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United States: Money Market Mutual Fund Liquidity Facility¹

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Yale Program on Financial Stability Case Study
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Abstract

At the onset of the COVID-19 pandemic in March 2020, prime and tax-exempt money market funds (MMFs) faced increased demands for redemption. Meeting redemptions required MMFs to sell assets into increasingly illiquid markets. Using the emergency authority outlined in Section 13(3) of the Federal Reserve Act, the Board of Governors of the Federal Reserve established the Money Market Mutual Fund Liquidity Facility (MMLF), a facility similar in structure and purpose to a program that the Fed implemented in 2008 amidst the Global Financial Crisis (GFC). The MMLF extended nonrecourse loans to banks and their affiliates for the purchase from some types of MMFs of certain high-quality assets, including government securities, secured and unsecured commercial paper, and short-term municipal debt. Borrowers pledged the purchased assets as collateral for the loans with the Federal Reserve Bank of Boston (FRBB), which administered the MMLF. The MMLF accepted a wider range of collateral than the GFC-era program, which only accepted asset-backed commercial paper. FRBB was also further protected by \$10 billion in credit protection from the Treasury Department, unlike the GFC-era program. Use of the MMLF peaked at \$53.8 billion in loans outstanding the week of April 9, 2020, then gradually decreased. The MMLF expired on March 31, 2021, after two extensions to its operating dates.

Keywords: COVID-19, market liquidity, money market mutual funds, MMLF

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Overview

Over the first three weeks of March, amid increasing uncertainty surrounding the COVID-19 pandemic, financial market volatility spread to short-term funding markets. Money market mutual funds (MMFs), generally considered a safe investment⁴, suddenly faced destabilizing outflows (Cipriani et al. 2020). Investors demanded redemptions from prime MMFs, which invest primarily in highly rated corporate debt securities, and tax-exempt or “muni” MMFs, which invest primarily in municipal securities. Investors plowed \$827 billion into government MMFs, which invest in Treasuries and agency securities (FRB 2020l; Anadu et al. 2021).

In the month of March, institutional⁵ investors withdrew 30 percent of prime MMF assets under management (AUM), while retail investors withdrew 9 percent (FSB 2020). Between March 10 and March 24, prime MMFs reduced their holdings of commercial paper (CP) by \$35 billion, or 74 percent of the overall decline in CP during these two weeks (PWG 2020). In total, MMFs’ assets under management declined by \$143 billion over this time period (Anadu et al. 2021).

Investor redemptions put MMFs under pressure to sell assets into illiquid markets to raise cash. Weekly liquid assets (WLA), which are assets the Securities and Exchange Commission determines can be converted to cash within a week⁶, fell close to regulatory thresholds (17 CFR, n.d.). If WLA falls below 30 percent of total assets, institutional MMFs may impose

Key Terms

Purpose: To aid MMFs “in meeting demands for redemptions by investors and to foster liquidity in the markets for the assets held by [MMFs], including the market for municipal securities” (FRB 2020l).

Launch dates	Authorized: March 18, 2020 Announced: March 18, 2020 (FRB 2020i)
Operational Date	March 23, 2020 (FRB 2020l)
End Date	March 31, 2021
Legal Authority	Section 13(3) of the Federal Reserve Act U.S.C. 31 § 5302 Exchange Stabilization Fund
Source of Funding	Federal Reserve, US Treasury
Administrators	Federal Reserve Bank of Boston
Overall Size	Aggregate amount of haircut-adjusted eligible collateral
Term	Equal to collateral maturity up to a maximum length of 12 months
Haircut Rate	Depending on collateral type, ranged from the primary credit (discount window) rate to 100 basis points over the primary credit rate (FRB 2020i)
Eligible Collateral	Government securities, short-term municipal securities, unsecured CP, ABCP, negotiable CDs, and VRDNs (FRB 2020k; FRB 2020n; FRB 2020o)
Peak Utilization	\$53.8 billion in outstanding loans, during the week of April 9, 2020 (FRB 2020c)

⁴ Throughout this case, MMFs refer only to domestic mutual funds; offshore funds were not eligible for the MMLF. MMFs are generally considered a safe investment as they pay dividends that reflect short-term interest rates, are redeemable on demand, and seek to maintain a stable Net Asset Value (NAV) of \$1.00.

⁵ Institutional MMFs are funds whose investors do not qualify as retail (i.e. are not natural persons) and allow investments from small businesses, large corporations, pension plans, and endowments, among others.

⁶ WLA include cash, US Treasury securities, certain other government securities that mature within 60 days, and securities that mature or are puttable within five business days (Anadu et al. 2021).

redemption gates or fees (up to 2 percent) on investors; if it falls below 10 percent and the fund must impose a fee of 1 percent unless its board determines doing so is not in the interest of shareholders (Anadu et al. 2021). Market participants feared that if one prime institutional fund imposed these restrictions, an industry-wide run on prime MMFs may occur, as happened in 2008 when one large prime fund “broke the buck”⁷ (Kothari et al. 2020).

On March 18, 2020, the Federal Reserve (Fed) established the Money Market Mutual Fund Liquidity Facility (MMLF) to stanch a run on MMFs and “foster liquidity in the markets for the assets held by [MMFs]” (FRB 2020l). The Federal Reserve Bank of Boston (FRBB), which administered the program, extended nonrecourse loans to banks for the purchase of high-quality assets from prime and tax-exempt MMFs (FRBB 2020b). These assets were then pledged back to FRBB as collateral for the loan (FRB 2020k). While the Fed is authorized to lend to banks in this way using its normal discount window lending authority, the Fed invoked emergency lending authorities under Section 13(3) of the Federal Reserve Act to extend loans on the same terms to bank holding companies, including parent companies and their broker-dealers, as well as branches and agencies of foreign banks (FRB 2020i). Unlike the discount window, the loans offered by the MMLF were nonrecourse, and borrowers were exempt from capital and liquidity requirements (FDIC, FRB, and OCC 2020). The Fed and SEC provided the regulatory relief that allowed these banks and nonbanks to purchase assets from affiliated MMFs (FRB 2020j; ICI 2020a; SEC 2020; FRB 2020h).

The MMLF resembled the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) that was established in the response to the Global Financial Crisis (GFC), but there were three important differences. First, the launch of the AMLF in 2008 was accompanied by a Treasury guarantee of all funds held in MMFs (Treasury 2008). In 2020, Congress granted Treasury the authority to guarantee the MMF industry again, but Treasury did not exercise this authority (FRB 2020i; ICI 2020b). Second, in 2020, unlike in 2008, Treasury provided \$10 billion in credit protection to FRBB (FRB 2020p). Third, the MMLF accepted a broader range of assets as eligible collateral than the AMLF, including Treasury and agency securities, unsecured CP, and municipal securities (FRB 2020i; FRB 2020k; Kelly 2021). The AMLF accepted only certain types of asset-backed commercial paper (ABCP).

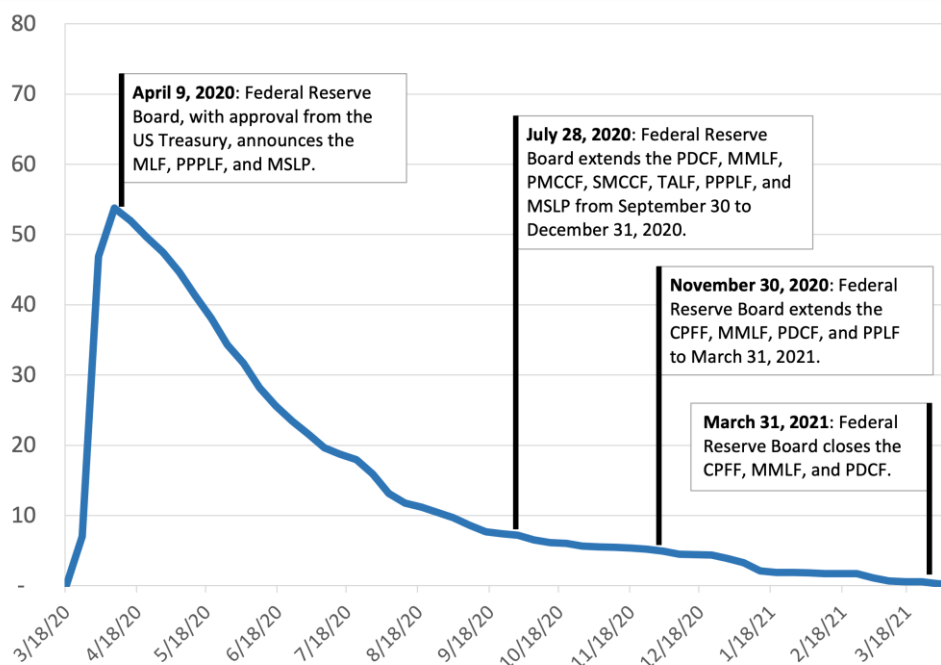
Loan amounts and maturity were equal to the value and term of the collateral pledged to the FRBB, with a maximum maturity of 12 months (FRB 2020i). Treasuries and government-sponsored securities were valued at fair value or amortized cost. ABCP, negotiable certificates of deposit (CDs), and municipal short-term debt, including variable rate demand notes (VRDNs), were valued at amortized cost (FRB 2020i).

Lending through the MMLF began on March 23, 2020, and peaked two weeks later at \$53.8 billion, representing about 5% of the net assets in eligible MMFs (Baklanova, Kuznits, and Tatum 2020) (see Figure 1). For context, the AMLF reported \$152 billion in loans outstanding

⁷ The AMLF helped prevent a run on MMFs after a large prime MMF with significant exposure to Lehman Brothers CP “broke the buck,” meaning that its net asset value (NAV) fell below \$0.995. For a detailed discussion of the AMLF, see Wiggins (2020).

at the height of its use in October 200⁸ (Wiggins 2020). Initially scheduled to expire on September 30, 2020, with several other emergency lending facilities, the Fed and Treasury extended the operating window of the MMLF to December 31, 2020, then extended operations again to March 31, 2021 (FRB 2020a; FRB 2020q). In its May 9, 2021, Report to Congress, the Fed reported that no losses were realized on the MMLF and, as of April 30, 2021, FRBB had received interest, fees, and other revenue on the MMLF of \$186.6 million (FRB 2021).

Figure 1: Average Weekly Assets Under the MMLF (in USD Billions)



Source: H.4.1 Factors Affecting Reserve Balances, retrieved from FRED (FRB 2020c).

Summary Evaluation

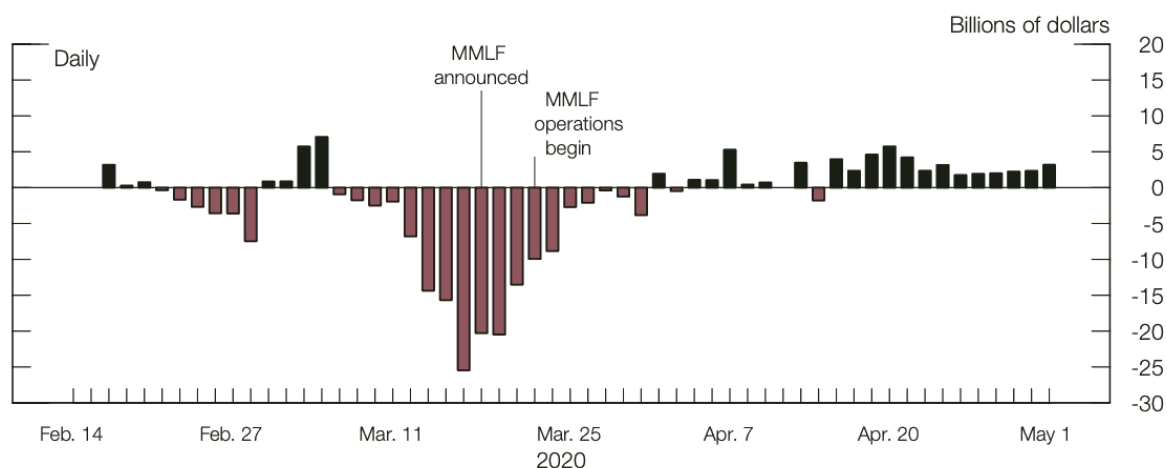
The MMLF supported the net asset value (NAV) of prime and municipal MMFs by providing a way for MMFs to meet redemptions without selling assets into increasingly volatile and illiquid markets. At the end of March, the NAV for prime and muni MMFs dropped significantly but quickly rebounded once the MMLF became operational (see Figure 6).

Prime MMFs experienced the largest outflows, and outflows continued in the days after the facility launched (see Figure 2). Funds with the largest outflows saw higher use of the MMLF and pledged more assets to it (Anadu et al. 2021). Institutional prime funds (which were subject to redemption gates and fees) experienced larger outflows than retail prime funds

⁸ While in dollar terms use of the AMLF far exceeded use of the MMLF, MMF outflows as a percentage of fund size in 2020 were either higher than in 2008, in the case of institutional prime MMFs, or comparable to 2008 levels, in the case of retail prime and tax-exempt MMFs (PWG 2020; Anadu et al. 2021).

and comprised 29 of the 47 funds participating in the MMLF (Anadu et al. 2021). Analysis shows that institutional investors ran more from MMFs with lower levels of WLA that were more at risk of imposing redemption gates and liquidity fees (Cipriani and La Spada 2020; Li et al. 2020; Anadu et al. 2021). No MMFs breached their regulatory thresholds or imposed redemption gates or fees in March 2020 (SEC 2021b).

Figure 2: Prime Money Market Mutual Fund Net Flows

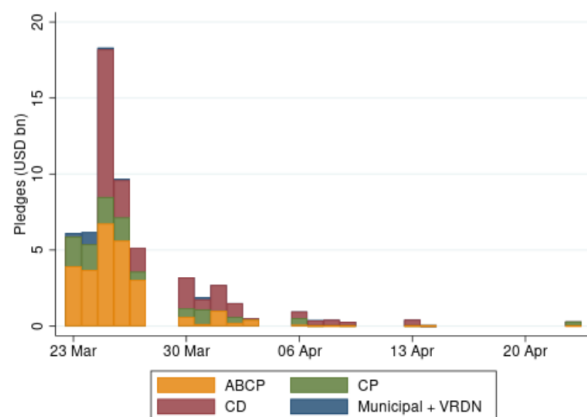


Source: FRB 2020b. Data retrieved from iMoneyNet, Money Fund Analyzer-Gold.

By pledging assets into the MMLF, MMFs replaced illiquid assets with cash, directly improving funds' liquidity positions. Anadu et al. found that funds participating in the MMLF held more ABCP and repos and less Treasuries and unsecured CP. To stem outflows, prime institutional MMFs had to raise the WLA in their portfolios and reduce investors' concerns about liquidity, so funds sold their most illiquid assets into the facility, such as long-dated CDs and CP (see Figures 3-4). By slowing the run on the MMF industry, the MMLF "gave funds time for their assets to mature so that they could use the proceeds to buy more liquid assets" (Anadu et al. 2021).

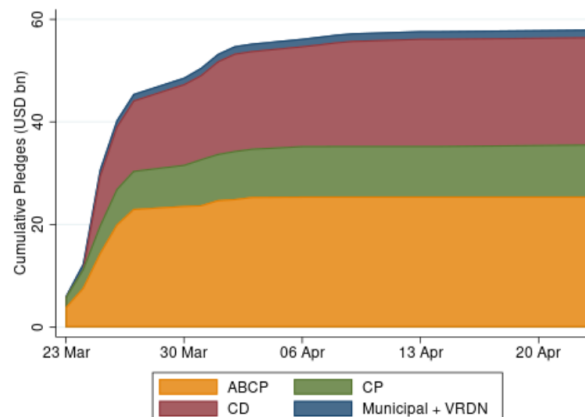
SEC analysis showed the announcement and launch of the MMLF led to improved market conditions (Kothari et al. 2020). As the Fed announced broader collateral eligibility on March 20 and March 23, prime MMF outflows subsided, and by April 2 the funds saw moderate inflows (Cipriani et al. 2020; Anadu et al. 2021) (see Figure 2). Municipal MMFs saw outflows until VRDNs became eligible collateral on March 23, after which AUM of muni MMFs increased and soon returned to January 2020 levels (Cipriani et al. 2020). Anadu, et al. also found that interest rates on second-tier (not top-rated) CP, which were not eligible for the MMLF, decreased slower relative to rates on MMLF-eligible securities, even after controlling for credit risk. Within a week of the MMLF's launch, spreads between top-rated CP rates (both secured and unsecured) and the interest on excess reserves (IOER) returned to pre-crisis levels (Anadu et al. 2021).

Figure 3: Daily MMLF Pledges by Asset Category



Source: Anadu et al. 2021.

Figure 4: Cumulative MMLF Pledges by Asset Category

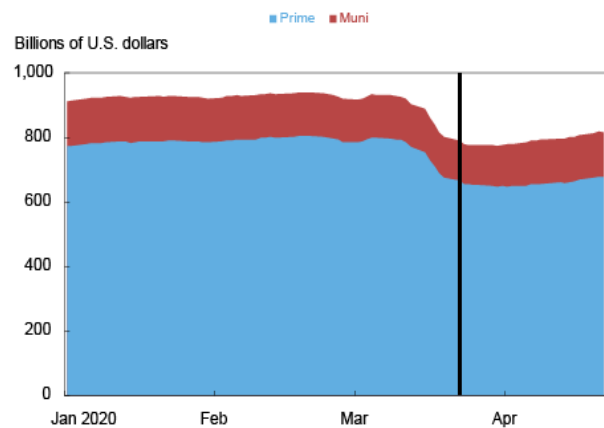


Source: Anadu et al. 2021.

By late April, prime funds had recovered 33 percent of the assets under management lost to the run in mid-March (see Figure 5), suggesting that the MMLF had been successful over a short timeframe at “slowing investor outflows from prime and muni MMFs and improving conditions in money markets”⁹ (Cipriani et al. 2020). Among the three COVID-era facilities intended to support short-term funding markets, the MMLF saw the most volume, peaking at \$53.8 billion, while use of the PDCF peaked at \$35 billion and the CPFF at \$4.3 billion (Anadu et al. 2021; Mott 2021; Engbith 2021). The MMLF extended 736 loans to nine borrowers totaling \$58 billion (FRB 2022). The median borrowing term was 73 days, and 40% of loans had terms greater than 90 days (FRB 2022).

⁹ In addition to stabilizing domestic prime MMFs, the MMLF may have had a positive effect on EU-based, USD-denominated offshore prime MMFs, as a \$100 billion loss in their AUM was reversed around the time the MMLF became operational (Cipriani et al. 2020; Anadu et al. 2021).

Figure 5: MMF Assets Under Management Before and After Inception of MMLF



Note: Domestic MMFs. The vertical line represents the day of the MMLF's operation.

Source: Cipriani et al. 2020.

Figure 6: Net Asset Value of the Tenth Percentile of Prime and Muni MMFs Before and After the Inception of the MMLF



Note: The vertical line represents the day of the MMLF's operation.

Source: Cipriani et al. 2020.

Context: United States 2019–2020	
GDP (SAAR, nominal GDP in LCU converted to USD)	\$21.694 trillion in 2019 \$21.477 trillion in 2020
GDP per capita (SAAR, nominal GDP in LCU converted to USD)	\$65,280 in 2019 \$63,414 in 2020
Sovereign credit rating (five-year senior debt)	Data for 2019: Moody's: Aaa S&P: AA+u Fitch: AAA Data for 2020: Moody's: Aaa S&P: AA+u Fitch: AAA
Size of banking system	\$13.825 trillion in 2019 \$15.882 trillion in 2020
Size of banking system as a percentage of GDP	63.73% in 2019 73.95% in 2020
Size of banking system as a percentage of financial system	27.14% in 2019 27.30% in 2020
Five-bank concentration of banking system	45.74% in 2019 46.24% in 2020
Foreign involvement in banking system	Data not available for 2019 Data not available for 2020
Government ownership of banking system	Data not available for 2019 Data not available for 2020
Existence of deposit insurance	Yes in 2019 Yes in 2020
<i>Sources: Bloomberg, World Bank Global Financial Development Database, and World Bank Deposit Insurance Dataset.</i>	

Key Design Decisions

1. Purpose: The Federal Reserve established the MMLF to facilitate the functioning of money markets at the outset of the COVID-19 pandemic.

On March 18, 2020, the Board of Governors of the Federal Reserve announced that it had authorized the Federal Reserve Bank of Boston (FRBB) to extend loans to eligible banking institutions secured by high-quality assets purchased from money market mutual funds (MMFs). The purpose of the Money Market Mutual Fund Liquidity Facility (MMLF) was to assist MMFs in meeting demands for redemption from investors and households and to provide liquidity in the markets for assets held by MMFs (FRB 2020l). MMFs were the ultimate beneficiaries of the MMLF, with banks and nonbanks acting as intermediaries (FR OIG 2020).

2. Part of a Package: The MMLF was one of many initiatives the Fed undertook to support the flow of credit to households and businesses.

The MMLF was one of several initiatives the Fed undertook to “broaden its program of support for the flow of credit to households and businesses” (FRB 2020i). Because prime MMFs are major buyers of commercial paper¹⁰ (CP), the Fed designed the MMLF to work “in concert” with the Commercial Paper Funding Facility (CPFF),¹¹ which used a special purpose vehicle to purchase CP directly from issuers (Boyarchenko, Crump, and Kovner 2020). Between March 10 and March 24, prime MMFs reduced their holdings of CP by \$35 billion, or 74 percent of the overall decline in CP during these two weeks (PWG 2020). The MMLF was designed to stanch the asset fire sales that were negatively affecting CP liquidity, while the CPFF also helped to reduce strains on MMFs (Boyarchenko, Crump, and Kovner 2020). The MMLF became operational just after the Fed launched the Primary Dealer Credit Facility (PDCF), which provided funding to primary dealers in exchange for a broad range of collateral (FRB 2020b).

3. Legal Authority: Legal authority for the MMLF came from Section 13(3) of the Federal Reserve Act; Treasury’s use of the Exchange Stabilization Fund was authorized under the Gold Reserve Act of 1934.

The Federal Reserve Board authorized the MMLF by invoking its authority under Section 13(3) of the Federal Reserve Act (FRB 2020r). Section 13(3) of the Federal Reserve Act permits the Fed, in “unusual and exigent circumstances,” to “discount to any participant in any program or facility with broad-based eligibility” (FRB 2017, Sec. 13(3)(a)). The invocation of Section 13(3) allows the Fed to provide liquidity more broadly than its monetary policy and discount window authorities allow. Using its normal discount window documentation and processes, FRBB advanced funds to banks for the purchase of MMF assets, which were then pledged back to FRBB “expeditiously” or “concurrently” to secure the loan (FRB 2020p). Invoking Section 13(3) permitted the Fed to “discount” to broker-

¹⁰ In February 2020, publicly offered prime MMFs owned 19% of outstanding CP (PWG 2020).

¹¹ For more information about the CPFF, see Engbith (2021).

dealers, bank holding companies, and domestic branches of foreign banks on the same terms as banks (Logan, Nelson, and Parkinson 2020, 89). The MMLF received the unanimous approval of the five members of the Board of Governors and the treasury secretary¹² (FRB 2020l; Mnuchin 2020a).

To assist the Fed in meeting the legal requirement that its 13(3) facilities are “secured to the satisfaction of the Federal Reserve bank,” Treasury used its Exchange Stabilization Fund (ESF) to provide the FRBB with \$10 billion in credit protection¹³ (FRB 2017; FRB 2020k). The ESF was established by the Gold Reserve Act of 1934, granting the treasury secretary, with presidential approval, discretion to use the ESF to “deal in gold, foreign exchange, and other instruments of credit”¹⁴ (CRS 2020b).

At the time of the AMLF’s launch in 2008, Treasury did not offer credit protection to FRBB. It did announce a separate program that would use the ESF to temporarily guarantee MMFs (Treasury 2008; Wiggins 2020). But the MMF guarantee program’s details were unclear for several weeks after the announcement. Partly for that reason, the AMLF saw heavy use, peaking at \$150 billion just ten days after its launch (Logan, Nelson, and Parkinson 2020). In passing the CARES Act in 2020, Congress temporarily permitted the use of the ESF to guarantee the MMF industry, although Treasury did not use this authority (ICI 2020b).

4. Governance: The Fed provided Congress with periodic updates on the MMLF, whose operations were subject to a three-phase review by Reserve Bank Operations and Payment Systems and scrutinized by the Government Accountability Office; extensions to the MMLF were subject to Regulation A and Section 13(3) requirements.

Pursuant to Section 13(3) of the Federal Reserve Act, the Fed submitted reports to Congress every 30 days including “the [aggregate] value of collateral, the amount of fees and other items of value received; and the expected or final cost to the taxpayer” (FRB 2020e, 29–30). The Coronavirus Aid, Relief, and Economic Security Act (CARES Act) required the Board to publish these reports on its website within seven days of them being submitted to Congress; although the PDCF was not funded by the CARES Act, the Board published the relevant reports anyway (FRB 2020e).

The Government Accountability Office (GAO) published a report examining the Fed’s overall response to the COVID-19 pandemic, as well as two reports on the Fed’s emergency lending facilities. The reports did not include recommendations specific to the MMLF (GAO 2020a).

¹² The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 required Treasury pre-approval for the establishment of the MMLF; the AMLF did not have this stipulation (CRS 2020a).

¹³ After the launch of the MMLF, Congress appropriated up to \$500 billion for the Treasury’s ESF through the CARES Act, \$454 billion of which could be used support the Fed’s programs (Baklanova, Kuznits, and Tatum 2020).

¹⁴ Historically, Treasury used ESF funds to lend to foreign countries facing a financial crisis. In 2008, the ESF was used to guarantee MMF deposits (GAO 2020b).

Reserve Bank Operations and Payment Systems (RBOPS), a division of the Federal Reserve Board that oversees the policies and operations of the Reserve Banks, conducted a three-phase review of Fed facilities (GAO 2020b). In the first phase, RBOPS assisted with the launch of the facility (GAO 2020b). In the second phase, conducted no later than 45 days after the Board authorized the facility, RBOPS focused its oversight of each facility on four areas: (1) compliance, governance, and risk management; (2) credit and collateral; (3) processes and controls; and (4) accounting and reporting (GAO 2020b). The third phase of RBOPS' review consisted of monitoring the Fed's facilities (GAO 2020b). RBOPS communicated any control design gaps it identified, as well as recommendations for remediation, to Reserve Bank management; RBOPS did not find any control gaps in the MMLF (GAO 2020b).

5. Administration: The Federal Reserve Bank of Boston was responsible for the administration of the MMLF.

Under the MMLF, the FRBB was authorized to lend to eligible financial institutions in any of the 12 Federal Reserve districts (FRB 2020t). FRBB was selected to administer the AMLF during the GFC given its expertise in the MMF industry and ability to launch the program quickly (Logan, Nelson, and Parkinson 2020). Through the MMLF as was the case with the AMLF, the Fed engaged depository institutions as intermediaries and the FRBB used the existing discount window process and documentation to quickly implement the program (Logan, Nelson, and Parkinson 2020; FRBB 2020b).

6. Communication: The Federal Reserve created the MMLF to provide liquidity to markets for the assets held by MMFs and support financial market functioning amid disruptions caused by the COVID-19 pandemic.

The Fed established the MMLF to foster liquidity in the markets for the assets held by [MMFs] and help MMFs meet demands for redemptions by investors (FRB 2020l; Cipriani et al. 2020). The MMLF was seen as part of the Fed's broader effort to support the flow of credit to households and businesses (FRB 2020o). Throughout the duration of the facility, the Fed reiterated the role of the MMLF in preventing outflows from MMFs from turning into an industry-wide run (Cipriani et al. 2020).

The Fed announced the MMLF late on the evening of Wednesday, March 18, a week before it was ready to launch the facility. According to Boston Fed President Eric Rosengren, the Fed believed this early announcement was necessary to prevent widespread closure of MMFs in the intervening days (Timiraos 2022).

The Fed made regular press releases accompanying decisions on the terms and regulatory rules related to the MMLF.

7. Disclosure: The Federal Reserve Board was required to provide monthly reports to Congress regarding 13(3) emergency lending facilities, but the Fed did not disclose the names or transaction details of MMLF borrowers or funds until March 31, 2022.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 requires the Fed to present Congress with two types of 13(3) reports: 1) one submitted within a week after authorizing any loan, providing the justification for the exercise and detailed information on the recipients and the amounts of each transaction; and 2) a monthly update “regarding the value of collateral, the amount of fees and other items of value received; and the expected or final cost to the taxpayer” (US Congress 2010; FRB 2020e). In compliance with the second type of required report, the Fed provided monthly reports to the public with details on the MMLF including the aggregate “amounts borrowed, interest rate charged, and value of pledged collateral,” as well as “the overall costs, revenues, and fees” (FRB 2020l). These reports included more detailed aggregate data on the MMLF’s outstanding loans than were included in the Fed’s weekly release of its balance sheet data (FRB 2020c). The Coronavirus Aid, Relief, and Economic Security Act (CARES Act) required the Fed to publish monthly reports to the public about programs supported by CARES Act funds within seven days of delivering them to Congress (116th US Congress 2020). Although the MMLF was not supported by CARES Act funds, the Fed released the MMLF-related information anyway (FRB 2020e, 29–30).

The Fed released aggregate MMLF lending data on a weekly basis as part of the usual publication of the Fed’s overall balance sheet, and more detailed aggregate lending data in a monthly report on the MMLF (FRB 2020c). However, the Fed did not publicly disclose disaggregated details about MMLF transactions, unlike some of the other emergency lending facilities¹⁵ (FRB 2020f). As allowed in the Dodd-Frank Act, the Fed chair requested a delay in the release of confidential treatment of borrower-identifying information for the MMLF, PDCF, and CPFF to avoid adversely affecting these facilities’ participants (FRB 2020e; GAO 2020b). The Fed was cognizant of the possibility that market participants would view a firm’s use of these facilities as a sign of liquidity stress, which could cause a run on the institution (GAO 2020b).

However, the law still required the Fed to release MMLF borrower information to the public by March 31, 2022. Specifically, Section 11(s) of the Federal Reserve Act, as amended by the Dodd-Frank Act, required the Fed to disclose detailed transaction-level data within one year after the termination date of any credit facility, such as the MMLF (FRB 2020p; FRB, n.d.a, sec. 11[s][2][A]).

¹⁵ See the Main Street Lending Programs by Kelly (2021) and the Primary Market Corporate Credit Facility (PMCCF) by Leonard (2021).

8. Use of SPV: The MMLF did not utilize a special purpose vehicle.

The MMLF differed from the other Fed programs in that, among other things, it was not operated through an SPV¹⁶ (OIG 2021). ESF funds were deposited to an account maintained by FRBNY in the name of FRBB as a secured party (OIG 2021).

9. Size: No explicit limit was announced for the MMLF, and there were no individual participation limits.

The MMLF had no overall program limit nor individual borrower limits; the same was true for the GFC-era AMLF (FRB 2020p; Wiggins 2020). This feature applied to those emergency lending facilities focused on short-term funding markets, as well as the Paycheck Protection Program Liquidity Facility (PPPLF); the Fed and Treasury applied specific aggregate lending limits to credit-based facilities based on the amount of funding support from Treasury (COC 2020a).

For context, assets under management (AUM) at MMFs totaled \$4.7 trillion in March 2020 (Kothari et al. 2020, 5; OFR, n.d.). Investments in prime and tax-exempt MMFs totaled \$981 billion and \$127 billion, respectively, while government funds, which were ineligible for the MMLF, reached \$3.6 trillion in March (OFR, n.d.). Over the two weeks from March 11 to March 24, net redemptions amounted to roughly \$140 billion for prime MMFs and \$40 billion for tax-exempt MMFs (PWG 2020). Use of the MMLF peaked at \$53.8 billion in the second week of April (FRB 2020c).

10. Source of Funding: The MMLF was funded through the creation of reserves.

The Fed utilized its standard discount window lending documentation and processes for the MMLF (FRBB 2020b; FRB 2020p). As with the discount window, by tapping the MMLF, a borrower's reserve account at the Fed was credited with newly created reserves in the amount borrowed through the facility. The Fed recorded these MMLF loans as assets on its balance sheet (FRB 2020c). Upon maturity of the loan, the borrower had to request that FRBB release the collateral (FRB 2020p). FRBB then debited the borrower's account at the Fed for the full amount of the loan plus accrued interest (FRB 2020p). As borrowers made payments, the Fed extinguished the reserves (FRB 2020c).

The MMLF also received an equity investment of up to \$10 billion from Treasury. Unlike the other 13(3) facilities that received an investment from Treasury, the MMLF did not receive the total \$10 billion in ESF funds. Instead, on May 20 the MMLF received an initial \$1.5 billion to a separate deposit account maintained by the FRBNY in the name of the FRBB as a secured party. Only if the program experienced losses would Treasury, on a quarterly basis, transfer a portion of the \$8.5 billion of undisbursed credit support to FRBB (Treasury 2020a; OIG

¹⁶ Other COVID-era 13(3) facilities utilized a SPV and received a capital injection from Treasury; Treasury provided 85% nonmarketable Treasury securities and 15% in cash for the SPV's liquidity. In the case of the MMLF, which lacked a SPV, Treasury provided FRBB's account at FRBNY with only \$1.5 billion, or 15 percent, of the total \$10 billion earmarked for the facility (OIG 2021).

2021). On April 12, 2021, FRBB returned the funded portion of the credit protection, in the amount of \$1.5 billion, to Treasury.

11. Eligible Institutions: Eligible borrowers under the MMLF included all solvent US depository institutions, US bank holding companies, and US branches and agencies of foreign banks that could not secure credit elsewhere.

Eligible borrowers included US depository institutions, US bank holding companies (parent companies incorporated in the US or their US broker-dealer subsidiaries), and US branches and agencies of foreign banks (FRB 2020k). In order to borrow under the MMLF, eligible borrowers were required to provide the FRBB with two certifications: first, that the borrower and the MMF from which it purchased assets were solvent; and second, that the borrower was unable to secure adequate credit from other financial institutions (FRBB 2020a). A lack of “adequate credit” did not have to mean that no credit was available; rather, the Fed allowed the borrower to “consider economic or market conditions as compared to usual economic or market conditions, including the availability and price of credit,” acknowledging that “lending may be available, but at prices or on conditions that are inconsistent with a normal, well-functioning market” (FRBB 2020a).

Ultimately, the MMLF extended credit to nine counterparties; the amount of credit extended to broker-dealers under the MMLF was roughly equal to the amount extended to depository institutions (Anadu et al. 2021, 12; Matthew Hoops and Robert Kurtzman 2021).

12. Auction or Standing Facility: The MMLF was a standing facility, accessible at the borrower’s election.

The MMLF was a standing facility, accessible at the borrower’s election (FRB 2020p).

13. Loan or Purchase: The MMLF extended nonrecourse loans to eligible borrowers for the purchase of eligible MMF assets.

The Fed is not authorized to purchase MMF assets directly, so to foster liquidity in the markets for MMF assets, the Fed engaged banks and nonbanks as intermediaries, extending nonrecourse loans to eligible borrowers for the purchase of high-quality assets from MMFs. The Fed advanced funds to borrowers to make a purchase from the MMF, and the purchased assets were then pledged back to FRBB “expeditiously” or “concurrently” as collateral for the loan (FRB 2020l; FRB 2020p).

14. Eligible Collateral: The MMLF initially accepted Treasuries, fully guaranteed agency securities, GSE securities, and both secured and unsecured commercial paper as collateral. The MMLF later expanded eligibility to include municipal short-term debt, negotiable CDs, and variable-rate demand notes.

Following the initial announcement of the MMLF on March 18, both prime and tax-exempt MMFs continued to see large net outflows (Cipriani et al. 2020). On March 20, the Fed, intending to facilitate the flow of credit to municipalities, expanded eligible collateral at the MMLF to include short-term municipal debt (FRB 2020m; FRB 2020n). As outflows from tax-

exempt MMFs continued, the Fed on March 23 further expanded eligible collateral to include VRDNs and negotiable CDs (PWG 2020; FRB 2020m; FRB 2020o). VRDNs comprise a significant portion of the portfolios of tax-exempt MMFs, and their inclusion had positive effects on the municipal markets (Cipriani, Spada, Orchinik, and Plesset 2020; COC 2020).

Ultimately, five broad categories of collateral could be pledged to the MMLF (FRB 2020i): US Treasuries and fully guaranteed agency securities; securities issued by government-sponsored entities; CP; municipal short-term debt other than VRDNs; and VRDNs (see Figure 7).

Figure 7: Categories and Ratings of Collateral Considered Eligible for the MMLF

COLLATERAL TYPE	MATURITY	SHORT-TERM RATING ^A	LONG-TERM RATING ^B
US Treasuries Fully guaranteed agency securities	Any	-	-
Securities issued by US Government-Sponsored Entities	Any	-	-
Asset-backed commercial paper (ABCP) Unsecured commercial paper US-issuer negotiable CDs	12 months or less	A1/F1/P1 ^C	-
US municipal short-term debt (excl. VRDNs)	12 months or less	SP1/MIG1/F1 ^C	or AA or above ^D
VRDNs	Option for holders to tender the note within 12 months	SP1/VMIG1/F1 ^C	or AA or above ^D

^A From at least two nationally recognized statistical rating organizations (NRSROs)

^B From at least two NRSROs, if not rated in short-term rating category

^C If only rated by one NRSRO, must be rated within the top rating category

^D If only rated by one NRSRO, must be rated within the top two rating categories

Source: FRB 2020i.

Eligible government securities or CP assets could be purchased by the borrower on or after March 18, 2020, while municipal securities collateral could be purchased by the borrower on or after March 20, 2020 (FRB 2020k; FRB 2020n).

MMFs used the facility mainly to sell their illiquid assets in order to meet redemptions; of the securities pledged to the MMLF, 44% were ABCP, 36% were CDs, 18% were unsecured CP, and the rest were VRDNs and municipal debt (see Figure 8) (Anadu et al. 2021).

Figure 8: Collateral Pledged to the MMLF

COLLATERAL	PAR VALUE	AMORTIZED COST	TOTAL VALUE OF LOANS COLLATERALIZED
ABCP	25.53 billion	25.46 billion	70.35 billion
CP	10.21 billion	10.15 billion	25.55 billion
CDs	20.85 billion	20.90 billion	57.27 billion
Municipal Securities	1.43 billion	1.45 billion	9.75 billion
VRDNs	0.45 billion	0.45 billion	0.45 billion

Source: FRB 2022.

The MMLF accepted a much broader range of eligible collateral than the AMLF, which only accepted highly rated ABCP (Wiggins 2020).

Eligible collateral could be purchased from funds that identified as Prime¹⁷, Single State, or Other Tax-Exempt MMFs. Of 95 total funds identifying as one of these fund types, 47 sold assets into the MMLF (Anadu et al. 2021). Initially, the MMLF was available only for the purchase of assets from prime funds, however tax-exempt MMFs saw large outflows that were likely contributing to the worsening conditions in short-term municipal debt markets¹⁸ (PWG 2020). Among participating funds, 63 percent were institutional (Anadu et al. 2021, 13). To facilitate the flow of credit to municipalities, the MMLF terms were amended on March 20, expanding eligibility to Single State and Other Tax Exempt funds (FRB 2020m; FRB 2020n).

The AMLF was available to any fund that qualified as an MMF under rule 2a-7, while all MMFs except for government funds were eligible under the MMLF¹⁹ (FRB 2020n; 17 CFR, n.d.).

15. Loan Amounts: Borrowers were only limited by the value of collateral they pledged to the facility.

FRBB advanced a principal amount equal to the value of the collateral pledged to secure the advance; there were no other amount restrictions on borrower's use of the facility (FRB 2020p).

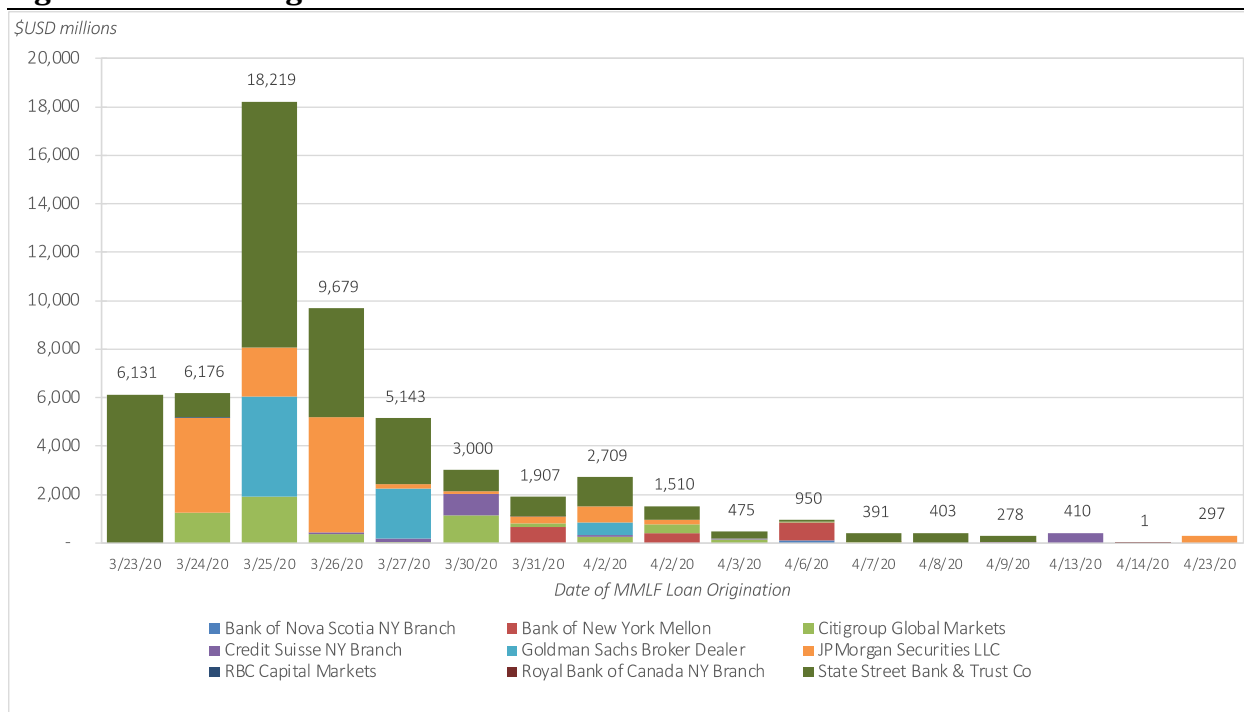
¹⁷ Both retail and institutional prime MMFs were eligible; the vast majority of tax-exempt MMFs are retail, however institutional MMFs were also eligible.

¹⁸ Figure 2 in the Evaluation section illustrates the March 2020 decline in AUM in prime and muni MMFs.

¹⁹ To ensure that the AMLF was used only when necessary, its terms were amended in June 2009, limiting access to only those funds that experienced material outflows, which is defined as outflows of at least 5% of net assets in a single day or 10% of net assets in five days or less (Wiggins 2020). The MMLF never imposed such a restriction.

On March 31, 2022, the Fed disclosed the names and identifying details of each participant in the facility, the amount borrowed, the interest rate or discount paid, and information concerning the types and amounts of collateral pledged or assets transferred in connection with the facility (FRB 2020p; GAO 2020b). State Street Bank and Trust comprised 56% of the borrowing at the MMLF (see Figure 9) (FRB 2022).

Figure 9: Borrowing at the MMLF



Note: The chart omits dates with no loan originations.

Source: FRB 2022.

16. Haircuts: At the time when the borrower pledges the collateral to the MMLF, the collateral valuation is equal to the purchase price, which is either the seller’s amortized cost or the fair value.

Collateral was valued at either the fair value or the seller’s amortized cost (FRB 2020k). For any CP or municipal collateral—which included ABCP, CP, negotiable CDs, municipal short-term debt, and VRDNs—the collateral valuation was the seller’s amortized cost (FRBB 2020b). For government securities collateral, the purchase price was either fair value or the amortized cost of the collateral on the borrower’s date of purchase, depending on the nature

of the fund,²⁰ the bank's accounting treatment of the security,²¹ and the availability of fair value prices in distorted markets (FRBB 2020b).

To encourage participation, the Fed lent on favorable terms: nonrecourse loans were extended without haircuts for the remaining maturity of the assets (aside from cases of long-term government and agency securities) (FRB 2020k). Thus, most of the risk was transferred to FRBB. The Treasury Department used the Exchange Stabilization Fund (ESF) to provide \$10 billion in credit protection to the FRBB for the MMLF (FRB 2020t).

The AMLF was similar in design and function but did not receive direct credit protection from Treasury (CRS 2020b; Wiggins 2020).

17. Interest Rates: The interest rate was equal to the primary credit rate offered by the FRBB at the time the loan was made plus a spread based on the collateral type.

The interest rate for the loan was based on the primary credit (discount window) rate offered to depository institutions at the time the loan was originated (FRB 2020i) (see Figure 10).

Figure 10: Interest Rates on Collateral Used to Secure MMLF Loans

Collateral	Interest Rate
US Treasuries, fully guaranteed agency securities, GSE securities	Primary credit rate ^A
Short-term municipal debt, including VDRN	Primary credit rate + 25 basis points
All other collateral (including CDs and CP)	Primary credit rate + 100 basis points

^A 25 basis points for the duration of the facility

Source: (FRB 2020i).

On March 15, the Fed announced it would narrow the spread between the primary credit rate and the general level of overnight interest rates from 50 basis points to zero “to help encourage more active use of the window by depository institutions to meet unexpected funding needs” (FRB 2020s). The Fed set the rate for the MMLF and other facilities that intervened in primary markets according to the principles of penalty rates in Regulation A²²;

²⁰ Post-GFC reforms established that retail MMFs were eligible to price and transact at a stable NAV of \$1.00, while institutional and municipal funds would allow their NAV to “float” (i.e., allow their daily share prices to fluctuate). Previously, all MMFs valued their portfolios using amortized cost, but the SEC required floating funds to mark their portfolios to market (SEC 2009)

²¹ Fuster and Vickery (2018) discuss the factors involved in a bank's accounting treatment of securities.

²² The 2015 amendment to Regulation A calls for the Fed to charge a “penalty rate” on all lending through 13(3) emergency lending facilities (FRB 2015).

namely, that the rate “is a premium to the market rate in normal circumstances” but “affords liquidity in unusual and exigent circumstances” (FRB 2015; 12 CFR, n.d.; GAO 2020b, 12; COC 2020b, 33). Fed officials told the Government Accountability Office that charging such a rate ensured “the facilities would experience limited participation when credit is available in the marketplace and increased participation when markets declined and there was a shortage of credit” (GAO 2020b). Even so, the primary credit rate applied to MMLF lending—a zero basis point spread above the general level of overnight interest rates—was more favorable than the AMLF, for which the Fed lowered the primary credit rate to only a 25 basis point spread above overnight rates (Wiggins 2020).

18. Fees: The MMLF did not charge fees to borrowers.

As with the GFC-era AMLF, the MMLF did not charge fees to borrowers (FRB 2020k; Wiggins 2020).

Treasury, however, charged the FRBB a facility fee associated with the use of credit protection through the ESF (OIG 2021; Treasury 2020b). The fee for each loan was an amount equal to 90 percent of the difference between the rate charged to the borrower on the MMLF loan and the primary credit rate at the time the loan was advanced. Had the facility experienced losses, the MMLF would have first utilized the accumulated facility fees²³, and then the principal amount of ESF’s credit support (OIG 2021).

19. Term: MMLF loans had a maturity date equal to the maturity date of the collateral pledged to secure the loan, with a maximum term of 12 months.

Because the maturity could not exceed 12 months, any eligible collateral with a longer maturity required the borrower to repay the loan and either sell the collateral, request repayment of the security (in the case of VRDNs), or retain it on the borrower’s balance sheet without nonrecourse treatment and capital relief (FRBB 2020b; FRB 2020p). MMLF loans could not be repaid early in full or in part unless the borrower was insolvent or as determined by the FRBB (FRBB 2020b).

Participants in the MMLF generally sold securities with longer maturities (i.e., less liquid securities) given their need to improve their liquidity position and their WLA (Anadu et al. 2021). The average maturity of the securities pledged to the MMLF ranged from 16 (CDs) to 34 (CP) days (as of February 2020).

Loans under the AMLF also had a maturity identical to the ABCP that was pledged as collateral. The maximum loan term, however, was 120 days for depository institutions and 270 days for others (Wiggins 2020).

²³ As of September 30, 2021, the ESF had accrued net facility fees totaling \$119 million (OIG 2021).

20. Other Restrictions on Eligible Participants: There were no other restrictions on participants in the MMLF.

No additional restrictions were imposed on participants in the MMLF.

21. Regulatory Relief: US regulatory agencies adopted two interim final rules: the first to exclude MMLF participations from regulatory capital calculations and the second to neutralize the impact of MMLF participation on a borrower's liquidity coverage ratio.

To encourage participation in the MMLF, the Fed lent on favorable terms: loans were nonrecourse, without haircut, for the remaining maturity of the assets. Nevertheless, as in 2008, banks were concerned that participation in the MMLF would decrease their regulatory capital ratios, which would worry their creditors (Logan, Nelson, and Parkinson 2020). To address this concern, the Fed, Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC) released an interim final rule on March 19 that modified capital rules to “exclude the effects of purchasing assets through the MMLF” (FRB, OCC, FDIC 2020). Specifically, the interim final rule allowed participants to exclude nonrecourse exposures acquired as part of the MMLF from its total leverage exposure, average total consolidated assets, Advanced Approaches total risk-weighted assets, and standardized total risk-weighted assets (FRB, OCC, FDIC 2020).

On May 6, the agencies released another interim final rule that sought to “neutralize” the effect of participation in the MMLF and Paycheck Protection Program Liquidity Facility²⁴ (PPPLF) on the liquidity coverage ratio (LCR) (OCC, FRB, FDIC 2020). The standard LCR rule requires eligible borrowers to maintain a minimum amount of high-quality liquid assets (HQLA) to cover their net cash outflows over a 30-day period. Without the interim final rule, borrowers would be required to recognize outflows for those MMLF and PPPLF loans with a remaining maturity of 30 days or less, raising the potential that participation in these facilities would lead to “inconsistent, unpredictable, and more volatile” LCR calculations (OCC, FRB, FDIC 2020). Notably, borrowers who funded their advance by purchasing and pledging securities they issued were not relieved from assigning appropriate LCR rates since this would result in higher liquidity risk due to asymmetric cash flows (OCC, FRB, FDIC 2020). The agencies stated they “believe the public interest is best served by implementing the interim final rule immediately upon publication in the Federal Register,” foregoing the standard 60-day delay in the effective date of major regulation (OCC, FRB, FDIC 2020, 2–3).

For the AMLF, the Fed exempted participants from leverage and risk-based capital rules (Wiggins 2020).

²⁴ Under the PPPLF, each Federal Reserve Bank can extend nonrecourse loans to institutions eligible to make the PPP loans, and through the PPPLF, the institutions can pledge the PPP loans as collateral. For more information about the PPPLF, see Kelly (2021).

22. Regulatory Relief: The Fed and SEC issued no-action letters to banks, providing relief from rules that govern transactions with bank affiliates, which allowed the banks to purchase assets from affiliated MMFs.

On March 19, the Fed released templates of letters it issued to banks temporarily exempting the recipient banks from Section 23A of the Federal Reserve Act and the Federal Reserve Board's Regulation W²⁵ (FRB 2020s). Section 23A seeks to manage the exposure of a bank to the risk of its affiliates by limiting "covered transactions," defined as loans to, investments in, or purchases from a bank's affiliates. Section 23A also authorizes the Fed to exclude from the definition of "covered transaction" the purchase of certain assets by a member bank from an affiliate (FRB, n.d.c). Exemptions were intended to ease liquidity pressures by allowing recipient banks to extend credit, issue guarantees, or purchase assets from affiliated MMFs and broker-dealers (FRB 2020h; FRB 2020j). Exemptions were necessary for both entities because at this time transactions between affiliates were restricted under the proprietary trading stipulations under the "Volcker Rule"²⁶. The Volcker Rule was amended on June 25, 2020 (effective October 1, 2020) to, among other things, permit a banking entity to purchase assets from an affiliated fund (OCC, FRB, FDIC, CFTC, SEC 2020, 211). Transactions were subject to certain limitations and conditional on the type of MMF or broker-dealer, the amount purchased, and loss protection for the bank and its parent holding company (FRB 2020h; FRB 2020j). Exemptions expired six months from the date of the letter, March 17, 2020²⁷ (FRB 2020h).

Although the Fed provided relief from Section 23A for banks, MMFs regulated as investment companies by the SEC would still be prohibited from transacting with affiliates, including banks, under Section 17(a) of the Investment Company Act of 1940. On March 19, following a request for regulatory relief from the Investment Company Institute, the SEC issued no-action letters that provided relief from Rule 17(a)-9, permitting the affiliates of SEC-regulated MMFs to purchase securities from the MMF²⁸ (ICI 2020a; Gluck and Sood 2020; 17 CFR, n.d., sec. 270.17a-9; Bartmann 2020). Moreover, on March 23, the Division of Investment Management of the SEC stated that it would not recommend enforcement action to the SEC against any open-end investment company registered as an MMF, or any affiliate of that MMF, so long as the transaction met the Fed's conditions and was reported to the SEC

²⁵ Regulation W implements Section 23A and 23B of the Federal Reserve Act (FRB 2003b). Between March 17, 2020, and April 30, 2021, firms were exempted from Section 23A; they were not exempt from 23B. Section 23B requires that certain transactions, including all covered transactions, be on market terms and conditions, and specifies how this requirement must be met (FRB, n.d.c). Under Regulation W, purchases of or investments in securities issued by an affiliate are valued at the greater of the bank's purchase price or carrying value of the securities (FRB 2003a).

²⁶ Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships With, Hedge Funds and Private Equity Funds.

²⁷ After the expiration date, assets purchased by the bank pursuant to the exemption could remain with the bank and would not count towards the bank's Section 23A quantitative limits.

²⁸ Rule 17a-9 of the Investment Company Act of 1940 requires purchases in cash at a price equal to the greater of the amortized cost of the security or its market price (fair value); this was relieved for the MMLF.

in a timely manner (SEC 2020b, 2020c; Gluck and Sood 2020). On April 30, 2021, the SEC's letters were withdrawn (SEC 2021a).

When the AMLF launched in 2008, the Fed and SEC permitted transactions with affiliates through formal rulemaking, whereas in 2020 the agencies announced MMLF-related exemptions by publishing the templates of letters they sent to financial institutions (GPO 2009).

23. International Coordination: The Fed did not coordinate with other jurisdictions when designing or operating the MMLF.

The Fed did not coordinate with other jurisdictions when designing or operating the MMLF.

24. Duration: After two extensions beyond its initial expiration date of September 30, 2020, the MMLF ceased extending credit on March 31, 2021.

On July 28, the Fed announced that it would extend several 13(3) emergency lending facilities, including the MMLF, through December 31, 2020 (FRB 2020q). On November 30, the Fed announced a further extension of the MMLF to March 31, 2021, along with three other 13(3) programs: the Commercial Paper Funding Facility (CPFF), the Primary Dealer Credit Facility (PDCF), and the Paycheck Protection Program Liquidity Facility (PPPLF)²⁹ (FRB 2020a). When announcing both extensions, the Fed acknowledged that “financial markets have stabilized significantly,” but pointed to “the presence and extent of volatility and illiquidity in financial markets” and “the price and availability of credit in the market . . . as compared to normal market conditions” as justification for their continued operations (FRB 2020d; FRB 2020g). The MMLF, along with the CPFF and PDCF, expired on March 31, 2021, while the Fed retained its 13(3) invocation and continued operating the PPPLF. All loans made by FRBB through the MMLF were repaid by April 15, 2021 (FRB 2021).

²⁹ On November 19, Secretary Mnuchin expressed his desire for the Fed to continue the CPFF, PDCF, and PPPLF, even as Treasury announced it would end support for other 13(3) facilities on December 31 (Mnuchin 2020c).

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