THE LIQUIDITY PANDEMIC: A RECENT HISTORY OF THE FEDERAL RESERVE AND ECONOMIC IMPLICATIONS OF HISTORICALLY AGGRESSIVE ACTIONS DURING THE COVID-19 PANDEMIC†

Roland Lindmayer††

TABLE OF CONTENTS

INTRODUCTION

The events of early 2020 represent some of the most tumultuous financial and economic conditions in U.S. history. On February 19th, 2020, the S&P 500 index closed at a then all-time high of over 3,386 points.[1] Shortly thereafter, during the week of February 24th, stock markets around the world reported the largest single-week decline since

† This is the second place essay for an interprofessional writing competition held by the *Syracuse Law Review*. To accommodate various professional fields, the citations are a blend of APA and Bluebook style formats. Sources and details have not been independently verified by *Syracuse Law Review* and *Syracuse Law Review* did not complete a peer review of the study or of the conclusions drawn by the authors.

†† Roland Lindmayer holds a J.D. from Syracuse University College of Law and an M.B.A. in Finance from the Whitman School of Management. He also holds a B.S. in Economics from the Pennsylvania State University. He has recently held several legal internships with the U.S. Securities and Exchange Commission and previously worked as an Economist at Moody's Analytics. He is interested in financial markets and regulation. This article reflects the author's views and not necessarily those of any affiliated parties.

1. S&P 500. (n.d.). Retrieved February 07, 2021, from https://fred.stlouisfed.org/graph/?g=quqF.

the 2008 financial crisis that led to the Great Recession.[2] The impetus, of course, was the sudden realization that the novel coronavirus, also known as COVID-19, was spreading rapidly through the air in a way that was difficult to contain and that would likely affect public health—and therefore businesses—on a macro scale. Continued uncertainty and a flight to safety from equity markets to less risky assets led to the S&P 500 index losing over one-third of its value in just one month.[3]

The financial markets were immediately and severely shaken by the spread of the virus, but this does not fully represent the broader economic picture in the U.S. at the time. Just before the pandemic, the U.S. was experiencing its longest economic expansion in history, with over ten consecutive years of growth in real gross domestic product (GDP),[4] which is the inflation-adjusted measure of all goods and services produced by an economy.[5] Furthermore, the unemployment rate reached a low of 3.5% in September 2019, which was the lowest rate since 1969.[6] However, as the effects of the COVID-19 pandemic took hold, annualized GDP growth in the first quarter of 2020 fell by 5.0%, followed by a staggering 31.4% drop in the second quarter of 2020.[7] Furthermore, the unemployment rate spiked from 4.4% in March 2020 to 14.8% in April 2020 as millions of Americans suddenly lost their jobs or were furloughed.[8]

In response to the sudden financial and macroeconomic shock caused by the pandemic, a number of government bodies took action to mitigate the effects on the economy. This article will focus on the Federal Reserve's actions prior to and during the COVID-19 pandemic, and how these efforts have and will continue to affect the economy, financial markets, and monetary policy for years—and even decades—to come.

---

2. Timeline of events related to the covid-19 pandemic. (n.d.). Retrieved February 07, 2021, from https://fraser.stlouisfed.org/timeline/covid-19-pandemic#13.

3. S&P 500. (n.d.). Retrieved February 07, 2021, from https://fred.stlouisfed.org/graph/?g=quqF.

4. Marotta, D. (2021, January 07). Longest economic expansion in united states history. Retrieved February 07, 2021, from https://www.forbes.com/sites/davidmarotta/2020/01/21/longest-economic-expansion-in-united-states-history/?sh=445abaed62a2.

5. Ganti, A. (2020, November 27). Real gross domestic product (gdp) definition. Retrieved February 07, 2021, from https://www.investopedia.com/terms/r/realgdp.asp#.

6. Unemployment rate. (2021, February 05). Retrieved February 07, 2021, from https://fred.stlouisfed.org/series/UNRATE.

7. Real gross domestic product. (2021, January 28). Retrieved February 07, 2021, from https://fred.stlouisfed.org/series/A191RL1Q225SBEA.

8. Unemployment rate, *supra note* 6.

I. THE PURPOSE AND STRUCTURE OF THE FEDERAL RESERVE

The Federal Reserve System ("the Fed") is an influential independent federal government agency that affects both the economy and financial markets. The mission of the Federal Reserve System is "to foster the stability, integrity, and efficiency of the nation's monetary, financial, and payments systems so as to promote optimal macroeconomic performance."[9] Through the Federal Reserve Act, signed into law by President Woodrow Wilson in 1913, the Federal Reserve system was created in a way that contains a centralized Board and decentralized regional banks.[10] The Fed consists of the Board of Governors, which directs monetary policy and sets rates and reserve requirements; the 12 regional Federal Reserve Banks, which assist in supervising commercial banks and perform regional research; and the Federal Open Market Committee (FOMC), which performs open market operations to execute policy.[11] The Fed has many policy tools at its disposal to achieve the desired result of "optimal macroeconomic performance," such as changing the interest rate, changing the money supply, and changing banking regulations.

II. THE FEDERAL RESERVE BEFORE COVID: GETTING BACK TO NORMAL

Prior to the pandemic, the strategy of the Federal Reserve was largely a return to normalcy, meaning abandoning near-zero federal funds rates and reducing the multi-trillion-dollar balance sheet that had accumulated since 2008.

During the Great Recession and until late 2015, the Federal Reserve had lowered the federal funds rate to near zero in order to stimulate the economy.[12] [13] This rate technically only refers to the target rate for overnight lending between banks, but it is also used as a benchmark for many transactions, including business loans, mortgages, auto loans, credit cards, student loans, etc., and lowering it incentivizes borrowers to

9. Board of the Governors of the Federal Reserve System. (n.d.). Retrieved February 07, 2021, from https://www.federalreserve.gov/boarddocs/rptcongress/98frgpra.pdf?q=board-of-governors-of-the-federal-reserve-system#.

10. Board of Governors of the Federal Reserve System. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/aboutthefed/fract.htm.

11. *Id.*

12. ABC News. (2008, December 16). Retrieved February 08, 2021, from https://abcnews.go.com/Business/story?id=6474821&page=1.

13. Effective federal funds rate. (2021, February 01). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/FEDFUNDS.

take on more credit than otherwise.[14] Lowering this rate also has the effect of stimulating inflation, promoting maximum employment, and maintaining economic growth by incentivizing consumption and borrowing.[15]

Concurrently, during the Great Recession, the Fed had begun performing open-market purchases of U.S. Treasury bonds, as well as purchasing distressed mortgage-backed securities, which were a major catalyst of the recession. As the Federal Reserve states on its website: "During the 2007-08 financial crisis and subsequent recession, total assets increased significantly from $870 billion in August 2007 to $4.5 trillion in early 2015."[16] The process of purchasing U.S. Treasury bonds is another strategy that the Fed can utilize to stimulate the economy by increasing the flow of money in the economy. Additionally, the Fed purchased mortgage-backed securities in order to remove these toxic securities from the market and further increase money supply.

A return to normalcy was the strategy from 2015 until 2019. Starting in December 2015, considering many economic indicators such as improving household spending and a lower unemployment rate, among other indicators, the Federal Reserve began to raise the Federal Funds Rate from the zero lower-bound target where it had been for seven years.[17] From 2015 to 2019, the trend was an increasing federal funds rate in order to keep inflation in check as labor market conditions and the overall economy continued to improve.[18] Furthermore, the Fed had proposed a plan to normalize its balance sheet by allowing a total of $50 billion in Treasuries and mortgage-backed securities to mature and run off every month.[19] In other words, rather than reinvesting the proceeds from the securities in its balance sheet and therefore keeping assets stable, the Fed stopped reinvesting. Indeed, during the period of 2017 to 2019, the Fed's balance sheet did begin to decline at a steady but gradual rate,

14. Amadeo, K. (2020, July 07). The most powerful interest rate in the world. Retrieved February 08, 2021, from https://www.thebalance.com/fed-funds-rate-definition-impact-and-how-it-works-3306122.

15. *Id.*

16. Board of Governors of the Federal Reserve System. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm.

17. Federal Reserve Press Release, from https://www.federalreserve.gov/monetarypolicy/files/monetary20151216a1.pdf.

18. Effective federal funds rate. (2021, February 01). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/FEDFUNDS.

19. Board of Governors of the Federal Reserve System. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/fomcminutes20170614.htm.

falling from $4.5 trillion to a trough of about $3.76 trillion in August 2019.[20]

III. THE FEDERAL RESERVE IN LATE 2019: REVERSING COURSE

The Fed has set a long-run inflation rate target of 2%, which is deemed to be "healthy" inflation.[21] Both deflation (negative inflation) and abnormally high inflation could be detrimental to economic growth, for different reasons that should be elaborated in a different article. As the Fed gradually began to raise the federal funds rate from 2015 to 2019, they noticed that inflation was remaining stubbornly below this target. This was part of the motivation for reversing course. Citing soft business investment, potential weakness in other areas of the global economy, and muted inflation, the Fed started lowering the target federal funds rate in July 2019 for the first time in over a decade, a trend that would accelerate in the early months of the pandemic…[22]

In September 2019, another more pressing problem began to emerge in a market that serves as a vital piece of financial plumbing: the overnight lending market among banks, colloquially known as the repo market. Banks use this market to lend capital to each other using typically very low-risk assets as collateral, such as Treasuries.[23] This market usually runs so smoothly that it is not newsworthy, as the repo rate typically very closely tracks the federal funds rate target that the Fed sets.[24] However, during mid-September, several compounding factors led to a sudden spike in this repo rate, specifically the Secured Overnight Financing Rate (SOFR), meaning that demand for cash suddenly and greatly exceeded supply. The rate jumped from near 2% to a peak of over 9% in a matter of days.[25] [26] The Fed did expect some upward pressure during this time period of mid-September, because corporate taxes became due and a large amount of Treasury debt settled simultaneously

20. Board of Governors of the Federal Reserve System. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm.

21. Board of Governors of the Federal Reserve System. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/faqs/economy_14400.htm.

22. Federal Reserve Issues FOMC Statement. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/monetary20190731a.htm.

23. Cheng, J., & Wessel, D. (2020, March 24). What is the repo market, and why does it matter? Retrieved February 08, 2021, from https://www.brookings.edu/blog/up-front/2020/01/28/what-is-the-repo-market-and-why-does-it-matter/.

24. *Id.*

25. Secured overnight financing rate. (2021, February 05). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/SOFR.

26. Cheng, J., & Wessel, D., *supra note* 23.

on September 16th.[27] This meant that cash reserves in the banking system declined by about $120 billion—representing nearly 10% of total banking reserves at the time—in a matter of two days.[28] Overall bank reserves had been declining since 2015 due to the Federal Reserve's balance sheet normalization program mentioned earlier, so this drop as a percentage of total reserves was extremely large.[29] It seems that the Fed underestimated the effect this would have on the liquidity of the repo market.

As a result of all of the aforementioned factors combined, banks began to hold onto cash reserves, and demand for cash suddenly exceeded the supply that other banks were willing to lend, leading to an uncontrolled spike in the repo rate. As a result, the Fed restored liquidity in the repo market by injecting cash supplies into the market in the last few months of 2019 at a typical rate of about $60 billion per day.[30] Since the Fed was once again purchasing assets from the open market, these actions marked the premature end to the balance sheet normalization program. Even before pandemic-induced volatility in March 2020, the Fed's balance sheet had already swelled back to roughly $4.2 trillion.[31]

IV. THE FEDERAL RESERVE DURING COVID-19: AGGRESSIVE ON ALL FRONTS

Against the backdrop of an already unstable repo market, the pandemic caused a sudden and far more dramatic disruption that necessitated immediate Fed action. As financial market and economic conditions rapidly deteriorated in March 2020, the Federal Reserve began deploying its entire monetary policy arsenal. The Fed dropped the target federal funds rate back to the zero lower-bound by implementing a 1.5-percentage point cut in the federal funds rate, which was much more aggressive than previous cuts.[32] [33] This was a preemptive measure in

27. *Id.*

28. What happened in money markets in September 2019? (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/econres/notes/feds-notes/what-happened-in-money-markets-in-september-2019-20200227.htm.

29. Total reserves of depository institutions. (2021, January 28). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/TOTRESNS.

30. Overnight repurchase agreements: Treasury securities purchased by the Federal reserve. (2021, February 05). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/RPONTSYD.

31. Board of governors. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm.

32. Implementation note ISSUED March 15, 2020. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/monetary20200315a1.htm#.

33. Federal funds target range - lower limit. (n.d.). Retrieved February 08, 2021, from https://fred.stlouisfed.org/graph/?g=j9bq.

order to lessen the damage of the COVID-19 pandemic as it became clear that it would greatly disrupt the economy. In conjunction, the Fed also reinstated "forward guidance," which was first introduced during the Great Recession and is used to reassure the public about the future path of Fed policy.[34] [35]

Another immediate measure taken was the authorization of more open-market asset purchases, known "quantitative easing," to increase the flow of money, setting the stage for rapid increases in the Fed's balance sheet. In relevant part, "The Committee directs the Desk to increase… holdings of Treasury securities and agency mortgage-backed securities (MBS) by at least $500 billion and by at least $200 billion, respectively."[36] Furthermore, the Fed sought to continue addressing the lingering repo market illiquidity by continuing to conduct "term and overnight repurchase agreement [repo] operations to ensure that the supply of reserves remains ample and to support the smooth functioning of short-term U.S. dollar funding markets."[37]

However, the most pressing problem for the Fed was illiquidity across *all* short-term markets; in a matter of days, as investors began to realize the global devastation of COVID-19, short-term funding markets that were treated "just like cash" became so illiquid as to be essentially closed.[38] This shock was similar to the repo market liquidity crisis mentioned above, except that it extended across all short-term markets across the globe, such as commercial paper, certificates of deposit, municipal debt, and money market funds. Even the Treasury market—considered the most liquid market in the world at more than $500 billion in transactions per day—briefly faltered as cash became the most sought-after asset.[39] This total breakdown in short-term, low-risk lending markets lasted for nearly two weeks.[40]

34. Federal reserve issues FOMC statement. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/monetary20201105a.htm.

35. Board of governors. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/faqs/what-is-forward-guidance-how-is-it-used-in-the-federal-reserve-monetary-policy.htm.

36. Implementation note ISSUED, *supra note* 32.

37. *Id.*

38. Lessons from COVID-19: U.S. Short-Term Money Markets - BlackRock, from https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-lessons-from-covid-19-us-short-term-money-markets-july-2020.pdf .

39. Brettell, K., & Ramnarayan, A. (2020, March 11). Investors hit pockets of illiquidity in U.S. treasuries as yields drop to record lows. Retrieved February 08, 2021, from https://www.reuters.com/article/us-health-coronavirus-treasuries/investors-hit-pockets-of-illiquidity-in-u-s-treasuries-as-yields-drop-to-record-lows-idUSKBN20X3DD.

40. Lessons from COVID-19: U.S. Short-Term Money Markets, *supra note* 38.

Many of these short-term funding markets are governed by liquidity requirements put in place after the financial crisis of 2008 that were intended to promote liquidity in the event of a shock, as investors quickly move to withdraw into cash. Ironically, however, some of these requirements likely had the adverse effect of exacerbating the illiquidity. For example, pursuant to Rule 2(a)-7 of the Investment Company Act of 1940, money market funds are required to maintain a weekly liquidity threshold of 30%, meaning that at least 30% of the fund's assets must be able to converted into cash within a week.[41] During the recent liquidity crisis, fund managers were treating this as more of a "cliff" than a cushion, and as a result this rule incentivized higher redemptions of liquid assets to avoid liquidity fees or other restrictions imposed if the fund were to fall below 30%. For example, Goldman Sachs used almost $2 billion of its own capital to support its money market funds from falling below this 30% threshold; instances like this illustrate why demand for cash skyrocketed.[42]

After this period, the Fed introduced a slew of new liquidity operations to ensure that short-term market transactions could return to normal, much like they did with the repo market. Through these programs, the Fed is acting as a "lender of last resort," which is a situation in which the central bank acts as the provider of liquidity to a financial institution when other sources have been exhausted.[43] In "unusual and exigent circumstances," the Fed is also permitted by Section 13(3) of the Federal Reserve Act to act as a lender of last resort for nondepository institutions.[44] [45] It is undisputed that the financial shock caused by COVID-19 was certainly an "unusual and exigent circumstance" that justified the use of Section 13(3).

A. The Fed's Pandemic-Era Liquidity Facilities

The Fed has certainly taken advantage of Section 13(3) through its multitudinous credit programs introduced during the pandemic. One of

41. 17 CFR § 270.2a-7 - money market funds. (n.d.). Retrieved February 08, 2021, from https://www.law.cornell.edu/cfr/text/17/270.2a-7.

42. McLaughlin, T. (2020, October 31). Exclusive: Goldman money funds' liquidity buffer Swells before U.S. election. Retrieved February 08, 2021, from https://www.reuters.com/article/usa-election-money-funds-idUSKBN27G07J.

43. Lender of last resort - how lenders of last resort ensure liquidity. (2020, April 28). Retrieved February 08, 2021, from https://corporatefinanceinstitute.com/resources/knowledge/finance/lender-of-last-resort/

44 Board of governors of the Federal reserve system. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/aboutthefed/section13.htm.

45. Promoting Financial System Stability, from https://www.federalreserve.gov/aboutthefed/files/pf_4.pdf#page=11.

the first programs is the Commercial Paper Funding Facility.[46] Commercial paper is short-term debt in the form of an unsecured promissory note with a maturity date typically not exceeding 270 days.[47] Many corporations use commercial paper to fund day-to-day operations, such as payrolls, inventory, and accounts payable.[48] The Fed instituted this program to purchase commercial paper from certain corporations as well as state and local governments in order to ensure liquidity. The Treasury provided the initial $10 billion for the program, while the New York Fed has been providing additional funding.[49]

Another program instituted by the Fed under Section 13(3) in the wake of the pandemic is the Primary Dealer Credit Facility.[50] This program is only eligible for primary dealers of the New York Fed, which are a handful of banks and broker-dealers that are authorized to trade directly with the Fed.[51] The primary dealers play a vital role by acting as market-makers on behalf of the Fed in Treasury markets.[52] It is important that these dealers remain active because, as mentioned earlier, even the Treasury market was experiencing problems during the first few weeks of the pandemic's financial shock.

A third program under Section 13(3) is the Money Market Mutual Fund Liquidity Facility.[53] Money market mutual funds are pivotal because they are one of the most stable investments possible, and they are treated much like cash or a savings account by many companies as well as state and local governments.[54] Through this program, the Federal Reserve Bank of Boston lends to financial institutions in a way that encourages the institutions to purchase collateral from money market funds with the most liquidity risk.[55]

46. Commercial Paper Funding Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200323b5.pdf .

47. Commercial paper - overview, how it works, risks. (n.d.). Retrieved February 08, 2021, from https://corporatefinanceinstitute.com/resources/knowledge/credit/commercial-paper/.

48. *Id.*

49. Commercial Paper Funding Facility, *supra note* 46.

50. Term Sheet for Primary Dealer Credit Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200317b1.pdf.

51. Congressional Research Service (2020, March 27). The Federal Reserve's Legal Authorities for Responding to the Economic Impacts of COVID-19, Retrieved February 08, 2021, from https://crsreports.congress.gov/product/pdf/LSB/LSB10435.

52. Primary dealers - Federal Reserve Bank of New York. (n.d.). Retrieved February 08, 2021, from https://www.newyorkfed.org/markets/primarydealers.

53. Commercial Paper Funding Facility, *supra note* 46.

54. Congressional Research Service, *supra note* 51.

55. Monetary Market Mutual Fund Liquidity Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200323b4.pdf.

A fourth program instituted under Section 13(3) is the Term Asset-Backed Securities Loan Facility.[56] This facility is designed for consumers and small businesses, as its purpose is to purchase collateralized loans like auto loans, student loans, credit-card receivables, and some Small Business Administration loans.[57] The Treasury provided the initial $10 billion for the program, and the New York Fed invested the remaining for a total of $100 billion initially made available.[58] All loans originated through this program will have a term of three years.[59]

A fifth program instituted under Section 13(3) is the Primary Market Corporate Credit Facility.[60] The program's purpose is to directly purchase investment-grade bonds and loans from issuers. Much like several other programs on this list, the Treasury provided the initial $10 billion, while the New York Fed is responsible for additional funds.[61] Relatedly, the Secondary Market Corporate Credit Facility is designed to purchase investment-grade corporate bonds in the secondary market.[62] And like many other facilities, the Treasury invested $10 billion, while the New York Fed is responsible for the ongoing funding.[63] These programs are both designed to support corporate debt and to prevent a liquidity crisis from turning into a solvency crisis through corporate debt defaults.

In a similar structure to the two corporate credit facilities, the Fed also established the Municipal Liquidity Facility under Section 13(3).[64] This facility enables the Fed to purchase up to $500 billion of short-term debt of U.S. cities, counties, and states.[65] Like the corporate credit facilities, this facility is designed to prevent cities, counties, and states from defaulting on any municipal debt.

Another program instituted under Section 13(3) is the Paycheck Protection Program Liquidity Facility.[66] Under the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act"), the Small Business

---

56. Term Asset-Backed Securities Loan Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200323b3.pdf.
57. *Id.*
58. *Id.*
59. *Id.*
60. Primary Market Corporate Credit Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200323b1.pdf.
61. Congressional Research Service, *supra note* 51.
62. Secondary Market Corporate Credit Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200323b2.pdf.
63. *Id.*
64. Municipal Liquidity Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20200811a1.pdf.
65. *Id.*
66. Paycheck Protection Program Liquidity Facility Term Sheet, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20201130a4.pdf.

Administration created the Paycheck Protection Program to provide loans to small businesses in order to keep them solvent and ensure that workers remain on the payroll.[67] In response, the Federal Reserve created the Paycheck Protection Program Liquidity Facility to ensure that financial institutions have the liquidity and capital available to originate these small business loans.

The final program instituted under Section 13(3) is the Main Street Business Lending Program, which consists of five separate liquidity facilities: the New Loans Facility, the Expanded Loans Facility, the Priority Loans Facility, the Nonprofit Organization New Loan Facility, and the Nonprofit Organization Expanded Loan Facility.[68] "Main Street" is a colloquial term used to contrast with Wall Street that refers to smaller businesses or the real economy rather than the publicly traded equity and credit markets associated with the larger businesses of Wall Street.[69] So, as the name implies, these five facilities are intended to support lending for businesses with fewer than 15,000 employees that are unable to participate in other liquidity programs.[70] Under the two non-profit facilities, the Fed is also facilitating lending to schools, hospitals, and social service organizations with endowments of less than $3 billion, among other conditions.[71] The combined size of the program will be up to $600 billion.[72]

In addition to the vast array of liquidity programs intended to support short-term lending and borrowing, the Fed has also relaxed regulatory requirements for the banking system. It has been encouraging both the

67. Paycheck Protection Program Information Sheet: Borrows, from https://www.sba.gov/sites/default/files/2020-05/PPP--Fact-Sheet.pdf.

68. Board of governors of the Federal reserve system. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/mainstreetlending.htm.

69. Main Street vs Wall street - Overview, mutual Dependence, Conflcts. (n.d.). Retrieved February 08, 2021, from https://corporatefinanceinstitute.com/resources/knowledge/finance/main-street-vs-wall-street/.

70. Main Street New Loan Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20201229a1.pdf.

71. Nonprofit Organization New Loan Facility, from https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20201229a4.pdf.

72. Main Street New Loan Facility, *supra note* 70.

largest commercial banks and community banks to dip into their required cash reserves in order to increase lending capabilities.[73] [74]

V. FED AFTERMATH: NO NORMALIZATION FOR THE FORESEEABLE FUTURE

Prior to the repo market liquidity crisis in 2019 and the broad-based liquidity crisis in early 2020, the Fed was attempting to normalize its balance sheet by allowing Treasuries and mortgage-backed securities purchased during the last recession to mature and run off. After the coronavirus financial shock, the Federal Reserve's balance sheet has ballooned again. From a trough of about $3.76 trillion in late August 2019, the Fed's balance sheet has nearly doubled to roughly $7.41 trillion as of early February 2021.[75] In fact, the Federal Reserve has recently surpassed BlackRock and Vanguard to become the world's largest asset manager.[76] The Fed would like to eventually reduce its balance sheet again, as it was attempting to do before the coronavirus, but this seems unlikely over the next few years. Although the rate of the Fed's open-market purchasing has slowed dramatically since June 2020, it would need to be a slow and gradual process over years or potentially decades for the Fed to stop reinvestment and to allow its newly acquired assets to mature. While there is no clear consensus as to what is considered a "healthy" Fed balance sheet, it seems at least politically unfavorable to keep increasing it and irresponsible from an inflation perspective.

Similarly, the Fed's interest rate policy seems unlikely to change over the next few years. After the financial crisis of 2008, the Fed was unwilling to raise the federal funds rate until late 2015, and as a result the federal funds rate remained at the zero lower-target bound for seven years.[77] Unless there are simultaneous signs that inflation is running near or above the 2% Fed target, the labor market is approaching or exceeding full employment, and other factors such as the housing market starting to overheat, the Fed will likely wait at least several years to consider raising

73. Federal reserve board announces temporary change to its supplementary leverage ratio rule. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200401a.htm.

74. Agencies announce changes to the community bank leverage ratio. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200406a.htm.

75. Board of governors of the Federal reserve system. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm.

76. Fischer, M. (2020, August 26). World's top 20 biggest ASSET Managers: 2020. Retrieved February 08, 2021, from https://www.thinkadvisor.com/2020/08/26/worlds-top-20-biggest-asset-managers-2020/.

77. Federal funds target range - lower limit. (n.d.). Retrieved February 08, 2021, from https://fred.stlouisfed.org/graph/?g=j9bq.

the federal funds rate. Indeed, recent economic projections from the Fed indicate a consensus of a near-zero federal funds rate until at least 2023.[78]

On the other hand, many of the Fed's multitudinous liquidity facilities instituted since the start of the coronavirus financial shock have either recently expired or are scheduled to expire at the end the first quarter of 2021.[79] It remains to be seen whether the Fed will continue to extend some of these programs or whether liquidity and credit availability across the financial system have returned to a healthier level that no longer necessitates Fed support.

VI. LONG-TERM ECONOMIC IMPLICATIONS

It is abundantly clear now that the Federal Reserve is deeply entangled with capital markets, lending, and asset management. Part of the explanation is the basic structure of the U.S. economy as compared to other economies. The question now is whether and to what extent the Federal Reserve can or should disentangle itself over the coming years and decades.

A. Bank-Based versus Market-Based Credit

The U.S. credit system is fundamentally different from many other economies. In many other countries, most of the available credit is obtained by businesses and individuals directly from banks, known as a bank-based system. However, in the U.S., most of the available credit comes from capital markets, such as through the issuance of corporate bonds to investors, also known as a market-based system.[80] Furthermore, the banking system in the U.S. is much more diffuse than elsewhere, as community banks number in the thousands. The banking industry concentration ratio, a measure of total deposits and assets relative to the total number of banks, is about one-third of countries such as Canada, France, and Switzerland, where banks tend to be more conglomerated.[81]

78. Board of governors of the Federal reserve system. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20201216.htm.

79. Federal reserve board Announces extension through March 31, 2021. (n.d.). Retrieved February 08, 2021, from https://www.federalreserve.gov/newsevents/pressreleases/monetary20201130a.htm.

80. Bank-Based or Market-Based Financial Systems: Which is better?, from https://www.nber.org/system/files/working_papers/w9138/w9138.pdf.

81. Federal Reserve Bank of San Francisco. (2002, April 01). How does the U.S. banking system compare? Retrieved February 08, 2021, from https://www.frbsf.org/education/publications/doctor-econ/2002/april/us-banking-system-foreign/.

In times of crisis, such as during the coronavirus financial shock, the Federal Reserve is therefore much more responsible for regulating capital markets than in many other countries, as part of its mission is to ensure efficiency and integrity of the financial markets. When credit is mainly flowing through capital markets, this requires greater Fed intervention than in other economies to support liquidity and credit availability, which is why the Federal Reserve has been so active over the past year. The coronavirus pandemic provides a case study to reignite the long-running economic debate over whether the U.S. market-based system or a bank-based system in other countries is the most efficient, which is a topic for another paper.

B. Future Economic Downturns and the Fed's Response

As mentioned above, the Fed has exhausted almost all of its monetary policy and other tools in order to support capital markets and prevent total economic calamity. If another economic downturn were to transpire in the U.S. over the next several years, the Fed may have to resort to more unorthodox policy tools to support the economy. Assuming that the Fed still kept interest rates near zero and maintained a massive balance sheet, they may have to resort to yield curve control and negative interest rates.

Under its policies, the Fed has traditionally focused on setting a target range for *short-term* interest rates through the federal funds rate, affecting mainly Treasury bonds with a shorter maturity and other short-term lending markets, such as the repo market.[82] Yield curve control is a concept where instead of focusing on short-term markets, the Fed would focus on a specific longer-term maturity of Treasury bonds and cap the yield. Because buying a bond in large quantities lowers its yield, the Fed could calculate exactly how much it needs to purchase in order to achieve this target long-term yield cap.[83] This is not a new concept, however; the Fed experimented with yield curve control in the U.S. during World War II in order to help fund massive debt expenditures that the war caused.[84] Additionally, the Bank of Japan has been maintaining a yield curve control policy since 2016, while the Reserve Bank of Australia implemented such a policy in March 2020.[85]

82. Federal Reserve Bank of St. Louis. (2020, August 11). What is yield curve control? Retrieved February 08, 2021, from https://www.stlouisfed.org/on-the-economy/2020/august/what-yield-curve-control.

83. *Id.*

84. *Id.*

85. *Id.*

Yield curve control does not come without its downsides. First, it could distort market signals. The Treasury yield curve is used by many economists to try to predict when a recession will occur. When the yield curve inverts, meaning that short-term yields exceed long-term yields, it is one of the most reliable indicators that a recession is approaching in the next year or two.[86] But, artificially altering the yield curve through controlled Treasury purchases may reduce this accuracy. Second, the Fed could lose credibility. In the World War II and postwar period, inflation expectations rose dramatically, but the Fed was committed to its yield curve control policy.[87] It then faced a tough choice to either allow inflation to continue to spiral out of control or to break its yield curve promise. By committing to a yield curve control policy over a period of time, the Fed would also lose some of its autonomy to make monetary policy decisions.

Another unorthodox policy that the Fed may eventually have to employ is the idea of lowering the federal funds rate *below* zero. This has never happened in the U.S., but more and more central banks around the world are beginning to experiment with this policy tool, including the European Central Bank, the Bank of Japan, as well as the central banks of Denmark, Sweden, and Switzerland.[88] In effect, these central banks are charging commercial banks within their respective countries a fee to deposit excess cash at the central bank, therefore discouraging banks from holding cash reserves and incentivizing the use of excess cash for additional lending. Although this may sound like a strange concept, it is not so different from the status quo. For example, the real interest rate, which is simply the interest rate minus the inflation rate, is already effectively negative for 5-year, 10-year, and 30-year Treasuries.[89] Therefore, a Treasury bondholder is already losing money on their investment, because their rate of return is not keeping pace with inflation. Furthermore, the effect of incentivizing commercial bank lending is

86. Federal Reserve Bank of Boston. (2020, February 03). Predicting recessions using the yield curve. Retrieved February 08, 2021, from https://www.bostonfed.org/publications/current-policy-perspectives/2020/predicting-recessions-using-the-yield-curve.aspx.

87. Federal Reserve Bank of St. Louis, *supra note* 82.

88. Kopp, V. (n.d.). Back to basics: What are negative interest rates? – IMF. Retrieved February 08, 2021, from https://www.imf.org/external/pubs/ft/fandd/2020/03/what-are-negative-interest-rates-basics.htm.

89. Treasury Inflation-indexed Security, Constant Maturity. (2021, February 05). Retrieved February 08, 2021, from https://fred.stlouisfed.org/series/DFII5; from https://fred.stlouisfed.org/series/DFII10; from https://fred.stlouisfed.org/series/DFII30.

already being achieved by the Fed's previously mentioned policy of relaxing cash reserve requirements during the pandemic.

However, negative interest rates also have their downsides. First, commercial banks could become less profitable as they lose their ability to earn a profit between the spread of the rates they pay to savers and the rates they charge to borrowers. If these rates are negative, it may be more difficult to create this spread as savers are less willing to deposit for negative return. Undermining bank profitability could then have adverse effects on the financial system as a whole, although this may be less dramatic in the U.S. than in other countries due to the heavily market-based economic characteristics mentioned above. However, interest rates could become so negative that savers would stop depositing into banks altogether and instead just hold cash, which could again undermine the financial system.

Regardless of what policies the Fed will use in future economic downturns, eventually the Fed will have to confront its balance sheet and determine whether it is practical and in the U.S. economy's best interest to remain the world's largest asset manager. The Fed will also have to decide when and how to raise interest rates, if ever. If it does not confront these challenges, it may have to resort to these unorthodox policies at some point in the near future.

CONCLUSION

The Federal Reserve has been an extremely influential government body in combatting the economic and financial effects of the COVID-19 pandemic. The Fed's policies since the start of the pandemic have also fundamentally altered its relationship with the U.S. economy and financial markets by continuing to venture into more unorthodox policies and to extend the Fed's reach into new markets. Some policies that were previously considered entirely out of the question are now within the realm of possibilities for continuing to combat the recession caused by the COVID-19 pandemic or future recessions. It remains to be seen exactly how the Federal Reserve will move forward as both a monetary policymaker and asset manager, and how its relationship with financial markets will continue to evolve.