From the Floor Back to the Corridor: Why the Choice of Monetary Policy Implementation Framework Matters

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The Federal Reserve used to be a much smaller part of the economy and financial markets. Before the Global Financial Crisis of 2007-2009, the assets of the Federal Reserve equaled 6 percent of GDP; now they equal 26 percent. Before the crisis, currency was over 95 percent of Fed liabilities; now it is 33 percent, with the Fed now borrowing trillions of dollars from commercial banks, money market mutual funds, GSEs, the Treasury, and foreign official institutions. These extraordinary changes in the size and breadth of the Federal Reserve's interactions with the financial system reflect a change in how the Fed implements monetary policy—that is, how the Fed moves interest rates to where it wants them to be.

The Federal Reserve currently implements monetary policy by creating a vast amount of reserve balances and reverse repurchase agreements, driving the interbank overnight rate down to between the interest rate the Fed pays on deposits of commercial banks and the interest rate it pays money market mutual funds and GSEs on reverse repurchase agreements. To produce a sufficiently large quantity of Fed liabilities, the Fed needs to invest in a correspondingly large amount of assets.

Because such an implementation regime drives money market rates down to the "floor" created by the interest rate the Fed pays on overnight borrowing, it is often referred to as a "floor system." The Federal Open Market Committee officially adopted a floor system at its January 2019 meeting, but it had been using a floor system since October 2008. Prior to that point, the Fed had been implementing policy by announcing a new target for the federal funds rate, adjusting the discount rate to 100 basis points above that target, and continuing to provide just the quantity of reserve balances banks needed to meet their clearing needs and reserve requirements. Because money market rates ended up in a corridor created by the discount rate and the interest rate the central bank pays on reserve balances (or zero in the Fed's case at that time), such an implementation regime is referred to as a "corridor system."

Nelson (2024a) discusses how the Fed got so huge and why and how it can shrink. The story of the Fed's growth, and the discussion of how the Fed could shrink without causing market turmoil, are critical components of the overall discussion of the Fed's implementation regime, but readers interested in those issues are referred to the longer paper. This note focuses on *why* the Fed should shrink, why it should implement policy using a corridor system updated to current realities. In particular, the note discusses the extraordinary, often overlooked costs and scant benefits of the current implementation framework.

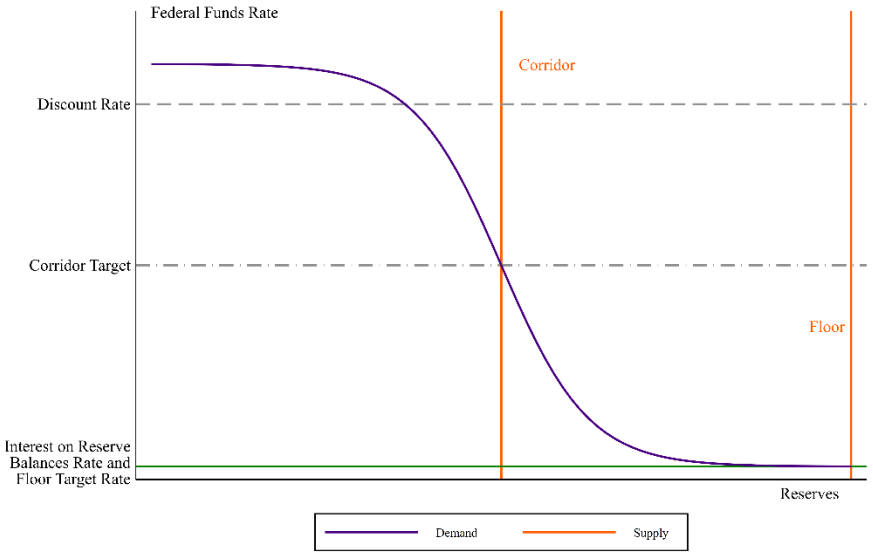
Costs

Implementing monetary policy using a floor system creates a self-reinforcing cycle that requires the Fed not only to be massive, but to become ever more massive. The dynamic stems from changes in money market structure, bank behavior, and federal banking agency examiner behavior. It also

arises from rising estimates within the Fed about what is normal and by growing ambitions in other parts of the government about potential uses of the Federal Reserve's balance sheet.

To implement policy using a floor system as the Fed originally envisioned, the Fed must supply reserves that exceed the amount the banking system needs by a large enough buffer that reserves supply or demand can rise or fall in line with normal variation without the Fed taking countervailing fine-tuning action and without the fed funds rate rising or falling. Because the shocks can be large, for instance on corporate tax day, the buffer needs to be large, about $200 billion.[1]

However, this conceptualization of how a floor system will work was based on an incorrect application of the "Poole model." The model, developed by Bill Poole in 1968, describes the relationship between reserve balances and the federal funds rate. Banks maintain reserves to satisfy reserve requirements (currently zero) and to ensure that they do not run an overnight overdraft; after the GFC, banks also hold reserves for liquidity purposes.

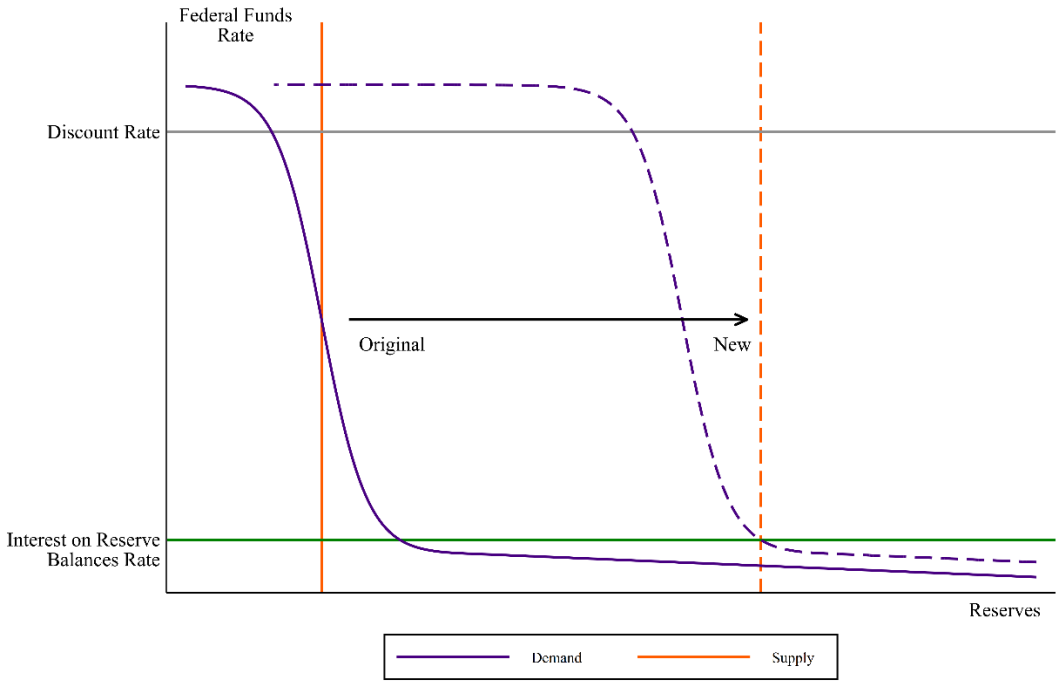


When the Fed supplies the quantity of reserves the banking system wishes to hold in aggregate, the fed funds rate clears at the FOMC target rate. When supply falls short, the rate is bid up to a bit above the discount rate, leading some banks to borrow, creating reserves, and clearing the market. If supply ends up too high, the funds rate falls to the interest rate on reserve balances (IORB rate) because all banks have the reserves they need, and no one will borrow in the funds market for less than what they can get simply leaving the funds on deposits at the Fed. While the Poole model indicates that the fed funds rate will be pinned to the floor created by the IORB rate when the Fed oversupplies reserves, Poole created the model to describe the behavior of the funds rate *within a day*, not for persistent periods of time. As Poole noted in the original 1968 paper:

[1] See Federal Reserve System (2018).

> The model presented here concentrates on these very short-run adjustments. However, it is obvious that the bank must make further adjustments if it experiences persistent reserve drains or accretions.[2]

When the Fed persistently oversupplies reserves, markets and behaviors change in line with the Lucas critique that policy analysis needs to recognize how the economy will adjust to any new government effort to influence economic outcomes.[3] The amount of reserves needed to implement the floor system grows, and because a buffer is needed, the amount keeps growing.



The consequence can be seen in the table, which shows Fed staff's estimate of the quantity of reserves necessary for implementing a floor system.

[2] Poole (1968), p. 770.
[3] Lucas (1976).

Fed's Estimate of Banks' Structural Demand for Reserve Balances	
Date	**Level $billions**
April 2008	35
March 2016	100
March 2018	600
December 2018	1,000
October 2019	1,500
May 2022	2,300
April 2023	3,000
Source: April 2008, staff memo to the FOMC; March 2016 – December 2018, blue/tealbooks, October 2019, FOMC directive; May 2022 and April 2023, FRBNY projections.	

Interbank markets deteriorate

One reason why excessive reserves get locked in is because the market mechanism for redistributing reserves between banks deteriorates. Before the GFC, each bank sought to keep reserves to a minimum because the interest rate on reserve balances (zero at the time) was well below the rate banks could earn on other money market investments or had to pay on money market borrowings. The Fed adjusted the size of its repo operations with dealers to supply the aggregate necessary amount of reserves. Note that the Fed did not engage in transactions with banks directly (apart from the occasional discount window loan) and dealers do not have reserves. At the end of the day, some banks would have extra reserves, and some would be short of reserves; those banks would trade with each other in the federal funds market until the quantity was redistributed.

Under a floor system, banks do not need to redistribute reserves at the end of the day because most banks have a large quantity of extra reserves. The fed funds market is much smaller and serves a different purpose. The transactions largely consist of loans from Federal Home Loan Banks to U.S. branches and agencies of foreign banks. FHLBs have accounts at Federal Reserve Banks but do not earn interest on their deposits; they can, however, lend the Federal Reserve money at the overnight reverse repurchase agreement facility and earn the ON RRP rate. The branches and agencies can borrow the funds in the fed funds market and invest them in reserve balances on which they earn the IORB rate.[4] The fed funds rate ends up between the IORB rate and

[4] Branches and agencies are the predominant borrowers because they have insured deposits and therefore do not have deposit insurance premiums. Deposit insurance premiums are based on total bank liabilities, not insured deposits, so they are applied to fed funds purchased.

the ON RRP rate because the FHLBs and the branches and agencies split the difference between what the branches can earn and the yield on FHLB's alternative investment option.

This shift from relying on other banks for liquidity to relying on the central bank for liquidity is why the Norges Bank switched in 2010 from a floor system to a corridor system. When seeking comment on their decision, Norges Bank (2010) noted:

> When Norges Bank keeps reserves relatively high for a period, it appears that banks gradually adjust to this level…With ever increasing reserves in the banking system, there is a risk that Norges Bank assumes functions that should be left to the market. It is not Norges Bank's role to provide funding for banks…If a bank has a deficit of reserves towards the end of the day, banks must be able to deal with this by trading in the interbank market. (p.5)

Discount window stigma increases

The overabundance of reserves also increases the stigma associated with borrowing from the discount window.[5] Before the GFC, most discount window loans by volume occurred for monetary policy purposes, clearing the market on days when the supply of reserves fell short of demand. After the GFC, the volume of borrowing has fallen sharply, and borrowing that does occur is mostly for contingency funding purposes. As a consequence, when borrowing does occur, it is more alarming. Banks report that an important reason why they maintain large levels of reserve balances is to reduce to near zero the probability that they would ever have to borrow from the discount window.

Examiners expect banks to have large stockpiles of reserve balances

As banks' business models adjust to make use of abundant, cheap reserve balances, so do examiners' attitudes toward banks' need for reserve balances. Before the GFC, liquidity was evaluated based on a bank's access to reliable and diversified funding including access to the discount window. Asset-based liquidity risk-management was considered something that smaller, less sophisticated banks did. After the GFC, liquidity became synonymous with a bank's stockpile of liquid assets including especially reserve balances.[6] Former Vice Chair for Supervision Randy Quarles has noted that bank examiners' preference for reserves contributed to the abrupt and disorderly end to the previous round of QT in September 2019.[7]

Examiner expectations also contribute to the one-way ratchet that expands reserves ever further. A chief investment officer of a GSIB described how his bank increased its holdings of reserve balances rather than reverse repos when the IORB rate was above the repo rate prior to 2018 but decided against rotating back toward reverse repos when the repo rate rose above the IORB rate simply to avoid having to explain the decision to their examiners.[8]

The new normal: A giant balance sheet

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[5] There has been a stigma associated with borrowing from the discount window since the 1920s, and stigma exists for many reasons. See Nelson (2021).
[6] See Nelson (2023).
[7] Quarles (2022).
[8] Nelson (2020).

The Fed's ever-expanding size is also due to changing views within the Fed on what is a normal use of the balance sheet. In December 2018, when the Committee was debating whether to adopt a floor system permanently, staff told the Committee that about $1 trillion in reserve balances should be necessary. Chair Powell remarked that if the necessary level of reserve balances turned out to be higher, he would experience "buyer's regret."[9] The most recent publicly available staff estimates put the necessary amount at $3 trillion, but there have been no expressions of regret.

Similarly, Committee members including then-Governors Powell, Stein and Tarullo expressed serious misgivings when the ON RRP facility was opened in 2012 about expanding the Fed's set of counterparties to include money market mutual funds, but took comfort from the fact that the facility was supposed to be temporary. Eleven years later, in May 2023, when the ON RRP facility was more than 10 times its peak level in 2014, Chair Powell stated that the ON RRP facility was simply doing the job it was designed to do.[10] Indeed, although the ON RRP is still supposedly a temporary facility, the Board's website now describes it as a standard tool of policy implementation.[11]

Fed staff made decisions, evidently without consulting the FOMC, that locked in the floor system—decisions apparently based on the view that there were few costs associated with a massive balance sheet. One such decision was over the size and variability of the U.S. Treasury's account balance. Prior to the GFC, the Treasury kept most of its cash in the banking system, while its deposit at the Fed held roughly steady at about $5 billion. It was held roughly steady because the Treasury and Fed understood that if the balance was highly variable, the Fed would need to engage in large countervailing open-market operations. However, during and after the GFC, Treasury and Fed staff decided to allow Treasury to expand its balance, which is now about $800 billion, roughly where Treasury plans to maintain it apart from during debt debacles, when it runs it down.[12] The resulting volatility has been cited by staff several times as a reason why the Committee can't return to a corridor system.[13] The story is similar for the facility the Fed provides to foreign official institutions to place their overnight investments ("the foreign repo pool").[14]

Having an unbounded balance sheet may also have contributed to complacence about the risk associated with large-scale asset purchases ("quantitative easing" or "QE"). Reading and listening to the Fed's explanations for QE4, one gets the impression that it was stumbled into. QE4 started in March 2020 as address a market meltdown, then it gradually morphed into an effort to stimulate the economy (see September 2020 FOMC statement), then the Fed locked in the pace of QE with rigid forward guidance (see December 2020 FOMC statement).

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[9] Federal Open Market Committee (2018c) p. 44

[10] When Powell was asked in the press conference following the May 2023 FOMC meeting if the ON RRP facility was making the deposit outflows from banks worse, he responded: "[The facility] is really there to, to help us keep rates where they're supposed to be, and it's, it's serving that purpose very well." (Federal Open Market Committee (2023) p. 20).

[11] https://www.federalreserve.gov/aboutthefed/fedexplained/monetary-policy.htm

[12] Maintaining a large cash deposit may give Treasury more time during debt ceiling debacles if the debt limit had been established based a level consistent with the higher balance.

[13] See, for example, Federal Reserve System (2018).

[14] Nelson (2019).

Because the Fed was investing in longer-term assets funded largely by overnight liabilities, the Fed took on massive amounts of interest rate risk through its QE programs. That was by design. The intent of the programs was to shift interest rate risk from public hands to the Fed's balance sheet, pushing down the term premium on longer-term assets, stimulating the economy. The Fed's balance sheet principles published in 2002 state that interest rate risk is equivalent to credit risk and the Fed would likely only incur substantial interest rate risk after consulting with Treasury and Congress.[15] However, repeated use begets complacency, and the FOMC now seems to see taking substantial interest rate risk as an unremarkable policy tool.

Sometimes risky investments pay off. In the 2010s, the sluggish recovery resulted in overnight interest rates remaining much lower than had been expected when the Fed purchased longer-term securities in QE 1, 2, and 3 between 2008 and 2012. As a result, the Fed was highly profitable in the 2010s.

But sometimes risky investments make losses. Starting in 2022, the Fed needed to raise overnight interest rates by more, and do so more rapidly, than it had done for 40 years to combat a sharp rise in inflation. The increase drove the Fed's interest expenses, which are entirely tied to short-term rates, above the interest income it earned on its portfolio of mostly longer-term securities. As a result, the Fed began to make losses in September 2023 and is projected by the New York Fed to continue to make losses until 2025.[16]

The Fed is making losses even though its monopoly franchises on currency and as banker for the Treasury allow it to fund itself with a substantial amount of interest-free liabilities. The Fed began making operating losses in September 2022 and losses had accumulated to $199.8 billion by September 25, 2024.[17] Over that same period, a portfolio of Treasury bills funded by currency and the TGA would have earned $302.2 billion.[18]

[15] Federal Reserve System, 2002.
[16] Federal Reserve Bank of New York, 2024. See also Levin, Lu and Nelson (2022).
[17] Federal Reserve Balance Sheet: Factors Affecting Reserve Balances - H.4.1, table 6. https://www.federalreserve.gov/releases/h41/
[18] Cumulative sum of the one-month Treasury bill rate (at a weekly rate) times the sum of the Treasury General Account and Currency Outstanding from the H.4.1.

A dangerous backdoor to the Fed's balance sheet

Adopting a floor system has also eliminated a safeguard on the Fed's balance sheet being used by Congress as a source of financing (Plosser (2022); Selgin (2020)). If asked to buy this or that security, under a corridor system, the Fed could demur by correctly observing that it would lose control of monetary policy if its assets exceeded currency by more than a small amount. At the November 2018 FOMC meetings, Loretta Mester, then president of the Cleveland Fed, stated "The lack of an operating constraint on the size of our balance sheet might also generate requests that the Federal Reserve aid specific industries or use the balance sheet to fund government initiatives, as occurred during and since the crisis." Similarly, at the same meeting, Randal Quarles, then vice chair for supervision, stated:

> Having the FOMC control such a large stock of assets presents what the lawyers in the room will recall from your first-year torts class is called an "attractive nuisance." And for the nonlawyers in the room, an attractive nuisance is an object that a property owner allows to remain on his land when it is obvious both that the object will be dangerous if misused and that misusing it will be irresistibly appealing to passers-by of impulsive and immature judgment, such as children and congressmen (Federal Open Market Committee (2018b) p. 34).

Experience has shown that this is not just an abstract concern. The financing plank of the Green New Deal is:

> As the checks go out, the government's bank—the Federal Reserve—clears the payments by crediting the seller's bank account with digital dollars. In other words, Congress can pass any budget it chooses, and our government already pays for everything by creating new money (Carlock et al. (2018)).

Similarly,

- The Coronavirus Aid, Relief, and Economic Security Act (CARES) of 2020, after encouraging the secretary of the Treasury to implement a program to aid medium-sized businesses, states: "Nothing in this subparagraph shall limit the discretion of the Board of Governors of the Federal Reserve System to establish a Main Street Lending Program or other similar program or facility that supports lending to small and mid-sized businesses. . ." (CARES Act, 2020, p. 213).
- Saule Omarova, a 2021 nominee to head the Office of the Comptroller of the Currency, proposed that the Fed give everyone accounts. It could then put money into the accounts of businesses if they retained their employees and spent money on "real" goods and services as well as the accounts of underprivileged people, expenditures the Fed would finance by driving its equity negative (Omarova (2021)).
- The proposed ECASH Act of 2022 would direct the Treasury to create a digital currency, with costs covered by running an overdraft in a specially created account at the New York Fed (ECASH Act (2022)).
- And the proposed BITCOIN Act of 2024 utilizes the capital and profits of the Federal Reserve to accumulate a "strategic reserve" of 1 million bitcoins. (BITCOIN ACT (2024)).

Monetizing the debt

Relatedly, the floor system has also opened the door to the Fed monetizing the debt. It is unclear what "monetizing the debt" actually means. But in 2011, Chairman Bernanke was asked by the House Budget Committee if the Fed was monetizing the debt with its large-scale asset purchases. He responded:

> No, sir. Monetization would involve a permanent increase in the money supply to basically pay the government's bills through money creation. What we are doing here is a temporary measure which will be reversed so that at the end of this process, the money supply will be normalized, the amount of the Fed's balance sheet will be normalized, and there will be no permanent increase, either in money outstanding, in the Fed's balance sheet, or in inflation (U.S. Government Publishing Office (2011)).

At that time, the Fed's normalization principles involved selling the securities acquired during QE to return to a necessary-reserves framework. But the Fed has instead decided to maintain a giant balance sheet, much larger as a percentage of GDP than when Bernanke said there would be no permanent increase. By Bernanke's definition, therefore, the Fed has monetized the debt.

Moreover, although the Fed will never *deliberately* set out to monetize the debt, with the balance sheet unbounded, it is free to respond to developments in a manner that does so. For example, Vice Chair Quarles explained in October 2020 that the Fed may need to continue massive securities purchases because the Treasury was issuing more than financial markets could handle on their own (Derby (2020)).

Independence of the Fed at risk

The independence of the Federal Reserve's conduct of monetary policy relies critically on convention rather than being established by law. Just as the Fed sought to keep Treasury financing rates low at the direction of Treasury prior to the Treasury-Fed accord of 1951, future administrations could nominate, and the Senate could approve, Fed Board members with an understanding that the Board would coordinate with the administration in setting interest rates. Because the Fed's balance sheet is now unconstrained, a future administration could also direct balance sheet policy. In fact, the "attractive nuisance" of the unbounded balance sheet could be the catalyst the leads future administrations to forgo the convention of Fed independence.[19]

Relatedly, in recent years there have been many calls (and in the case of the ECB, action) to force banks to extend zero-interest loans to central banks to cover central bank losses.[20] The loans would take the form of requiring banks to hold deposits at the central banks on which the central banks would pay no interest. If the central bank funds QE with unremunerated reserves that banks are forced to hold, QE becomes a money maker for the government. The larger the Fed's portfolio, the more the revenue, all without having to raise taxes.

[19] See Plosser (2022).
[20] Nelson (2024b).

Benefits are limited

Both frameworks provide good interest rate control in normal times, and corridor becomes floor in stress times

An evaluation of the net costs of a floor implementation regime requires consideration of the benefits as well as costs. Overall, the benefits of the floor system are limited. There is broad agreement that both a corridor and floor system provide good interest rate control in normal times. One purported benefit of a floor system is that it provides better interest rate control in times when the Federal Reserve needs to expand its balance sheet because of emergency lending or asset purchases. While true, a corridor system *becomes* a floor system in such circumstances, as demonstrated by the Fed's experience in 2008 and the ECB's experience in 2009, 2012, and 2015, so it is not necessary for the Fed to implement policy in a floor system *at all times* to reap this benefit.

Monetary policy implementation has not become simpler

Another claimed benefit of a floor system is that it allows for simpler implementation of monetary policy in normal times. Experience has not borne this out. Before the GFC, policy implementation was simple and fed funds rate volatility low. Under the current regime, the Fed and market participants are devoting a huge amount of resources to determining how low reserve balances can shrink without the fed funds rate becoming sensitive to downward swings in reserves. False confidence that the fine-tuning operations were no longer needed led to the severe bout of repo market volatility in September 2019.

The pre-GFC implementation regime also satisfied the "Friedman Rule"

Another purported benefit is that the floor system is efficient because it is free for the Fed to create reserves and so it should do so until the fed funds rate equals the interest rate on reserves. As discussed above, it is not true that it is free for the Fed to oversupply reserves – the costs are many and large. Moreover, as explained below, Federal Reserve was already providing the financial system abundant liquidity using its pre-GFC implementation system.

A deposit at a bank and an undrawn line of credit from a bank are economically nearly identical – both are promises by the bank to provide funds up to some limit on demand. According to what is loosely called the "Friedman rule," it is economically efficient for a central bank to provide the financial system liquidity generously because it can produce the liquidity at low cost. In the pre-GFC regime, the Fed provided liquidity in the form of free lines of collateralized daylight and overnight (discount window) credit. The Fed began offering free lines of overnight credit in 2003 when it converted the discount window into a "no-questions-asked" facility, renamed "primary credit" that financially sound banks could count on to meet contingency funding needs. The lines were and are free. The interest rate on the *draws under the lines* (the primary credit rate) is above market so that banks would choose to use the discount window only as a contingency source of funding. Indeed, if the primary credit rate was too low, and banks used primary credit as an ongoing source of funding, there would be less undrawn line capacity to provide liquidity. Liquidity comes from available funding, not used funding. In addition, beginning in 2008, the Fed began providing

financially sound banks free collateralized daylight credit so that banks would use the credit liberally and not withhold payments until late in the day.

The extensions of daylight and overnight credit were and are backed by pre-positioned collateral, primarily business and consumer loans. As a consequence, banks were provided with liquidity (capacity under a line of credit) generously without the Fed having to maintain a massive portfolio of securities and without banks having to use up balance sheet space maintaining large deposits at the Fed. Instead, the banks used their balance sheets to make loans to businesses and households that they then pledged to the Fed to back the lines.

Under the floor system, the liquidity is provided by the Fed being the receiver of huge amounts of reserve balances with a corresponding huge portfolio of securities. Many of the costs of the approach are discussed above, but one demonstration of how stuffing bank balance sheets with reserves raises bank balance sheet costs occurred when the Fed stopped its COVID-period exclusion of reserve balances from the denominator of the leverage ratio. Even though the Fed paid money funds 10 basis points less on ON RRPs than it paid banks on reserves, the ON RRP facility exploded as funding the Fed became more profitable for money funds than for banks. And that was just the leverage ratio. Reserve balances also worsen banks' stress test results and the largest banks' GSIB surcharges.[21] Those higher bank balance sheet costs translate into lower bank credit supply and reduced economic activity.

Is the Fed Becoming an Outlier?

While expanding the balance sheet through emergency lending and quantitative easing served a legitimate purpose when the federal funds rate was near zero, there is a building consensus across the major central banks that the costs of a floor system outweigh the benefits. The Bank of Canada, Bank of England, European Central Bank, and Reserve Bank of Australia have all announced plans to reduce reserves until borrowing from the central bank picks up and market rates are a bit above the interest rate the central bank pays on deposits, essentially returning to a corridor system, although they are not using the word "corridor." But as Andrew Bailey observed recently

> Generally speaking, as reserves levels grow, the incentives for the banking sector to manage its own liquidity falls. And to the extent that reserve supply crowds out healthy market intermediation in normal market conditions, a large part of the financial system's ability to manage its liquidity will be affected. Mindful of these costs, we do not seek a larger balance sheet than is strictly necessary.

In the same speech, Bailey indicated that there was an active ongoing debate at meetings of central bankers at the Bank for International Settlements about the benefits of a floor system. In a podcast in January 2024, Claudio Borio, head of research at the BIS, described the advantage of returning to a corridor system with an active federal funds market and looking to discount window borrowing capacity as a bank's source of contingent liquidity. In that case, banks first meet their liquidity needs in the interbank market, then prepare for their liquidity needs under stress with collateral at the discount window, as opposed to the current system in which banks meet their liquidity needs with deposits at the Fed:

[21] See Covas (2021) and Covas, Flowers, and Waxman (2024).

> Would you like to have a system in which the central bank is a backstop, or would you like to have a system in which the central bank is the mass market maker of first resort, so last resort versus first resort?... I think that having a system in which the central bank is a backstop, and a system in which the first line of defense against demands on liquidity is an interbank market, that to me sounds [like], on balance, a better system. (Borio (2024)).

Looking forward, maybe the Fed is changing its mind too

There may also have been a quiet, but material, change in how the Fed anticipates conducting monetary policy once it has normalized its balance sheet. Despite the ratchet in the demand for reserves, demand can be reduced, but only by the Fed 1) reducing supply until money market rates move a bit above the interest rate the Fed pays on reserve balances and 2) stopping examiners from requiring banks to hold such high levels of reserves.

The Fed has made changes, and may make more changes, to accomplish #2, allowing banks to substitute discount window capacity for reserve balances. Critically, on August 13, 2024, the Fed published an FAQ about how it will enforce the requirement that banks conduct internal liquidity stress tests (ILSTs), the most binding requirement for many banks.[22] Banks not only need to have liquid assets to meet projected needs to pass their ILSTs; they also need to demonstrate that they can *monetize* those assets. The FAQ states that banks can now point to the discount window, standing repo facility, or borrowing from a Federal Home Loan Bank as the means by which they would monetize their liquid assets. Consequently, banks can reduce their holdings of reserve balances as the sole means by which they would meet a depositor run. Similar changes, but ones that require a change in regulations, may be in the works.[23]

Moreover, the Fed may also now be planning on bringing about #1, reducing reserve supply until money market rates are a bit above the IORB rate. Many Fed communications now describe its plan as reducing reserve supply until they are in the zone where the demand curve is sloping up.[24] Since the flat part of the curve is near the IORB rate, the sloped part of the curve should be mostly above the IORB rate.

In sum, the Fed may also have concluded that the costs of a floor system exceed the benefits and be taking steps to shrink. If so, the change will become clear over coming quarters as QT continues and reserve balances decline. The rub will come when the Fed has to decide whether it wants to maintain a multi-hundred-billion-dollar buffer of reserve balances over the amount that the banking system needs.

[22] See Nelson and Waxman (2024).
[23] Barr (2024).
[24] See, for example, Afonso and colleagues (2024).

References

Afonso, G., D. Giannone, G. La Spada, and J. Williams. (2024) "When Are Central Bank Reserves Ample?" Federal Reserve Bank of New York *Liberty Street Economics*, August 13. https://libertystreeteconomics.newyorkfed.org/2024/08/when-are-central-bank-reserves-ample/.

Bailey, A. (2024). *The importance of central bank reserves. Lecture in honour of Charles Goodhart*. London School of Economics. May 21. https://www.bankofengland.co.uk/speech/2024/may/andrew-bailey-lecture-london-school-of-economics-charles-goodhart

Barr, M. (2024). The Next Steps on Capital. At the Brookings Institution, Washington, D.C. September 10. https://www.federalreserve.gov/newsevents/speech/files/barr20240910a.pdf

BITCOIN ACT (2024). *Boosting Innovation, Technology, and Competitiveness through Optimized Investment Nationwide Act of 2024*. Section 9. https://www.congress.gov/bill/118th-congress/senate-bill/4912/text

Borio, C. (2024). *Claudio Borio on the Future of Central Bank Operating Systems*. Mercatus Original Podcasts. January 8. https://www.mercatus.org/macro-musings/claudio-borio-future-central-bank-operating-systems

CARES Act (2020). *Coronavirus Aid, Relief, and Economic Security Act*, Section 4003, paragraph (c)(3)(D)(ii). https://www.govinfo.gov/content/pkg/COMPS-15754/pdf/COMPS-15754.pdf

Carlock, G., Bernal, A., & Kelton, S. (2018). We can pay for a green new deal. *Huffington Post*, November 30. https://www.commondreams.org/views/2018/11/30/we-can-pay-green-new-deal

Covas, F (2021). Take-up at the Federal Reserve's ON RRP Facility: Much Larger and More Persistent than Planned, Getting Larger, and the Reasons Why. *Bank Policy Institute Blog*. June 8. https://bpi.com/wp-content/uploads/2021/06/Take-up-at-the-Federal-Reserves-ON-RRP-Facility-Much-Larger-and-More-Persistent-than-Planned-Getting-Larger-and-the-Reasons-Why.pdf

Covas, F., S. Flowers, & B. Waxman (2024). Empty Promises: Revisiting the Reasons to Fix the Supplementary Leverage Ratio. *Bank Policy Institute Blog*. July 8. https://bpi.com/wp-content/uploads/2024/07/Empty-Promises-Revisiting-the-Reasons-to-Fix-the-Supplementary-Leverage-Ratio-5.pdf

Derby, M. S. (2020). Fed Official Wonders Whether Treasury Market Can Handle Massive Issuance Alone. *Wall Street Journal*, October 14. https://www.wsj.com/articles/fed-official-wonders-whether-treasury-market-can-handle-massive-issuance-alone-11602713864

ECASH Act (2022). *FAQ 13 How is the bill funded?* https://ecashact.us/#funding

Federal Open Market Committee (2018b). *Transcript of the Meeting of the FOMC on November 7-8*. Board of Governors office, Washington, D.C. Retrieved from https://www.federalreserve.gov/monetarypolicy/files/FOMC20181108meeting.pdf

Federal Open Market Committee (2018c). *Transcript of the Meeting of the FOMC on December 18-19*. Board of Governors office, Washington, D.C. Retrieved from https://www.federalreserve.gov/monetarypolicy/files/FOMC20181219meeting.pdf

Federal Open Market Committee (2023). *Transcript of Chair Powell's Press Conference, May 3*. Retrieved from https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20230503.pdf

Federal Reserve Bank of New York (2024). *Domestic Open Market Operations During 2023*. https://www.newyorkfed.org/medialibrary/media/markets/omo/omo2023-pdf.pdf

Federal Reserve System (2002). *Alternative Instruments for Open Market and Discount Window Operations*. Board of Governors of the Federal Reserve System, Washington, D.C., December. https://www.federalreserve.gov/monetarypolicy/files/FOMC20021201memo01.pdf

Federal Reserve System (2018). *The Federal Reserve's Long-Run Operating Regime. Memo to the Federal Open Market Committee*, October 22. https://www.federalreserve.gov/monetarypolicy/files/FOMC20181022memo02.pdf

Levin, A., Lu, B. and Nelson, W. (2022). *Quantifying the costs and benefits of quantitative easing* (No. w30749). National Bureau of Economic Research. https://www.nber.org/papers/w30749

Lucas Jr, R.E. (1976). January. Econometric policy evaluation: A critique. In *Carnegie-Rochester conference series on public policy* (Vol. 1, pp. 19-46). North-Holland.

Nelson, B. (2019). Two Little-Noticed and Self-Inflicted Causes of The Fed's Current Monetary Policy Implementation Predicament. *Bank Policy Institute Blog*, October 1. https://bpi.com/wp-content/uploads/2019/10/Two-Little-Noticed-and-Self-Inflicted-Causes-of-the-Feds-Current-Monetary-Policy-Implementation-Predicament.pdf

Nelson, B. (2020). Comment on "Reserves were not so ample after all." Hoover Institute. https://www.hoover.org/sites/default/files/hoover_nelson_remarks_on_cdy_share_1.pdf

Nelson, B. (2021). Discount window stigma: We have met the enemy, and he is us. *Bank Policy Institute Blog*, August 10. https://bpi.com/wp-content/uploads/2021/08/Discount-Window-Stigma-We-Have-Met-the-Enemy-and-He-Is-Us.pdf

Nelson, B. (2023). Is it time for a holistic review of liquidity requirements? *Bank Policy Institute* Blog, February 23. https://bpi.com/is-it-time-for-a-holistic-review-of-liquidity-requirements/

Nelson, B. (2024a). How the Federal Reserve got so huge, and why and how it can shrink. *Southern Economic Journal* (forthcoming). Working paper version: https://bpi.com/wp-content/uploads/2024/02/How-the-Federal-Reserve-Got-So-Huge-and-Why-and-How-It-Can-Shrink.pdf

Nelson, B. (2024b). Should banks, thrifts, and credit unions be forced to make interest-free loans to the U.S. government? Bank Policy Institute Blog. July 25. https://bpi.com/wp-content/uploads/2024/07/Should-banks-thrifts-and-credit-unions-be-forced-to-make-interest-free-loans-to-the-U.S.-government.pdf

Nelson B. and B. Waxman (2024). *A Helpful Federal Reserve Board Statement on Bank Liquidity*. Bank Policy Institute Blog. August 21. https://bpi.com/wp-content/uploads/2024/08/A-Helpful-Federal-Reserve-Board-Statement-on-Bank-Liquidity_.pdf

Norges Bank (2010). Changes in "Regulation on the Access of Banks to Borrowing and Deposit Facilities in Norges Bank etc.". *Norges Bank Monetary Policy Consultative Document*. Retrieved from https://www.norges-bank.no/contentassets/cfc83348f4574a719dd5a4ce70a48840/consultative_document_06102010.pdf?v=09032017123145

Omarova, S. T. (2021). The people's ledger: How to democratize money and finance the economy. *Vanderbilt Law Review 74(5)*. 1231-1300. Retrieved from https://scholarship.law.vanderbilt.edu/vlr/vol74/iss5/1

Plosser, C. (2022). Federal Reserve independence: Is it time for a new Treasury-fed accord? *Hoover Institution Economics Working Paper 22104*. https://www.hoover.org/sites/default/files/research/docs/22104-plosser.pdf

Poole, W. (1968). Commercial Bank Reserve Management in a Stochastic Model: Implications for Monetary Policy. *The Journal of Finance*, 23(5), 769-791. doi: https://doi.org/10.1111/j.1540-6261.1968.tb00316.x

Quarles, R. (2022). *Randal Quarles on Inflation, Balance Sheet Reduction, Financial Stability, and the Future of the Fed*. Mercatus Original Podcasts. July 18. Available at: https://www.mercatus.org/macro-musings/randal-quarles-inflation-balance-sheet-reduction-financial-stability-and-future-fed

Selgin, G. (2020). *The Menace of Fiscal QE*. Washington D.C.: Cato Institute. https://www.cato.org/books/menace-fiscal-qe

U.S. Government Publishing Office (2011). *Hearing before the Committee on the Budget, House of Representatives, One Hundred Twelfth Congress, First Session, February 9*. https://www.govinfo.gov/content/pkg/CHRG-112hhrg64726/html/CHRG-112hhrg64726.htm