

**United States House of Representatives**  
**Committee on Financial Services**  
**Subcommittee on National Security, International Development, and Monetary Policy**

**September 23, 2021**

***“Lending in a Crisis: Reviewing the Federal Reserve’s Emergency Lending Powers During the Pandemic and Examining Proposals to Address Future Economic Crises”***

Written Testimony of Mike Konczal

Director, Macroeconomic Analysis, Roosevelt Institute

Good morning and thank you for inviting me to testify at this hearing. My name is Mike Konczal, and I’m the director of Macroeconomic Analysis at the Roosevelt Institute. I’ve led our organization’s research on full employment, fiscal and monetary policy, and the Federal Reserve’s toolkit throughout both the Great Recession and the recession following the COVID-19 outbreak.<sup>1</sup>

In response to the crisis in March of 2020, the Federal Reserve—using existing authority and in conjunction with powers and funding from the Coronavirus Aid, Relief, and Economic Security (CARES) Act—launched several emergency interventions in financial markets. I will discuss four of these interventions here. The first two involved direct lending to entities at a penalty rate—like section 13(3) emergency lending programs for financial firms, but for elements of the real economy. These included the Primary Market Corporate Credit Facility (PMCCF), which offered to purchase new corporate bonds, and the Municipal Liquidity Facility (MLF), which offered to purchase bonds from states and municipalities. The third intervention, called the Secondary Market Corporate Credit Facility (SMCCF), is a program to purchase a market index of already existing corporate bonds, and the fourth is the Main Street Lending Program (MSLP), which was designed to provide loans to small- and medium-sized businesses.

I will discuss three things about these programs today. First, the first three programs were more successful than people realize; we see dramatic effects if we look not just at their level of activity, but at their overall impact on interest rates. These efforts created lower borrowing costs at a time of severe budgetary stress, which helped ease pressure during the worst of the downturn. However, this is not a substitute for fiscal policy or direct support to states, municipalities, and people.

Second, these programs are an evolution of unconventional monetary policy at the zero lower bound and are likely to stay with us, just as they will likely stay with the other countries that used similar interventions throughout last year. There isn’t just one interest rate in our economy that is administered by the Federal Reserve; there are many, and tools that allow the Fed to directly target them are critical in guiding the

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<sup>1</sup> Special thanks to Emily DiVito for research assistance, and to Sonya Gurwitt and Tayra Lucero for editorial and graphics support.



economy back to full employment.

Because these programs work by influencing interest rates, Black and brown communities suffered from punitive rates as a result of the delay in expanding the eligibility of the MLF. To prevent this from happening again, the Fed must make understanding the multiple ways it can improve these facilities a priority going forward. Moreover, the experiences of these programs can provide guideposts for ways in which unconventional monetary policy can drive other policy objectives in the future.

### **1) The Facilities Were Successful in Lowering Interest Rates Faced by the Real Economy**

To understand the success of these programs, we need to look not just at the headline numbers of loans made, but instead at their overall impact on interest rates across all lending. The total amount of assets purchased and loans made was quite small, especially compared to the \$454 billion that was budgeted in the CARES Act for these programs, a number that was later leveraged to \$2.3 trillion.<sup>2</sup>

Nowhere near that amount of activity occurred through these programs. The PMCCF made no direct loans to corporations. The MLF made four direct loans to two entities, for a total of \$6.4 billion dollars.<sup>3</sup> The SMCCF purchased \$14.1 billion worth of corporate bonds from the secondary market. By the end of 2020, the MSLP made a total of just \$16.5 billion in loans.<sup>4</sup> If judged solely on the amount of loans and purchases, we would view these programs as a failure considering the scope of the crisis, or at least as not accomplishing any important economic objectives.

It was always likely that the direct lending programs wouldn't do much lending. Since the programs were created under 13(3) emergency lending authority, the Federal Reserve believed that they needed to be implemented with a penalty rate. As such, once the financial crisis had passed, there was the downside of a penalty rate, with no corresponding upside for participating. In contrast, the Payroll Protection Program (PPP) had the downside (from the point of view of businesses) of significant terms attached to lending but the upside of having loans turn into direct cash grants. The PPP saw substantial uptake by businesses; in 2020, because of the upside attached to its extra terms, the PPP approved 5,149,906 loans amounting to \$522,798,414,639.<sup>5</sup> Adding any additional terms to the PMCCF or MLF facilities would have made uptake even less likely.

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<sup>2</sup> Joe Courtney, "H.R.748 - 116th Congress (2019-2020): CARES Act," Pub. L. No. H.R. 748 (2020), <https://www.congress.gov/bill/116th-congress/house-bill/748/text>; Board of Governors of the Federal Reserve System, "Federal Reserve Takes Additional Actions to Provide up to \$2.3 Trillion in Loans to Support the Economy," June 29, 2020, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200409a.htm>.

<sup>3</sup> Board of Governors of the Federal Reserve System, "Periodic Report: Update on Outstanding Lending Facilities," January 9, 2021, <https://www.federalreserve.gov/publications/files/pdf-mmlf-cpff-pmccf-smccf-talf-mlf-ppplf-msnlf-mself-msplf-nonlf-noelf-01-11-21.pdf#page=6>.

<sup>4</sup> Board of Governors of the Federal Reserve System, "Uptake of the Main Street Lending Program," April 16, 2021, <https://www.federalreserve.gov/econres/notes/feds-notes/uptake-of-the-main-street-lending-program-20210416.htm>.

<sup>5</sup> US Small Business Administration, "Paycheck Protection Program (PPP) Report: Approvals through 01/24/2021," January 24, 2021, [https://www.sba.gov/sites/default/files/2021-01/PPP\\_Report\\_2021\\_01\\_24-508.pdf](https://www.sba.gov/sites/default/files/2021-01/PPP_Report_2021_01_24-508.pdf).



However, if we look at how the announcements of the creation and later expansions of these programs affected interest rates, we see dramatic results. Table 1 summarizes several studies conducted on bond prices since the crisis. Though they all use different methodological tools and data sets to study the announcements and expansions as specific case studies, all of their results point in the same direction. This body of research finds that the mere existence of these programs, as well as their expansions, brought down the interest rates that municipalities and corporations faced.

This occurred during a period with a significant amount of lending, so these programs mattered. Total municipal issuances were above \$450 billion for 2020—significantly higher than in previous years. Lower rates ensured that this borrowing took place on more favorable terms to the public. There was reporting at the time of the crisis on corporations needing to turn to harsh terms from vulture funds and other distressed-debt funds in the immediate panic, but following the announcement of these programs, corporations were able to access funding at reasonable rates to survive the year.<sup>6</sup> This resulted in a private sector that had less onerous debt and that was in a better position to expand and sustain the recovery.

#### *The Municipal Liquidity Facility (MLF)*

Take the MLF and municipal debt market as the first example. From March 2 to March 23, 2020, yields on AAA-rated municipalities dramatically increased by 1.8 percentage points. The ratio between the yields of municipal bonds and US Treasuries, normally below 100 percent, skyrocketed to levels of 365 and 252 percent (for 10- and 30-year bonds, respectively) by March 23. Yet this increase collapsed, and by June much of it had dissipated entirely.<sup>7</sup>

The MLF seemed poorly designed to do significant lending to address a crisis. Its original narrow terms meant it was very difficult for any subnational entity to qualify. When it was announced on April 9, 2020, it only applied to US counties with a population of at least 2 million residents and US cities with a population of at least 1 million residents. As was quickly pointed out, only 10 cities and 15 counties were eligible for direct access to the MLF under these criteria, and these requirements prevented all 35 cities with the highest concentration of Black residents from receiving direct assistance.<sup>8</sup>

On April 27, 2020, the Fed expanded the MLF by lowering the eligibility threshold for counties to 500,000 residents and for cities to 250,000. The Fed continued to expand eligibility, notably through a reduction in the penalty rate on August 11, 2020. But even with these expansions, only two borrowers—the state of Illinois and the Metropolitan Transportation Authority of New York—took advantage of the program, borrowing only \$6.4 billion out of the \$500 billion dollars available for lending through this program.

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<sup>6</sup> Matt Wirz, “How Fed Intervention Saved Carnival,” *Wall Street Journal*, April 26, 2020, sec. Markets, <https://www.wsj.com/articles/how-fed-intervention-saved-carnival-11587920400>.

<sup>7</sup> Marco Cipriani et al., “Municipal Debt Markets and the COVID-19 Pandemic,” *Liberty Street Economics* (blog), June 29, 2020, <https://libtystreeteconomics.newyorkfed.org/2020/06/municipal-debt-markets-and-the-covid-19-pandemic/>.

<sup>8</sup> Aaron Klein and Camille Busette, “Improving the Equity Impact of the Fed’s Municipal Lending Facility” (Brookings, April 14, 2020), <https://www.brookings.edu/research/a-chance-to-improve-the-equity-impact-of-the-feds-municipal-lending-facility/>.



Yet as Table 1 shows, the interest rates municipalities faced dropped dramatically throughout April, and research has found this decrease in interest rates to be tied directly to the announcement of the MLF and its expansion. Research from the Federal Reserve Bank of New York found that lower-rated municipalities narrowly eligible for the MLF terms at the end of April saw a yield decline of roughly 72 basis points relative to those narrowly not eligible.<sup>9</sup> Research from the Federal Reserve Bank of Dallas found that the MLF, as a result of its creation, kept rates from rising between an estimated 5 and 8 percent as the economy deteriorated.<sup>10</sup> Researchers at the Federal Reserve Bank of Chicago found an impact of roughly 110 basis points on a sample study of 20 US states, including a 220 basis point drop for Illinois.<sup>11</sup>

Though the MLF made few loans during this period, the potential that it could was all it took to collapse private market spreads and to make sure that all the loans that did happen occurred on terms far more favorable to the public. This didn't just benefit municipalities with the best credit rating; New York Bank researchers found an option-like effect that disproportionately benefited municipalities with lower credit ratings. The Chicago Fed researchers, looking at states, found that "the MLF might be more helpful to states with lower credit ratings," and it is reasonable to see this impact across entities.<sup>12</sup>

#### *The Secondary Market Corporate Credit Facility (SMCCF)*

This same story played out in the corporate sector. Interest rates on corporate bonds started to spike in response to the panic in financial markets during March 2020. Spreads on investment grade bonds increased by 3.5 percentage points, while spreads on high-yield bonds were up 6.5 percent. The ratio of investment grade to high yield bonds had also increased, implying that this wasn't just about credit risk but a liquidity-driven panic.<sup>13</sup>

Though the purchases were only \$13.4 billion dollars, the impact was dramatic. One set of researchers found that eligible bonds had between a 51 and 85 basis point reduction in spreads.<sup>14</sup> Other researchers, with a slightly different comparison group, found a 45 basis point reduction, noting that "the vast majority

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<sup>9</sup> Andrew F. Haughwout, Benjamin Hyman, and Or Shachar, "The Option Value of Municipal Liquidity: Evidence from Federal Lending Cutoffs during COVID-19," *SSRN Electronic Journal*, June 28, 2021, <https://doi.org/10.2139/ssrn.3785577>.

<sup>10</sup> Michael D. Bordo and John V. Duca, "How the New Fed Municipal Bond Facility Capped Muni-Treasury Yield Spreads in the Covid-19 Recession," *Federal Reserve Bank of Dallas, Working Papers* 2021, no. 2101 (January 2021), <https://doi.org/10.24149/wp2101>.

<sup>11</sup> Robert Bernhardt, Stefania D'Amico, and Santiago I. Sordo Palacios, "The Impact of the Pandemic and the Fed's Muni Program on Illinois Muni Yields," *Chicago Fed Letter* No. 449 (December 2020), <https://doi.org/10.21033/cfl-2020-449>.

<sup>12</sup> *Ibid.*

<sup>13</sup> J. Nellie Liang, "Corporate Bond Market Dysfunction During COVID-19 and Lessons from the Fed's Response," *Brookings Hutchins Center Working Paper*, October 1, 2020, [https://www.brookings.edu/wp-content/uploads/2020/10/WP69-Liang\\_1.pdf](https://www.brookings.edu/wp-content/uploads/2020/10/WP69-Liang_1.pdf).

<sup>14</sup> Jessica S. Li and Rayhan Momin, "The Causal Effect of the Fed's Corporate Credit Facilities on Eligible Issuer Bonds," *SSRN Scholarly Paper* (Rochester, NY: Social Science Research Network, September 1, 2020), <https://doi.org/10.2139/ssrn.3684136>.



of the SMCCF’s impact on the corporate bond market occurred before the Fed actually bought anything.”<sup>15</sup> The SMCCF’s impact mirrors that of the MLF, where even though the Federal Reserve purchased virtually nothing, the chance that it could was enough to drive down borrowing costs for the corporate sector.

## **2) These Facilities Are an Appropriate Evolution of Unconventional Monetary Policy in Our Era of Low Rates**

These programs had a significant impact on interest rates just by being announced. One group of researchers with the Bank of International Settlement noted the irony of “the extraordinary power of modern central banks”: That “when markets have trust in the central bank’s ability to deliver on its promise” it “needs to do less (if anything) to deliver on its promise.” They compare the SMCCF to Mario Draghi’s 2012 statement that the European central bank would do “whatever it takes” to save the euro, a statement that had immediate and dramatic effects on interest rates though no additional action had taken place.<sup>16</sup> Here, we can see the impact of this kind of unconventional policy extended to real economy actors like municipalities and corporations.

We can also see how the MSLP disappointed in comparison to the other programs. The MSLP didn’t start making loans until July 2020, and was therefore too slow to bring down rates in the immediate crisis. It was not able to take a broad exposure in the relevant lending market, and so couldn’t credibly promise to bring down rates overall in the same way. It remained limited by bank underwriting in an environment where credit availability expanded. As such, the program would have likely benefited from an administrative structure with more experience and interest in executing it.

Yet it is through this lens, seeing asset purchase programs as an extension of unconventional monetary policy guiding long-term interest rates, that the impact and promise of these programs makes the most sense. Asset purchase programs viewed less as making actual loans and more as a mechanism for guiding and setting interest rates for users of funds in the economy aligns with this evidence. It also explains how these programs can work better in the future.

We will likely still need such programs in the future. Over the past several decades, interest rates have fallen across peer countries. The interest rate on 10-year US Treasury bonds was 8.55 percent in 1990. In 2000, it was 6.03 percent, and in 2019 it was 2.14 percent. Right now that rate is around 1.33 percent, which is below the rate before COVID and below any point in the six decades preceding the pandemic. Economists are engaged in significant debates over why interest rates are falling, with popular theories including increasing wealth inequality, the aging of the population, and more concentration in sectors across our economy.<sup>17</sup> These trends are likely to stay with us.

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<sup>15</sup> Simon Gilchrist et al., “The Fed Takes on Corporate Credit Risk: An Analysis of the Efficacy of the SMCCF,” *BIS Working Papers*, September 9, 2021, <https://www.bis.org/publ/work963.htm>.

<sup>16</sup> *Ibid.*

<sup>17</sup> On wealth inequality, see Atif R. Mian, Ludwig Straub, and Amir Sufi, “What Explains the Decline in R\*? Rising Income Inequality Versus Demographic Shifts,” *SSRN Electronic Journal*, Jackson Hole Economic Symposium, August 2021; on aging of the population, see Adrien Auclert, Hannes Malmberg, Frédéric Martenet, and Matthew Rognlie,



Low interest rates make conventional monetary policy, traditionally driven by changing short-term interest rates, more difficult, because the Federal Reserve has difficulty driving short-term interest rates into sufficiently negative values. In the two recessions preceding the Great Recession, interest rates were lowered 6 percent (in 1990) and 5.25 percent (in 2001); however, when the Federal Reserve lowered rates 5.25 percent to zero during the Great Recession, it was insufficient to bring about a rapid expansion. It was in this environment that the Federal Reserve turned to unconventional tools. The first several utilized during the Great Recession included purchasing longer-term assets like US Treasury bonds, known as quantitative easing (QE). Other unconventional interventions included making intentions on long-term goals more explicit, generally called forward guidance policy. The COVID crisis required yet another expansion of the unconventional monetary policy toolkit.

This expansion of unconventional monetary policy is also happening at other central banks. Even before COVID, other countries such as Japan and England had been experimenting with asset purchases as part of their unconventional monetary policy. The Bank of England announced a Corporate Bond Purchase Scheme (CBPS) in August 2016 to purchase corporate bonds to address the market chaos following the Brexit vote. A subsequent study found that being willing to purchase up to £10 billion of corporate bonds had the effect of reducing eligible bond spreads by 13–14 basis points, consistent with this unconventional monetary policy impact.<sup>18</sup>

As summarized in Table 2, multiple central banks ran asset purchase facilities in 2020 in response to the COVID crisis. The Bank of England again expanded its CBPS. The European Central Bank did purchases under its Corporate Sector Purchase Programme (CSPP). The Bank of Japan expanded already-existing corporate bond purchasing facilities. The Bank of Canada launched its Corporate Bond Purchase Program (CBPP) and its Provincial Bond Purchase Program (PBPP) in May 2020. Notably, the PBPP purchased the secondary debt of Canada’s provinces in an index based on outstanding debt, similar in structure to the Fed’s SMCCF, which was also structured as an index of secondary debt.

### *The Importance of Unconventional Policy*

As we examine this expansion of unconventional monetary policy, it is worth remembering two things. First, there isn’t just one Federal Reserve–administered interest rate in our economy; there are multiple interest rates faced by different actors in our economy. As IMF Chief Economist Olivier Blanchard described in 2011, when it comes to monetary policy, “the fact is that there are many targets and there are

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“Demographics, Wealth, and Global Imbalances in the Twenty-First Century,” *National Bureau of Economic Research*, Jackson Hole Economic Symposium, August 2021; for a summary of both, see Matthew C. Klein, “Inequality, Interest Rates, Aging, and the Role of the Central Banks,” Substack, *The Overshoot* (blog), August 31, 2021, <https://theovershoot.co/p/inequality-interest-rates-aging-and>; and on concentration and market power, see Emmanuel Farhi and François Gourio, “Accounting for Macro-Finance Trends: Market Power, Intangibles, and Risk Premia,” *Brookings Papers on Economic Activity*, September 13, 2018.

<sup>18</sup> Lena Boneva, Calebe de Roure, and Ben Morley, “The Impact of the Bank of England’s Corporate Bond Purchase Scheme on Yield Spreads,” *Bank of England Working Paper* No. 719 (March 23, 2018), <https://doi.org/10.2139/ssrn.3149766>.



many instruments.”<sup>19</sup> Lowering short-term interest rates should reduce the cost of funds to municipalities and corporations. But if it does not, or if it does not sufficiently to guide the economy to full employment, there’s no reason the Federal Reserve shouldn’t use other tools to drive down the rates that these entities face in financial markets.

Many economists and policymakers, both inside and outside the Fed, will feel uncomfortable that these kinds of large-scale asset purchases represent undesirable “distortions” of financial markets. Yet the goal of all monetary policy is to produce a pattern of asset prices, yields, and economic activity consistent with full employment. There is no such thing as “undistorted” values of interest rates, terms, risk premia, etc. These are always influenced by the policy choices of both the central bank and the elected government. There is not a single “interest rate,” but many interest rates, many asset markets, and many kinds of institutions participating in them. The Fed will need multiple tools to be able to intervene in all of them.<sup>20</sup>

Second, it’s also worth remembering that so-called “unconventional” policy has been part of the monetary policy toolkit for much of the 20th-century. The Federal Reserve directly set long-term rates during World War II and intervened at multiple points of the yield curve throughout the mid-century period. As former Bank of England Monetary Policy Committee member Adam Posen noted in 2012, the history of monetary policy shows that “central banks have engaged in extended periods of administrative guidance, of doing very active directed lending in particular sectors, and especially of engaging in market operations on financial assets other than government securities.”<sup>21</sup> As monetary policy tools like the COVID facilities are developed, we should understand them as a rediscovery of tested practices just as much as a discovery of new ones.

### **3) There are Multiple Ways to Improve These Facilities**

With the possible need for such programs in the future, it’s important to improve these facilities and take additional steps to help ensure that any future actions are better prepared. Especially in a world where these programs work more through their impact on interest rates, rather than actual lending, program design is essential.

There are multiple ways to improve these facilities:

(1) There should be preparation for future municipal lending facilities designed with more broad-based eligibility that are credible enough to reduce rates yet can sufficiently reach smaller municipalities and Black and brown communities most at risk from lack of access to funding. The Federal Reserve should

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<sup>19</sup> Olivier Blanchard, “Monetary Policy in the Wake of the Crisis,” <https://www.imf.org/external/np/seminars/eng/2011/res/pdf/ob2presentation.pdf>.

<sup>20</sup> Mike Konczal and J.W. Mason, “A New Direction for the Federal Reserve: Expanding the Monetary Policy Toolkit” (Roosevelt Institute, November 30, 2017), <https://rooseveltinstitute.org/publications/federal-reserve-expanding-monetary-policy-toolkit/>.

<sup>21</sup> Adam S. Posen, “Comments on ‘Methods of Policy Accommodation at the Interest-Rate Lower Bound’ by Michael Woodford,” FRBKC Economic Policy Symposium on the Changing Policy Landscape, August 13, 2012.



research how expansive it can make eligibility requirements. It should consider the ability to build a broad-based basket, like the SMCCF, and how that could have changed the initial delivery. This is the approach Canada took with its PBPP. Given how disjointed and opaque the US municipal bond market is, this approach is likely to be difficult, but it is worth considering. A more expansive set of eligibility requirements would bypass the various “down-streaming” of benefits models, where entities borrowed on behalf of sub-entities, which turned out to not be a practical solution to the crisis.

(2) The Federal Reserve should remove its penalty rate for any future programs like these. The penalty rate makes perfect sense for times in which we want to guard against moral hazard, especially in the financial sector. But when programs are being used as part of a general toolkit of unconventional monetary policy and rate setting, the penalty rate makes less sense. There were multiple legal arguments discussed in 2020 for how the penalty rate could have been removed under existing 13(3) law for the MLF.<sup>22</sup> Whether specific Congressional action would be needed or not, it’s important that the Federal Reserve understand these programs as extensions of QE, and as such, direct its actions in terms of adjusting the rates end-users face, particularly in moments of market stress or downturns. This would take the pressure off of having to deal with specific terms of loans, and put more on the flow of credit in the system.

It is noteworthy that even though much of the rate reduction came from stopping the immediate financial panic by April 2020, studies also generally find impact from the later expansion of eligibility terms. Studies finding impact from the MLF in late April and even August 2020 show that these terms have important potential as a means of unconventional policy impacting interest rates in a recession. The delay in expansion of eligibility of the MLF meant that many communities ended up with too-high interest rates during the summer of 2020.

Beyond program design, there are general policy changes that should be considered by regulators and Congress to help deal with crises, both on the regulatory and stabilization side. Better regulations of open-ended mutual funds are necessary to prevent the kind of immediate seizing in corporate financial markets that we saw in March 2020. Better automatic stabilizers, both for people and for states and municipalities, would stabilize nominal income in a recession and take some of the pressure off credit policy to maintain spending. Though these measures are unlikely to fully eliminate the need for unconventional policy, they would reduce the full need for it.

There should also be efforts to take advantage of these programs to structure any large-scale investments and infrastructure needs the country faces. Dealing with climate change, for instance, will require

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<sup>22</sup> Steven Kelly, “Cruel and Unusual Circumstances: The Fed’s Use and Misuse of Penalty Rates,” Global Financial Markets Center at Duke University School of Law, *The FinReg Blog* (blog), June 21, 2021, <https://sites.law.duke.edu/thefinregblog/2021/06/21/cruel-and-unusual-circumstances-the-feds-use-and-misuse-of-penalty-rates/>; Skanda Amarnath, Alex Williams, and Arnab Datta, “How The Fed Jammed In A Penalty Rate Requirement For All Emergency 13(3) Lending When It Didn’t...,” *Medium* (blog), September 18, 2020, [https://medium.com/@skanda\\_97974/how-the-fed-jammed-in-a-penalty-rate-requirement-for-all-emergency-13-3-lending-when-it-didnt-3c4f5ba6a417](https://medium.com/@skanda_97974/how-the-fed-jammed-in-a-penalty-rate-requirement-for-all-emergency-13-3-lending-when-it-didnt-3c4f5ba6a417).



coordination of large-scale investments over time and directing significant credit policy toward greener energy sources. These facilities show that the Fed and lawmakers have tools to ensure that investment can be carried out on the financing side, to complement the actions of Congress.

Finally, these facilities are no substitute for fiscal policy. The goal in a recession should be to stabilize nominal incomes and spending, and while monetary policy can change the terms of lending, at the end of the day the best response in a crisis and prolonged recession is to directly support incomes. Though the CARES Act provided a significant amount of fiscal stimulus in terms of expanded unemployment insurance and direct checks to people, it did not include any sufficient level of aid to state and local governments, which had to wait until 2021 for the American Rescue Plan to receive direct relief. The MLF would not be able to substitute for that lack of funding, no matter how generous the loan terms became.

Thank you for your time, and I look forward to any questions you might have.



**Table 1: Studies of the Federal Reserve’s Emergency Lending Facilities**

<b>Title</b>	<b>Authors</b>	<b>Facility Studied</b>	<b>Impact from Facility</b>
The Option Value of Municipal Liquidity: Evidence from Federal Lending Cutoffs during COVID-19	Andrew Haughwout, Benjamin Hyman, Or Shachar	MLF	“Low-rated issuers that were narrowly eligible for emergency lending exhibited a yields decline (demand increase) of roughly 72 basis point”
How the New Fed Municipal Bond Facility Capped Muni-Treasury Yield Spreads in the COVID-19 Recession	Michael D. Bordo, John V. Duca	MLF	“The MLF kept municipal bond rates from rising nearly 5 percentage points further for April 2020 [...] 8 percentage points in mid-April”
Municipal Markets and the Municipal Liquidity Facility	Nicholas Fritsch, John Bagley, Shawn Nee	MLF	“The MLF announcement is associated with a 21 to 29 basis point decrease in spreads”
The Impact of the Pandemic and the Fed’s Muni Program on Illinois Muni Yields	Robert Bernhardt, Stefania D’Amico, Santiago I. Sordo Palacios	MLF	“...in a panel of 20 U.S. states while controlling for state fixed effects, the total average impact of the Fed announcements is about 110 bps”
Flight to Liquidity or Safety? Recent Evidence from the Municipal Bond Market	Huixin Bi, W. Blake Marsh	MLF	“The announcement of the dedicated MLF facility on April 9 lowered yields by 17 basis points”
The Causal Effect of the Fed’s Corporate Credit Facilities on Eligible Issuer Bonds	Jessica S. Li, Rayhan Momin	SMCCF	“We estimate that eligible issuer bonds enjoy an additional 51 bps to 85 bps reduction in spreads, relative to ineligible issuer bonds”

The Fed takes on corporate credit risk: an analysis of the efficacy of the SMCCF	Simon Gilchrist, Bin Wei, Vivian Z. Yue, Egon Zakrajšek	SMCCF	“Across the two announcements, our ten-day window estimates imply a total decline of 45 basis points in credit spreads and roughly a 25 basis point reduction in bid-ask spreads”
It’s What You Say and What You Buy: A Holistic Evaluation of the Corporate Credit Facilities	Nina Boyarchenko, Anna Kovner, Or Shachar	SMCCF	“We document a dramatic improvement in average duration-matched spreads of 140 basis points in the three months after the initial announcement”
Anatomy of a Liquidity Crisis: Corporate Bonds in the COVID-19 Crisis	Maureen Maureen O’Hara, Xing (Alex) Zhou	SMCCF	“Most of the impact of SMCCF on bond liquidity seems to have materialized following its announcement”

**Table 2: International Experience of Emergency Lending Facilities**

Country	Name	Type	Maximum Amount Purchased Since Crisis	Most Recent Holding Amount
<b>Bank of England</b>	Corporate Bond Purchase Scheme	Corporate		£19.6 billion
<b>Bank of Canada</b>	Corporate Bond Purchase Program	Corporate	CAD 218 million	CAD 177 million
<b>Bank of Canada</b>	Provincial Bond Purchase Program	Municipal	CAD 19 billion	CAD 17.6 billion
<b>European Central Bank</b>	Corporate Sector Purchase Programme	Corporate	€296 billion	€296 billion