requirement provided more transparency, standardization, and liquidity and contributed to the strong performance of the derivatives market during the COVID-19 Crisis. As discussed below in “Understanding the CP Ecosystem,” CP is held by many different investors facing different constraints and seeking different objectives. Addressing problems in the CP markets requires more than reforms to money market funds (MMFs), which represent less than 25% of the CP investor base.² While there is a small secondary market, typically CP will only be bid on by the bank that originally offered the paper. **The COVID-19 Crisis underscores the need to consider improving the liquidity of CP by making changes in the market structure for CP and other short-term instruments.**

Key Takeaways & Recommendations

We recommend that policy makers look holistically at short-term money markets to identify areas for improvement. We identify a Three Pillar approach and recommend that policy makers take actions in all three pillars.

Pillar 1: Commercial Paper Market Structure – Short-term instruments are traded almost exclusively as over-the-counter instruments, and the COVID-19 Crisis underscores the need to reassess the market structure for CP and other short-term instruments.

a. All-to-all trading platform: In the current CP market structure, market participants must frequently ask the bank from whom they purchased the security to bid the paper in the secondary market. Many banks are unwilling to bid paper from issuers where they are not a named dealer on that program. This “single source of liquidity” model failed during the COVID-19 Crisis and will fail again in the next liquidity crisis if fundamental changes to the CP market structure are not implemented.

b. **We recommend that the SEC convene a group of banks, issuers, money market funds and other market participants to study potential CP market reforms. Ideas we recommend for consideration include standardization in the CP market and an all-to-all platform in primary and secondary trading to deepen the pool of liquidity providers.**

Pillar 2: Banks as Intermediaries – The strength of the banks’ balance sheets provided an opportunity for prudential regulators to selectively dial back some of the regulations imposed after the GFC, effectively treating bank capital and liquidity as countercyclical buffers in a crisis.

a. In order to incentivize banks to hold CP, particularly in times of market stress, **we recommend the highest rated CP be treated as a high-quality liquid asset (HQLA) for purposes of the liquidity coverage ratio (LCR).** One might challenge this suggestion, since earlier we identified that CP may sometimes have impaired liquidity. We believe that banks are better holders of CP relative to other investors, particularly during periods of stress, as they have more options available to them to perform maturity transformation. For example, banks can pledge CP at the discount window. In addition, if the proposed changes in the structure of the CP market are facilitated, the CP itself will become a more liquid asset.

b. As detailed in the section on ‘Government Actions,’ even modest relaxing of bank regulations created capacity and changed behavior during the COVID-19 Crisis. These actions reflected improvisation and ad hoc programs. **We recommend policy makers provide guidance on what provisions of the banking regulations might be relaxed in a future liquidity crunch.**

Key observations and recommendations (cont'd)

Pillar 3: MMFs – Post-GFC reforms to MMFs in the US were data-driven and were intended to create resilience; however, the COVID-19 Crisis exposed new vulnerabilities that should be evaluated and addressed.

- a. **Government MMFs performed well and do not require any further reforms.** Significant inflows into these MMFs during the COVID-19 Crisis beyond just a shift of assets from other MMFs exemplifies the market-wide flight to safety. The focus of any further MMF reforms should be on non-Government MMFs, including Institutional Prime, Retail Prime, Retail Muni, and Institutional Muni MMFs.
- b. **Retail and Institutional Prime funds** –The data show that institutional investors withdrew assets more quickly than retail investors during the COVID-19 Crisis; however, the latter group also made significant withdrawals. Nevertheless, we believe there continues to be a role for properly structured Prime MMFs.

Given the recent experience with the potential for triggering the implementation of liquidity fees and redemption gates creating uncertainty among investors, **we recommend decoupling the potential imposition of fees and gates from the 30% weekly liquid asset (WLA) threshold. However, Fund boards should retain the ability to implement fees and gates at their discretion at any time that they deem it to be in the best interests of a Fund. In addition, we recommend retaining the 30% WLA requirement as a portfolio construction feature so that a fund has a substantial liquidity buffer.** During the COVID-19 Crisis, the WLA threshold was similar to banks having significant liquidity but not being able to use it. As such, **we recommend that the SEC have guidance prepared for waiving or modifying the 30% threshold during periods of market stress.** These recommendations regarding the 30% WLA and gates and fees should also apply to municipal MMFs in order to retain a consistent framework. In order to further enhance the resiliency of Prime MMFs, **we recommend adjusting the portfolio requirements by prohibiting CP that does not have “strong capacity for repayment” and eliminating the 5% illiquid bucket.** Improvements made in Pillars 1 and 2 would also be beneficial for the operation of these funds.

- c. **Retail and Institutional Municipal MMFs** – These funds experienced much more muted outflows than Prime MMFs during the volatile weeks in March. Even during this period, municipal MMFs maintained upwards of 50% WLA with an average of 73% WLA (see Exhibit 15) which reflects the underlying assets in these funds. As a result, **we make no additional recommendations for muni MMFs, other than the recommendations regarding the 30% WLA threshold and gates and fees.**

Banks' use of their balance sheets to take large and concentrated risks was a key contributing factor to the GFC -- risk-taking on the balance sheet, the use of on- and off-balance sheet leverage, opacity in swap books and interconnectedness became a toxic combination. What began as a housing downturn quickly spiraled into a full-blown financial crisis as banks wrote down distressed assets, made margin calls on swap books and became forced sellers of assets to reduce leverage. Not surprisingly, a host of reforms was introduced in the aftermath of the GFC to fortify the banking system. 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 too much leverage and inadequate liquidity buffers. 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.³ 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. In

addition, the Dodd-Frank Act imposed further regulations to help ensure the safety and soundness of banks, including heightened stress testing, limits on the way banks can invest with the Volcker Rule, and expanded authority for the Federal Reserve over systemically important institutions.⁴

As a result of these reforms after the GFC, individual banks and the banking system entered the COVID-19 Crisis in a much healthier position than during the GFC with reduced risk taking, stronger balance sheets, more capital, and ample liquidity. However, the COVID-19 Crisis exposed a flaw in this fortress approach: because of the post-GFC regulations, banks were no longer able to provide intermediation to commercial paper or bond markets during extreme market volatility. **The financial strength of the banks provided an opportunity for prudential regulators to temporarily ease some of the bank regulations that arose after the GFC, in essence, using the banking system's capital and liquidity as countercyclical buffers in a crisis. As discussed in the section on “Government Actions,” this was recognized by policy makers, and relief was provided on a limited basis.**

During March, certain MMFs (particularly Prime MMFs) were among the short-term instruments that experienced stress. It is important to reflect on the circumstances that gave rise to the pressure on MMFs during the GFC versus the COVID-19 Crisis.

During the GFC, MMFs’ stable per share net asset value (NAV, aka \$1.00 NAV) structure came under pressure when the Reserve Primary Fund “broke the buck” in September 2008⁵ due to impaired credit held in its portfolio. Investors then subsequently raced to withdraw balances from a broad array of other cash and enhanced cash funds out of fear that these products would experience a similar loss. Some MMF sponsors purchased securities from their funds to help maintain the \$1.00 NAV, and the US Treasury established the Temporary Guarantee Program⁶ for Money Market Funds to guarantee the \$1.00 per share value of MMFs that joined the Program as of September 19, 2008. These actions helped restore confidence in the markets, leading to a dramatic reduction in redemptions from MMFs and subsequently leading to a reversal towards subscriptions. As the post-Crisis analysis showed,⁷ it was primarily institutions that were aggressively withdrawing from Prime MMFs during this time.

In the aftermath of the GFC, extensive analysis and debate led the Securities and Exchange Commission (SEC) to adopt “money market reforms” in 2010 and 2014. Reforms to MMFs in the US were data-driven and were intended to enhance systemic resilience; they included: (i) changes to the underlying portfolios – maturity limits, credit criteria, minimum liquidity levels, (ii) changes to the structure of the MMFs – the introduction of the floating per share net asset value (FNAV), liquidity fees and redemption gates, and (iii) changes to reporting – more frequent, more detailed, stress testing.⁸ Importantly, US Government MMFs were allowed to continue to offer constant per share NAVs (CNAV) without being subject to liquidity fees or redemption gate provisions.⁹ Fund sponsors updated their offerings to

reflect these new rules, and end-investors reallocated assets based on their investment and liquidity preferences. The result was a nearly \$1 trillion shift of assets from Prime MMFs to Government MMFs prior to final implementation of these reforms in October 2016.¹⁰ This shift in investor holdings proved to be beneficial during the COVID-19 Crisis, as it mitigated the potential for even greater absolute outflows from Prime MMFs. **The COVID-19 Crisis, however, exposed new vulnerabilities in certain MMFs that should be evaluated and addressed.**

Understanding the CP ecosystem

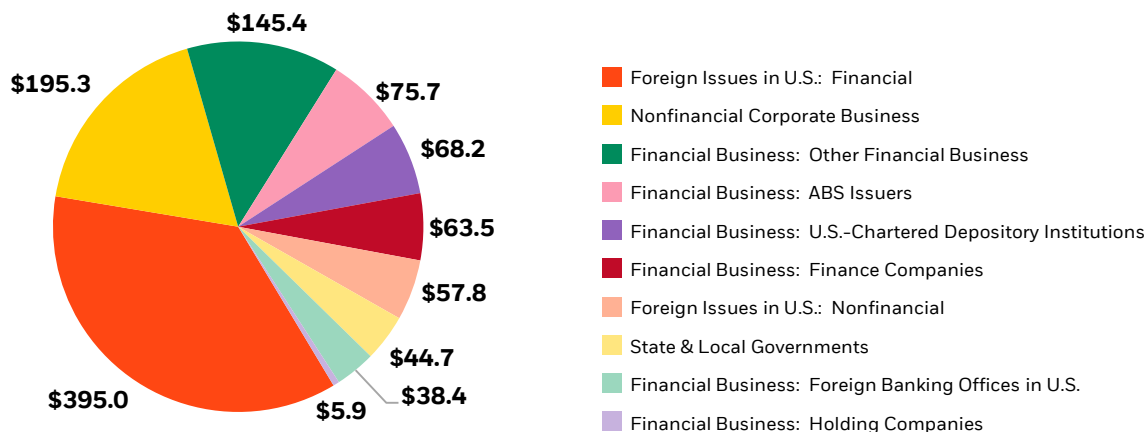
The commercial paper ecosystem includes a variety of participants, including issuers, investors, rating agencies, and intermediaries. Following is a brief discussion of these entities and the important roles they play in this ecosystem.

CP Issuers

CP is a typical debt instrument issued by corporations, banks, and municipalities to meet short-term financing needs, such as payroll or funding for a new project. Exhibit 1 shows outstanding CP using issuer sectors and Exhibit 2 shows the largest issuers of taxable CP. Importantly, CP typically has a maturity of less than 270 days, in order to be treated as a cash equivalent.

Likewise, municipalities often borrow against expected revenues by issuing notes for temporary financing needs. These notes are referred to as “anticipation notes” because funds to pay off the note are “anticipated” to be received in the near future. There are several key types of anticipated notes. Tax anticipation notes (TANs) are used in anticipation of future tax collections. Revenue anticipation notes (RANs) are issued with the expectation that cash flow sources such as property taxes, income taxes, sales taxes and user fees and charges will pay debt service typically

Exhibit 1: Commercial Paper Issuers by Sector (Taxable & Tax-Exempt)



Source: federalreserve.gov (financial accounts of United States – Z.1)

Exhibit 2: Largest Issuers of Commercial Paper

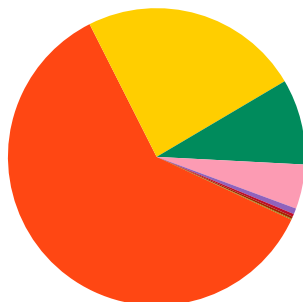
Non-Financial Issuers	
Issuer	Current outstanding (MM)
Exxon Mobil Corp	\$25,348
Pfizer Inc	\$12,261
Walt Disney Co	\$10,628
Coca-Cola Co	\$9,989
Shell International Finance BV	\$9,782
Chevron Co	\$8,793
Nestlé SA	\$6,856
BASF SE	\$6,760
Koch Industries Inc	\$6,520
Apple Inc	\$6,431
Total Capital Canada Ltd	\$6,106
AT&T Inc	\$5,415
National Securities Clearing Corp	\$4,807
UnitedHealth Group Inc	\$515
Merck & Co	\$4,150

Source: Citigroup; data as of June 17, 2020

within a fiscal year. Tax and revenue anticipation notes (TRANs) are issued with an expectation of combined tax and non-tax revenue. Bond anticipation notes (BANs) function as bridge loans and are issued when the municipality expects a future longer-term bond issuance to pay off the anticipation note at maturity. In some cases, municipalities issue variable rate demand notes (VRDNs), which typically have either a one-or seven-day put option which allows investors to put the security back to a financial intermediary at par with one-or seven-days' notice, respectively.¹¹ This enables investors to treat these as cash equivalents even if the final maturity is longer than a year.

Exhibit 3 highlights the dominance of short-term financing for general purpose and shows the diversity of tax-exempt

Exhibit 3: Issuers of Municipal Notes



Source: Refinitiv

Financial/Sovereign Issuers	
Issuer	Current outstanding (MM)
Toronto Dominion Bank	\$33,512
Toyota Motor Credit Corp	\$27,154
ING (US) Funding LLC	\$24,888
Caisse des Depots et Consignations (CDC)	\$22,013
Royal Bank of Canada	\$19,688
Societe Generale	\$18,387
Bank of Nova Scotia	\$16,604
NRW.Bank	\$16,594
J.P. Morgan Securities	\$15,693
National Australia Bank Ltd	\$15,651
HSBC Bank plc	\$15,505
Canadian Imperial Bank of Commerce (CIBC)	\$15,471
Kreditanstalt für Wiederaufbau (KfW)	\$15,338
Nederlandse Waterschapsbank (NWB Bank)	\$14,854
MUFG Bank Ltd. NY Branch	\$13,669

CP issuers, away from general purpose. Exhibit 4 shows some of the largest issuers of municipal CP based on holdings in tax-exempt MMFs which we believe to be representative of the market.

Exhibit 4: Some of the Largest Issuers of Municipal Commercial Paper held by tax-exempt MMFs

Issuer Name
University of Texas
California Statewide Communities Development Authority
State of California
California Department of Water Resources
University of California
Metro Government of Nashville & Davidson County
Harris County Cultural Education Facilities Finance Corp.
San Francisco Public Utilities Commission
Atlanta Airport
San Diego County Water Authority
City of Houston Texas
Miami-Dade County
Montgomery County Maryland
New York State Power Authority
Los Angeles Municipal Improvement Corp.
Dallas Area Rapid Transit
Port of Oakland
Massachusetts Health & Educational Facilities Authority
University of Michigan
Las Vegas Valley Water District

Source: Form N-MFP holdings; as of 3/31/2020. Sorted from largest dollar values, top to bottom

Rating Agencies

Prior to the GFC, the SEC required securities held by MMFs to have certain credit ratings. The Dodd Frank Act, however, required each federal agency to review its regulations that referenced credit ratings and modify such regulation to “remove any reference to or requirement of reliance on credit ratings and substitute in such regulations such standard of creditworthiness as each respective agency shall determine as appropriate for such regulation.”¹² Today, the SEC requires MMFs to determine securities have a minimal credit risk based on other factors, including whether the issuer of the security or the guarantor continues to have the capacity to repay its financial obligations. MMFs can continue to consider credit ratings as part of the monitoring process. In the SEC’s final rule removing the references to credit ratings, the Commission noted that a credit rating downgrade would likely affect the security’s market value.¹³

Rating agencies continue to play an important role in assessing the credit quality of issuers particularly in the taxable CP market, since CP is unsecured and backed primarily on the financial strength of the issuer. There are currently nine nationally recognized statistical rating organizations (NRSROs) registered with the SEC: A.M. Best Rating Services, Inc.; DBRS, Inc.; Fitch Ratings, Inc.; Egan-Jones Ratings Co.; Japan Credit Rating Agency, Ltd.; HR Ratings de México, S.A. de C.V.; Kroll Bond Rating Agency, Inc.; Moody’s Investors Service, Inc.; and S&P Global Rating. However, the credit rating industry is highly concentrated;

the “Big Three” credit rating agencies are S&P, Moody’s, and Fitch, which represent most of the credit ratings in the industry.

A1/P1/F1 ratings are the highest short-term ratings by S&P, Moody’s, and Fitch, respectively. During the COVID-19 Crisis, the Federal Reserve used credit ratings as a metric for some of their lending and liquidity facilities. For example, the Commercial Paper Funding Facility (CPFF) provided a liquidity backstop to US issuers of commercial paper through a special purpose vehicle that purchases unsecured and asset-backed commercial paper rated A1/P1/F1.

CP Investors

CP is considered a “cash equivalent” for accounting purposes. As a result, CP is held in a wide variety of portfolios, including in-house managed cash portfolios, outsourced cash portfolios, custodial sweep accounts, and MMFs.

We used Federal Reserve Z.1 “Financial Accounts of the United States” data to estimate commercial paper assets by type of holder. As shown in Exhibit 5 below, a diverse group of investors hold CP. Notably, the distribution of holders has changed significantly over the past decade. In December 2007, just prior to the GFC, MMFs comprised 39% of the investor base, whereas as of December 2019, less than 23% of CP was held by MMFs. Today, the largest investor category is nonfinancial corporate businesses which reflects the buildup of cash on corporate balance sheets.

Exhibit 5: Holders of Commercial Paper in 2007 and 2019

	December 2007		December 2019	
	\$ millions	% of total open market paper	\$ millions	% of total open market paper
Nonfinancial corporate business	69,462	3.9%	242,292	23.2%
MMFs	688,437	38.5%	237,223	22.7%
Rest of the world	226,258	12.6%	127,196	12.2%
Other financial business	352,187	19.7%	106,024	10.1%
Pension plans	73,615	4.1%	105,063	10.1%
Mutual funds	46,014	2.6%	99,312	9.5%
State and local governments	160,446	9.0%	66,774	6.4%
Insurance companies	57,278	3.2%	44,971	4.3%
Security brokers and dealers	87,115	4.9%	8,544	0.8%
GSEs	27,655	1.5%	7,141	0.7%
Credit unions	426	0.0%	709	0.1%
Total	1,788,893	100%	1,045,249	100%

Source: Fed Z.1 Data. As of Dec. 31, 2007 and Dec. 31, 2009. Available at <https://www.federalreserve.gov/releases/z1/>. See table L.209 on Open Market Paper. Note that “pension plans” includes private pension funds as well as state and local government defined benefit retirement plans; “insurance companies” includes property and casualty insurers (including residual market reinsurers) as well as life insurers.

Banks as Intermediaries

Banks act as intermediaries in the CP market, purchasing paper and then re-selling to investors. The largest commercial paper counterparties are shown in Exhibit 6. Many smaller issuers rely on banks to serve as dealers. Banks also provide credit enhancements and serve as key liquidity providers in the CP market. Since CP maturities are short, ranging from days to months up to 270 days, most investors purchase at issuance and hold until maturity. As a result, the CP secondary market is relatively small. Instead, many investors roll over maturing CP by purchasing new issues as their holdings mature. If

Exhibit 6: Largest Commercial Paper Counterparties (based on notional trade activity)

Commercial Paper Counterparty	% of Notional Trade Activity
JPMorgan	24.1%
Bank of America	14.3%
Citigroup	12.0%
Barclays	7.5%
Royal Bank of Canada	7.1%
Goldman Sachs	6.4%
TD Bank	6.2%
Guggenheim Securities	3.5%
Academy Securities	2.5%
Credit Suisse	2.3%
Other CP Counterparties	14.2%

Source: BlackRock's Q2 2020 CP trade activity. 10 largest CP counterparties for USD denominated products (MMFs, CTFs, and Separate Accounts)

investors sell CP before maturity, they typically sell it back to the same CP dealer that originally offered the paper. In fact, many banks are unwilling to bid paper from issuers where they are not a named dealer on that program. This “single source of liquidity” model failed during the COVID-19 Crisis, particularly, when banks needed to protect their balance sheets and hold liquidity to comply with capital and liquidity regulations. In this environment investors were unable to sell CP they were holding. This contrasts with the more diversified sources of liquidity found for financial instruments that are either exchange-traded (e.g., equities, ETFs) or encourage the participation of multiple market makers (e.g., cleared derivatives). The de facto monopoly that a CP's issuing dealer has over providing liquidity presents the very real possibility that the dealer can step away from the paper which is in stark contrast to other financial instruments from equities to bitcoin. Regulators recognized these issues, and as detailed in the section on “Government Actions,” even modest relaxing of bank regulations created capacity and boosted investor confidence.

Understanding the MMF Ecosystem

US MMFs are offered pursuant to Rule 2(a)-7, under the Investment Company Act of 1940, as amended. MMFs are often discussed as if they are all the same, however, there are a number of important differences, as post-GFC reforms created a new set of rules for different types of US MMFs. Exhibit 7 summarizes the key features differentiating Government MMFs, Institutional Prime MMFs, Retail Prime MMFs, Institutional Tax-Exempt MMFs, and Retail Tax-Exempt MMFs.

Exhibit 7: US MMF Requirements

MMF by Mandate	NAV	Liquidity Fee	Redemption Gate	Daily Liquidity Requirement	Weekly Liquidity Requirement	Credit Quality
Government	Stable	None (unless the board opts in)	None (unless the board opts in)	Government money market funds invest 99.5% or more of their total assets in cash, government securities, and/or repurchase agreements that are fully collateralized		
Retail Prime	Stable	Up to 2%	Up to 10 business days in a 90-day period	At least 10% of assets must be liquid assets	At least 30% of assets must be liquid assets	Securities required to have a minimal credit risk
Institutional Prime	Floating	Up to 2%	Up to 10 business days in a 90-day period	At least 10% of assets must be liquid assets	At least 30% of assets must be liquid assets	Securities required to have a minimal credit risk
Retail Tax-Exempt	Stable	Up to 2%	Up to 10 business days in a 90-day period		At least 30% of assets must be liquid assets	Securities required to have a minimal credit risk
Institutional Tax-Exempt	Floating	Up to 2%	Up to 10 business days in a 90-day period		At least 30% of assets must be liquid assets	Securities required to have a minimal credit risk

Source: SEC website. Note: the grey boxes reflect requirements enacted under the 2014 reforms and orange boxes reflects requirements enacted under the 2010 reforms

MMF reforms introduced new liquidity and credit quality requirements as well as increased transparency, broader oversight for funds' boards of directors, and stress testing. Specifically, all taxable MMFs are required to hold at least 10% of assets in cash, US Treasury securities, or securities that are deemed to be able to be liquid within one day. All MMFs are required to hold at least 30% of assets in cash, US Treasury securities, certain other Government securities with remaining maturities of 60 days or less, or securities that are deemed to be able to be liquid within one week ("30% weekly liquid asset (WLA) threshold"). MMFs are required to publicly disclose the WLA as well as daily liquid assets for each MMF daily.

Under Rule 2(a)-7 today, in the event a MMF, other than a Government MMF, falls below the 30% WLA threshold, the Fund's Board of Directors is permitted to consider a course of action, choosing: (a) the imposition of liquidity fees, (b) the use of a redemption gate, or (c) to monitor closely without taking action on fees or gates. If a MMF's WLA falls below 10%, the MMF is required to impose a liquidity fee of 1% on all redemptions, unless the Fund Board decides another action is in the best interests of such MMF (e.g., a smaller liquidity fee or a liquidity fee of up to 2%, a redemption gate, or no action).

In addition, the 2014 MMF reforms introduced a requirement for institutional Prime and Municipal MMFs to convert to a floating NAV, meaning they are no longer permitted to use amortized cost accounting to round the NAV to a stable \$1.00 per share price. For most purposes, these funds are considered "cash equivalents."¹⁴

Government MMFs use a stable per share NAV, and they are not subject to liquidity fees or redemption gate provisions, unless the Fund Board chooses to avail itself of these tools.

As noted earlier, many institutional end-investors responded to the post-GFC MMF reforms by shifting some or all of their asset allocation from Prime MMFs to Government MMFs. To put this in perspective, in 2008, Prime MMFs' assets represented approximately 60% of a \$3.6 trillion market. Investment Company Institute (ICI) weekly data showed that assets under management in US MMFs totaled \$3.58 trillion as of September 10, 2008 (just before the Lehman bankruptcy and the run on MMFs). This included \$2.18 trillion in Prime MMFs, \$0.89 trillion in government-only funds, and \$0.52 trillion in tax-exempt funds.¹⁵ It is difficult to make comparisons as the 2014 reforms created new types of funds, including retail funds where the investors must be "individuals."¹⁶ However, Exhibit 8 shows the dominant role of Government MMFs today, representing in excess of 80% of MMF assets in aggregate. In addition, this exhibit highlights the flight to safety across the short-term markets in March 2020, as Government MMFs experienced inflows even beyond a shift in assets from Institutional Prime MMFs to Government MMFs. Between month-end February and month-end March 2020, Government MMF assets under management (AUM) jumped more than 30%.

Exhibits 9 and 10 show the typical asset allocation of Prime and Municipal MMFs, respectively. Prime MMFs typically feature significant holdings in CP and CDs, as these offer income and portfolio diversification and can be used as a source of funding to meet redemptions either from the proceeds of maturities or through liquidation of such obligations. Repurchase agreements collateralized by Treasury and agency securities are commonly held in Prime MMFs, as these are obligations with very short maturities, and can be used as a source of portfolio liquidity. Of note, Retail Prime funds don't tend to experience the same level

Exhibit 8: MMF AUM

MMF by Mandate	AUM (\$B)					
	2/28/2020	3/16/2020	3/31/2020	4/15/2020	4/30/2020	5/12/2020
Government	\$2,662.6	\$2,900.9	\$3,491.2	\$3,646.2	\$3,827.2	\$3,850.9
Retail Prime	471.1	465.5	423.8	425.2	436.1	445.7
Institutional Prime	313.6	289.8	222.6	236.9	258.7	273.7
Retail Tax-Exempt	123.3	120.4	115.1	124.1	122.3	120.3
Institutional Tax-Exempt	11.2	12.5	12.7	14.6	13.7	14.6
Total 2a-7	\$3,581.7	\$3,789.1	\$4,265.3	\$4,447.0	\$4,657.9	\$4,705.1

Source: iMoneyNet

of volatility in flows, allowing them to extend the weighted average portfolio maturity (WAM) and weighted average portfolio life (WAL) more comfortably and run weekly liquidity closer to the 30% threshold. For muni MMFs, VRDNs are the largest part of the portfolio allocation. They have a put feature (where the holder can demand early repayment), typically one or seven days, which is used to manage liquidity buckets.

Exhibit 9: Typical Asset Allocation of Prime MMFs

Prime MMFs		
Commercial Paper	31.9%	\$308,309,003,719
Certificate of Deposit	22.3%	\$216,058,944,685
Repurchase Agreement	17.5%	\$169,140,037,083
U.S. Treasury Debt	11.3%	\$109,790,178,787
U.S. Government Agency Debt	7.2%	\$69,722,776,136
Time Deposit	6.8%	\$65,773,987,758
Other Instrument	1.6%	\$15,215,538,067
Variable Rate Demand Note	1.1%	\$10,796,927,120
Investment Company	0.2%	\$1,942,950,512
Tender Option Bond	0.1%	\$849,230,000

Exhibit 10: Typical Asset Allocation of Muni MMFs

Municipal MMFs		
Variable Rate Demand Note	43.5%	\$55,363,471,022
Municipal Notes and Bonds	24.4%	\$31,057,636,081
Tender Option Bond	24.1%	\$30,586,390,133
Commercial Paper	4.2%	\$5,339,314,612
Investment Company	3.5%	\$4,464,056,069
Repurchase Agreement	0.3%	\$331,027,363

Source: Form N-MFP as of 3/31/2020

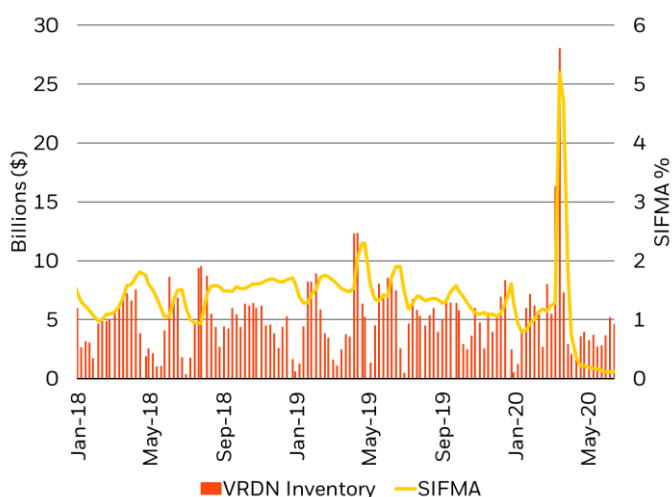
US Experience in COVID-19 Crisis

During the period of high volatility and illiquidity in March of 2020, the short-term cash markets came to a virtual halt. Spreads widened dramatically on commercial paper and certificates of deposit. We can see this reflected in the increase in the 3-month LIBOR Overnight Indexed Swap spread, which went from 23 basis points at the end of February to 138 basis points at the end of March.¹⁷ Rates on 3-month and shorter Treasury bills declined sharply from over 1.25% at the end of February to mostly negative rates toward the end of March given strong demand for high-quality liquid instruments.¹⁸

In the municipal market, the illiquidity that already existed from large scale selling was exacerbated by the need to exercise the put feature of VRDNs. Therefore, banks were seeing these securities being put back to them at a time

when their balance sheets were already at capacity. Dealer inventories of VRDNs peaked at a record level of around \$31 billion as of March 19 (most of which was in weekly put VRDNs, rather than daily) before contracting back to normal levels of around \$5 billion by the end of March. In an effort to stem this selling, the rates on VRDNs jumped dramatically and pushed the SIFMA index, which represents the average yield on 7-day municipal VRDN securities, to a peak of 5.20% by March 18, up from 1.15% at the end of February, as shown in Exhibit 11.¹⁹ This revalued any non-variable rate security, such as short-term notes or tax-exempt CP, causing NAVs to fall. Some of these vehicles were included in the Primary Dealer Credit Facility (discussed more in “Government Actions”), which helped alleviate dealer balance sheet pressure. Further relief came from the inclusion of tax-exempt CP and notes in the Money Market Liquidity Facility (also discussed more in “Government Actions”). Subsequently, the SIFMA index began to normalize to pre-crisis levels. During this period, selling of VRDNs came from a diverse set of market participants, including long-term muni bond funds, short-duration muni bond funds, separately managed accounts, and other direct holders of VRDNs in addition to municipal MMFs, as VRDNs are frequently held as a placeholder for cash in many types of municipal portfolios. Less than half of the VRDNs put back to dealers in mid-March was from muni MMFs, however the selling still added pressure to muni MMFs, as the reluctance for dealers to offer bids caused note and CP holdings of muni MMFs to push many of the FNAVs below \$1.0000 for the first time since FNAVs were implemented in 2016. Additionally, outflows from muni bond funds caused redemptions of their cash buffers from muni MMFs. Still, municipal MMFs maintained upwards of 50% WLA (as shown in Exhibit 15) and

Exhibit 11: VRDN Inventory vs. SIFMA



Source: Bloomberg, Bank of America, Securities Industry and Financial Markets Association (SIFMA), as of 5/31/20

Exhibit 12: March Inflows for 10 Largest US Government MMFs as of 3/18

Fund Name	2/28 AUM (\$B)	3/31 AUM (\$B)	AUM Chg. (\$B)	% Chg.
Fidelity Govt Cash Reserves	\$165.4	\$200.3	\$34.9	21.1%
JPMorgan US Govt MMF	\$159.1	\$199.1	\$40.0	25.1%
Fidelity Govt MMF	\$156.5	\$183.8	\$27.3	17.4%
Vanguard Federal MMF	\$152.4	\$183.3	\$30.9	20.3%
Fidelity Inv Govt Portfolio	\$133.8	\$173.5	\$39.7	29.7%
BlackRock Liquidity: FedFund	\$123.7	\$144.3	\$20.6	16.7%
Goldman Sachs FS Government Fund	\$120.0	\$157.0	\$37.1	30.9%
Federated Government Obligations Fund	\$105.3	\$138.7	\$33.4	31.7%
Wells Fargo Govt MMF	\$85.6	\$119.1	\$33.4	39.1%
BlackRock Liquidity: T-Fund	\$81.5	\$99.1	\$17.6	21.6%
Other Government MMFs	\$1,379.3	\$1,892.8	\$513.5	37.2%
Total Government 2a-7 Industry	\$2,662.6	\$3,491.2	\$828.6	31.1%

Source: This list is being provided for illustrative purposes only to demonstrate a segment of the U.S. government money market funds, focusing on the inflows for the 10 largest U.S. government money market funds in terms of AUM, as sourced by iMoneyNet as of March 18, 2020. BlackRock does not offer or distribute any of the third party funds. This is not intended to be sales material and, importantly, these funds may not be available in certain jurisdictions.

experienced much more muted outflows than Prime MMFs (see Exhibit 13). Moreover, once muni bond funds were able to sell securities to raise cash, muni MMFs benefitted from a flight to safety within the muni market and received inflows.

In this environment, certain MMFs came under intense pressure. Importantly, the experience of US MMFs varied significantly across the types of funds.

Government MMFs are viewed as safe, stable havens for investors. Many of these funds experienced significant inflows during the critical weeks of the COVID-19 Crisis, as shown in the February versus March month-end AUM rising by more than 30% (see Exhibit 12). As noted earlier, these inflows significantly exceeded outflows from other MMFs, reflecting investors' desire for safety in moving other assets to these funds.

While less than Institutional Prime, both Retail Prime MMFs and Retail Tax-exempt MMFs experienced withdrawals during March as highlighted in Exhibit 13. Retail Prime MMFs saw outflows of about 10% while their institutional counterparts had outflows closer to 30%. During this period, Retail Tax-exempt MMFs had outflows of about 6%, reflecting the investor preference for actual cash.

Some Prime MMFs approached the 30% WLA threshold, and one fell below the limit.²⁰ **Although no MMFs experienced credit problems and no MMFs were unable to meet 100% of their redemption requests, the presence of the WLA threshold created uncertainty and concern about how MMF Boards might act.** The fear of the imposition of a liquidity fee or redemption gate essentially converted the 30% WLA threshold to a new "break the buck" triggering event for investors.

Exhibit 13: 2a-7 MMF AUM by Mandate (\$ billions)

Fund Name	2/28 AUM (\$B)	3/31 AUM (\$B)	AUM Chg. (\$B)	% Chg.
Prime Retail	\$471.1	\$423.8	(\$47.3)	-10.0%
Prime Institutional	\$313.6	\$222.6	(\$91.0)	-29.0%
Municipal Retail	\$123.3	\$115.1	(\$8.2)	-6.7%
Municipal Institutional	\$11.2	\$12.7	\$1.5	13.4%
Total 2a-7 Prime & Municipal Market	\$919.2	\$774.2	(\$145.0)	-15.8%

Source: iMoneyNet

Per the SEC rules, WLA data is publicly disclosed daily on a one business day lag. Exhibit 14 shows the WLA data disclosed by the largest 20 Institutional Prime MMFs as of March 18, 2020. Looking back at this situation, Prime MMFs held at least 30% in liquid assets. However, these assets were essentially considered unusable, and portfolio managers were forced to raise additional liquidity rather than dip into this buffer.

Municipal MMFs are subject to a 30% WLA threshold; however, they are not subject to a daily liquidity test. The municipal short-term markets are different from the taxable markets in that a significant portion of the securities is floating rate with a put feature. Variable Rate Demand Notes (VRDNs) incorporate a put feature which is usually weekly and sometimes daily. Likewise, Tender Option Bonds (TOBS) are puttable daily or weekly. As noted in

Exhibit 14: Institutional and Retail Prime MMFs Over \$2 Billion, as of March 18, 2020

Fund Name	AUM (\$B)	Weekly Liquid Assets Percentage	Type
Vanguard Prime MMF	\$126.8	40.31%	Retail
Schwab Value Advantage MF	\$116.2	40.72%	Retail
Fidelity Inv Money Market Portfolio	\$71.1	40.00%	Retail
Fidelity MMF	\$54.9	45.00%	Retail
BlackRock Money Market Master Portfolio	\$51.9	48.40%	Institutional
JPMorgan Prime MMF	\$50.7	39.36%	Institutional
Federated Prime Cash Obligs	\$30.5	38.12%	Retail
Federated Instit Prime Oblig	\$21.2	31.33%	Institutional
UBS Prime Master Fund	\$16.5	32.51%	Institutional
State Street Money Market Portfolio	\$15.1	38.19%	Institutional
Goldman Sachs FS MMF	\$11.0	34.96%	Institutional
Morgan Stanley Instit Liquidity/Prime	\$10.9	33.10%	Institutional
JPMorgan Liquid Assets MMF	\$9.9	43.79%	Retail
BlackRock Liquidity:TempCash	\$9.2	37.77%	Institutional
Fidelity Inv Prime Reserves ²¹	\$8.8	50.00%	Institutional
Fidelity Inv Prime MMP ²²	\$7.8	50.00%	Institutional
BlackRock Liquidity:TempFund	\$7.4	35.56%	Institutional
UBS Prime CNAV Master Fund	\$7.4	38.99%	Retail
Dreyfus Cash Management	\$7.1	35.90%	Institutional
Wells Fargo Heritage MMF	\$6.6	34.72%	Institutional
Goldman Sachs FS Prime Obligs Fund	\$6.4	39.36%	Institutional
USAA Money Market Fund	\$4.7	41.51%	Retail
Schwab Variable Share Price MF	\$4.6	40.72%	Institutional
Federated Capital Reserves Fund	\$4.4	39.70%	Retail
Dreyfus Inst Preferred MMF	\$4.1	39.67%	Institutional
T Rowe Price Cash Reserves Fund	\$3.6	37.70%	Retail
General MMF	\$3.3	41.70%	Retail
Morgan Stanley Instit Liq/MMP	\$3.2	40.16%	Institutional
BlackRock MMP	\$3.1	52.60%	Retail
Wells Fargo Money Market Fund	\$2.9	41.89%	Retail
First Amer Retail Prime Obligs Fund	\$2.7	46.00%	Retail
Northern Instit Prime Obligs Port ²³	\$2.4	30.44%	Institutional
Invesco Liquid Assets Portfolio	\$2.1	39.90%	Institutional
Western Asset Liquid Reserves	\$2.0	36.72%	Institutional

This list is being provided for illustrative purposes only to demonstrate institutional and prime money market funds over \$2 billion in AUM, as sourced by iMoneyNet as of March 18, 2020. BlackRock does not offer or distribute any of the third party funds. This is not intended to be sales material and, importantly, these funds may not be available in certain jurisdictions.

Exhibit 10, municipal MMFs have an allocation in excess of 40% and 20% to VRDNs and TOBS, respectively. As a

result, these MMFs maintained a WLA in excess of 50% with an average of 73%, as shown in Exhibit 15.

Exhibit 15: Largest Municipal MMFs, as of March 18, 2020

Fund Name	AUM (\$B)	Weekly Liquid Assets Percentage	Type
Vanguard Municipal MMF/Investor	\$18.13	74.50%	Retail
Schwab Municipal MF	\$15.32	65.51%	Retail
JPMorgan T-F MMF	\$12.37	74.88%	Retail
BlackRock Liquidity:Muni Cash	\$7.16	79.14%	Institutional
Fidelity Inv Tax Exempt Portfolio	\$7.10	77.00%	Retail
Fidelity Municipal MMF	\$5.67	61.00%	Retail
Vanguard CA Muni MMF	\$5.44	62.16%	Retail
Schwab CA Muni MF	\$5.29	56.20%	Retail
Federated T-F Oblig	\$4.39	62.07%	Retail
Fidelity CA AMT T-F MMF	\$3.75	65.00%	Retail
Federated Muni Oblig Fund	\$3.57	62.33%	Retail
Fidelity T-E MMF	\$3.25	63.00%	Retail
Vanguard NY Muni MMF	\$2.95	75.37%	Retail
Fidelity NY AMT T-F MMF	\$2.16	77.00%	Retail
UBS Tax Free Master Fund	\$2.04	90.37%	Retail
Vanguard PA Muni MMF	\$1.92	83.27%	Retail
JPMorgan Instit T-F	\$1.81	67.24%	Institutional
Fidelity MA AMT T-F MMF	\$1.77	73.00%	Retail
Goldman Sachs Investor T-E MMF	\$1.70	74.38%	Retail
JPMorgan NY Muni MMF	\$1.59	80.18%	Retail
Fidelity CA Municipal MMF	\$1.55	71.00%	Retail
Fidelity MA Municipal MMF	\$1.39	74.00%	Retail
Federated CA Muni Cash Trust	\$1.33	53.14%	Retail
Federated Instit T-F Cash Trust	\$1.32	99.99%	Institutional
JPMorgan Muni MMF	\$1.28	72.20%	Retail
Vanguard NJ Muni MMF	\$1.27	74.84%	Retail
Wells Fargo Natl T-F MMF	\$1.20	73.78%	Retail
Fidelity NY Municipal MMF	\$1.19	81.00%	Retail
Schwab AMT Tax-Free MF	\$1.15	65.77%	Retail
Schwab NY AMT Tax-Free MF	\$0.99	79.90%	Retail
General Muni MMF	\$0.83	88.89%	Retail
Dreyfus AMT-Free T-E Cash Mgmt	\$0.78	84.50%	Institutional
JPMorgan CA Muni MMF	\$0.71	70.33%	Retail
First American Retail T-F Oblig	\$0.58	68.80%	Retail
Federated NY Muni Cash Trust	\$0.55	67.90%	Retail
Fidelity NJ Municipal MMF	\$0.51	66.00%	Retail
BNY Mellon Natl Muni MMF	\$0.50	91.21%	Retail

This list is being provided for illustrative purposes only to demonstrate the largest municipal money market funds, as sourced by iMoneyNet and fund websites as of March 18, 2020. BlackRock does not offer or distribute any of the third party funds. This is not intended to be sales material and, importantly, these funds may not be available in certain jurisdictions.

Exhibit 16: Form N-CR Actions by Fund

Fund Name	Supporting Entity	Date	Action	\$ Amt.
Dreyfus Cash Management	The Bank of New York Mellon	3/18/2020	Purchase of securities	\$1,204,850,099
Dreyfus Cash Management	The Bank of New York Mellon	3/19/2020	Purchase of securities	\$948,975,515
Dreyfus General NJ Municipal Money Market	The Bank of New York Mellon	3/23/2020	Capital contribution	\$89,000
Goldman Sachs Financial Square Prime Obligations	Goldman Sachs Bank USA	3/19/2020	Purchase of securities	\$301,201,274
Goldman Sachs Financial Square Prime Obligations	Goldman Sachs Bank USA	3/20/2020	Purchase of securities	\$89,940,240
Goldman Sachs Financial Square Money Market Fund	Goldman Sachs Bank USA	3/19/2020	Purchase of securities	\$722,365,313
Goldman Sachs Financial Square Money Market Fund	Goldman Sachs Bank USA	3/20/2020	Purchase of securities	\$729,199,880

Source: SEC.gov

In response, fund sponsors and regulators intervened to avoid the uncertainty associated with MMFs dropping below the 30% WLA threshold. Certain funds with a bank parent chose to buy assets out of their MMFs as shown in Exhibit 16. These banks sought and received permission from the SEC to allow affiliate purchases directly from their own funds.²⁴ Their actions were made public via Form N-CR filings posted on the SEC website, making these actions

easy for market participants to monitor. These actions also raised concerns of investors in MMFs more broadly as they highlighted the liquidity challenges in the market.

Recognizing that Prime MMFs experienced challenges during the COVID-19 Crisis, we note that during the COVID-19 Crisis, no US MMFs imposed liquidity fees or redemption gates, and all US MMFs met 100% of their redemption requests. In part, this reflected the post-GFC

Short-Term Investment Funds

Short-term investment funds (STIFs) are a type of bank-maintained collective investment trust (CIT) that is typically used as an adjunct to other investments in CITs, including for the investment of cash collateral received in securities lending transactions. STIFs are subject to regulation by the Office of the Comptroller of the Currency (OCC) if maintained by national banks, and by state bank regulators if maintained by state banks.

In 2012, in response to issues with STIFs observed in the GFC, the OCC promulgated revised portfolio composition requirements for STIFs and required enhanced reporting to the OCC, including monthly AUM. Among the portfolio composition changes, the STIF rule required a weighted average portfolio life maturity (WAL) of 120 days or less and a dollar weighted average portfolio maturity (WAM) of 60 days or less.²⁵ However, cash pools maintained by state-chartered banks are not under the supervision of the OCC and therefore do not have the same rules as the STIFs that are maintained by nationally-chartered banks.

During the COVID-19 Crisis, STIFs were not immune to the market disruptions experienced by other short-term credit vehicles. Due to rapidly declining values of equity securities on loan, STIFs used to invest cash collateral for securities lending saw significant net outflows. Under normal market circumstances, those outflows would have been funded by liquidating high-quality commercial paper or other similar credits. However, since short-term credit markets were frozen, the outflows had to be funded primarily from the daily liquidity in the respective STIFs, along with portfolio assets that were maturing. Therefore, STIFs' WALs and WAMs moved closer to the limits set forth under the OCC's STIF rule. On March 23, the OCC revised their STIF rule and issued a companion order to authorize banks to temporarily extend the WAL limit to 180 days or less and the WAM limit to 120 days or less.²⁶ The relief provided under the Order expires on July 20, 2020 unless the OCC revises the Order before that date.

money market fund reforms which ensured high quality, liquid portfolios. MMFs today are managed with a significant amount of liquidity that is sufficient to meet all normal redemptions and even to meet most elevated redemptions. A global pandemic where all investors and issuers run to safety is the most extreme scenario and suggests that some additional changes should be considered to make these funds even more resilient, especially as the 30% WLA threshold became a floor rather than a buffer.

Government Actions to Address Short-Term Markets

The Federal Reserve and the US Treasury announced a series of programs in March 2020 to alleviate pressure on short-term markets:

- **Primary Dealer Credit Facility (PDCF)** was announced on March 17th and became operational on March 20th. Under the PDCF, the Federal Reserve Bank of New York can offer overnight and term funding with maturities of up to 90 days to *primary dealers* of the Federal Reserve Bank of New York in exchange for collateral. The PDCF will be in place for at least six months and may be extended. Loans are collateralized by a range of investment grade debt securities, such as commercial paper and municipal bonds, as well as a range of equity securities. The interest rate was announced to be the primary credit rate offered to depository institutions via the discount window at the New York Fed. While important to the markets, the PDCF has had limited impact, as the dealers did not receive any relief on capital or liquidity, and they generally remained unwilling to buy securities that required balance sheet capacity.
- **Commercial Paper Funding Facility (CPFF)** was announced on March 17th. Under the CPFF, the Federal Reserve Bank of New York can provide a liquidity backstop through a special purpose vehicle (SPV) that can purchase US dollar-denominated 3-month commercial paper (including asset-backed and tax-exempt commercial paper) rated A1/P1/F1, *directly from eligible issuers*. This program includes a feature for Treasury to provide \$10B of credit protection from its Exchange Stabilization Fund (ESF). The SPV will cease purchasing on March 17, 2021, unless the Fed Board extends the facility. This program was important for the liquidity of the CP market and ability of issuers to borrow; however, it did not have a direct impact on MMFs.
- **Money Market Mutual Fund Liquidity Facility (MMLF)** was announced on March 18th and opened on March 23rd. Under the MMLF, the Federal Reserve Bank of Boston can make loans available to eligible financial institutions secured by *high-quality assets purchased by the financial institution from money market mutual*

funds. This program includes a feature for Treasury to provide \$10B of credit protection from its Exchange Stabilization Fund (ESF). Eligible collateral includes US Treasuries and Guaranteed Agency securities; GSE securities; asset-backed commercial paper; unsecured commercial paper; US municipal short-term debt. On March 23rd, eligible collateral for this program was expanded to include negotiable CDs by banks, including Yankee CDs, with A1/F1/P1 ratings and municipal variable rate demand notes (VRDNs). **Importantly, in this program, banks that purchase securities from the MMFs are not subject to risk weighted capital or leverage capital charges from purchases of money market instruments through the MMLF.** This final feature made the program directly useful to MMFs.

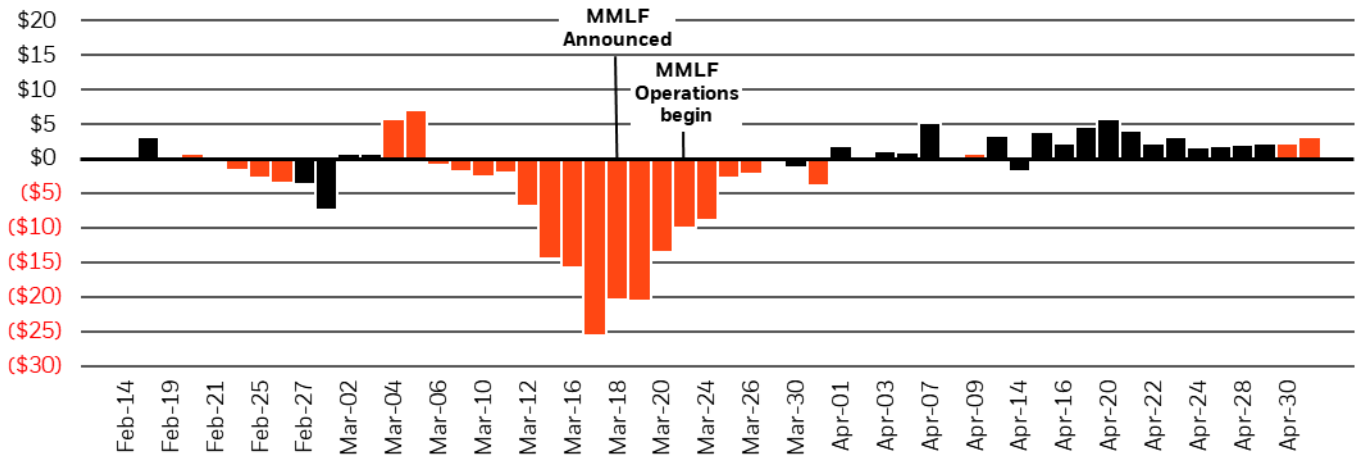
The announcement of the CPFF helped normalize issuance of CP. During March, issuance of CP with overnight maturities had risen sharply as investors pulled back to only the shortest-maturity assets.²⁷

While it took several weeks for banks to become operational with the MMLF, the announcement of this program had the immediate impact of significantly slowing institutional Prime MMF withdrawals, and, at the same time improving secondary market liquidity. There was initial confusion from market participants around the inclusion of Yankee CDs and floating rate CP in the MMLF which slowed the commitment of many banks to this program. Subsequent clarifications from the Fed around the inclusion of these securities in the MMLF helped more banks to become operational and further strengthened market liquidity. Importantly, the redemption behavior of investors during this time was about investors' seeking assurance about access to their funds; it was not about concerns about credit quality or the value of their assets. Restoring confidence was the key to changing investor behavior. Exhibit 17 shows the impact of the announcement and implementation of the MMLF program.

Looking back, these facilities were not used as much as similar facilities during the GFC. For example, eight weeks after the Fed's announcement of the 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 2008.²⁸ In 2020, the announcement of the facilities and the Fed's commitment to provide market liquidity were enough to calm the markets. In large part this reflects the contrast between the market-wide liquidity crisis in March and the GFC credit-oriented crisis.

The Federal Reserve noted that in March, constraints on dealers' intermediation capacity, including regulatory constraints, were possible reasons for deterioration in liquidity.²⁹ In addition to the short-term market facilities, the Fed and other prudential regulators announced a series of measures to ease capital, liquidity, and lending

Exhibit 17: Prime Money Market Mutual Fund Net Flows



Source: iMoneyNet

constraints as detailed in Exhibit 18. As noted earlier, the announcement of the relaxation of capital standards for banks participating in the MMLF, more than any other factor, was the key to the success of this program in stabilizing the short-term markets.

Furthermore, on March 27, President Trump signed the Coronavirus Aid, Relief, and Economic Security ('CARES')

Act into law. The CARES Act includes a provision that allows the US Treasury to guarantee money market funds. This tool was deployed in 2008, and the Dodd-Frank Act removed this power from the Treasury. While the CARES Act enabled Treasury to use this tool, the tool was not needed in the COVID-19 Crisis, which highlights one of the key differences between these crises. The GFC originated with

Exhibit 18: COVID-19 Banking Relief

Agency	Date Introduced	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	April 1, 2020	Interim final rule temporarily excluding Treasury securities and deposits at the Fed from the supplementary leverage ratio calculation
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	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	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	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	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, 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	March 23, 2020	Interim final rule to gradually phase in the automatic restrictions on TLAC buffer requirements	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	March 24, 2020	Statement reducing examination activity and extending remediation periods for existing supervisory findings	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	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	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
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			

Source: Fed, FDIC, OCC, and Basel Committee websites

credit issues which were exacerbated by leverage, opacity, and interconnectedness; these issues were largely addressed by the post-GFC reforms. In contrast, the COVID-19 Crisis originated with a global pandemic that led to a shutdown of the economy which created extreme uncertainty and an urgent need for liquidity.

What's ahead?

Looking ahead, we expect a review of the short-term markets to understand what happened and the policy changes that are needed to further strengthen these markets. We recommend that policy makers take a holistic approach, balancing the roles of various products and stakeholders that comprise the ecosystem. The critical role of commercial paper as a source of funding for corporations and municipalities should be a key component of any consideration of potential changes, while investors' and issuers' demand for cash and liquidity in times of stress is equally critical to consider. As we outline below, **we recommend three key pillars that should all be considered to improve short-term funding markets: (i) commercial paper market structure, (ii) banks as intermediaries, and (iii) money market funds.**

Pillar 1: Commercial Paper Market Structure

The COVID-19 Crisis highlighted the vulnerability of the current over-the-counter structure of the CP market. In the current CP market structure, market participants must frequently ask the bank from whom they purchased the security to bid the paper in the secondary market. Many banks are unwilling to bid paper from issuers where they are not a named dealer on that program. This "single source of liquidity" model failed during the COVID-19 Crisis and will fail again in the next liquidity crisis if fundamental changes to the CP market structure are not implemented. **Given that MMFs comprise less than 25% of the CP market, reforms of MMFs alone will not adequately address CP issues.**

Following the GFC, fundamental changes were made to the trading of OTC derivatives that proved to be effective during the COVID-19 Crisis. Derivatives and equity markets have continued to evolve with the increasing electronic trading, and the fixed income market has shifted some activity to all-to-all electronic platforms. Bond ETFs demonstrated the benefits of standardization during the COVID-19 Crisis. In the fixed income market, the amount and variety of individual CUSIPs has created fragmentation which impacted the ability to trade single bonds. In contrast, Bond ETFs bundle individual CUSIPs into a standardized basket, and during the COVID-19 Crisis these securities traded more frequently and more easily than the underlying bonds.³⁰

Fundamental changes in OTC markets, including derivatives and fixed income show useful examples of market structure evolution. The CP market has not undergone modernization efforts in decades and is overdue for market structure reforms to improve efficiency and resiliency. **We recommend that the SEC convene a group of banks, issuers, money market funds, and other market participants to study potential CP market reforms. Ideas we recommend for consideration include standardization in the CP market and an all-to-all platform in primary and secondary trading to deepen the pool of liquidity providers.**

Pillar 2: Banks as intermediaries

Bank regulation underwent significant change after the GFC with more stringent rules for capital and liquidity. These regulations have strengthened banks, and they have changed the incentives for banks to play a role as intermediaries. During the COVID-19 Crisis, banks withdrew support for short-term markets and, in effect, drained the market of liquidity. The strength of the banks' balance sheets provided an opportunity for prudential regulators to selectively modify some of the regulations imposed after the GFC, essentially treating the bank capital and liquidity as countercyclical buffers in a crisis.

As detailed in the section on "Government Actions," even modestly relaxing bank regulations created capacity and promoted investor confidence. During the COVID-19 Crisis, we saw the effectiveness of this approach when the Fed made participation in the MMLF a balance sheet neutral activity for banks, which was the key to the success of this program. **These actions reflected improvisation. We recommend that these ad hoc programs be replaced with guidance on what countercyclical measures could be used to relax selected regulations in a future liquidity crunch.**

In addition, **we recommend that prudential regulators consider permanently changing bank capital requirements so A1/P1/F1 CP is considered HQLA.** The banking agencies adopted the liquidity coverage ratio (LCR) rule in 2014.³¹ Under the LCR, banks must maintain a certain amount of HQLA relative to their projected net cash outflows. The Basel Committee describes HQLA as having certain general characteristics, including being low risk, easily valued, listed on an exchange, having an active and sizeable market and having low volatility.³² 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. Some CP is already considered to be HQLA Level 2A and some is 2B. **We recommend that all A1/P1/F1 CP should be considered**

HQLA level 2A. Assuming market structure reforms are made, such as a shift to an all-to-all trading platform, CP liquidity would increase.

Treating CP as a HQLA would incentivize banks to hold it on their balance sheets. While CP faced liquidity challenges during the COVID-19 Crisis, incentivizing banks to hold CP would inherently prevent many of these issues from surfacing in a future crisis, since one of the main drivers of the liquidity challenges was banks' reluctance to buy CP. Furthermore, banks are better holders of CP relative to other investors, particularly during periods of stress, as they have more options to perform maturity transformation. For example, banks can pledge CP at the discount window. Incentivizing banks to hold CP by treating the highest rated CP as a HQLA for purposes of the LCR, coupled with CP market structure reforms, would significantly alleviate liquidity pressures in a future crisis and increase stability of the asset class.

Pillar 3: MMFs

MMFs underwent significant change after the GFC, resulting in a shift of capital toward Government MMFs. In addition, Prime and Municipal MMFs were subjected to a series of new criteria impacting the portfolio composition and the structure of these funds. These reforms were data-driven and were intended to create resilience. During the COVID-19 Crisis, no US MMFs imposed liquidity fees or redemption gates, and all US MMFs met 100% of their redemption requests. However, the potential for redemption gates and liquidity fees to be imposed as some Prime MMFs approached the 30% WLA threshold created uncertainty and increased pressure for investors to redeem. In retrospect, MMF reforms after the GFC were designed to address the idiosyncratic risk associated with a fund that took too much credit risk. However, the COVID-19 Crisis resulted from liquidity pressure rising simultaneously in all parts of the capital markets in response to a global pandemic, and it exposed new vulnerabilities which need to be evaluated and addressed.

Looking at the data from the COVID-19 Crisis, it is clear that Government MMFs performed well and, in our view, do not require any further reforms. These MMFs did not rely on government liquidity programs, and, in fact, these funds experienced significant inflows beyond just a shift from other MMFs—this reinforces the observation of a market-wide flight to safety.

Focusing instead on non-Government Prime MMFs, the key issue to address is the concern raised by the potential for the 30% WLA threshold to trigger the implementation of gates and fees. As funds approached this level, uncertainty increased, as no one could predict how a fund board might

act if they reached this threshold. We make the following recommendations:

1. **We recommend retaining the 30% WLA requirement as a portfolio construction feature so that a fund has a substantial liquidity buffer.**
2. **We recommend decoupling the potential imposition of fees and gates from the 30% WLA threshold. However, Fund boards should retain the ability to implement fees and gates at their discretion at any time that they deem it to be in the best interests of a Fund.**
3. During the COVID-19 Crisis, the 30% WLA threshold was similar to banks having significant liquidity but not being able to use it. Given the uncertainty involved, the 30% WLA threshold became a floor rather than a buffer. Just as bank regulators can introduce countercyclical measures to enable banks to provide intermediation services during a crisis, **we recommend that the SEC have guidance prepared for waiving or modifying the 30% threshold during periods of market stress.** Accumulating liquidity for the sake of simply retaining it, without being able to access it when needed, serves no purpose.³³
4. **In order to further enhance the resiliency of MMFs, we recommend adjusting the portfolio requirements.** Specific recommendations include:
 - Prohibit CP that does not have “strong capacity for repayment.”
 - Eliminate the 5% illiquid bucket.
5. The data highlights important underlying market differences between taxable and tax-exempt MMFs. During the crisis, muni MMFs experienced more muted outflows than Prime MMFs. The temporary outflows from institutional muni MMFs were driven by the liquidity challenges in the underlying muni market, particularly challenges in muni bond funds. However, once muni bond funds were able to sell securities to raise cash, muni MMFs benefitted from a flight to safety within the muni market and received money back by the end of March. In addition, it has also been posited that one of the primary reasons muni MMFs saw outflows is that they were initially excluded from the MMLF.³⁴ Even during the market volatility, municipal MMFs maintained upwards of 50% WLA with an average of 73%. The weekly liquidity in muni MMFs averages 75% naturally due to the investment universe consisting mainly of VRDNs. Muni MMFs largely maintained these high levels of liquidity during the COVID-19 Crisis. As a result, **we make no additional recommendations for muni MMFs, other than the recommendations regarding the 30% WLA threshold and gates and fees.**

In developing our recommendations, we also considered several other ideas that have been proposed. Following is a summary of these proposals and our assessment.

1. **Roll back MMF Reforms:** Some have suggested rolling back MMF reforms to allow for constant NAV funds without any of the structural reforms that were adopted in 2014. **We strongly disagree, as we believe this would result in significant systemic risk without commensurate benefits to issuers or investors.** In our 2018 ViewPoint, "[US Money Market Fund Reform: Assessing the Impact](#)," we noted that we did not believe a roll back of MMF reforms was advisable without first studying the effects of MMF reforms and the implications of any potential changes. The COVID-19 Crisis served as a critical test, clearly demonstrating that the MMF reforms of 2010 and 2014 provided important improvements, including the increase in credit quality, shorter maturities, a large liquidity buffer, and a shift in assets from Prime to Government MMFs.
2. **Eliminate Prime and Muni MMFs:** Some have suggested that MMFs be limited to Government MMFs. This solution has important implications for both issuers and investors.

End investors who need a constant NAV could continue to invest in Government MMFs. In theory, investors seeking more yield could invest in extremely short duration funds with a floating NAV. Unlike the current MMFs, these funds would not be deemed "cash equivalents" which would likely limit their appeal and reduce the size of this market even further. While larger institutions could choose to invest directly in CP, CDs and other instruments held in Prime MMFs – either by investing themselves or by establishing a separate account managed externally – this option would not be realistic for smaller institutions or individuals.

In this scenario, there would likely be a reduction in demand for the underlying short-term instruments which would result in higher financing costs for taxable and tax-exempt issuers of CP and other MMF-eligible securities. The costs to issuers and investors need to be factored into the analysis of this option. Furthermore, even if Prime MMFs do not exist in a future state, the CP market will remain highly vulnerable to seizure and disruption and will likely require continuing central bank support if Pillars 1 and 2 are not addressed.

3. **Capital Requirements:** Some have suggested that MMF sponsors be required to hold capital against institutional prime money market funds, ostensibly to be used in the event of a credit or liquidity issue in a fund. In our view this would not advance the cause of decreasing systemic risk. Money market funds are investment products where investors bear the risk of the investment performance of the fund. A capital requirement would likely create a false perception for investors of a "sponsor guarantee." Furthermore, looking at the outflows, it is clear that Prime funds need liquidity requirements, but it is unclear what purpose capital would serve. **Since MMFs are relatively low margin products, the cost of a capital requirement would likely make them uneconomic for sponsors and would have the practical impact of a ban with the results noted in #2 above.**
4. **Access to Fed Discount Window:** Some have proposed that MMFs pay a modest fee to have access to the Federal Reserve Discount Window as a source of liquidity. MMFs have high quality, short-dated holdings that could be pledged in return for cash to meet a short-term liquidity event. Given that the announcement of the Fed MMLF restored investor confidence, enhancing the overall market functioning and credit provision to the broader economy, as the Fed intended,³⁵ there may be a construct in which this access could be a permanent feature of MMFs. However, this idea presents several challenges. The size of the fee would need to be modest; otherwise the funds would not be viable. Likewise, previous discussions have been tied to capital which raise the issues noted in #3 above. In addition, there would need to be cross-jurisdictional oversight of MMFs which may prove too complex to administer. **These significant challenges would need to be addressed for access to the discount window to be a viable option.**

Short-term markets, including commercial paper and money market funds, are important for funding taxable and tax-exempt entities. These instruments are part of a complex ecosystem. Understanding the ecosystem and taking a holistic approach to reforming the system are needed to strengthen the financial system to withstand the next market disruption. We recommend policy makers and market participants engage in a dialogue that includes addressing issues in all three of the pillars that we have discussed in this report.

Appendix: Global COVID-19 Government Actions for Short-Term Markets

Agency	Date	Program/Measure	Description
US			
OCC	March 22, 2020	Revised STIFs Rule	OCC revised their STIFs Rule to authorize banks to temporarily extend WAL and WAM limits
Fed	March 23, 2020	Money Market Mutual Fund Liquidity Facility (MMLF)	Facility to make loans to eligible financial institutions secured by high-quality assets purchased by the participating institutions from MMFs
Fed	March 23, 2020	Primary Dealer Credit Facility (PDCF)	Facility to offer overnight and term funding with maturities of up to 90 days to primary dealers of the Federal Reserve Bank of New York in exchange for collateral in the form of a range of investment grade debt securities (e.g., CP, muni's) and equity securities
Fed	March 23, 2020	Commercial Paper Funding Facility (CPFF)	Facility to provide a liquidity backstop by purchasing US dollar-denominated 3-month investment grade CP from eligible issuers
Fed	March 31, 2020	FIMA Repo Facility	Facility to provide dollar liquidity to central banks and international monetary authorities that have FIMA accounts at the Federal Reserve Bank of New York
Fed	April 27, 2020	Municipal Liquidity Facility	Facility to purchase up to \$500B of eligible notes from states and eligible cities & counties
European Union			
ECB	March 18, 2020	Corporate Sector Purchase Programme	ECB to purchase CP of sufficient credit quality
ECB	April 7, 2020	Emergency Collateral Package	ECB to implement temporary measures to support bank lending, including: (i) easing conditions under which credit claims are acceptable collateral; (ii) lowering minimum size for credit claims to €0; and reducing collateral valuation haircuts by 20%
UK			
BoE	March 18, 2020	COVID Corporate Financing Facility (CCFF)	BoE to purchase CP of up to 1-year maturity issued by firms making a 'material contribution to the UK economy', as well as corporate bonds
BoE	March 24, 2020	Contingent Term Repo Facility (CTRF)	BoE to provide a 3-month enhancement to existing sterling liquidity insurance facilities, allowing eligible participants (e.g., banks, building societies, broker-dealers, CCPs) to borrow central bank reserves in exchange for less liquid assets
BoE, HMT	April 9, 2020	Extension of Way & Means Facility	BoE and HMT extended the Government's overdraft account to fund direct stimulus measures, thereby supporting market functioning by reducing the impacts of turning to funding via gilt and sterling money markets
BoE	March 18, 2020	COVID Corporate Financing Facility (CCFF)	BoE to purchase CP of up to 1-year maturity issued by firms making a 'material contribution to the UK economy', as well as corporate bonds
Australia			
RBA	March 13 & 16, 2020	Repo agreement purchases	RBA injected additional liquidity into the banking system through regular repurchase agreements
APRA	March 19, 2020	Easing of bank capital requirements	APRA encouraged banks to utilise existing capital buffers to facilitate ongoing lending to the economy
RBA	March 19, 2020	Term Funding Facility (TFF)	RBA established the TFF to offer term funding at a fixed, low interest rate to lenders, to lower funding cost for the entire banking system and incentivize lenders to provide liquidity to small and medium-sized businesses
RBA	March 20, 2020	USD Swap Facility	RBA and the Fed established a temporary reciprocal swap line to enhance USD liquidity
Hong Kong			
HKMA	April 22, 2020	Enhancing USD liquidity	HKMA introduced a temporary USD Liquidity Facility, which uses funds obtained through the US Fed's FIMA Repo Facility, to enhance supply of USD to banks
HKMA	April 9, 2020	Reduction of Exchange Fund Bill issue size	HKMA reduced issue size of Exchange Fund Bills to increase HKD liquidity in the interbank market
HKMA	March 16, 2020	Reduction in countercyclical capital buffer	Countercyclical capital buffer reduced from 2% to 1%, to allow banks to be more supportive to the domestic economy

Appendix (cont'd)

Agency	Date	Program/Measure	Description
Japan			
BoJ	March 13, 2020	Increased issuance of JGSs	BoJ increased the number of issues of JGSs to stabilize the repo market
BoJ	March 15, 2020	USD Swap Facility	BoJ lowered price of existing USD swap line with the Fed to ensure supply of USD
BoJ	March 16, 2020	Modified purchase limits for CP and corporate bonds	BoJ increased the limits to purchase CP and corporate bonds
FSA	March 17, 2020	Easing of bank capital requirements	FSA encouraged banks to use capital buffers when necessary to maintain lending volume
Singapore			
MAS	March 19, 2020	USD Swap Facility	MAS and the Fed established a temporary reciprocal swap line to enhance USD liquidity
MAS	April 7, 2020	Easing of bank capital requirements	MAS encouraged banks to use capital buffers to support lending
MAS	April 20, 2020	SGD Facility	Facility to lend SGD at an interest rate of 0.1% pa to eligible financial institutions, to support their lending to SMEs under existing loan schemes.
Canada			
BoC	March 27, 2020	Commercial Paper Purchase Program	BoC to purchase CP with a tenor of up to 3 months and a minimum short-term credit rating of R-
Colombia			
Central Bank of Colombia	March 27, 2020	Dollar swap purchase	Central Bank of Colombia to purchase \$400mm in dollar swaps with a term of 60 days
Chile			
Central Bank of Chile (CBC)	March 12, 2020	Extension of liquidity management programs	CBC extended liquidity management programs in pesos (repo) and dollars (FX swaps) through January 2021
Mexico			
Hacienda and Banco de Mexico	March 9, 2020	NDF auction program upgrade	Hacienda and Banco de Mexico upgraded the NDF auction program from US\$20B to US\$ 30B and resumed auctions
Peru			
Central Bank of Peru	March 11, 2020	Repo operations extension	Central Bank of Peru extended repo operations (REPO-MONEDAS) to support liquidity conditions in financial markets

Related Publications

- January 2011, BlackRock ViewPoint, [Money Market Fund Reform – Discussion of Reform Proposals](#)
- August 2011, BlackRock ViewPoint, [Money Market Funds: Potential Capital Solutions](#)
- March 2012, BlackRock ViewPoint, [Money Market Funds: The Debate Continues – Exploring Redemption Restrictions, Revisiting the Floating NAV](#)
- September 2012, BlackRock ViewPoint, [Money Market Funds: A Path Forward](#)
- June 2018, BlackRock ViewPoint, [US Money Market Fund Reform: Assessing the Impact](#)
- BlackRock, Comment Letter to SEC on Sep. 12, 2013, [Money Market Fund Reform; Amendments to Form PF \(Release No. IC30551; File No. S7-03-13\)](#)
- Joint Asset Manager Letter to SEC on Oct. 31, 2013, [Money Market Fund Reform; Amendments to Form PF \(Release No. IC-30551; File No. S7-03-13\)](#)
- BlackRock, Comment Letter to SEC on Apr. 23, 2014, [Money Market Fund Reform; Amendments to Form PF \(Release No. IC30551; File No. S7-03-13\) – Staff Analysis of Data and Academic Literature Related to Money Market Fund Reform](#)
- BlackRock, Comment Letter to SEC on Oct. 14, 2014, [Removal of Certain References to Credit Ratings and Amendment to the Issuer Diversification Requirement in the Money Market Fund Rule \(Release No. IC-31184; File No. S7-07-11\)](#)

Endnotes

1. See Appendix for a comprehensive list presenting the breadth of government programs introduced around the world to support short-term markets during the COVID-19 Crisis.
2. Source: Federal Reserve (see Exhibits 5 and 6)
3. BCBS [Basel Framework](#)
4. The Dodd-Frank Act: <https://www.govinfo.gov/content/pkg/BILLS-111hr4173enr/pdf/BILLS-111hr4173enr.pdf>
5. Wall Street Journal, "Money Fund, Hurt by Debt Tied to Lehman, Breaks the Buck," September 17, 2008
6. US Department of the Treasury, "Treasury Announces Temporary Guarantee Program for Money Market Funds," September 29, 2008
7. SEC Division of Risk, Strategy, and Financial Innovation, "Response to Questions Posed by Commissioners Aguilar, Paredes, and Gallagher," November 30, 2012
8. Money Market Reform; Amendments to Form PF, Release No. 339616; IA-3879, IC 31166
9. Money Market Reform; Amendments to Form PF, Release No. 339616; IA-3879, IC 31166 (page 202). As part of reforms, government MMFs are required to invest 99.5% or more of its total assets in cash, government securities, and/or repurchase agreements that are collateralized fully.
10. 2017 [ICI Fact Book](#)
11. BlackRock, Understanding Variable Rate Demand Notes (2019), available at <https://www.blackrock.com/cash/literature/whitepaper/understanding-variable-rate-demand-notes.pdf>.
12. Section 939A(a)(1) and Section 939A(b)
13. SEC [Removal of Certain References to Credit Ratings and Amendment to the Issuer Diversification Requirement in the Money Market Fund Rule](#), 17 CFR Parts 270 and 274
14. "The Commission's position continues to be that, under normal circumstances, an investment in a money market fund that has the ability to impose a fee or gate under rule 2a-7(c)(2) qualifies as a "cash equivalent" for purposes of US GAAP." IC-31166, p. 134
15. See Patrick McCabe, Federal Reserve Board, Finance and Economics Discussion Series: 2010-51: The Cross Section of Money Market Fund Risks (Sep. 12, 2010), available at <https://www.federalreserve.gov/Pubs/feds/2010/201051/index.html>.
16. Money Market Fund Reform; Amendments to Form PF, 79 Fed. Reg. 47735 (Aug. 14, 2014); SEC Division of Investment Management, 2014 Money Market Fund Reform Frequently Asked Questions (revised February 7, 2019), available at <https://www.sec.gov/divisions/investment/guidance/2014-money-market-fund-reform-frequently-asked-questions.shtml>.
17. Source: Bloomberg
18. Source: Bloomberg
19. Source: Bloomberg/SIFMA Municipal Swap Index Yield
20. A Northern Trust Fund fell below the 30% limit on two separate instances. Source: Northern Trust [website](#)
21. Fidelity [announced](#) on June 19, 2020 it is liquidating the Fidelity Investments Money Market Prime Money Market portfolio and Fidelity Investments Money Market Prime Reserves Portfolio. Liquidation will occur on or about August 14, 2020
22. Ibid
23. On May 18, 2020, Northern Trust announced it was shutting down the Northern Institutional Prime Obligations Portfolio (NPAXX). In its [filing with the SEC](#), the firm stated it will liquidate the portfolio on or about July 10, 2020.
24. SEC no-action relief to the Investment Company Institute, March 19, 2020: <https://www.sec.gov/investment/investment-company-institute-031920-17a>
25. OCC 12 CFR Part 9.18(b)(4)(iii) finalized October 2012, effective July 2013. This was consistent with the 2010 MMF reforms.
26. OCC Bulletin 2020-22: <https://www.occ.gov/news-issuances/bulletins/2020/bulletin-2020-22.html>
27. Federal Reserve, "Financial Stability Report," May 2020
28. ICI, "Fund Flows During COVID-19," May 27, 2020
29. Federal Reserve, "Financial Stability Report," May 2020
30. iShares, "Bond ETFs Send a Clear Signal," April 14, 2020: <https://www.ishares.com/us/insights/etf-trends/bond-etfs-send-a-clear-signal>
31. 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.
32. Basel Committee on Banking Supervision, "Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools," January 2013
33. The recommendations regarding the 30% WLA and gates and fees also apply to municipal MMFs to retain a consistent framework
34. The Fed [announced](#) on March 20 (two days after the MMLF was originally announced) the expansion of the MMLF to allow the Federal Reserve Bank of Boston to make loans available to eligible institutions secured by certain high-quality assets purchased from single state and other tax-exempt municipal money market mutual funds.
35. Federal Reserve Money Market Mutual Fund Liquidity Facility: <https://www.federalreserve.gov/monetarypolicy/mmlf.htm>

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