

CHAPTER ONE

THE BALANCE SHEET

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SECTION ONE

The Risks of a Fed Balance Sheet Unconstrained by Monetary Policy

Charles I. Plosser

Last fall I was invited to give a talk at the Swiss National Bank in honor of Karl Brunner on the occasion of the hundredth anniversary of his birth. Karl, of course, was a famous Swiss economist, often associated with coining the term “monetarism.” I first met Karl at the Hoover Institution, where he and Robert Barro were visiting in 1978. They recruited me to the University of Rochester. Between 1978 and his death in 1989, I was fortunate to be a colleague of Karl’s at Rochester and learned a great deal from him over those years—not only about economics but many other things, including his views of the professional responsibilities associated with being a journal editor. Having founded the *Journal of Money, Credit, and Banking* and the *Journal of Monetary Economics*, he felt strongly about the important role played by high-quality refereed academic journals. Karl’s interests also spanned political science, sociology, and the philosophy of science. He was truly a committed scholar and had an amazing intellect.

You might ask what all this has to do with the Fed's balance sheet. Karl had a deep interest in policy, and he tried to encourage academics to take an interest in policy-related research. He founded the Carnegie-Rochester Conference Series on Public Policy with Allan Meltzer, his student and longtime collaborator. The two of them also created the Shadow Open Market Committee in 1971 to bring policy insights out of the academic environment and make them accessible to the press and broader public. One theme Karl stressed in his discussions of policy was that institutions matter. He thought it important to recognize that policy makers are not the romantic "Ramsey planners" that we economists often assume in our models but actors responding to incentives and subject to institutional constraints, both of which shape policy choices and outcomes. Karl felt we needed to understand that environment to provide useful policy advice. Little did I know during those years at Rochester that I would end up in a policy-making role at the Fed during one of the most challenging times for our central bank.

This preface is relevant because I found Karl's message, which I heard so many years ago, to be more germane than I imagined. And consequently, it has helped shape my thinking about policy and the current debates over monetary reform, including alternative operating regimes for implementing monetary policy.

I have often spoken about important institutional aspects of our central bank.¹ In particular, I have stressed the importance of Fed independence and how institutional arrangements influence it. I have stressed that in a democracy, independence must come with limitations on the breadth and use of authorities. These constraints must be chosen carefully to preserve independence and the ability to achieve objectives while limiting actions that go beyond accept-

1. See, for example, Charles Plosser, "A Limited Central Bank," delivered at the Cato Institute's 31st Annual Monetary Conference, November 14, 2013; and Charles Plosser, "Balancing Central Bank Independence and Accountability," in *Central Bank Governance and Oversight Reform*, ed. John H. Cochrane and John B. Taylor (Stanford, CA: Hoover Institution Press, 2016).

able boundaries. For example, I have suggested limiting the Fed's mandate to price stability and restricting the composition of the asset side of its balance sheet to Treasuries. Such limitations would constrain discretion and largely prevent the Fed from engaging in credit allocation policies that, in a democracy, should be in the hands of the marketplace or elected officials.

My focus today is on the Fed's balance sheet and how institutions, and the incentives they create, matter for how it is managed. Since 2006, the balance sheet of our central bank has grown about fivefold, primarily because of the Fed's unconventional policies during the financial crisis and subsequent recession. Once the Fed had reduced the targeted fed funds rate to near zero in December 2008, it embarked on a program of large-scale asset purchases. Initially, those purchases were motivated by a desire to provide liquidity and maintain financial market stability. Those goals were largely achieved by mid-2009, yet quantitative easing (QE) continued and expanded. It was justified not on the grounds of financial market dysfunction but as a means to provide more monetary accommodation to speed up the recovery.

STRUCTURE OF THE FED'S BALANCE SHEET

Currently, the Fed's balance sheet is roughly \$4.5 trillion, compared to about \$850 billion prior to the financial crisis. The composition of the balance sheet is also quite different today than it was prior to the crisis. In 2006, the asset side of the balance sheet was predominately US Treasury securities. Today, approximately 40 percent of the balance sheet is composed of mortgage-backed securities (MBS), while Treasuries account for most of the rest. In addition, at various points during the crisis the Fed held hundreds of billions of dollars of other private-sector securities or loans, although most of these private-sector securities have rolled off the balance sheet, leaving primarily Treasuries and MBS.

The liability side of the balance sheet also reflects the impact of QE. In 2006, currency accounted for more than 90 percent, or \$785 billion, of the \$850 billion, and bank reserves just about 2 percent, or \$18 billion, almost all of which were required reserves. Today, currency represents about \$1.5 trillion, or just 33 percent of the balance sheet, while reserves have risen to about \$2.6 trillion, or about 60 percent of the balance sheet, of which only \$180 billion are required.² So there is about \$2.4 trillion in excess reserves today compared to zero in 2006.

Thus, currency has doubled (growing about 6 percent a year) over the last ten years, yet reserves have grown by a factor of about ten (growing about 26 percent per year).

As for the Fed's assets, holding predominately Treasuries was historically viewed as neutral in the sense that no sector of the economy was favored over another, and the maturity structure was chosen so that the yield curve was not affected.³ The purchase of MBS during QE, however, was a deliberate effort to improve the housing sector, while acquiring other private-sector securities as part of the rescues of Bear Stearns and AIG was intended to aid the creditors of those institutions. In the rescues, the Fed sold off Treasuries to purchase private-sector securities and make loans. These were highly unusual actions in support of specific parties even though the broader goal was to stabilize the financial system. Regardless of the rationale, the actions amounted to debt-financed fiscal policy and a form of credit allocation. Thus, such changes in the mix of assets held by the Fed are frequently referred to as credit policy.

2. I have counted outstanding reverse repurchase agreements as part of total reserves as they are simply a mechanism for temporarily reducing excess reserves.

3. That is, the Fed's holding of Treasuries mostly reflected the same mix of bonds and bills as issued by the Treasury.

OPERATING REGIMES AND THE ROLE OF THE BALANCE SHEET

How big should the Fed's balance sheet be? In part, this depends on the Fed's goals and objectives and on the operating regime for monetary policy. Prior to the crisis, the Fed operated with a relatively small balance sheet. Its size was determined by the demand for currency and the demand for required reserves. The Fed supplied currency elastically and supplied reserves in a way that achieved the target for the fed funds rate (the interbank lending rate). That is, it expanded or shrank reserves in the banking system to achieve its funds rate target. This operating procedure required the Fed to increase or decrease its balance sheet accordingly. The size of the balance sheet was integral to setting the instrument of monetary policy—the fed funds rate.

The Fed has not provided much in the way of guidance regarding the role it sees for the balance sheet going forward. In its exit principles, the Fed has stated that “the size of the securities portfolio and the associated quantity of bank reserves are expected to be reduced to the smallest levels that would be consistent with the efficient implementation of monetary policy.”⁴ This is not helpful without knowing how the Federal Open Market Committee (FOMC) will ultimately choose to implement monetary policy. Will it return to the prior framework of targeting the fed funds rate or will it adopt some other target or instrument? What will determine the size of the balance sheet? Different approaches will have different implications for the balance sheet.

As to the preferred instrument of monetary policy going forward, the FOMC seems to have suggested that it would like to

4. Federal Open Market Committee, “Policy Normalization Principles and Plans,” September 2014, https://www.federalreserve.gov/monetarypolicy/files/FOMC_Policy_Normalization.pdf.

restore the federal funds as its primary instrument but has not committed to this strategy. How will the FOMC then achieve its target? With the current large balance sheet flooding the market with reserves, trading in the fed funds market is quite thin compared to the precrisis period.

Several economists (including former Fed chair Ben Bernanke, now at the Brookings Institution, and John Cochrane at the Hoover Institution) have argued that since the Fed now has the ability to pay interest on bank reserves, it is possible, desirable, and perhaps more efficient to maintain a large balance sheet and use the interest rate paid on reserves (IOR) as the instrument of monetary policy rather than the fed funds rate. The basic idea is that by setting the interest rate it pays on bank reserves, the Fed establishes a floor for short-term risk-free rates. In such a regime, as long as the balance sheet is of sufficient size to satiate the demand for reserves, it can be arbitrarily large (that is, operate with significant amounts of excess reserves) without affecting the conduct of monetary policy. This operating regime is often referred to as a “floor system.” Under this type of system, the fed funds market as we know it would likely disappear. Indeed, as I noted, due to QE and the current large balance sheet, the funds market is mostly moribund today.

The precrisis system of targeting a fed funds rate could also be implemented in a world where interest is paid on reserves. In such a regime, the fed funds target could be set slightly above the interest rate paid on reserves (say twenty-five to fifty basis points). However, to achieve a funds rate higher than the floor, or IOR, the balance sheet (more precisely, reserves) would have to shrink. This method of setting the interest rate target is often referred to as a “corridor” or “channel system.” This is because the instrument (the fed funds rate) is in a corridor above the IOR but less than the discount or primary credit rate, which is the rate at which the Fed is willing to lend reserves to depository institutions.

How big might the balance sheet be today under such a corridor system? As a reference point, one can think of a balance sheet today composed of currency plus required reserves as about \$1.7 trillion. Adding \$100 billion or so for the Treasury's general account suggests that we might expect a Fed balance sheet of \$1.8–\$1.9 trillion as the size necessary to return to the precrisis operating regime. The arguments for a large balance sheet, composed of significant quantities of excess reserves, untethered to monetary policy, generally focus on financial stability factors. One argument is that large amounts of riskless reserves ensure ample safe assets in the system, which presumably provides liquidity and reduces systemic risk (whatever that may mean). It is argued that a scarcity of safe assets contributed to financial fragility in the crisis.⁵ Moreover, paying interest on reserves mitigates the distortionary effects of the tax on deposits caused by reserve requirements.

RISKS OF A LARGE BALANCE SHEET

The theoretical arguments for a floor system and a large balance sheet are straightforward, and while I disagree with some elements of the economic arguments, my major concerns arise from the institutional arrangements and incentives engendered by such a system at the Fed and in other parts of the government. Who will determine the amount of excess reserves created and how will they do it, since the monetary policy instrument will be the IOR? Unfortunately, there is little discussion or analysis of how to determine the appropriate amount of excess reserves that should be created. Is it \$10 billion, \$100 billion, or \$1,000 billion?

5. This argument is not compelling to me. Buying up short-term Treasuries in exchange for bank reserves would seem to simply swap one safe asset for another and thus lead to no net increase in safe assets. Only if the Fed was purchasing "risky assets"—for example, long-term Treasuries, corporate debt, or equities—does this argument seem to apply. Even so, such actions just shift risk to the taxpayer.

Making the Fed's balance sheet unrelated to monetary policy opens the door for the Fed to use its balance sheet for other purposes. For example, the Fed would be free to engage in credit policy through the management of its assets while not impinging on monetary policy. Indeed, the Fed's balance sheet could serve as a huge intermediary and supplier of taxpayer subsidies to selected parties through credit allocation. It also opens the door for Congress (or the Fed) to use the balance sheet for its own purposes. Let me elaborate by articulating several concerns raised by pursuing an operating regime that tolerates a large and unconstrained balance sheet. Some of these concerns could be mitigated through legislation, while others are not so easily addressed.

First and foremost, an operating regime where the Fed's balance sheet is unconstrained as to its size or holdings is ripe for misuse, if not abuse. A Fed balance sheet unconstrained by monetary policy becomes a new policy tool, a free parameter if you will. Congress would be free to lobby the Fed through political pressure or legislation to manage the portfolio for political ends. Imagine Congress proposing a new infrastructure bill where the Fed was expected, or even required, to buy designated development bonds to support and fund the initiative so taxes could be deferred. This would be very tempting for Congress. Indeed, in testimony before Congress I was asked why the Fed shouldn't contribute "its fair share" to an infrastructure initiative. Imagine the lobbying for the Fed to purchase "build America bonds" issued by the Treasury to fund infrastructure initiatives.

More generally, the temptation would be to turn the Fed's balance sheet into a huge hedge fund, investing in projects demanded by Congress and funded by forcing banks to hold vast quantities of excess reserves on which the central bank pays the risk-free rate. Of course, this just represents off-budget fiscal policy.

Consider the European Central Bank's holdings of sovereign debt. This policy seems to have been designed to prop up the finan-

cial positions of countries in fiscal distress. Imagine if Illinois or California were on the verge of default. Would Congress decide that Fed purchases of state and local bonds constituted an acceptable tactic to delay and defer undesirable turmoil? Imagine the moral hazard and perverse incentives such a policy might induce.

Another recent example of these pressures can be found in Switzerland. The Swiss National Bank (SNB) has grown its balance sheet, which is composed mostly of foreign exchange reserves. Political pressure is being applied to “use” the reserves to invest in various initiatives, such as Swiss companies or other politically attractive activities. The arguments are often couched in the language of “risk management” or “appropriate diversification” of the SNB’s balance sheet.

Congress will undoubtedly find many “appropriate” uses for the Fed’s balance sheet and could do so and claim it doesn’t interfere with the independence of monetary policy. Recall that in 2015 Congress raided the Fed’s balance sheet to help fund a transportation bill. In 2010, the resources for the Consumer Financial Protection Bureau were found in Fed revenues. These were all efforts to exploit the central bank for fiscal policy purposes.

Imagine the political debates over appointments to the Board of Governors. Hearings might focus on the nominees’ views on the investment policy for the balance sheet rather than monetary policy. Political pressure to purchase various forms of securities to support favored projects or initiatives could be enormous and fraught with controversy. Fed independence is fragile and is gradually being eroded further. Offering the fiscal authorities a balance sheet to conduct fiscal policy or credit allocation off budget is akin to opening Pandora’s box.

With a big balance sheet, the Fed would also be paying banks large amounts of interest that would otherwise flow to the Treasury. For example, an increase of one percentage point in IOR with \$2.4 trillion in excess reserves would increase payments to the banking

system by \$24 billion that “otherwise” would have gone to the US Treasury. Congress might complain that they want access to those revenues rather than “subsidizing” the banking system for holding excess reserves. The fact that a large portion of excess reserves is held by foreign banks will not help matters. Of course, appropriate economic analysis tells us this is a fallacious argument from the standpoint of the government’s consolidated balance sheet. That is because if the Fed didn’t hold the Treasuries, the public would; thus, the interest payments going to the Fed and then to the banks would be going to the public (maybe not the banks), and the Treasury is no better or worse off. In any event, that outcome is unlikely to stop Congress. Again, remember the case of the Consumer Financial Protection Bureau, which was funded from Fed income to avoid the appropriation process. Worse, imagine if Congress decided to cap or eliminate the authority to pay interest on reserves.

One way to mitigate some of these concerns is to require the Fed to maintain an all-Treasuries portfolio. Such a restriction would give the Fed some protection and grounds for saying no to proposals that would require the Fed to either acquire private-sector securities or engage in some types of credit allocation. But it may not prevent Congress from requiring the Fed to purchase Treasuries to support specific fiscal initiatives, such as “build America bonds.” After all, Congress could argue that requiring such purchases didn’t matter for monetary policy, and hence independence is not compromised.

These risks are what some would call political economy issues, but that does not mean we should ignore them. The risks posed for our institutions are serious and could adversely affect economic outcomes.

IMPLEMENTING MONETARY POLICY WITH A BIG BALANCE SHEET

I have other concerns surrounding the implementation of monetary policy under a big-balance-sheet regime. The evidence accrued to date suggests that the IOR does not provide a firm floor for the funds rate or other short-term rates. Several reasons have been offered for this outcome. Some of them are regulatory related. For example, depository institutions are required to pay a tax to the FDIC based on total assets. This means that these firms have less incentive to hold reserves compared to those firms that are not depository institutions. This seems to be one reason non-depository foreign banks are holding a large fraction of the excess reserves. Capital requirements have also influenced market equilibrium in other ways. When some banks are required to hold capital against total assets, including reserves, flooding the banking system with excess reserves increases the capital these banks must hold.

One way the Fed has sought to address these problems is by increasing its interventions into the short-term money markets and creating the opportunity to, in effect, pay interest on reserves to a broader range of short-term market participants. The idea is that this broadens participation and improves the arbitrage. This program is the reverse repo program, or RRP. This program allows non-depository institutions to borrow Treasury securities from the Fed overnight (which soaks up reserves) with an agreement that the Fed will repurchase the securities the next day. The Fed pays an interest rate on the transaction. The consequence is a reduction in reserves overnight or for the duration of longer-term repos. This program effectively gives many financial institutions the ability to earn interest on reserves even though they are not depository institutions. It also means that many more market participants are interacting and trading with the Fed.

Thus, we have some evidence that the floor system currently in place does not provide a firm floor and must be supported by the RRP program, which effectively drains reserves from the banking system on an ongoing basis. Will the necessity of the RRP decline as the balance sheet shrinks? If it does, will the Fed continue to use it? And if so, to what purpose?

The Fed has become a larger and more deeply embedded participant in the short-term financial markets than ever before. Some say that is a good thing because it gives the Fed more insight and the ability to intervene when and where it feels appropriate. Some also argue that such dominance allows the Fed to influence more rates more quickly, making the monetary transmission mechanism more effective. Others say this is a worrisome development, as RRP gives large financial firms a safe and reliable place to flee in times of volatility—and making it easy to do so may increase systemic risk rather than reduce it. It also places the Fed in a powerful position, so that markets may focus more on the Fed and less on fundamentals. Put slightly differently, such dominance reduces market influences and feedback while broadening the role of price setting by the Fed.

These are legitimate concerns that deserve broader consideration than they have been given to date. They are important because they go to the fundamental question of how short-term institutional arrangements are likely to evolve under the floor system, perhaps accompanied by a large ongoing RRP program. In particular, what should the role of the Fed be? What should be the limits to its discretionary authority? Or more simply, how big does the Fed's footprint in the markets need to be? The unintended consequences may prove larger and more worrisome than we think.

The floor system also poses some governance issues that are as yet unresolved. The instrument of monetary policy in a floor system is the interest paid on reserves. Unlike the funds rate, the IOR is an administered rate rather than a market rate. Under current

law, the IOR is set by the Board of Governors, not the FOMC. In other words, it is the Board of Governors rather than the FOMC that technically determines monetary policy. Under a pure floor system, the FOMC would become irrelevant.

Both Bernanke and Janet Yellen have understood this but have acted to preserve the role of the FOMC in practice by tying the IOR decision to a funds rate decision of the FOMC. This has been healthy for governance but is not required going forward. The structure of the FOMC, which includes the presidents of the Federal Reserve Banks, is an important characteristic that sustains monetary policy independence. Gutting the FOMC's role in monetary policy would undermine independence and result in monetary policy becoming far more political. Obviously, legislation can fix this, and some reform bills have included provisions that require FOMC approval for IOR decisions. My view is that it would be a huge mistake to adopt a floor system without addressing this governance issue in legislation.

The FOMC is currently operating a floor system out of necessity. QE flooded the banking system with reserves. The argument for doing so was that at the zero lower bound it was the way the FOMC sought to provide additional accommodation. The zero lower bound is no longer a binding constraint, and the Fed is seeking to raise rates. Yet the FOMC continues to stress that the large balance sheet makes the stance of policy more accommodative. How does this accommodation come about? One mechanism stressed by the Fed is that the cumulative purchases of longer-term assets (Treasuries and MBS) lowered long rates more broadly through some sort of portfolio balance mechanism. Michael Woodford and others have argued that QE is theoretically of dubious value at best.

Those who support a large balance sheet argue that using interest on reserves as the policy instrument allows monetary policy to be conducted independent of the size of the balance sheet. Yet if, as the Fed has argued, the large balance sheet is providing

accommodation, that has implications for how the Fed sets the IOR. It would suggest that the policy instrument, IOR, might have to be higher than it would be with a small balance sheet—fewer excess reserves—to achieve any specified degree of accommodation. If that is the case, then how should IOR be set as a function of the size of the balance sheet? Why does it make sense to substitute increases in short-term rates to avoid reducing the balance sheet if you think it is providing accommodation through its pressure on long rates? The Fed has not offered any clues as to how it would calibrate IOR policy depending on the balance sheet.

One possibility is that the effectiveness of QE and thus the balance sheet's impact on monetary policy depend on the composition of the balance sheet. For example, the Fed purchased mostly longer-duration assets in an effort to directly influence long rates or the term premium and purchased MBS to target the housing sector. It might be the case, for example, that as the duration of the Fed's holdings declines with time, the degree of monetary accommodation from the portfolio balance effect diminishes.⁶

CONCLUSIONS

The large effect of unconventional monetary policy on the Fed's balance sheet and on short-term money markets has raised many questions about the future of monetary policy. These are healthy discussions and have opened the door to reconsidering important features of the way the Fed implements policy.

A particularly important and pressing question revolves around the future size and composition of the balance sheet. Some have argued that using interest on reserves as the instrument of monetary policy allows the Fed to maintain a large balance sheet

6. If this is the view of the FOMC, then it should explain it and consider eliminating the reference to the balance sheet in its post-meeting statement.

unconstrained by monetary policy. They argue that this offers an opportunity to improve financial stability and efficiency. But what constraints should be in place on the size and composition of the balance sheet? Advocates of a floor system have yet to offer an answer. As I noted at the beginning, freedom or independence of the central bank must be accompanied by constraints on discretionary authorities. It is best to make those constraints clear at the outset rather than wait for a disaster.

On the other hand, the Fed has argued through the crisis and recession that the large balance sheet is providing accommodation and thus is important for the conduct of monetary policy. In that view, how does one conduct monetary policy with two instruments working through perhaps different channels? With such a complicated framework, it would be important to understand and to communicate to the public and markets how policy would be implemented before adopting such a regime for the longer term.

I have tried to highlight some concerns regarding the Fed's approach to its balance sheet and its choice of operating regimes. Many of these concerns stem from the nature of our institutions and the incentives of political actors and policy makers who must operate within them. A large Fed balance sheet that is untethered to the conduct of monetary policy creates the opportunity and incentive for political actors to exploit the Fed and use its balance sheet to conduct off-budget fiscal policy and credit allocation. Such actions would undermine Fed independence and politicize the Fed to a far greater degree than it currently is. Without changes in the Federal Reserve Act, it would shift the conduct of monetary policy to a more politicized Board of Governors and away from the FOMC. Finally, it seems to require that the Fed play a much larger, directive role in the functioning of short-term money markets, potentially reducing the traditional role of market forces. For these reasons, I think the economy would be better served if the Fed returned to an

operating regime based on a smaller footprint, where the balance sheet is more directly linked to the conduct of monetary policy.

Political independence is an essential element of sound monetary policy decision making. But with that independence must come constraints on broad discretionary authorities that could be subject to political abuse and interference. For example, the Fed should not be allowed to engage in fiscal policy actions that rightly belong to the fiscal authorities. Without carefully established constraints on the size and composition of the Fed's balance sheet, credit allocation and off-budget fiscal policy represent discretionary opportunities ripe for abuses that would undermine the case for political independence. Such authorities are likely to prove detrimental to our institutions and the economy.

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SECTION TWO

Alternatives for Reserve Balances and the Fed's Balance Sheet in the Future

John B. Taylor

Since this is a chapter on the Fed's balance sheet, I begin by looking at the Fed's balance sheet today and reviewing how it has changed in the years since the global financial crisis. I then discuss alternative balance sheet sizes and configurations for reserve balances in the future, and consider alternative ways to get there. I explain why a balance sheet size and configuration for reserve balances in which the short-term interest rate is determined by market forces should be considered for the future as an alternative to one in which the short-term interest rate is administered through the interest payments on excess reserves.