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BACKGROUNDER

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The Crisis Is Over: It Is Time to End Experimental Monetary Policy

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Abstract

As part of its response to the 2008 financial crisis, the Federal Reserve purchased large quantities of long-term Treasuries and mortgage-backed securities. The Fed also implemented a number of experimental monetary policy tools that it has yet to end, such as paying above-market interest rates on banks' excess reserves. The Fed's current operating framework effectively divorces its monetary policy stance from the size of its balance sheet. It also distorts markets because it replaces a market-determined federal funds rate with a bureaucratically administered funds rate target range. Although the Fed has started to shed some of its extraordinary securities holdings, its plan will keep the balance sheet bloated compared to pre-crisis levels for years to come. Furthermore, the Fed has not announced any plan to end its experimental policy framework. To genuinely normalize monetary policy, the Fed has to shrink its balance sheet more aggressively and end its experimental programs.

Key Points

- The Fed's new operating framework replaces a market-determined federal funds rate with bureaucratically administered interest rates and prevents the federal funds market from functioning as a source of bank liquidity (as it did historically).
- The new policy structure is a dramatic shift from the past. It is now very difficult for the Fed to regulate the economy's overall liquidity without allocating credit to specific groups.
- The Fed has not announced a plan to end its experimental polices of paying above-market interest rates on excess reserves or acting as a borrower of first resort through its "overnight reverse repurchase facility."
- The crisis is over. To normalize monetary policy, the Fed has to shrink its balance sheet and end the experimental operating framework it created to deal with the crisis.

In late 2007, the Federal Reserve began various emergency lending programs, such as the Term Auction Facility, that increased reserves in the banking system. In 2008, the Federal Reserve implemented the first of several quantitative easing (QE) programs, purchasing large quantities of long-term Treasuries and mortgage-backed securities. These operations eventually expanded the Fed's balance sheet to include more than five times the amount of securities it had prior to 2008. Currently, the Fed holds $4.5 trillion in assets, consisting mainly of long-term Treasury securities as well as the debt and the mortgage-backed securities (MBS) issued by Fannie Mae and Freddie Mac. (See Chart 1.)

This paper, in its entirety, can be found at **http://report.heritage.org/bg3265**

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These operations ultimately caused the Fed to create a new policy framework that replaced traditional market activity with bureaucratically administered interest rates. By paying billions of dollars in interest to large banks (and other financial institutions) to make it more attractive for them to place funds with the Fed than to lend in other short-term markets, this framework gives the Fed an abnormally large presence (by historical standards) in credit markets. The new policy structure is a dramatic shift from the past, making it very difficult for the Fed to adequately regulate the overall availability of credit in private markets without allocating credit to specific groups.

The Fed has begun to shrink its balance sheet, but the existing scheme ensures that it will maintain an abnormally large footprint in credit markets for years to come. Furthermore, Fed officials have not announced any plans to end the Fed's interest on reserve policies or its special reverse repurchase program. To normalize monetary policy, thus restoring the market forces that the Fed has displaced, the Fed has to shrink its balance sheet *and* end these experimental programs. This *Backgrounder* explains the main differences between the Fed's pre-crisis and post-crisis operations, and makes specific recommendations for Congress to help restore the Fed's traditional operating framework.

Traditional Monetary Policy Framework

A central bank exercises *monetary control* by regulating the economy's overall liquidity (the availability of liquid, or cash-like, assets) to indirectly influence the economy's general course of spending, prices, and employment. Prior to the 2008 financial crisis, the Federal Reserve exercised monetary control mainly through open market operations, that is, the buying and selling of short-term Treasury securities on the open (public) market.[1] Many economists focus on the relationship between open market operations and interest rates, but that focus ignores the underlying mechanics of the Fed's traditional operating framework.[2]

The Fed conducted these operations with the specific intent of increasing or decreasing the amount of reserves—a highly liquid asset—in the banking system, thereby increasing or decreasing the amount of money that banks could lend. This system worked because banks need reserves to make new loans,[3] and only the Federal Reserve can increase (or decrease) the total amount of reserves in the banking system.

Under this traditional framework, when the Fed wanted banks to create less money, it took reserves out of the banking system by selling the Fed's own securities. These sales reduced the aggregate amount of money that banks could create because it caused banks to use reserves for buying securities from the Fed rather than for funding additional private loans. Conversely, when the Fed purchased securities on the open market it increased reserves in the system, thus enabling banks to create more money with new loans. When an individual bank did not have enough reserves to make more loans (create more deposits or currency), it would simply borrow those reserves from another bank. Thus, while the Federal Reserve decided the total amount of reserves in the banking system, private banks ultimately determined how those reserves were allocated throughout the system.

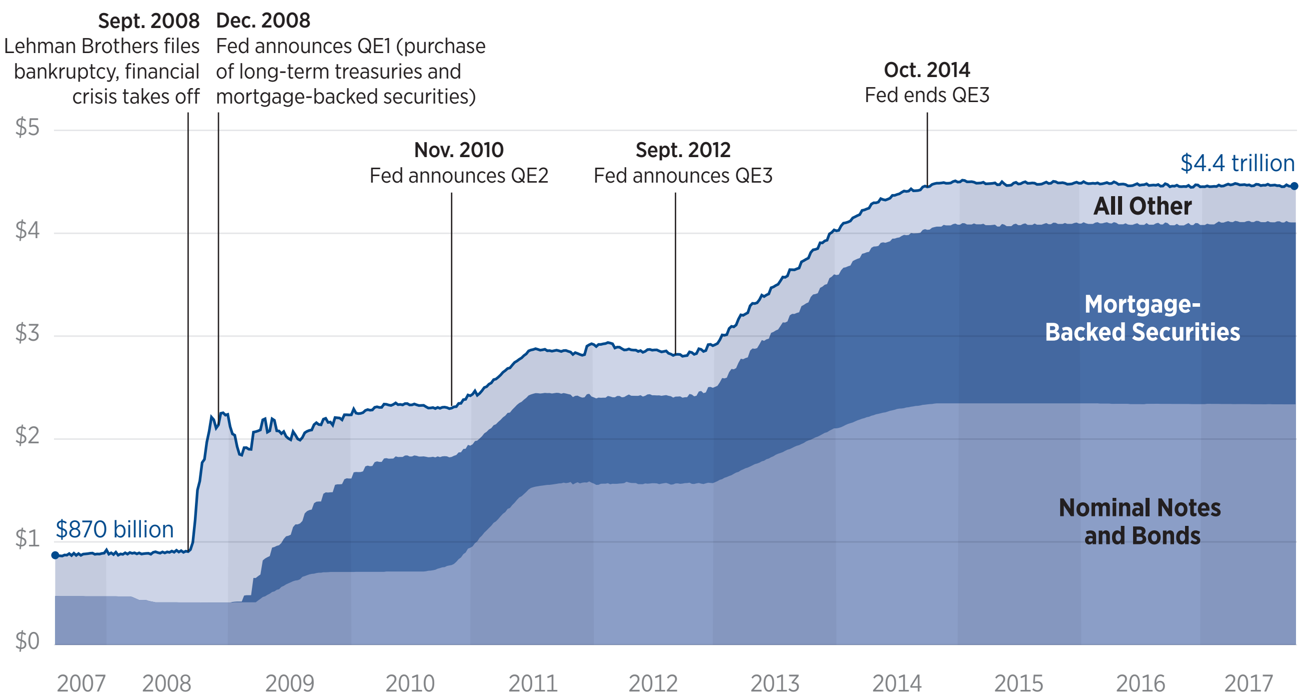
Traditionally, banks commonly lent and borrowed reserves to satisfy their legal (and precautionary) requirements. This activity took place in the federal funds market, so named because banks hold reserve balances at the Federal Reserve. Traditionally, the interest rate in this lending market, the federal funds rate, was a market-determined rate. In other words, private banks' lending negotiations—not the Federal Reserve—determined the federal funds rate.[4] While the Federal Reserve did not set the federal funds

1. Norbert J. Michel, "The Fed at 100: A Primer on Monetary Policy," Heritage Foundation *Backgrounder* No. 2876, January 29, 2014, http://www.heritage.org/report/the-fed-100-primer-monetary-policy, and George Selgin, "A Monetary Policy Primer, Part 7: Monetary Control, Then," Alt-M, September 20, 2016, https://www.alt-m.org/2016/09/20/monetary-policy-primer-part-7-monetary-control/ (accessed September 29, 2017).
2. Norbert J. Michel, "Fascination with Interest Rates Hides the Fed's Policy Blunders," Heritage Foundation *Issue Brief* No. 4500, December 15, 2015, http://www.heritage.org/report/fascination-interest-rates-hides-the-feds-policy-blunders.
3. Whether banks find additional reserves before or after they arrange to make new loans is irrelevant. When a bank makes a loan, it credits the borrower's account with newly created money. The borrower then withdraws money and pays another individual (the payee), who places the funds in his own bank. This transaction requires a transfer of reserves from the lending bank to the payee's bank. Thus, the effect of making the loan is the same as if the lending bank simply lent its reserves.
4. What is commonly referred to as *the* federal funds rate actually refers to an average measure called the effective federal funds rate. Michel, "Fascination with Interest Rates Hides the Fed's Policy Blunders."

CHART 1

Federal Reserve Assets: Key Dates

ASSETS IN TRILLIONS OF DOLLARS



SOURCE: Board of Governors of the Federal Reserve System, "Credit and Liquidity Programs and the Balance Sheet: Total Assets of the Federal Reserve," http://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm (accessed Novemeber 1, 2017).

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rate itself, it did set a *target* for the federal funds rate based on ensuring that overall liquidity was consistent with its broader macroeconomic goals. The Fed then conducted its open market operations in an effort to ensure that the federal funds rate stayed near the desired target.

Influencing Rates vs. Setting Rates. The Fed's open market operations typically have a great deal of influence on the federal funds rate—especially over short intervals—because the Fed is the monopoly supplier of bank reserves. While the Fed determines the total quantity of reserves in the banking system, market forces (banks' decisions based on their individual reserve needs) determined the distribution of reserves *within* the system in the traditional framework. This process allowed the Fed to rely on banks' demand for reserves as a decent indicator of the demand for money (or, more generally, liquidity). The aggregate demand for reserves, in conjunction with the total supply, ultimately determined the federal funds rate.

By adjusting the supply of reserves in the system "just enough" to meet the demand for reserves at its chosen target, the Fed was (in theory) able to offset changes in demand without disrupting market forces.[5] By adjusting the supply of reserves based on its federal funds rate target, the Fed regulated the overall flow of liquidity in an effort to meet its broader macroeconomic goals. In such a system, the target federal funds rate is merely a means to an end—it is a policy instrument but it is not a policy objective.

5. The Fed could still, of course, disrupt market forces by conducting operations based on a target very different from the market's natural rate; this issue is discussed further below.

This policy framework depends on the Fed keeping a minimal footprint in the market for reserves, causing some economists to refer to the traditional framework as a *reserve-scarcity* regime.[6] All else constant, a scarcity of reserve balances (relative to demand for reserves) results in a larger volume of reserve lending between banks. In such an operating environment, the federal funds rate conveys information based largely on conditions in private credit markets, as perceived by the private lenders and borrowers putting their capital at risk.

On the other hand, the Fed's open market operations would have very little influence on the federal funds market if reserves were more attractive (on a regular basis) than other uses of funds. In such an environment, with plentiful reserves that have little opportunity cost, banks would find it unnecessary to borrow reserves and the federal funds rate would no longer be the result of the same market process. In fact, the enormous buildup in reserves during the 2008 crisis ultimately caused interbank lending markets to break down, and contributed to the Fed abandoning its traditional operating procedures.

Federal Funds Targeting Falls Apart

One of the very first signs of the financial crisis occurred in August of 2007, when France's largest publicly traded bank, BNP Paribas, suspended withdrawals from three of its subprime mortgage funds.[7] According to Ben Bernanke's memoir of the crisis, he quickly ordered the New York Fed to buy "large quantities of Treasury securities on the open market" to flood the federal funds market with reserves.[8] Soon, the Fed began allocating credit directly to certain firms, operations that also increased reserves in the system.[9]

While some of these efforts may have kept certain financial firms afloat, the Fed hamstrung its overall efforts by sterilizing (offsetting) its liquidity operations.[10] In particular, the Fed sold Treasury securities from its portfolio, thus *taking reserves out of the system* at the same time it was injecting reserves into the system. To the extent that there was an increased demand for liquidity, the sterilization process hindered the Fed from meeting that demand. Ben Bernanke provides the following account of the Federal Open Market Committee's (FOMC's) decision during its August 2008 meeting:

> We were facing what might prove to be a critical question: Could we continue our emergency lending to financial institutions and markets, while at the same time setting short-term interest rates at levels that kept a lid on inflation? Two key elements of our policy framework—lending to ease financial conditions, and setting short-term interest rates—could come into conflict.
>
> ...Since April, we had set our target for the federal funds rate at 2 percent—the right level, we thought, to balance our goals of supporting employment and keeping inflation under control. We needed to continue our emergency lending and at the same time prevent the federal funds rate from falling below 2 percent.[11]

Thus, the Fed was officially worried about meeting its overall macroeconomic goals and maintaining what control it had over the federal funds rate. In hindsight, this approach proved a critical mistake, but the Fed could have avoided the misstep by concerning itself with maintaining an adequate supply of liquidity for the economy as a whole.

6. Alexander Kroeger, John McGowan, Asani Sarkar, "The Pre-Crisis Monetary Policy Implementation Framework," Federal Reserve of New York *Staff Report* No. 809, March 2017, p. 15, https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr809.pdf?la=en (accessed September 29, 2017).
7. Sudip Kar-Gupta and Yann Le Guernigou, "BNP Freezes $2.2 Bln of Funds Over Subprime," Reuters, August 9, 2007, https://www.reuters.com/article/us-bnpparibas-subprime-funds/bnp-freezes-2-2-bln-of-funds-over-subprime-idUSWEB612920070809 (accessed September 30, 2017).
8. Ben Bernanke, *The Courage to Act: A Memoir of a Crisis and Its Aftermath* (New York: W.W. Norton & Company, 2015), p. 144.
9. The Fed provided additional credit through open market purchases and various new lending programs, both of which have the same (positive) effect on reserves in the banking system. U.S. Government Accountability Office, "Federal Reserve System: Opportunities Exist to Strengthen Policies and Processes for Managing Emergency Assistance," GAO–11–696, July 2011, http://www.gao.gov/new.items/d11696.pdf (accessed September 30, 2017).
10. Given central banks' duty to ensure the flow of credit in the financial system, providing emergency liquidity on a system-wide basis, and withdrawing it after the extraordinary need for liquidity had passed, was the correct approach.
11. Bernanke, *The Courage to Act*, pp. 236 and 237.

For instance, total nominal spending, for which a statistical counterpart is nominal gross domestic product (GDP), tends to decline in an economic crisis as people pull back on spending. This decrease in total spending coincides with people holding larger money balances, thus resulting in a shortage of liquidity in the economy. As a matter of principle, it makes little sense to strive for bolstering the federal funds rate and hitting an inflation target while total spending is collapsing.[12] Yet, the Fed took just this approach as nominal GDP growth slowed in 2007 and fell into negative territory in early 2008. (See Chart 2.)

Furthermore, it is hardly controversial that the Fed cannot maintain any federal funds rate it desires, especially at a level inconsistent with the underlying natural (equilibrium) federal funds rate.[13] If, for instance, the Fed tries to maintain an unnaturally high federal funds rate (a rate above the natural rate), it will lead to excessively tight monetary policy. All else constant, lending, overall spending, and the price level, will fall, and the drop in the demand for credit will lead to a *lower* federal funds rate.

Though it is very difficult to know the level of the natural federal funds rate at any given point in time, in hindsight it appears that the Fed was trying to maintain its target above the natural rate. The Fed clearly *followed* rates downward after September 2007 when it began lowering its target federal funds rate. (See Chart 3.) In little more than one year, the Fed had to lower its target from 5.25 percent to 1 percent. By the end of 2008, the Fed was still having difficulty hitting its target, so it scrapped the idea of a single target rate in favor of a target *range* (from 0 percent to 0.25 percent).[14]

Regardless of whether it was the right approach, it is indisputable that the Fed wanted to sterilize its operations in order to maintain control over the federal funds rate and to achieve its macroeconomic goals. However, by the time it conducted its rescue of American International Group (AIG) in September 2008, the Fed had exhausted its ability to sterilize its emergency lending by selling Treasuries. From August 2007 to September 2008, the Fed's holdings of Treasury securities had fallen from approximately $791 billion to $480 billion. (See Chart 4.) Given the size of its operations, the Fed believed it was nearly out of short-term Treasuries to sell.[15]

Post-2008 Monetary Policy Framework

As the 2008 crisis unfolded, the Fed changed its operating procedures dramatically. One well-cited example of this shift is the Fed's massive QE programs, whereby the Fed expanded its balance sheet from less than $1 trillion to nearly $5 trillion.[16] The Fed now holds approximately $4.5 trillion in assets that consist mainly of longer-term Treasury securities as well as the debt and the MBS of Fannie Mae and Freddie Mac. (See Chart 1.) Prior to the crisis, the Fed held, almost exclusively, short-term Treasuries. Another aspect of this new framework—the decision to pay interest on reserves—has at least as far-reaching implications as the QE programs.[17]

Economists have long recognized that requiring banks to hold non-interest-bearing reserves acts as a tax on bank deposits and, therefore, on bank depos-

12. A monetary policy framework based on total nominal spending could lessen policymakers' difficulty in dealing with economic shocks. David Beckworth, "The Knowledge Problem in Monetary Policy: The Case for Nominal GDP Targeting," Mercatus Center, George Mason University, July 18, 2017, https://www.mercatus.org/publications/knowledge-problem-monetary-policy (accessed October 28, 2017).

13. This rate, the one that is consistent with full employment and stable prices in a growing economy, is also referred to as the *neutral* federal funds rate. Federal Reserve Bank of San Francisco, "What Is Neutral Monetary Policy?" April, 2005, http://www.frbsf.org/education/publications/doctor-econ/2005/april/neutral-monetary-policy/ (accessed September 30, 2017).

14. Federal Reserve Board of Governors, Transcript of the joint Federal Open Market Committee and Federal Reserve Board of Governors meeting, held December 15–16, 2008, pp. 22 and 23, https://www.federalreserve.gov/monetarypolicy/files/FOMC20081216meeting.pdf (accessed June 23, 2017).

15. Bernanke, *The Courage to Act*, p. 325. This figure ($480 billion) is the lowest reported balance since 2002, the first year in the full series reported by the Federal Reserve.

16. Norbert J. Michel and Stephen Moore, "Quantitative Easing, The Fed's Balance Sheet, and Central Bank Insolvency," Heritage Foundation *Backgrounder* No. 2938, August 14, 2014, http://thf_media.s3.amazonaws.com/2014/pdf/BG2938.pdf (accessed September 14, 2017).

17. For a thorough account of the Fed's interest on reserve policies, see Hearing, *Monetary Policy v. Fiscal Policy: Risks to Price Stability and the Economy*, George Selgin, testimony before the Monetary Policy and Trade Subcommittee, Committee on Financial Services, U.S. House of Representatives, July 20, 2017, https://financialservices.house.gov/uploadedfiles/hhrg-115-ba19-wstate-gselgin-20170720.pdf (accessed September 14, 2017).

itors.[18] However, the Fed asked Congress for this authority for reasons that went well beyond merely offsetting the cost of reserve requirements.[19] In his memoir, former Fed Chair Ben Bernanke explained the request as follows:

> We had initially asked to pay interest on reserves for technical reasons. But in 2008, we needed the authority to solve an increasingly serious problem: the risk that our emergency lending, which had the side effect of increasing bank reserves, would lead short-term interest rates to fall below our federal funds target and thereby cause us to lose control of monetary policy. When banks have lots of reserves, they have less need to borrow from each other, which pushes down the interest rate on that borrowing—the federal funds rate.
>
> Until this point we had been selling Treasury securities we owned to offset the effect of our lending on reserves (the process called sterilization). But as our lending increased, that stopgap response would at some point no longer be possible because we would run out of Treasuries to sell. At that point, without legislative action, we would be forced to either limit the size of our interventions... or lose the ability to control the federal funds rate, the main instrument of monetary policy.
>
> So, by setting the interest rate we paid on reserves high enough, we could *prevent the federal funds rate from falling too low*, no matter how much lending we did.[20] (Emphasis added.)

Thus, Fed officials believed that paying interest on reserves would help the Fed hit its interest rate target, and that the rate they paid on reserves would serve as a *floor* for the federal funds rate.[21] Their intent had been to create a *corridor* system, whereby the interest rate on reserves is set below the central bank's policy rate (the target federal funds rate in the case of the Federal Reserve).[22] However, the Fed did not create a corridor system due to its conflicting goals.

Above Market Rates: The Fed's Leaky Floor. The Fed clearly wanted to pay interest on reserves to sterilize its operations, thus preventing the new reserves it was creating from flooding the federal funds market. Put differently, the Fed wanted to pay interest on excess reserves (IOER) so that banks would hold their excess reserves at the Fed rather than lend them in the federal funds market. The only possible way to accomplish this task, of course, would be to offer banks a higher rate of interest on excess reserves than they could earn by lending those reserves in the federal funds market. Thus, the IOER rate could not serve as a floor for the federal funds rate *and* sterilize the Fed's operations.

When it began paying IOER in October 2008, the Fed set the IOER rate at 0.75 percent, well below the federal funds target rate of 1.5 percent. (See Chart 5.) In approximately two weeks, the Fed increased the IOER rate to 1.15 percent, reducing the spread between that rate and the prevailing federal funds target rate to 0.35 percent. By November 2008, both the federal funds target rate and the IOER rate were 1 percent. In December 2008, the Fed began setting a range for the federal funds target (an upper and lower limit) *instead* of a single target rate. The Fed held the IOER rate *above* the effective federal funds

18. The same economic argument does not apply to banks' decisions to hold *excess* reserves, and it is long-standing bank management practice to minimize excess reserves because "[i]f a bank has a surplus, it will invest the excess balances." Timothy Koch, *Bank Management*, 3rd ed., (Orlando, FL: The Dryden Press, 1995), p. 462. The idea of paying interest on *required* reserves was considered, though ultimately rejected, when Congress created the Federal Reserve in 1913. Selgin, testimony Before the Monetary Policy and Trade Subcommittee, p. 2.

19. In 2008, Congress granted the Fed the authority to pay interest on reserves by amending legislation that had passed in 2006. Title II of the Financial Services Regulatory Relief Act of 2006, 120 Stat. 1966 Public Law 109–351, authorized the Fed to pay interest on reserves, beginning October 1, 2011. Section 128 of the Emergency Economic Stabilization Act of 2008, 122 Stat. 3766 Public Law 110–343, amending 12 U.S. Code § 461, accelerated the start date to October 1, 2008.

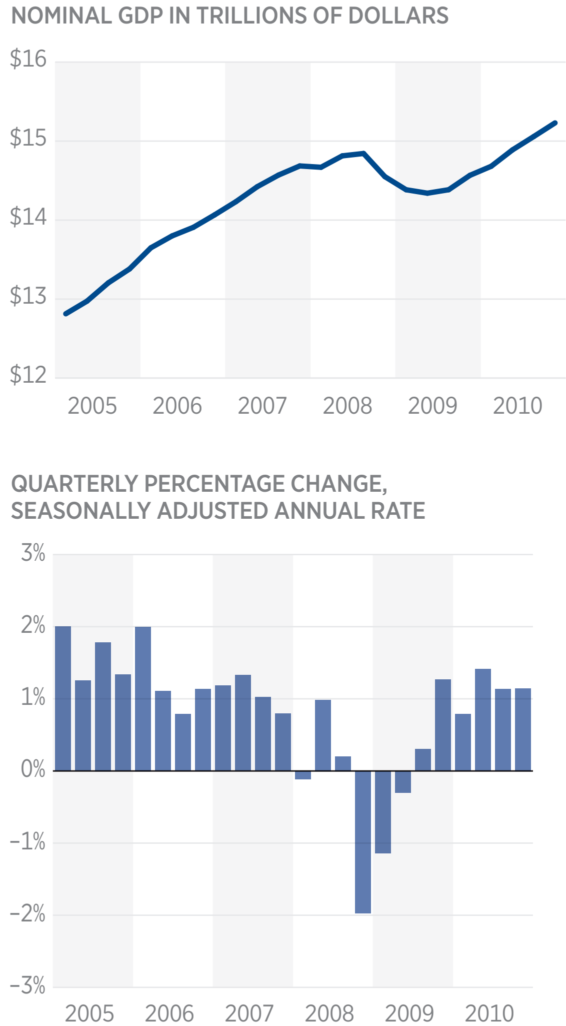
20. Bernanke, *The Courage to Act*, pp. 325 and 326.

21. In 2005, Fed Governor Donald Kohn similarly testified to Congress that "[i]f the Federal Reserve was authorized to pay interest on excess reserves, and did so, the rate paid would act as a minimum for overnight interest rates." Donald Kohn, "Regulatory Relief," testimony before the Subcommittee on Financial Institutions and Consumer Credit, Committee on Financial Services, U.S. House of Representatives, June 9, 2005, https://www.federalreserve.gov/boarddocs/testimony/2005/20050609/default.htm (accessed September 30, 2017).

22. John Taylor, "Reserve Balances and the Fed's Balance Sheet in the Future," Economics One, June 24, 2017, https://economicsone.com/2017/06/24/reserve-balances-and-the-feds-balance-sheet-in-the-future/ (accessed September 30, 2017).

CHART 2

Total Spending Collapse



SOURCES: U.S. Bureau of Economic Analysis, "Gross Domestic Product (GDP)," https://fred.stlouisfed.org/series/GDP (accessed November 1, 2017), and U.S. Bureau of Economic Analysis, "Gross Domestic Product [A191RP1Q027SBEA]," https://fred.stlouisfed.org/series/A191RP1Q027SBEA (accessed November 1, 2017).

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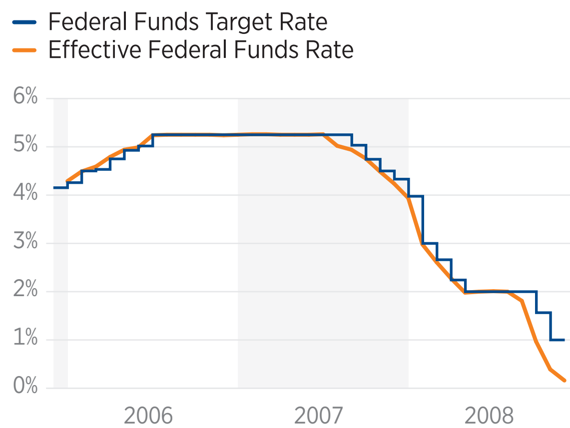
CHART 3

Federal Reserve Following Rates



NOTES: Figures are monthly, not seasonally adjusted.
SOURCES: Board of Governors of the Federal Reserve System, "Federal Funds Target Rate (DISCONTINUED)," https://fred.stlouisfed.org/series/DFEDTAR (accessed November 1, 2017), and Board of Governors of the Federal Reserve System, "Effective Federal Funds Rate (FEDFUNDS)," https://fred.stlouisfed.org/series/FEDFUNDS (accessed November 1, 2017).

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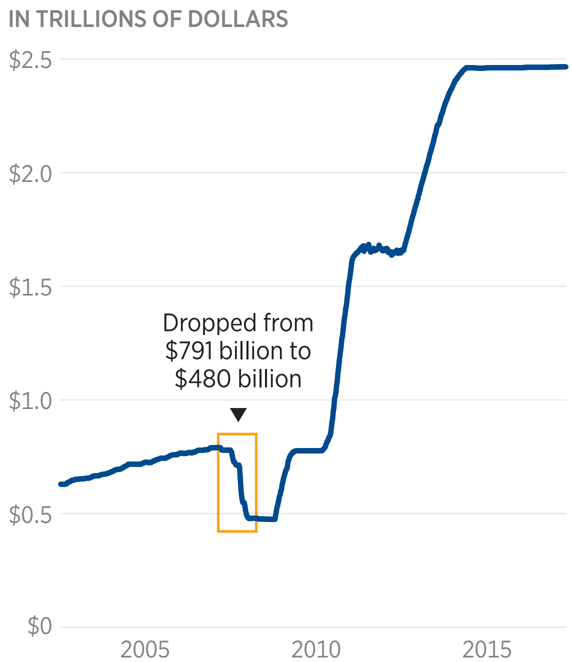
rate—the actual rate charged in the federal funds market—from the end of October 2008 through 2017. In fact, for roughly the entire period it has paid IOER, the Fed has set this overnight interest rate above virtually all short-term low-risk rates available on the market. (See Chart 6.) As of this writing, the IOER rate is 1.25 percent.

Another major change in the Fed's monetary policy framework involves the creation of the overnight reverse repurchase facility (ON RRP). Historically, the Fed has conducted temporary open market operations by lending cash to primary dealers and accepting Treasuries as collateral in repurchase (repo) transactions, but this new program is different.[23] The ON RRP program reverses these

23. In general, a repo agreement is a short-term loan, a contract where one party agrees to sell securities for cash and repurchase the same securities later at a higher price (frequently the next day). A reverse repo is exactly the same contract, but it describes the lender's perspective instead of the borrower's. Viewed in this manner, a lender provides cash, purchases the securities for collateral, and then sells them back to receive cash in the future. See Norbert J. Michel, "Federal Reserve's Expansion of Repurchase Market Is a Bad Idea," Heritage Foundation *Issue Brief* No. 4261, August 14, 2014, http://www.heritage.org/budget-and-spending/report/federal-reserves-expansion-repurchase-market-bad-idea.

CHART 4

U.S. Treasury Securities Held by the Federal Reserve



NOTE: Figures are for all maturities, not seasonally adjusted.
SOURCE: U.S. Board of Governors of the Federal Reserve System, "U.S. Treasury Securities Held by the Federal Reserve: All Maturities," https://fred.stlouisfed.org/series/TREAST (accessed October 31, 2017).

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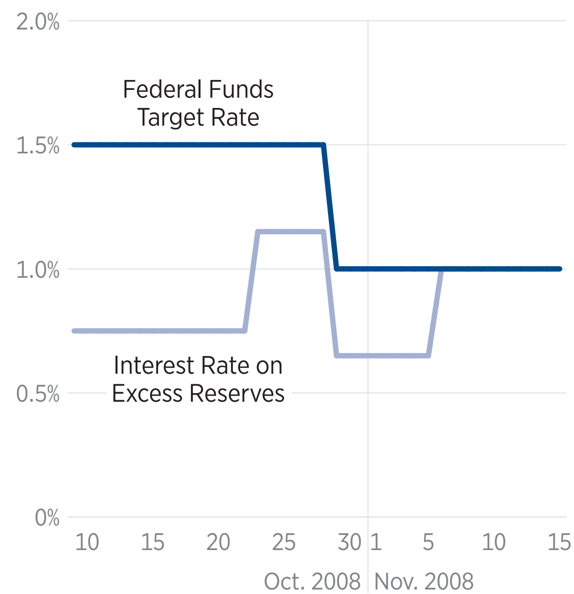
CHART 5

Federal Reserve Equates Interest Rate on Excess Reserves to Federal Funds Target



NOTES: Figures are daily, not seasonally adjusted.
SOURCES: Board of Governors of the Federal Reserve System, "Federal Funds Target Rate (DISCONTINUED)," https://fred.stlouisfed.org/series/DFEDTAR (accessed November 1, 2017), and Board of Governors of the Federal Reserve System, "Interest Rate on Excess Reserves," https://fred.stlouisfed.org/series/IOER (accessed November 1, 2017).

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roles: Firms *lend cash to the Fed* and accept the Fed's securities as collateral, so the Fed is actually the borrower. A second main difference from its traditional repo transactions is that the Fed is trading with many nonbank financial firms instead of only with its primary dealers.[24] The current list of ON RRP counterparties includes 20 banks, 14 government-sponsored enterprises (GSEs, including Fannie Mae and Freddie Mac), and more than 100 money market funds.[25]

The effect of the ON RRP program is very similar to that of IOER in that both programs drain cash from private credit markets. All of the counterparties can enter into daily contracts to lend money to the Fed, at a risk-free rate on an overnight basis, thus diverting cash into the Fed's coffers. The FOMC sets the maximum interest rate the Fed will pay in an ON RRP transaction, known as the ON RRP *offering* rate. Most counterparties earn this rate because when "the total amount of propositions [offers] received is less than or equal to the amount of available secu-

24. Michel, "Federal Reserve's Expansion of Repurchase Market Is a Bad Idea."

25. Federal Reserve Bank of New York, "Reverse Repo Counterparties," https://www.newyorkfed.org/markets/rrp_counterparties.html (accessed October 7, 2017).

rities [the $2 trillion currently on the Fed's balance sheet], awards will be made at the specified offering rate to all counterparties that submit propositions."[26]

From its inception in 2013, the Fed has been engaged in these repo transactions with large money market mutual funds and Fannie Mae and Freddie Mac.[27] Initially, the ON RRP rate was set at 0.05 percent, and individual counterparties were limited to contracts of $500 million.[28] The Fed gradually raised this cap to $30 billion per counterparty, and also instituted an aggregate cap of $300 billion per day.[29] In December 2015, the Fed eliminated the aggregate cap but kept the $30 billion per day counterparty limit.[30] As of this writing, the ON RRP offering rate is 1 percent.[31]

Effects and Implications of the New Framework

When the Fed implemented this new framework, it chose to pay a *higher* IOER rate than the rate banks were charging to lend in the federal funds market. Unsurprisingly, aggregate lending in the federal funds market declined severely, from approximately $200 billion in 2007 to just over $60 billion by the end of 2012.[32] Though the Federal Reserve does not provide a continuous data series for the post-crisis era, the *total* volume in the federal funds market remains below $100 billion.[33]

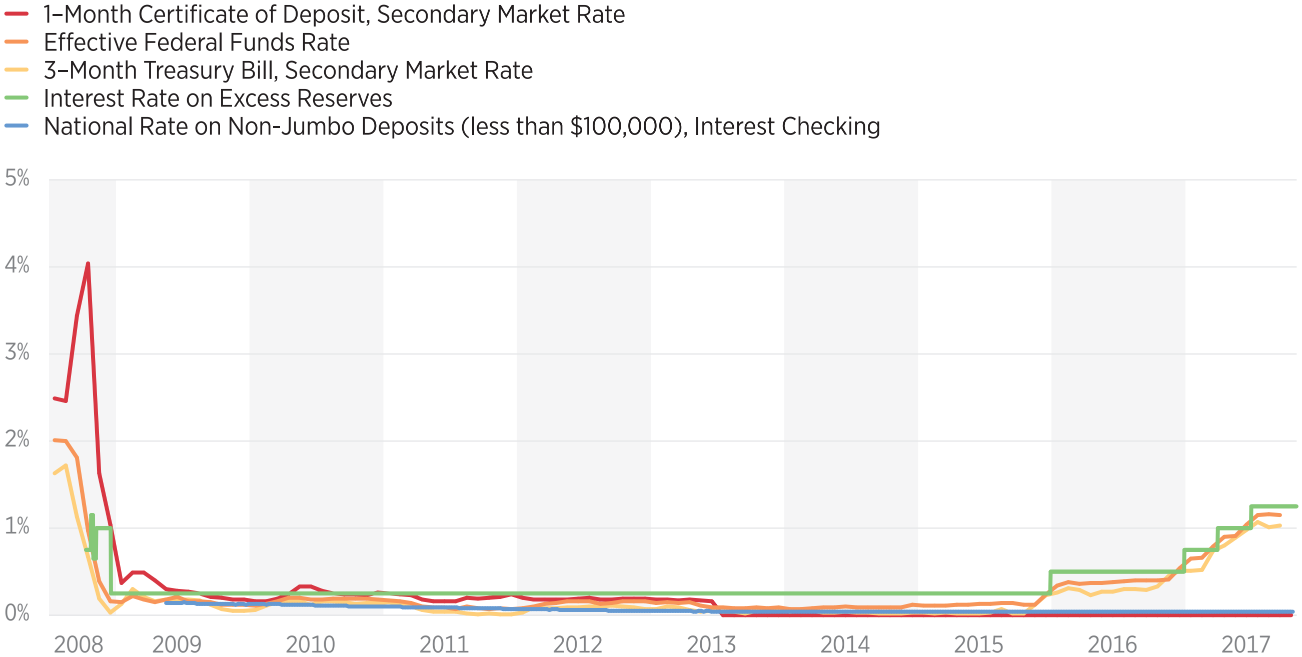
The composition of federal funds market lending has also changed dramatically. Whereas banks accounted for the bulk of federal funds lending prior to the new framework (approximately 60 percent), they accounted for little more than 25 percent by the end of 2012.[34] Now, the GSEs—mainly Fannie Mae, Freddie Mac, and the Federal Home Loan Banks (FHLBs)—are the primary source of lending in the federal funds market.[35] After 2011, it appears that the FHLBs account for the bulk of this GSE activity, with a share of federal funds lending at nearly 75 percent in 2012.[36]

These changes represent a completely different dynamic in the federal funds market. Prior to the IOER framework, banks lent and borrowed in the federal funds market to cover their reserve needs. Now, on the other hand, most of the lending in the federal funds market is by GSEs, which do not have to meet the Fed's reserve requirements. Of course, banks are eligible to earn IOER, so they can borrow funds (effectively) from the GSEs, and then earn the IOER rate on these borrowed funds (at virtually no risk). Thus, while banks are still doing most of the *borrowing* in the federal funds market, they are not doing so to cover their reserve needs—they are borrowing to invest funds in a risk-free asset provided, at above market rates, by the Fed.

26. Federal Reserve Bank of New York, "FAQs: Reverse Repurchase Agreement Operations," September 20, 2017, https://www.newyorkfed.org/markets/rrp_faq.html (accessed October 7, 2017).
27. Technically, the Fed ran the ON RRP facility on a test basis from 2013 through 2015. See Josh Frost et al., "Overnight RRP Operations as a Monetary Policy Tool: Some Design Considerations," Federal Reserve Board, February 19, 2015, https://www.federalreserve.gov/econresdata/feds/2015/files/2015010pap.pdf (accessed October 7, 2017).
28. Frost et al., "Overnight RRP Operations as a Monetary Policy Tool," p. 7.
29. Ibid.
30. Federal Reserve Bank of New York, "Statement Regarding Overnight Reverse Repurchase Agreements," December 16, 2015, https://www.newyorkfed.org/markets/opolicy/operating_policy_151216.html (accessed October 7, 2017).
31. Federal Reserve Board of Governors, "Implementation Note," September 20, 2017, https://www.federalreserve.gov/newsevents/pressreleases/monetary20170920a1.htm (accessed October 7, 2017).
32. Gara Afonso, Alex Entz, and Eric LeSueur, "Who's Lending in the Fed Funds Market?" Federal Reserve of New York *Liberty Street Economics*, December 2, 2013, http://libertystreeteconomics.newyorkfed.org/2013/12/whos-lending-in-the-fed-funds-market.html (accessed October 2, 2017). Also see Gara Afonso, Alex Entz, and Eric LeSueur, "Who's Borrowing in the Fed Funds Market?" Federal Reserve of New York *Liberty Street Economics*, December 9, 2013, http://libertystreeteconomics.newyorkfed.org/2013/12/whos-borrowing-in-the-fed-funds-market.html (accessed October 2, 2017), and Jerry Jordan, "Rethinking the Monetary Transmission Mechanism," *Cato Journal*, Vol. 37, No. 2 (2017), https://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2017/5/cj-v37n2-10.pdf (accessed October 2, 2017).
33. See, for instance, the data series "Effective Federal Funds Volume (EFFRVOL)," Federal Reserve Economic Data, https://fred.stlouisfed.org/series/EFFRVOL (accessed October 7, 2017).
34. Afonso, Entz, and LeSueur., "Who's Lending in the Fed Funds Market?"
35. The FHLBs consist of 11 regional GSEs that provide liquidity to member financial institutions.
36. The FHLBs' share peaked at 83 percent in 2010. Afonso, Entz, and LeSueur, "Who's Lending in the Fed Funds Market?"

CHART 6

Federal Reserve Set Interest Rate on Excess Reserves Above Virtually All Short-Term Low-Risk Rates



NOTES: Figures are not seasonally adjusted. Figures are monthly except for Interest Rate on Excess Reserves (daily) and National Rate on Non-Jumbo Deposits (weekly).

SOURCES: Board of Governors of the Federal Reserve System, "1-Month Certificate of Deposit: Secondary Market Rate (DISCONTINUED)," https://fred.stlouisfed.org/series/CD1M (accessed November 1, 2017); Board of Governors of the Federal Reserve System, "Effective Federal Funds Rate (FEDFUNDS)," https://fred.stlouisfed.org/series/FEDFUNDS (accessed November 1, 2017); Board of Governors of the Federal Reserve System, "3-Month Treasury Bill: Secondary Market Rate," https://fred.stlouisfed.org/series/TB3MS (accessed November 1, 2017); Board of Governors of the Federal Reserve System, "Interest Rate on Excess Reserves," https://fred.stlouisfed.org/series/IOER (accessed November 1, 2017); and Board of Governors of the Federal Reserve System, "National Rate on Non-Jumbo Deposits (less than $100,000): Interest Checking," https://fred.stlouisfed.org/series/ICNRNJ (accessed November 1, 2017).

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The new operating framework has provided banks with a new risk-free investment choice, at a relatively high rate of return, so it should not be surprising that banks are holding more funds as excess reserves. Naturally, the more banks hold in reserve, all else constant, the less money they create in the broader economy. Even though aggregate lending has rebounded from the financial crisis and subsequent recession, it is clear that the rate at which banks use reserves to create broader money has not.

One way to express this relationship is with the money-multiplier, the ratio of the broader money supply to the monetary base.[37] This ratio dropped sharply after September 2008 and has remained well below its pre-crisis trend. (See Chart 7.) Balance sheet data from banks also support this interpretation. For instance, from 2008 to 2015, banks began holding a larger share of their assets as cash and a smaller share as loans. (See Chart 8.) This trend appears to have reversed in the past two years, but banks are still holding a much larger share of

37. This *Backgrounder* uses the commonly employed money multiplier defined as the ratio of M1 (currency, traveler's checks, demand deposits, and other checkable deposits) to the monetary base (currency and reserves), available from the Federal Reserve Bank of St. Louis, "M1 Money Multiplier (MULT)," https://fred.stlouisfed.org/series/MULT (accessed October 27, 2017).

their assets as cash (almost 15 percent) relative to the share in the pre-crisis framework (less than 3 percent).

Similarly, loans remain a smaller share of banks' total assets now (less than 57 percent) relative to the pre-crisis share (approximately 63 percent).[38] (See Chart 8.) The fact that these changes coincide with the Fed's decision to pay banks an above-market return to hold excess reserves suggests that the Fed has succeeded in keeping excess reserves off the market.[39] In other words, banks have not used the Fed's newly created reserves to invest in new lending activity, which is exactly what the Fed hoped to achieve with IOER. The following list summarizes the negative implications that this new framework has for the broader economy:

- **Subsidized financial repression.** The Fed has created two new risk-free investment choices—above-market interest on excess reserves and the ON RRP program—for banks and other favored financial firms, and it literally administers the rate it pays on these investments. This arrangement is the equivalent of the federal government directly paying favored constituents to keep funds out of the private sector.

- **Decreased private investment.** The Fed's new operating policies encourage banks to park funds at the Fed instead of investing funds in private securities and loans. Each dollar of excess reserves held at the Fed represents a dollar that banks fail to invest in the private market, thus detracting from economic growth.

- **Credit market distortions.** The Fed's policies have eliminated the federal funds market as a source of bank liquidity and allocated credit directly to the housing and government sectors. The Fed now holds $4.5 trillion in total assets, with approximately $2 trillion of that total in MBS. To put this figure in perspective, the entire commercial banking sector holds approximately $1.8 trillion in MBS.[40] Neither prices of MBS nor the federal funds rate convey economic information as they have traditionally.

- **Increased political risk for the Fed.** The Fed's large interest payments to banks pose an increasing political threat to the Fed's operational independence. In 2013 and 2014, the Fed paid banks $5.2 billion and $6.7 billion, respectively. The Fed now projects that it will pay $27 billion in interest on excess reserves in 2017, with the amount rising to $50 billion by 2019.[41] These payments reduce funds flowing to the Treasury and give the obvious appearance of providing generous government subsidies to large banks because the IOER rate is greater than the basic deposit rate available to the public.

- **More accessible money spigot.** The new framework divorces the Fed's monetary policy stance from the size of the Fed's balance sheet. It is designed to allow the Fed to purchase as many assets as it would like, all while paying firms to hold on to the excess cash that these purchases create. This framework can all too easily allow the Fed to be a pawn of the Treasury, enabling the government to run larger deficits. It also opens new opportunities for political groups to pressure the Fed for direct funding.

- **Weakened monetary policy effectiveness.** Because the new framework replaces market forces with bureaucratically administered rates,

38. The relationship between total deposits and loans tells a similar story. Prior to the crisis, the ratio of aggregate loans to deposits was very close to 1; the ratio fell during the crisis and has remained below 80 percent since 2012. These data series are available from the Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/ (accessed October 27, 2017).

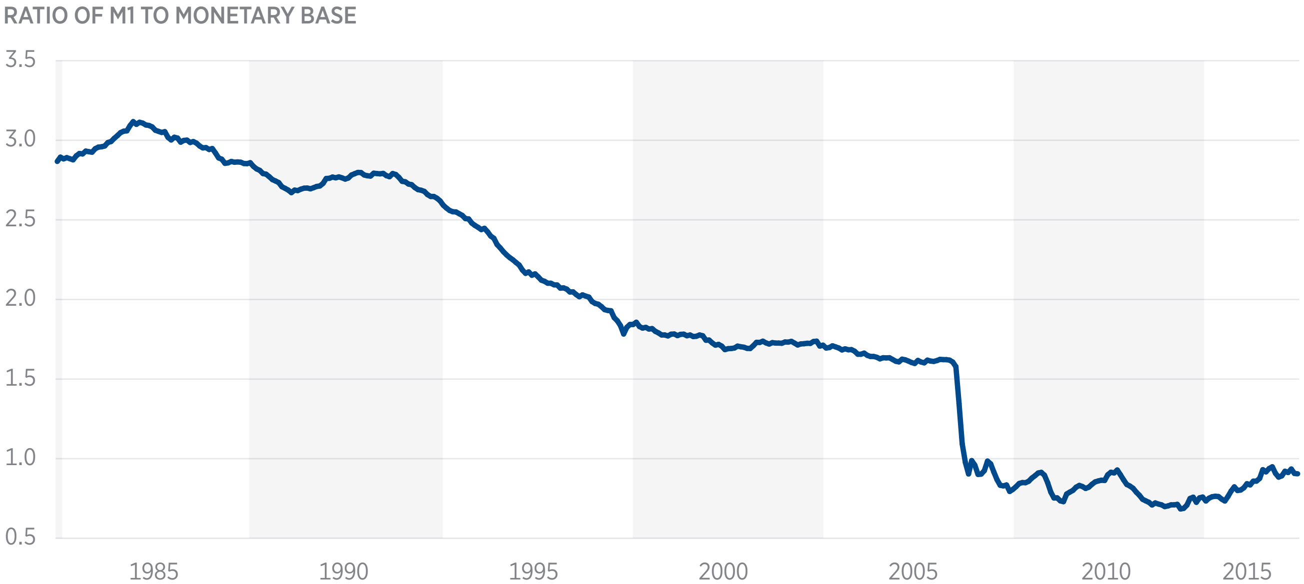
39. The liquidity coverage ratio (LCR), finalized in 2014, requires certain banks to hold enough *high-quality liquid assets* to meet a 30-day stressed liquidity scenario. However, these new liquidity requirements cannot account for the extraordinary excess reserve balances because Treasury securities are also high-quality liquid assets under the LCR rule, and banks would normally hold Treasuries instead of excess reserves to earn higher rates of return. See Department of the Treasury, "Liquidity Coverage Ratio: Liquidity Risk Measurement Standards," *Federal Register*, Vol. 79, No. 197 (October 10, 2014), https://www.gpo.gov/fdsys/pkg/FR-2014-10-10/pdf/2014-22520.pdf (accessed October 27, 2017).

40. Federal Reserve Bank of St. Louis, "Treasury and Agency Securities: Mortgage-Backed Securities (MBS), All Commercial Banks [TMBACBW027SBOG]," https://fred.stlouisfed.org/series/TMBACBW027SBOG (accessed October 6, 2017).

41. "Is the Federal Reserve Giving Banks a $12bn Subsidy?" *The Economist*, March 18, 2017, http://www.economist.com/news/finance-and-economics/21718872-or-interest-fed-pays-them-vital-monetary-tool-benefits (accessed June 23, 2017).

CHART 7

M1 Multiplier Remains Below Pre-Crisis Trend



NOTE: The M1 multiplier is the ratio of M1 to the St. Louis Adjusted Monetary Base. For further information on monetary aggregates, see, Federal Reserve Bank of St. Louis Economic Research, "Monetary Trends," http://research.stlouisfed.org/publications/mt/ (accessed November 6, 2017).
SOURCE: Board of Governors of the Federal Reserve System, "M1 Money Multiplier (MULT)," https://fred.stlouisfed.org/series/MULT (accessed October 25, 2017).

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it prevents private markets from allocating credit without (potentially massive) ongoing government interference. This arrangement distorts prices and jeopardizes the Fed's ability to maintain monetary control. That is, it endangers the Fed's ability to regulate the economy's overall liquidity so that it can meet its broader economic goals with respect to the general course of spending, prices, and employment.

Authorization for Interest on Reserves

For years, the U.S. Treasury successfully opposed the Fed paying banks interest on reserves,[42] but Title II of the Financial Services Regulatory Relief Act of 2006 authorized these payments.[43] Even though the 2006 act authorized these interest payments beginning October 1, 2011, the Fed later asked Congress to speed up that date. Congress agreed, and the Emergency Economic Stabilization Act of 2008 accelerated the date to October 1, 2008.[44] Although the 2008 act accelerated the date of initiation by three years, it left all other statutory language from the 2006 act unchanged.

Because the main intent of the 2006 act was to remove an implicit tax on deposits, it authorized the Fed to pay interest on reserves "at a rate or rates not to exceed the general level of short-term interest rates."[45] Nonetheless, the Fed has consistently paid rates on reserves higher than the federal funds rate and other short-term interest rates. As of June 2016,

42. See, for example, Marvin Goodfriend and Monica Hargraves, "A Historical Assessment of the Rationales and Functions of Reserve Requirements," Federal Reserve Bank of Richmond *Economic Review* No. 69 (1983), pp. 3–21, https://www.richmondfed.org/~/media/richmondfedorg/publications/research/working_papers/1983/pdf/wp83-1.pdf (accessed September 14, 2017).

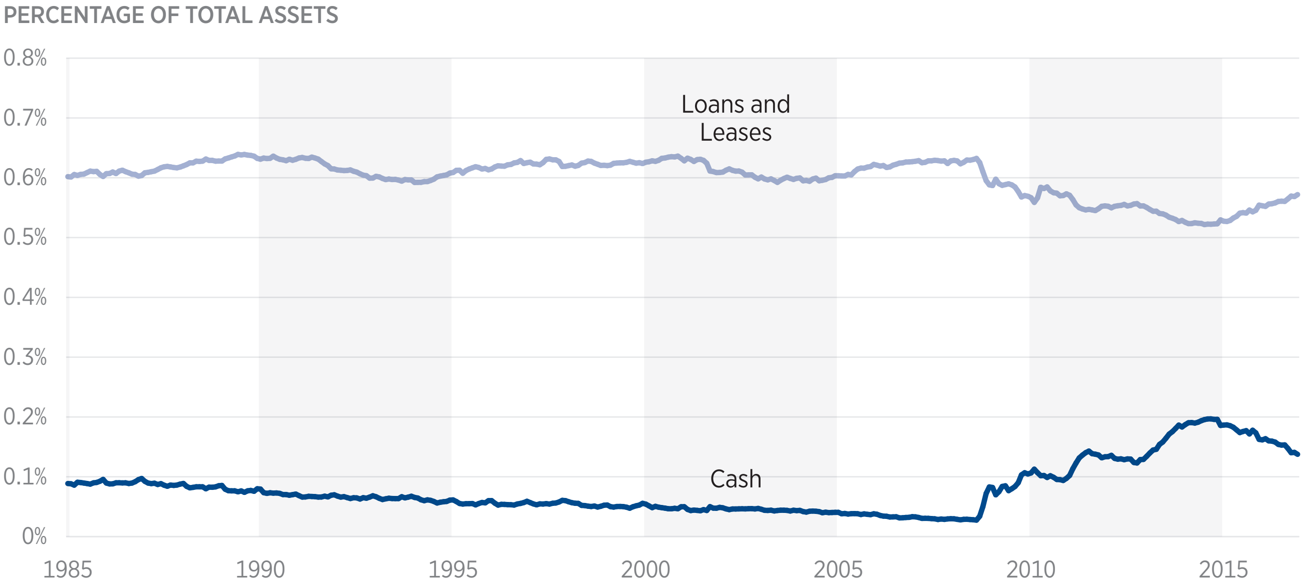
43. 120 Stat. 1966 Public Law 109–351.

44. 122 Stat. 3766 Public Law 110–343, Section 128, amending 12 U.S. Code § 461.

45. 12 U.S. Code § 461 (b)(12)(A).

CHART 8

Assets and Liabilites of All Commerical Banks in the U.S.



NOTES: Figures are not seasonally adjusted.
SOURCE: Board of Governors of the Federal Reserve System, "Assets and Liabilities of Commercial Banks in the United States-H.8," https://www.federalreserve.gov/releases/H8/default.htm (accessed November 1, 2017).

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for instance, the Fed was paying an IOER rate of 50 basis points even though the federal funds rate was only 38 basis points. As noted above, the Fed has set the IOER rate above virtually all short-term low-risk rates available on the market for nearly the entire time it has paid IOER.

It is very difficult to argue that such a high premium was what even Fed officials had in mind during 2006, much less what Congress had in mind. However, when Congress questioned Fed Chair Janet Yellen about this seemingly high rate of interest, she intimated that the Fed had the authority to pay even a 100 percent premium over the federal funds rate.[46] Clarifying the statutory language, so that the Fed can no longer pay above-market IOER rates, should be one of Congress' priorities in 2018.[47]

Solutions for Congress

In the wake of the 2008 crisis, the Federal Reserve made trillions of dollars in emergency loans and expanded its balance sheet by purchasing large quantities of long-term Treasuries and MBS. These operations gave rise to an experimental policy framework that replaces traditional market activity with bureaucratically administered interest rates. To normalize monetary policy, thus restoring the market forces that the Fed has displaced, the Fed has to shrink its balance sheet *and* end these experimental programs.

Though Fed officials have started reducing the size of the balance sheet, the current plan is to reinvest a portion—rather than all—of the Fed's monthly principal payments in new securities. That is, as the Fed's securities mature and the Fed receives princi-

46. George Selgin, "Has the Fed Been Breaking the Law?" Alt-M, September 6, 2016, https://www.alt-m.org/2016/09/06/has-fed-been-breaking-law/ (accessed September 14, 2017).

47. George Selgin and Lydia Mashburn, "Clarifying the Federal Reserve's Statutory Authority to Pay Interest on Reserves," Center for Monetary and Financial Alternatives Briefing Paper, Cato Institute, forthcoming.

pal payments, the Fed will buy a smaller amount of new securities with those proceeds than it had been buying. The current plan limits Treasury security reductions to $6 billion per month, and agency MBS reductions to $4 billion per month, through December 2017. These caps will rise each month until they reach $30 billion for Treasuries and $20 billion for MBS, at which time they will become fixed.[48]

Under this schedule, the Fed's balance sheet will be approximately three times its pre-crisis size by 2020, and the Fed will surely use any economic slowdown to justify an even slower pace. Furthermore, virtually no Fed officials have seriously discussed (in public) ending the current IOER framework. These facts suggest that the Fed is trying to maintain its existing framework for as long as possible rather than restore its traditional operating framework.[49] Congress should require the Fed to implement a plan that combines shrinking the balance sheet with phasing-out the payment of interest on excess reserves in no more time (approximately five years) than it took to implement its QE programs.[50]

Congress should also immediately require the Fed to stop paying above-market rates on reserves. This change merely requires Congress to clarify the statutory language that authorizes the Fed to pay interest on reserves, thus aligning the Fed's practice with the original intent of the law. In particular, Congress should clarify the meaning of "general level of short-term interest rates" so that the Fed can no longer pay above-market IOER rates. For instance, Congress could amend the law as follows:[51]

> Section 19(b)(12) of the Federal Reserve Act (12 U.S.C. 461(b)(12)) is amended by inserting after Subparagraph (C)
>
> (D) General level of short-term interest rates defined.
>
> For purposes of this paragraph, the term "general level of short-term interest rates" shall be defined as the average value over the preceding six-week interval of the Federal Reserve Bank of New York's benchmark broad Treasury financing rate on overnight repurchase agreements.

There is no uniform repo rate to use as a benchmark market rate, but the Fed's broad Treasury financing rate is a reasonable benchmark rate. This rate, developed by the Federal Reserve, serves as a general benchmark rate for the overnight repo Treasury market, where dealers engage in repo transactions collateralized by Treasury securities.[52] Parking reserve balances at the Fed overnight is risk-free, and these repo transactions are very similar.

Conclusion

Federal Reserve officials have implemented a plan to shrink its bloated balance sheet, but the plan is far from optimal. The current schedule leaves the Fed's balance sheet abnormally large for far longer than it took to complete its QE purchases, thus leaving taxpayers at risk and maintaining the Fed's massive credit allocation to the government and housing sectors. Furthermore, the Fed has not yet announced any plans to end its IOER policies and is set to start paying banks an even higher interest rate on excess reserves. To normalize monetary policy without inviting a new recession, the Fed needs to shrink its balance sheet and phase out its interest on excess reserve policies.

48. Federal Reserve Bank of New York, "Statement Regarding Reinvestment in Treasury Securities and Agency Mortgage-Backed Securities," September 20, 2017, https://www.newyorkfed.org/markets/opolicy/operating_policy_170920 (accessed October 14, 2017). Also see Brian Bonis, Jane Ihrig, and Min Wei, "Projected Evolution of the SOMA Portfolio and the 10-Year Treasury Term Premium Effect," Federal Reserve Board of Governors, September 22, 2017, https://www.federalreserve.gov/econres/notes/feds-notes/projected-evolution-of-the-soma-portfolio-and-the-10-year-treasury-term-premium-effect-20170922.htm (accessed October 14, 2017).
49. Indeed, some policymakers are openly discussing the idea of maintaining the Fed's extraordinary large balance sheet indefinitely. Ben Bernanke, "Should the Fed Keep Its Balance Sheet Large?" Brookings Institution, September 2, 2016, https://www.brookings.edu/blog/ben-bernanke/2016/09/02/should-the-fed-keep-its-balance-sheet-large/ (accessed September 14, 2017).
50. Norbert Michel and George Selgin, "Fed Must Stop Rewarding Banks for Not Lending," *American Banker*, May 30, 2017, https://www.americanbanker.com/opinion/fed-must-stop-rewarding-banks-for-not-lending (accessed September 14, 2017).
51. For more detail, and the original version of this language, see Selgin and Mashburn, "Clarifying the Federal Reserve's Statutory Authority."
52. Kathryn Bayeux et al., "Introducing the Revised Broad Treasuries Financing Rate," Liberty Street Economics, June 19, 2017, http://libertystreeteconomics.newyorkfed.org/2017/06/introducing-the-revised-broad-treasuries-financing-rate.html (accessed October 14, 2017).

Ultimately, there is no way to restore the Fed's traditional operating procedures unless the Fed stops paying *above-market* interest rates on reserves. The Fed will have to pay interest on reserves while it reverts to its traditional operating framework, but Congress can still require the Fed to pay typical market rates during this normalization period. To ensure that the Federal Reserve merely compensates banks for the cost of holding required reserves, without making such reserves preferable to other interest-earning assets, Congress need only to clarify the meaning of "general level of short-term interest rates" in its authorizing statute. There is no valid reason to delay ending these above-market payments.

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