Finance and Economics Discussion Series

Federal Reserve Board, Washington, D.C.
ISSN 1936-2854 (Print)
ISSN 2767-3898 (Online)

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2021-035

Please cite this paper as:
Clarida, Richard H., Burcu Duygan-Bump, and Chiara Scotti (2021). "The COVID-19 Crisis and the Federal Reserve's Policy Response," Finance and Economics Discussion Series 2021-035. Washington: Board of Governors of the Federal Reserve System, https://doi.org/10.17016/FEDS.2021.035.

The COVID-19 Crisis and the Federal Reserve's Policy Response

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June 3, 2021

Abstract

The COVID-19 pandemic and the mitigation efforts put in place to contain it delivered the most severe blow to the U.S. economy since the Great Depression. In this paper, we argue that the Federal Reserve acted decisively and with dispatch to deploy all the tools in its conventional kit and to design, develop, and launch within weeks a series of innovative facilities to support the flow of credit to households and businesses. These measures, taken together, provided crucial support to the economy in 2020 and are continuing to contribute to what is expected to be a robust economic recovery in 2021.

JEL classification: E4, E5
Keywords: monetary policy, forward guidance, asset purchases, section 13(3) facilities

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This paper was produced as a chapter for the CEPR and ICMB e-book *Monetary Policy and Central Banking in the Covid Era*, published on June 3, 2021, at www.voxeu.org, and edited by Bill English, Kristin Forbes, and Angel Ubide. The views expressed in this paper are our own and not necessarily those of other Federal Reserve Board members or Federal Open Market Committee participants. We are grateful to Grace Brang, Hannah Firestone, Akila Forde, and Tyler Pike for excellent research assistance, and to Christopher Karlsten for outstanding editing help. All errors are our sole responsibility. Send correspondence to Burcu.Duygan-Bump@frb.gov and Chiara.Scotti@frb.gov, Federal Reserve Board, Washington, DC 20551.

Introduction

At the time of this writing, one year has passed since the COVID-19 pandemic arrived on the shores of the United States. Since then, the virus has caused tremendous human and economic hardship across our country and around the world. The pandemic and the mitigation efforts put in place to contain it delivered the most severe blow to the US economy since the Great Depression. GDP collapsed at an annual rate of over 30 percent in the second quarter of 2020. More than 22 million jobs were lost in just the first two months of the crisis, and the unemployment rate rose from a 50-year low of 3.5 percent in February to a postwar peak of almost 15 percent in April of 2020. A precipitous decline in aggregate demand pummeled the consumer price level. The resulting disruptions to economic activity significantly tightened financial conditions and impaired the flow of credit to U.S. households and businesses.

The fiscal and monetary policy response in the United States to the COVID crisis was unprecedented in its scale, scope, and speed. Legislation passed by the Congress in March 2020, December 2020, and March 2021 provided a total of nearly $5.8 trillion in fiscal support to the U.S. economy—about 28 percent of U.S. GDP.[1]

The Federal Reserve acted decisively and with dispatch to deploy all the tools in its conventional kit and to design, develop, and launch within weeks a series of innovative facilities to support the flow of credit to households and businesses (table 1). The Federal Reserve's policy actions in response to the COVID crisis can be grouped into four broad categories. In the first category, we would include conventional monetary policy measures such as cutting interest rates, offering forward guidance, and rescaling and restarting programs to purchase Treasury securities and agency mortgage-backed securities (MBS) as well as repurchase agreement (repo) operations. In the second group, we would include measures to provide liquidity and funding to support money market functioning. In the third category, we would include a number of facilities the Federal Reserve launched to support more directly the flow of credit to households, businesses, and state and local governments. And in the fourth group, we would include temporary recalibrations the Federal Reserve made to regulations and supervisory practises to encourage and incent banks to support the flow of credit to their household and business customers.[2]

The facilities the Federal Reserve either relaunched or designed and developed anew in response to the COVID crisis were established under the authority of section 13(3) of the Federal Reserve Act; under section 13(3), these facilities can be established only in "unusual and exigent

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[1] This total includes the roughly $3 trillion from the spring 2020 bills—the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020; the Families First Coronavirus Response Act; the Coronavirus Aid, Relief, and Economic Security (CARES) Act; and the Paycheck Protection Program and Health Care Enhancement Act—inclusive of the roughly $0.45 trillion in capitalization for the Fed lending facilities in the CARES Act; as well as $0.9 trillion in the stimulus divisions of the Consolidated Appropriations Act, 2021, passed in late December 2020; and $1.9 trillion in the American Rescue Plan Act of 2021, passed in March 2021.

[2] A complete list of the Federal Reserve's actions in response to COVID-19 can be found on the Federal Reserve Board's website at https://www.federalreserve.gov/covid-19.htm. The text included in this paper relies heavily on Board of Governors (2020f, 2020g, 2020h). For additional discussion of the Federal Reserve and other policy actions in response to the COVID crisis, see, among others, Barr, Jackson, and Tahyar (2020); Haas, Neely, and Emmons (2020); Mizrach and Neely (2020); and Sims and Wu (2020).

circumstances” and with approval of the Treasury Secretary. The U.S. Treasury provided first-loss equity investments in seven of the nine section 13(3) facilities stood up during the COVID crisis.[3] These Treasury equity investments were funded initially from the traditional Exchange Stabilization Fund (ESF) and then later from funds specifically appropriated to the ESF by the Congress for this purpose in title IV of the Coronavirus Aid, Relief, and Economic Security (CARES) Act. Another key principle respected in the design of the facilities is that they were structured to be backstops, with pricing and terms set to incent borrowers to obtain credit, if available, from financial markets and financial institutions so as to restore the flow of credit from private lenders through normal channels.

The paper is organized as follows. The first section reviews the monetary policy measures, such as interest rate policies, open market operations, and asset purchases. The second section discusses facilities focused on providing liquidity and funding support. The third section discusses the facilities that more directly support the flow of credit to households, businesses, and state and local governments. And the fourth section reviews the supervisory and regulatory actions. The fifth section concludes the paper.

[3] Section 13(3) of the Federal Reserve Act requires that a lending Reserve Bank be secured to its satisfaction and directs the Board to adopt policies and procedures designed to ensure that the security for emergency loans is sufficient to protect taxpayers from losses. During the Global Financial Crisis, while several of the programs used features to provide such protection, the only facility with Treasury equity was the Term Asset-Backed Securities Loan Facility (TALF), where the U.S. Treasury provided the Federal Reserve with credit protection equal to 10 percent of the authorized size of the program. For more detailed discussion of the first iteration of TALF, see Campbell and others (2011).

Table 1: Timeline of selected Federal Reserve actions during the COVID-19 pandemic

Date	Action	Objective
Monetary policy actions		
March 3, 2020	FOMC lowers FFTR by 1/2 percentage point, to 1 to 1-1/4 percent	To support achieving its maximum-employment and price-stability goals
March 9, 2020	Updates the monthly schedule of repo operations	To ensure that the supply of reserves remains ample and to mitigate the risk of money market pressures that could adversely affect policy implementation
March 12, 2020	Introduces new weekly recurring one- and three-month term repo operations	To address the disruption in Treasury financing markets
March 15, 2020	FOMC lowers FFTR by 1 percentage point, to 0 to 1/4 percent, and introduces forward guidance	To support achieving its maximum-employment and price-stability goals
March 15, 2020	FOMC to increase its holdings of Treasury and agency mortgage-backed securities by at least $500 billion and $200 billion, respectively, over the coming months	To support the smooth functioning of markets for Treasury securities and agency mortgage-backed securities
March 16, 2020	Introduces a second daily overnight repo operation and increases the amount offered in each to $500 billion	To ensure that the supply of reserves remains ample and to mitigate the risk of money market pressures that could adversely affect policy implementation
March 23, 2020	FOMC announces it will continue to purchase Treasury securities and agency MBS "in the amounts needed." It also includes in the purchases agency CMBS for the first time	To support the smooth functioning of markets for Treasury securities and agency mortgage-backed securities
June 10, 2020	FOMC announces it will increase holdings of Treasury securities and agency mortgage-backed securities at least at the current pace	To sustain smooth market functioning, thereby fostering effective transmission of monetary policy to broader financial conditions
September 16, 2020	FOMC revises forward guidance on rates	To bring FOMC forward guidance into line with the new policy framework, introduced with the approval in August of the new Statement on Longer-Run Goals and Monetary Policy Strategy
December 16, 2020	FOMC introduces guidance on asset purchases	To bring guidance into line with the new policy framework in order to provide accommodation and support the economy
Liquidity and funding operations		
March 15, 2020	Discount window: reduction in primary credit rate by 150 basis points to 0.25 percent, and introduction of term loans up to 90 days. Reserve requirements: reduction to 0 percent, effective on March 26	For depository institutions to meet unexpected funding needs and, in doing so, to help them meet demands for credit from households and businesses
March 15, 2020	FOMC enhances standing U.S. liquidity swap lines with Bank of Canada, Bank of England, Bank of Japan, European Central Bank, and the Swiss National Bank	To lessen strains in global dollar funding markets
March 17, 2020	FRB announces Commercial Paper Funding Facility	To support the flow of credit to households and businesses
March 17, 2020	FRB announces Primary Dealer Credit Facility	To support smooth market functioning and facilitate the availability of credit to businesses and households
March 18, 2020	FRB announces Money Market Mutual Fund Liquidity Facility	To support the flow of credit to households and businesses

Table 1 (*continued*)

Date	Action	Objective
March 19, 2020	FOMC announces temporary swap lines with 9 additional central banks	To lessen strains in global dollar funding markets
March 20, 2020	FOMC increases frequency of 7-day maturity operations of standing swap lines	To lessen strains in global dollar funding markets
March 31, 2020	FOMC announces temporary FIMA Repo Facility	To lessen strains in global dollar funding markets
Tools to provide more direct support for providing credit across the economy		
March 23, 2020	FRB announces Term Asset-Backed Securities Loan Facility	To support the flow of credit to consumers and businesses
March 23, 2020	FRB announces Primary Market Corporate Credit Facility	To allow companies access to credit so that they are better able to maintain business operations and capacity during the period of dislocations related to the pandemic
March 23, 2020	FRB announces Secondary Market Corporate Credit Facility	To provide liquidity for outstanding corporate bonds
March 23, 2020	FRB says it expects to announce Main Street Lending Program soon	To facilitate the flow of credit to small businesses so that they can keep their workers on the payroll during the disruptions caused by the coronavirus
April 9, 2020	FRB announces Municipal Liquidity Facility	To help state and local governments manage cash flow stresses caused by the coronavirus pandemic
April 9, 2020	FRB announces Paycheck Protection Program Liquidity Facility	To bolster the effectiveness of the Small Business Administration's PPP by supplying liquidity to participating financial institutions through term financing backed by PPP loans to small businesses
Banking initiatives		
March 15, 2020	FRB encourages banks to use their capital and liquidity buffers as they lend to households and businesses who are affected by the coronavirus	To support the flow of credit to households and businesses
March 22, 2020	Agencies provide additional information to encourage financial institutions to work with borrowers affected by COVID-19	To help with the challenges that affect banks, credit unions, businesses, borrowers, and the economy, given the unique and evolving situation
April 1, 2020	FRB announces temporary exclusion of U.S. Treasury securities and deposits at Federal Reserve Banks from the supplementary leverage ratio	To help ease strains in the U.S. Treasury market and continue to facilitate the significant inflow of customer deposits at banks
June 25, 2020	FRB announces stress-test results with additional sensitivity analyses	To better identify the potential effects of the pandemic on the capital positions of banks
August 3, 2020	Interagency announcement on loan modification	To provide relief to business and individual borrowers during pandemic
December 18, 2020	FRB announces second round of stress-test results	To better identify the potential effects of the pandemic on the capital positions of banks

Note: On March 23, 2020, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the program came on April 9, 2020. A complete list of the Federal Reserve's actions in response to COVID-19 can be found on the Federal Reserve Board's website at https://www.federalreserve.gov/covid-19.htm. FOMC is Federal Open Market Committee; FFTR is federal funds rate target range; repo is repurchase agreement; CMBS is commercial mortgage-backed securities; FRB is Federal Reserve Board; FIMA is Foreign and International Monetary Authorities; PPP is Paycheck Protection Program.

Source: Federal Reserve Board.

I. Deploying the monetary policy toolkit

Interest rates

In light of the anticipated effects of COVID-19 on economic activity and on risks to the outlook, at two unscheduled meetings on March 3 and March 15, 2020, the Federal Open Market Committee (FOMC) cut the target range for the federal funds rate by a total of 1½ percentage points, bringing it to the effective lower bound target range of 0 to ¼ percent. In the statement accompanying the March 15 meeting, the Committee also deployed forward guidance and said that it expected to maintain this target range until it was confident that the economy had weathered recent events and was on track to achieve its maximum-employment and price-stability goals.[4] At the same time, the Committee noted that it would continue to monitor the implications of incoming information for the economic outlook, including information related to public health, as well as global developments and muted inflation pressures, and that it would use its tools and act as appropriate to support the economy.

Open market operations for safeguarding market functioning

In order to ensure that the supply of reserves remained ample and to support the smooth functioning of the critical funding markets, the Federal Reserve also took actions to expand the supply of short-term funding available to primary dealers to finance their increased holdings of Treasury securities and agency MBS at a time when funding costs from other sources were increasing sharply. In particular, beginning March 9, 2020, following a directive from the FOMC, the Federal Reserve Bank of New York's Open Market Desk increased the size of overnight and term repo operations.[5] The Desk subsequently introduced new weekly recurring one- and three-month term repo operations, introduced a second daily overnight repo operation, and increased the amount offered in each operation.[6]

Despite the much larger volume of repo operations, strains in Treasury and agency MBS markets continued to build. On March 15, the FOMC directed the Desk to increase its holdings of Treasury securities and agency MBS by at least $500 billion and $200 billion, respectively. On March 23, to provide greater flexibility in addressing the strains, the FOMC authorized purchases of those securities in the amounts needed to support smooth market functioning and the effective transmission of monetary policy to broader financial conditions.[7] The securities targeted for purchase were also expanded to include agency commercial MBS.

The scale of asset purchases required to support market functioning declined over the spring as market functioning improved. By the June 2020 meeting, and consistent with the directive from

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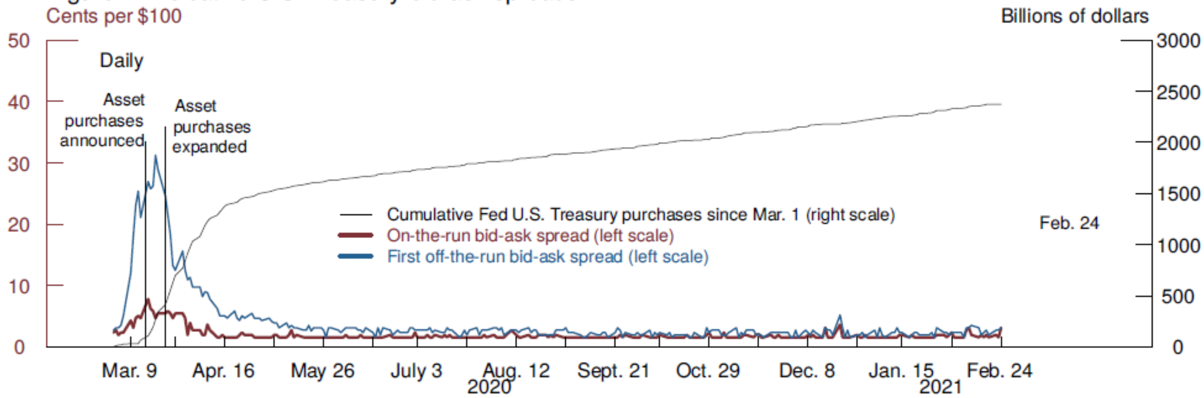
[4] FOMC statements are available on the Federal Reserve Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.
[5] See Federal Reserve Bank of New York (2020a).
[6] See Federal Reserve Bank of New York (2020b, 2020c).
[7] On March 12, the Desk statement also noted that it will shift its $60 billion reserve management purchases to be conducted across a range of maturities to roughly match the maturity composition of Treasury securities outstanding. See Federal Reserve Bank of New York (2020b).

the FOMC, the Desk settled on purchasing at least $80 billion of Treasury securities and at least $40 billion of agency MBS per month, which, as of this writing, remains the current pace of purchases.

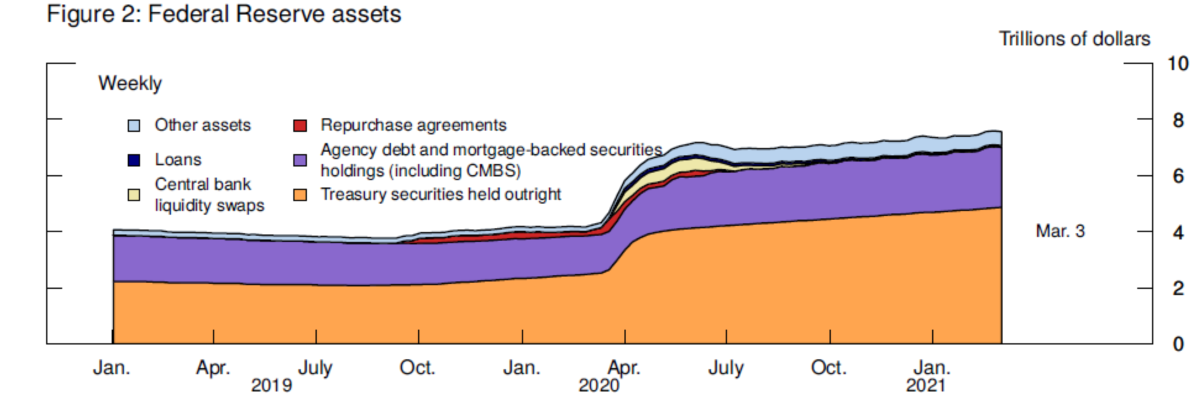
As a result of the increased repo operations and asset purchases, market functioning improved substantially (figure 1). Usage of Federal Reserve repo operations peaked on March 17 and then declined steadily as funding strains eased.[8] As a consequence of these programs, the size of the Federal Reserve's balance sheet has increased significantly since the onset of the crisis (figure 2).[9]

Figure 1: Indicative U.S. Treasury bid-ask spreads



Note: Indicative bid-ask spreads for 10-year Treasury note. On March 15, the Federal Open Market Committee announced an increase of its holdings of Treasury securities by at least $500 billion and its holdings of agency mortgage-backed securities (MBS) by at least $200 billion. On March 23, the Federal Reserve announced it would continue to purchase Treasury securities and agency MBS in the amounts needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions.
Source: Federal Reserve Bank of New York.

Figure 2: Federal Reserve assets



Note: "Other assets" include unamortized premiums and discounts on securities held outright, the Commercial Paper Funding Facility, the Secondary Market Corporate Credit Facility, and the Municipal Liquidity Facility. "Loans" consist of primary, secondary, and seasonal credit as well as other credit and liquidity facilities, including the Primary Dealer Credit Facility, the Money Market Mutual Fund Liquidity Facility, and the Paycheck Protection Program Liquidity Facility. CMBS is commercial mortgage-backed securities.
Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

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8 In light of more stable repo market conditions, on May 4, the Desk returned to once-daily overnight repo operations. Further, on May 14, the Desk discontinued its three-month term repo operations. See Federal Reserve Bank of New York (2020d, 2020e).

9 See the box "Developments on the Federal Reserve's Balance Sheet" in Board of Governors (2020h).

Guidance on rates and asset purchases

To counter the severe effects of the pandemic, the FOMC also deployed forward guidance starting with the March 15, 2020, meeting as mentioned above. In the September 2020 FOMC statement, the Committee provided unprecedented outcome-based forward guidance by indicating that, with inflation running persistently below 2 percent, its policy would aim to achieve inflation outcomes that keep inflation expectations well anchored at the 2 percent longer-run goal. In doing so, the Committee noted that it expects to maintain an accommodative stance of monetary policy until these outcomes—as well as the maximum-employment mandate—are achieved. Specifically, the Committee stated that it will be appropriate to maintain the current 0 to ¼ percent target range for the federal funds rate until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment, until inflation has risen to 2 percent, and until inflation is on track to moderately exceed 2 percent for some time.

In December 2020, the FOMC combined its forward guidance for the federal funds rate with enhanced, outcome-based guidance about the asset purchases. In particular, the FOMC indicated that it would continue to increase its holdings of Treasury securities by at least $80 billion per month and its holdings of agency MBS by at least $40 billion per month until "substantial further progress" was made toward its maximum-employment and price-stability goals.

These changes to the FOMC forward guidance brought it into line with its new "flexible average inflation targeting" framework as embodied in a revised Statement on Longer-Run Goals and Monetary Policy Strategy approved unanimously on August 27, 2020.[10] The new framework was the culmination of the Federal Reserve's first-ever comprehensive and public review of the strategy, tools, and communication practices it employs to achieve its congressionally mandated goals of maximum employment and price stability.[11]

II. Stabilizing short-term funding markets

Liquidity and funding operations

The sharp increase in the demand for cash and other liquid assets in mid-March 2020 caused strains in many other financial markets, disrupting the flow of credit to businesses needed to fund critical operations. To alleviate these strains, the Federal Reserve deployed its most traditional liquidity tool and encouraged depository institutions to turn to the discount window to help meet demands for credit from households and businesses. In support of this goal, the Board announced that it would lower the primary credit rate by 150 basis points to 0.25 percent, effective March 16, 2020. Narrowing the spread of the primary credit rate relative to the general level of overnight interest rates was intended to help encourage more active use of the window by depository institutions to meet unexpected funding needs. To further enhance the role of the

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[10] The statement is available on the Federal Reserve Board's website at https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications-statement-on-longer-run-goals-monetary-policy-strategy.htm.

[11] See Powell (2020) and Clarida (2020a, 2020b) for a more detailed discussion of the new framework.

discount window as a tool for banks in addressing potential funding pressures, the Board also announced that depository institutions could borrow from the discount window for periods as long as 90 days. In addition, the Federal Reserve reduced reserve requirement ratios to 0 percent, effective on March 26, and also encouraged depository institutions to utilize intraday credit extended by Reserve Banks, on both a collateralized and uncollateralized basis, to support the provision of liquidity to households and businesses and the general smooth functioning of payment systems.[12]

The liquidity squeeze—with short-term funding drying up even for companies in good financial standing—was particularly acute in the nonbank sector and threatened to amplify the initial economic shock. Businesses and state and local governments with strong finances rely on short-term debt, or "commercial paper" (CP), to raise cash to pay for expenses such as health care, employee salaries, and suppliers' invoices. These businesses and governments are generally able to roll over their CP every few weeks. As market strains rose and CP spreads spiked, many investors were unwilling to advance funds for longer than a few days, so businesses were forced to issue CP on a near-daily basis, with no guarantee that investors would accept it.

At the same time—and contributing to the stress—investors started to pull away from prime and tax-exempt money market mutual funds (MMFs). These funds typically hold CP and other short-term debt instruments. However, the scale of investor redemptions threatened to exhaust these funds' holdings of their most liquid assets. Concerns that the funds would restrict or suspend daily redemptions grew, prompting even heavier outflows.[13] The consequences of a failure in the CP market or of restricted redemptions from money funds would have been dire: Households and businesses would have missed payments to counterparties, forcing technical defaults by creditworthy entities, with potential consequences for the broader economy.[14]

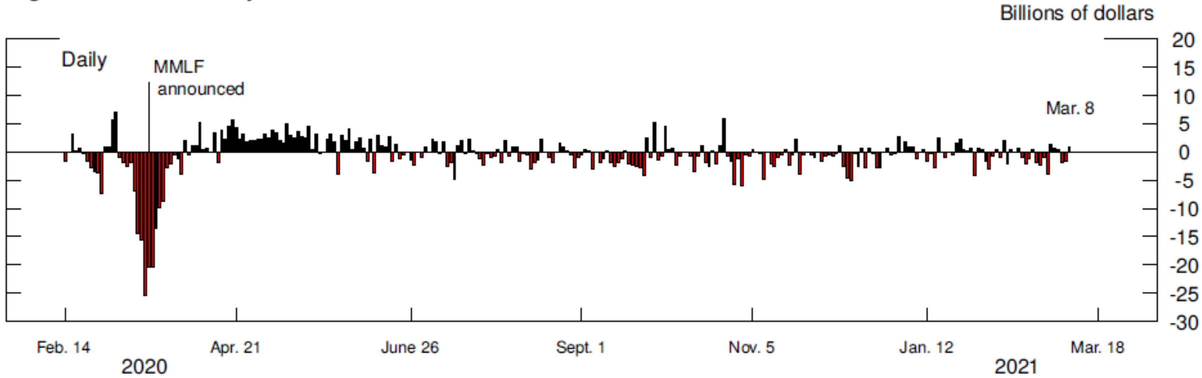
In response, the Federal Reserve, with the approval of the Department of the Treasury, announced the Commercial Paper Funding Facility (CPFF) on March 17 and the Money Market Mutual Fund Liquidity Facility (MMLF) on March 18, benefiting from the blueprints used for similar programs established during the Global Financial Crisis (GFC). The CPFF became operational on April 14 and the MMLF on March 23. These emergency lending facilities were established under section 13(3) of the Federal Reserve Act. Each facility had $10 billion of equity provided by the Treasury Department to protect the Federal Reserve from potential losses.

A companion facility that was also deployed during the GFC, the Primary Dealer Credit Facility (PDCF), was announced on March 17 to provide fully secured loans against good collateral to the primary dealers that are critical intermediaries in short-term funding markets; operations started on March 20. In March, constraints on dealer intermediation capacity contributed to

[12] For more details, see Board of Governors (2020a).
[13] See Li and others (2020).
[14] As discussed in Brainard (2021), the run on MMFs and the need for a policy intervention, for the second time in 12 years, highlights the structural vulnerabilities and the importance of reforms to reduce the run risk of prime MMFs. The President's Working Group on Financial Markets has outlined several potential reforms to address this risk (see U.S. Treasury (2020)). In addition, the runs on offshore MMFs that hold dollar-denominated assets like CP underscore the importance of working with international counterparts, including work being undertaken by the Financial Stability Board, to increase the resilience of short-term funding markets globally.

deteriorating liquidity in even usually liquid markets. The PDCF provided liquidity support to primary dealers in financing a wide range of securities, thereby contributing to smooth market functioning and supporting the financial needs of businesses, households, and communities.

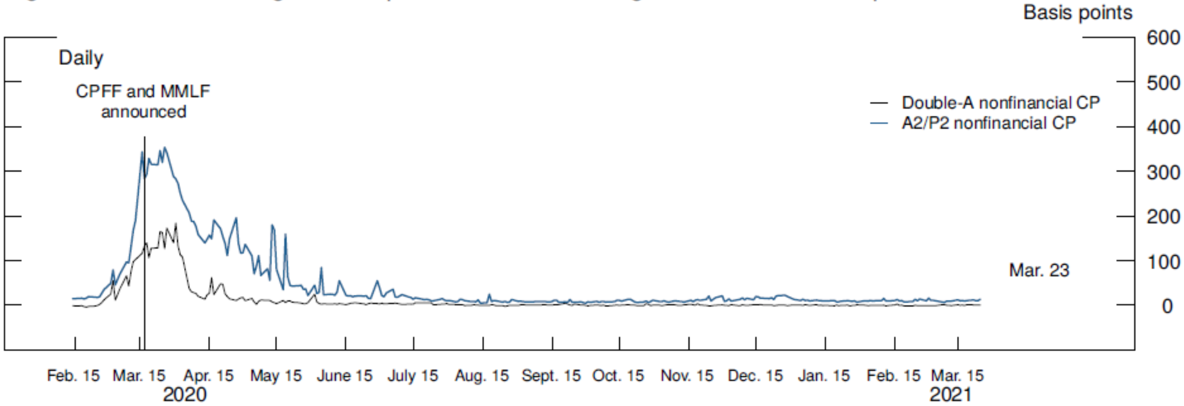
Figure 3: Prime money market mutual fund net flows



Note: MMLF is Money Market Mutual Fund Liquidity Facility. On September 29, 2020, Vanguard converted its $125.3 billion prime money market mutual fund (MMF) into a government MMF. This observation has been omitted from the chart.
Source: iMoneyNet, Money Fund Analyzer-Gold.

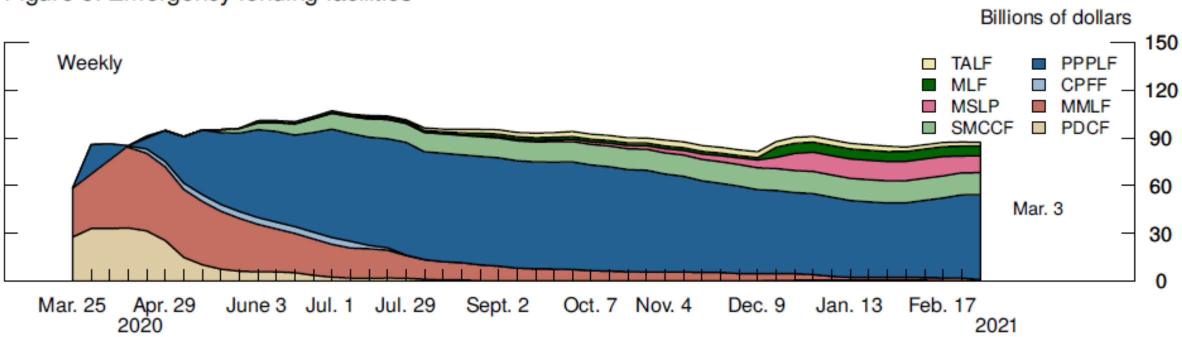
Following the announcement of these facilities, MMFs' outflows stabilized quickly, and CP spreads declined significantly (figures 3 and 4). The balance outstanding in these facilities grew rapidly during the weeks following their establishment and subsequently declined as market strains eased (figure 5). In particular, the fees and pricing were set to ensure these facilities worked as a backstop, prompting facilities to automatically wind down as market conditions improved. Although balances in the PDCF, CPFF, and MMLF fell from their peaks fairly quickly, the facilities continued to serve as important backstops against further market stress and supported the flow of credit as the pandemic persisted (table 2). Each of these facilities was allowed to expire in March 2021.

Figure 4: 1-month funding market spreads for investment-grade nonfinancial corporations



Note: All spreads are to overnight index swap rate of the same tenor. CP is commercial paper; CPFF is Commercial Paper Funding Facility; MMLF is Money Market Mutual Fund Liquidity Facility. Neither DTCC Solutions LLC nor any of its affiliates shall be responsible for any errors or omissions in any DTCC data included in this publication, regardless of the cause and, in no event, shall DTCC or any of its affiliates be liable for any direct, indirect, special or consequential damages, costs, expenses, legal fees, or losses (including lost income or lost profit, trading loses and opportunity costs) in connection with this publication.
Source: Federal Reserve Board; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation.

Figure 5: Emergency lending facilities



Note: The values shown are outstanding amounts. TALF is Term Asset-Backed Securities Loan Facility; MLF is Municipal Liquidity Facility; MSLP is Main Street Lending Program; SMCCF is Secondary Market Corporate Credit Facility; PDCF is Primary Dealer Credit Facility; MMLF is Money Market Mutual Fund Liquidity Facility; CPFF is Commercial Paper Funding Facility; PPPLF is Paycheck Protection Program Liquidity Facility.
Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

Table 2: Federal Reserve emergency lending facilities

Facility	Announcement date	Launch date	Current end date	Peak outstanding (billions of dollars)	Feb. 26, 2021, outstanding (billions of dollars)	Treasury capital provided as equity	Used in GFC
Commercial Paper Funding Facility	March 17, 2020	April 14, 2020	March 31, 2021	4.2	.0	$10 billion, ESF funds	Y
Primary Dealer Credit Facility	March 17, 2020	March 20, 2020	March 31, 2021	37.3	.3	N/A	Y
Money Market Mutual Fund Liquidity Facility	March 18, 2020	March 23, 2020	March 31, 2021	54.1	1.2	$10 billion, ESF funds	Y
Primary Market Corporate Credit Facility	March 23, 2020	June 29, 2020	December 31, 2020	.0	.0	$50 billion, CARES funds	
Secondary Market Corporate Credit Facility	March 23, 2020	May 12, 2020	December 31, 2020	14.1	14.0	$25 billion, CARES funds	
Term Asset-Backed Securities Loan Facility	March 23, 2020	June 17, 2020	December 31, 2020	4.1	2.6	$10 billion, ESF and CARES funds	Y
Main Street Lending Program	March 23, 2020	July 6, 2020	January 8, 2021	16.6	16.5	$75 billion, CARES funds	
Municipal Liquidity Facility	April 9, 2020	May 26, 2020	December 31, 2020	6.4	6.2	$35 billion, CARES funds	
Paycheck Protection Program Liquidity Facility	April 9, 2020	April 16, 2020	June 30, 2021	70.9	53.1	N/A	

Note: ESF funds are traditional funds that were already in the Exchange Stabilization Fund (ESF) at the onset of the pandemic, and CARES funds are funds appropriated to the ESF under section 4027 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act. On March 23, 2020, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the program came on April 9, 2020. GFC is Global Financial Crisis.

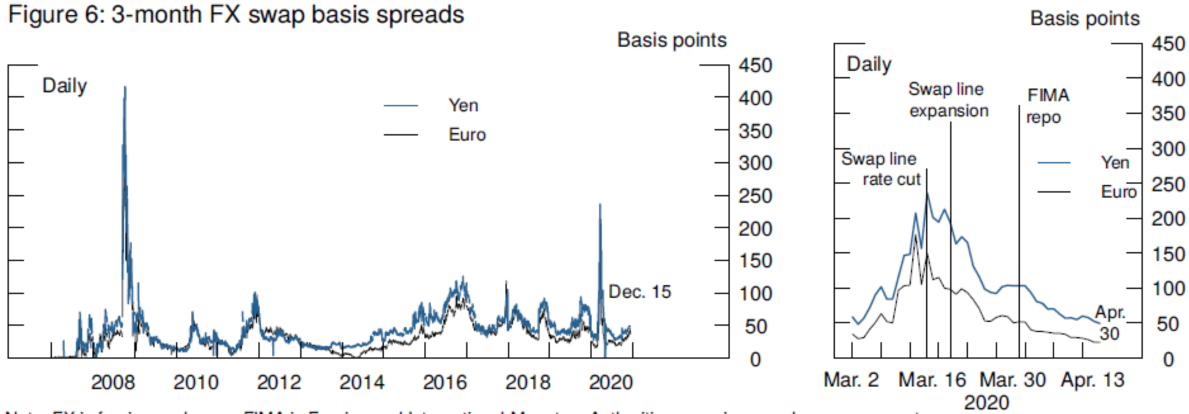
N/A Not applicable.

Source: Federal Reserve Board.

Easing strains in global dollar funding markets

The U.S. dollar is the leading currency for trade and is used extensively as a funding and investment currency worldwide. In general, foreign financial institutions lack ready access to U.S. retail deposits or other stable sources of dollar funding and thus rely more heavily on wholesale funding markets than do U.S. institutions. As a result, when dollar funding markets seize up, foreign financial institutions may be disproportionately affected. They not only may cut back on lending to foreign borrowers, thereby exacerbating disruptions in global markets, but also may reduce lending to U.S. residents and liquidate holdings of U.S. assets in order to obtain dollars, harming U.S. households and businesses. Indeed, in mid-March, offshore dollar funding markets came under stress, as manifested by sharp increases in foreign exchange swap basis spreads, which widened to levels last seen in the GFC (figure 6).

Figure 6: 3-month FX swap basis spreads

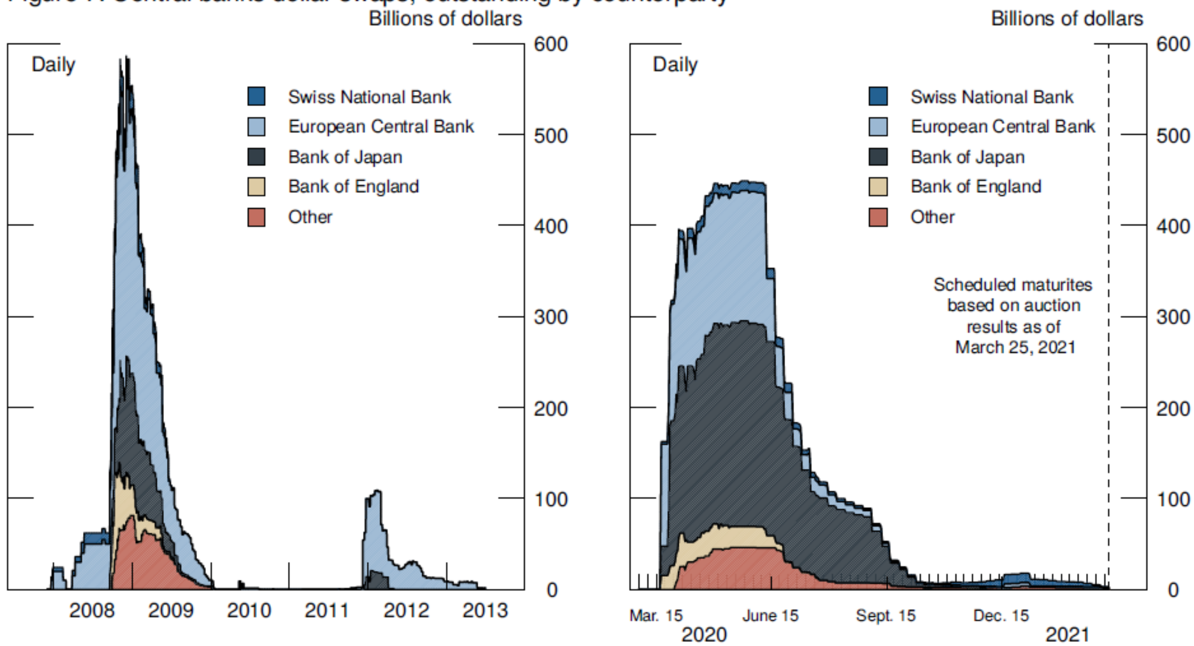


Note: FX is foreign exchange; FIMA is Foreign and International Monetary Authorities; repo is repurchase agreement.
Source: Federal Reserve Bank of New York; calculations based on data from Bloomberg Finance L.P.

In response, the Federal Reserve announced the expansion and enhancement of dollar liquidity swap lines with a number of central banks during the week of March 15, 2020. Longer-term swap operations were added for the four central banks that traditionally hold auctions, and temporary swap lines were reopened with the nine central banks that had temporary agreements during the GFC. The expanded swap lines were met with strong demand (figure 7). Swap basis spreads declined toward their pre-COVID levels following the announcement and expansion of the swap lines.

In addition to the swap line enhancements, on March 31, the Federal Reserve announced a new program to support dollar funding markets, the temporary FIMA (Foreign and International Monetary Authorities) Repo Facility. This facility is designed to provide a reliable source of dollar liquidity to a broad range of countries, many of which do not have swap line arrangements with the Federal Reserve. Under this facility, FIMA account holders (which include central banks and other monetary authorities) can enter into overnight repos with the Federal Reserve, temporarily exchanging U.S. Treasury securities they hold at the Federal Reserve for U.S. dollars, which can then be provided to institutions in their respective jurisdictions. The FIMA Repo Facility allows central banks to obtain dollars for liquidity purposes without selling their Treasury securities outright, which should help relieve pressure in Treasury markets at times of stress. Usage of this facility was minimal in the year following the onset of the pandemic.

Figure 7: Central banks dollar swaps, outstanding by counterparty



Note: "Other" consists of Banco de Mexico, Bank of Canada, Bank of Korea, Central Bank of Brazil, Danmarks Nationalbank, Norges Bank, Reserve Bank of Australia, and Reserve Bank of New Zealand. Auctions by "other" were held between 2008 and 2009.
Source: Bank of England; European Central Bank; Bank of Japan; Swiss National Bank; and Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

Note: Data reflect settlements and the expiry pattern of outstanding swaps. "Other" consists of Banco de Mexico, Bank of Korea, Danmarks Nationalbank, Monetary Authority of Singapore, Norges Bank, and Reserve Bank of Australia.
Source: Bank of England; European Central Bank; Bank of Japan; Swiss National Bank; and Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

III. Supporting the flow of credit to households, companies, and states

As it became clear that the pandemic would significantly disrupt the global economy, the cost of borrowing rose sharply in the corporate bond market, municipal debt market, and asset-backed securities market. Spreads in these markets widened notably in March 2020, and issuance of new debt in these markets slowed sharply and was restricted to the highest-quality issuers or even ceased altogether. In addition, small and medium-sized businesses that traditionally rely on bank lending faced substantial financial pressures as COVID-19 and the mitigation efforts put in place to contain it forced them to close or substantially cut back operations.

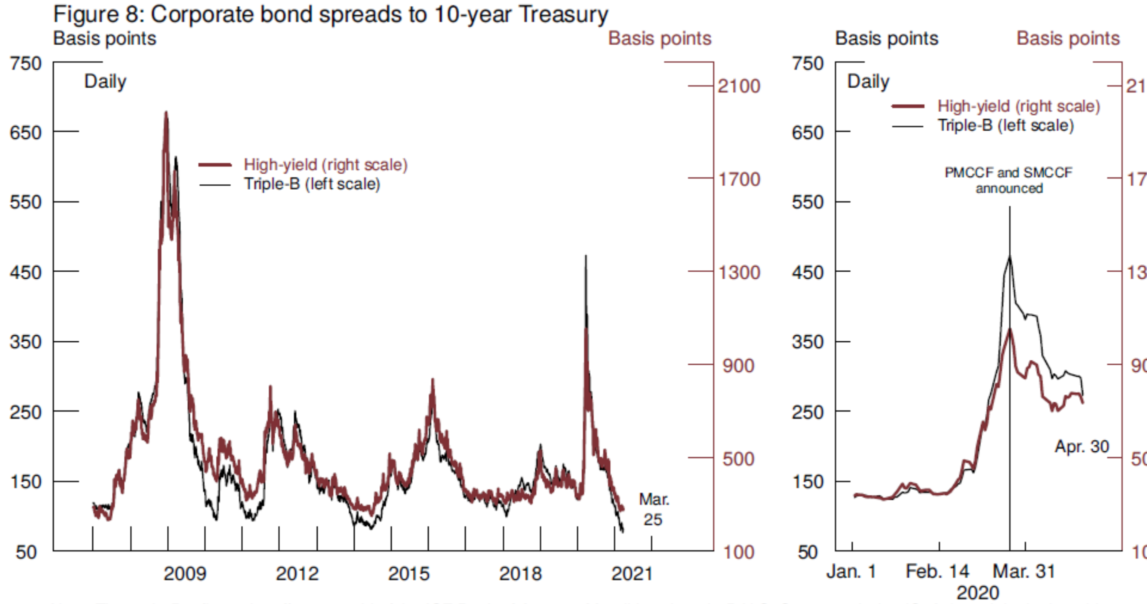
In light of these circumstances, the Federal Reserve Board, with the approval of the Secretary of the Treasury, took a series of steps to support the flow of credit to households, businesses, and communities using authorities under section 13(3) of the Federal Reserve Act. Ultimately, a set of six section 13(3) facilities were announced to support the flow of credit to large employers, small and medium-sized businesses, households, and state and local governments. The Treasury provided nearly $200 billion of credit protection to the Federal Reserve using funds appropriated by the Congress for this purpose under the CARES Act.

The Term Asset-Backed Securities Loan Facility was announced on March 23 (with operations starting on June 17) to facilitate the issuance of auto loans, equipment leases, credit card loans, and other loans that are bundled into asset-backed securities that are sold to investors. By facilitating issuance and instilling confidence that these markets will function effectively, the

TALF contributed to the flow of credit to consumers and businesses. A similar TALF program was also established during the GFC (with operation in 2009–10) and was effective then in supporting the flow of credit to creditworthy consumers and businesses.

The Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF) were also announced on March 23; SMCCF operations began on May 12, and the PMCCF opened on June 29.[15] These facilities were designed to work together to support the flow of credit to large investment-grade U.S. corporations so that they could maintain business operations and capacity during the period of dislocation related to COVID-19. The PMCCF stood ready to purchase new bonds and loans issued by such corporations, while the SMCCF supported trading in bonds that these corporations had previously issued. In addition to purchasing individual bonds, the SMCCF also purchased shares in exchange-traded corporate bond funds (ETFs), which enabled the Federal Reserve to quickly and broadly support the functioning of the corporate bond market. The PMCCF and SMCCF were also open to firms that were investment grade at the onset of the pandemic but were downgraded to the upper end of the speculative-grade range following the pandemic shock. In order to prevent an unusually large gap from opening up between borrowing costs faced by investment-grade and high-yield businesses, which could have sharply raised borrowing costs faced by businesses downgraded during the pandemic, the SMCCF also purchased a limited amount of shares in ETFs that held high-yield bonds. Shortly after the announcement of the PMCCF and the SMCCF, spreads of both investment- and speculative-grade corporate bonds declined notably (figure 8). In addition, issuance volumes of investment-grade corporate bonds rebounded to robust levels.

Figure 8: Corporate bond spreads to 10-year Treasury



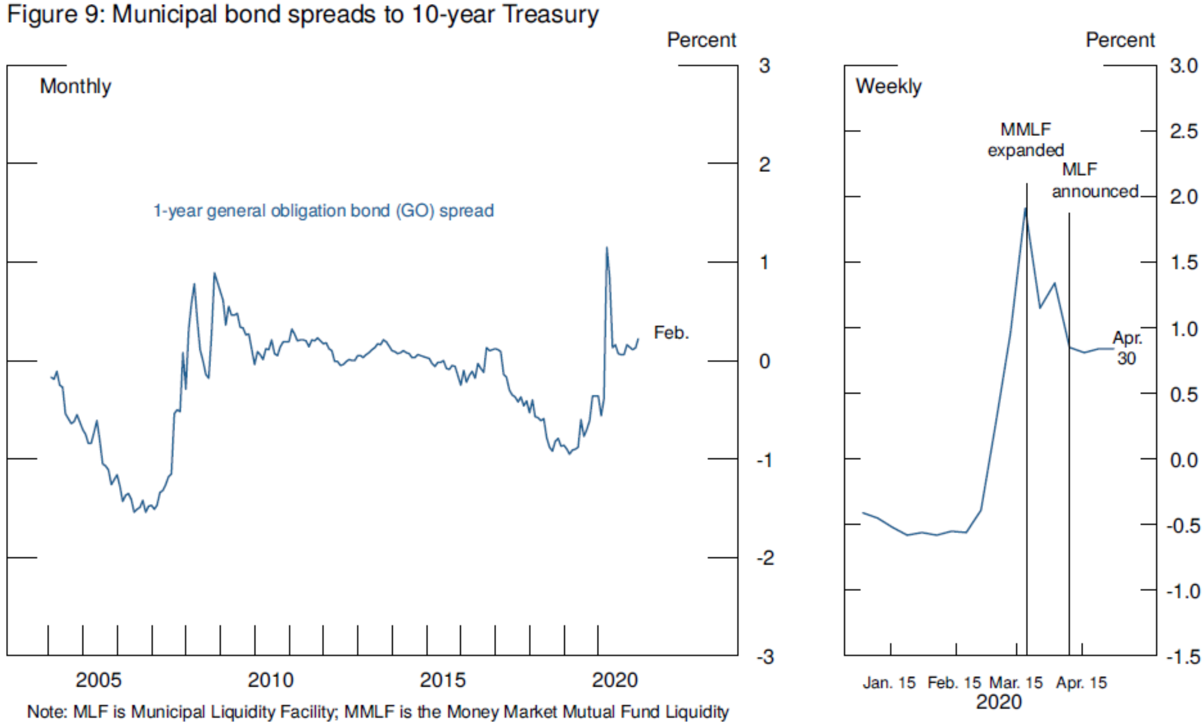
Note: The triple-B reflects the effective yield of the ICE Bank of America Merrill Lynch triple-B U.S. Corporate Index (C0A4), and the high-yield reflects the effective yield of the ICE BofAML US High Yield Index (H0A0). Treasury yields from smoothed yield curve estimated from off-the-run securities. Spreads over 10-year Treasury yield. PMCCF is Primary Market Corporate Credit Facility; SMCCF is Secondary Market Corporate Credit Facility.
Source: ICE Data Indices, LLC, used with permission.

[15] The SMCCF began purchasing exchange-traded corporate bond funds on May 12, 2020, and corporate bonds on June 16, 2020.

The Paycheck Protection Program Liquidity Facility (PPPLF) was announced on April 9 to extend credit to lenders that participated in the Small Business Administration's Paycheck Protection Program (PPP). The PPPLF began extending advances on April 16. The PPP provided forgivable loans to small businesses so that they can keep their workers on the payroll. The PPPLF bolstered the effectiveness of the PPP by supplying liquidity to lenders focused on servicing small businesses.[16]

The Municipal Liquidity Facility (MLF) was also announced on April 9 and became operational on May 26 to help state and local governments better manage cash flow pressures to continue to serve households and businesses in their communities. The facility stood ready to purchase short-term debt from U.S. states, cities, and other public enterprises such as transportation systems. The Federal Reserve designed the MLF to improve access to credit by creditworthy state and local governments. Conditions in municipal bond markets improved after the announcement that the CPFF and the MMLF would be broadened to accept short-term securities issued by state and local governments, and they improved further after the subsequent announcement of the MLF (figure 9).

Figure 9: Municipal bond spreads to 10-year Treasury



Note: MLF is Municipal Liquidity Facility; MMLF is the Money Market Mutual Fund Liquidity Facility.
Source: Bond Buyer via Bloomberg L.P.; Municipal Market Analytics, Inc.

[16] The PPP loans under the PPP are fully guaranteed as to principal and interest by the Small Business Administration, and these guaranteed loans fully collateralize extensions of credit under the PPPLF. As a result, this facility did not include specific credit protection from the U.S. Treasury to the Federal Reserve.

The Main Street Lending Program was announced on March 23 to support the flow of credit to small and medium-sized employers, with operations commencing on July 6.[17] The program purchased 95 percent participations in loans originated by depository institutions to borrowers with 15,000 or fewer employees or $5 billion or less in annual revenue. The Federal Reserve designed the Main Street program to complement the PMCCF and SMCCF by supporting lending to businesses that are too small to benefit directly from those facilities. Purchases of loan participations through Main Street both directly enhanced access to credit for small and medium-sized businesses and indirectly supported lending outside the program by expanding the lending capacity of depository institutions. Despite the many challenges around setting up the program, as highlighted by English and Liang (2020), Main Street did provide a substantial amount of credit to smaller businesses. Even though the program used only a small fraction—$17.5 billion—of its capacity to facilitate $600 billion in loans, as shown in Bräuning and Paligorova (2021), Main Street's 1,830 loans went to 2,453 borrowers, 99 percent of which were smaller businesses. These loans were generally concentrated among businesses in the industries and locations particularly hard hit by the COVID-19 pandemic.

The PMCCF, SMCCF, and MLF served their intended backstop role. The "announcement effect" led to rapid improvements in financing conditions in corporate and municipal bond markets well ahead of the facilities' actual opening, resulting not just in tighter spreads, but also an increased ability for a variety of issuers—including those not explicitly covered by these facilities—to access markets on reasonable terms. These facilities, with the exception of the PPPLF, were closed to new activity as of the end of December 2020. The PPPLF was extended through June 30, 2021. As of March 10, 2021, the PPPLF supported PPP loans to more than 7.5 million small businesses, peaking at more than $70 billion in August 2020 (table 2).

IV. Supervisory and regulatory initiatives

A well-capitalized, stable banking system that is lending to creditworthy households and businesses is critical to fully supporting the flow of credit to the economy.[18] In the years following the GFC, the Federal Reserve focused on building the resilience of banks so that they could be a source of liquidity and credit during a future downturn. The largest U.S. banks came into the pandemic with roughly twice the capital, more than three times the high-quality liquid assets, and substantially less short-term wholesale funding than on the eve of the GFC. Indeed, as the crisis intensified in early March 2020, banks met the considerable demands for cash from businesses that drew on their preexisting credit lines. Banks also funded the bulk of the more than $500 billion in PPP loans. As a result, commercial and industrial loans increased $715 billion between February 26 and their peak on May 13.[19] Banks also agreed to forbear interest and principal payments on the loans of millions of struggling households. In addition,

[17] On March 23, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the program came on April 9, 2020.
[18] The language and content of this section are based on Clarida (2020c) and Quarles (2020).
[19] See Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States," available on the Federal Reserve Board's website at https://www.federalreserve.gov/releases/h8.

through September 2020, banks absorbed about $2.5 trillion of deposits from investors who sought the safe haven of the U.S. dollar and insured bank accounts.

As a bank supervisor, the Federal Reserve recognized that its supervisory actions could strain the balance sheet capacity of banks and so took a number of steps to allow them to continue to support their customers during this unprecedented time. Along with the other federal banking agencies, the Federal Reserve issued a statement encouraging banks to work constructively with borrowers who were affected by COVID-19, recognizing that offering a customer a responsible loan modification could be a safe and sound banking practice and could help facilitate the economic recovery.[20]

With regard to actions taken that are relevant for larger institutions, the Federal Reserve adapted its stress-testing framework to better identify the potential effects of the pandemic on the capital positions of banks. In June 2020, it released the annual stress-test results and an additional sensitivity analysis that explored vulnerabilities of banks to the downside risks to the economy arising from the pandemic.[21] At the same time, to ensure resilience of the largest banks, it required them to resubmit their capital plans, imposed limitations on capital distributions, and provided new scenarios used for a second round of stress tests conducted in December 2020.[22]

Among other actions to support financial intermediaries during the pandemic, in April 2020, the Board issued an interim final rule that excluded, on a temporary basis, U.S. Treasury securities and deposits at Federal Reserve Banks from large bank holding companies' supplementary leverage ratios.[23] The rule helped ease strains in the U.S. Treasury market and facilitated the significant inflow of customer deposits to banks that has occurred since the onset of the crisis. On March 27, 2020, the Fed—together with other regulatory agencies—allowed banking organizations to mitigate the impact of the current expected credit losses accounting standard on regulatory capital, in order to allow banking organizations to better focus on supporting lending to creditworthy households and businesses.[24]

Turning to some issues of particular importance to small banks, the Fed provided temporary regulatory relief on the community bank leverage ratio, on regulatory reporting deadlines, and on appraisal requirements. It also streamlined bank examinations for small banks. These actions provided banks with additional time and resources to adjust their operations to prioritize the financial needs of their customers and communities, and to play the vital role of lending to small businesses through the PPP.

[20] For loan modification details, see Federal Financial Institutions Examination Council (2020).
[21] See Board of Governors (2020d).
[22] For second-round stress-test information, see Board of Governors (2020c, 2020e).
[23] For more details regarding the effect on the supplementary leverage ratio, see Board of Governors (2020b). On May 15, 2020, federal bank regulatory agencies announced temporary changes to the supplementary leverage ratio, which extended the April 1 changes to certain depository institutions (Board of Governors, FDIC, and OCC (2020b)).
[24] For more details about the interagency statement on current expected credit losses, see Board of Governors, FDIC, and OCC (2020a).

V. Conclusion

In the United States, both the fiscal and monetary policy responses to the COVID crisis were unprecedented in their scale, scope, and speed. In this paper, we have argued that the Federal Reserve acted decisively and with dispatch to deploy all the tools in its conventional kit and to design, develop, and launch within weeks a series of innovative facilities to support the flow of credit to households and business. These measures, taken together and in tandem with a historic fiscal policy response, provided crucial support to the economy in 2020 and are continuing to contribute to what is expected to be a robust economic recovery in 2021.

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