

INTEREST ON RESERVES: HISTORY AND RATIONALE, COMPLICATIONS AND RISKS

Peter N. Ireland

Among the enduring legacies of the 2007–09 financial crisis, interest on excess reserves (IOER) now plays a central role in the Federal Reserve’s policymaking framework. Famous arguments justify paying interest on required (but not excess) reserves on economic efficiency grounds. However, the Fed has used its power to pay IOER to facilitate credit market interventions that extend well beyond those required by its traditional central banking functions—namely, conducting monetary policy to stabilize the aggregate nominal price level and acting as a lender of last resort to illiquid but solvent depository institutions. One must question the wisdom of making IOER a permanent part of the Fed’s toolkit, given the resulting complications and risks.

History and Rationale

George Tolley (1957) and Milton Friedman (1960) first argued that since bank reserves can be created at zero marginal cost within a fiat money regime, economic efficiency dictates that the opportunity cost to banks of holding reserves should be driven to zero as well. Tolley and Friedman also pointed out that one way to satisfy this efficiency condition is for the central bank to pay interest on required

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Peter N. Ireland is the Murray and Monti Professor of Economics at Boston College and a member of the Shadow Open Market Committee. He thanks David Andolfatto for helpful comments on an earlier version of this article. The usual caveat applies.

reserves at a rate approximating those available on other safe and highly liquid short-term assets, such as United States Treasury bills.

Based largely on this economic efficiency argument, it seems, the Financial Services Regulatory Relief Act of 2006 granted the Federal Reserve authority to begin paying interest on bank reserves, though the Act postponed the effective date for its interest-on-reserves provision to October 1, 2011. The Emergency Economic Stabilization Act of 2008 pulled this effective date forward to October 1, 2008. On October 6, 2008, the Federal Reserve Board announced plans to begin paying interest on required and excess reserves at rates 10 and 75 basis points, respectively, below the Federal Open Market Committee's federal funds rate target. Two days later, the Federal Open Market Committee (FOMC) cut its target for the fed funds rate from 2 to 1.5 percent. Thus, on October 9, 2008, a new policy regime took hold, with the Fed paying banks interest at the rate of 1.4 percent on their required reserves and 0.75 percent on their excess reserves.

The Fed's October 6 press release (Federal Reserve Board 2008) offered a mixed rationale for the announced change in regime. Tolley and Friedman's efficiency arguments survived, explaining the higher interest rate on required reserves, which according to the press release would "essentially eliminate the opportunity cost of holding required reserves, promoting efficiency in the banking sector." The press release gave different reasons, however, for paying IOER:

Paying interest on excess balances should help establish a lower bound on the federal funds rate. The payment of interest on excess reserves will permit the Federal Reserve to expand its balance sheet as necessary to provide the liquidity necessary to support financial stability while implementing the monetary policy that is appropriate in light of the System's macroeconomic objectives of maximum employment and price stability.¹

In late 2007 and early 2008, the Federal Reserve successfully financed its Term Auction Facility and its lending to facilitate JP Morgan's purchase of Bear Stearns from sales of U.S. Treasury securities from its own portfolio. Nevertheless, the failure of Lehman Brothers and bailout of AIG in the fall of 2008 required far more

¹Walter and Courtois (2009), Goodfriend (2011), and Selgin (2016) provide more detailed interpretations and analyses of the Board's statements.

emergency lending, which the Fed could finance only by creating new reserves. Ordinarily, reserve creation puts downward pressure on the fed funds rate. However, by paying IOER, the Fed hoped to place a floor beneath which the funds rate could not fall, since no bank will lend reserves in the federal funds market at rates below what it can receive on its deposits at the Fed.

Elsewhere I have provided a monetarist perspective of the Fed's decision to start paying interest on reserves (Ireland 2017). My view, which is consistent with the Fed's, interprets the fed funds rate as a market rate of interest rather than a policy tool, and emphasizes how the central bank uses its role as monopoly supplier of base money to stabilize the price level. Specifically, by paying IOER, the Fed shifted the demand curve for reserves to the right. This increase in demand allowed the Fed to simultaneously shift the supply curve for reserves to the right as required by emergency lending without also generating an increase in the aggregate nominal price level.

In hindsight, therefore, two aspects of the Fed's 2008 decision to begin paying IOER stand out. First, it made monetary policy *tighter* than it would have been, as measured either by the higher fed funds rate or the lower equilibrium price level implied by the shifting but still intersecting demand and supply curves for reserves. The use of IOER to minimize the effects of emergency lending on the price level seemed prudent. However, it turned out to be a mistake. As Hetzel (2012) points out, monetary policy ought to have been substantially more accommodative than it was throughout 2008, considering the severe deflationary recession that followed. Second, the Fed adopted its interest on reserves policy in 2008 largely to facilitate interventions in private credit and capital markets that, as argued by Goodfriend (2011), extended well beyond those associated with its traditional role as lender of last resort to depository institutions.

Consistent with this interpretation, Federal Reserve Chairman Ben Bernanke (2009a) described the central bank's large-scale asset purchase programs, introduced in fall 2008 and expanded in early 2009, as a series of credit market interventions rather than a continuous effort to stabilize the price level by increasing the supply of reserves and base money:

The Federal Reserve's approach to supporting credit markets is conceptually distinct from quantitative easing (QE), the policy approach used by the Bank of Japan from 2001 to 2006.

Our approach—which could be described as “credit easing”—resembles quantitative easing in one respect: It involves an expansion of the central bank’s balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves, which are the liabilities of the central bank; the composition of loans and securities on the asset side of the central bank’s balance sheet is incidental. Indeed, although the Bank of Japan’s policy approach during the QE period was quite multifaceted, the overall stance of its policy was gauged primarily in terms of its target for bank reserves. In contrast, the Federal Reserve’s credit easing approach focuses on the mix of loans and securities that it holds and how this composition of assets affects credit conditions for households and businesses.

IOER took on yet another role in the aftermath of these large-scale asset purchase programs. As early as July 2009, in his “Semiannual Monetary Policy Report to Congress,” Bernanke (2009b) singled out IOER as the “most important tool” that the Fed could use to raise interest rates—thereby normalizing its monetary policy stance—while retaining on its balance sheet longer-term assets acquired during and after the crisis. Indeed, since December 2015, the FOMC has increased its target for the fed funds rate nine times, from a range between 0 and 0.25 percent to its current range between 2.25 and 2.50 percent, while continuing to maintain a balance sheet significantly larger than before the crisis, by increasing in similar steps the interest rates it pays on required and excess reserves.

Ireland (2017) outlines, again from a monetarist perspective, how under the floor system the Fed is using today, increases in the fed funds rate brought about through increases in IOER work to shift the demand and supply curves for bank reserves in ways that allow the Fed to continue using its role as monopoly supplier of reserves to stabilize the aggregate price level. It is true, therefore, that IOER is helping the Fed achieve its conventional central banking mandate. But it is also true that IOER allows the Fed to pursue those traditional objectives while maintaining an outsized role in credit markets through its large portfolio that includes, not only longer-term U.S. Treasury bonds, but substantial holdings of U.S. government agency mortgage-backed securities as well. By paying IOER at rates close to if not above those available on other money market instruments, the

Fed has satisfied Tolley (1957) and Friedman's (1960) efficiency criterion by driving the user cost of reserves to zero. But neither Tolley nor Friedman anticipated the complications and risks that arise when the Fed uses its power to create reserves to allocate credit as well as to stabilize the aggregate nominal price level.

Complications and Risks

Because the rationale for IOER has changed so much over time, the details of the legislation granting the Federal Reserve power to pay interest on reserves has inadvertently given rise to two sets of complications in the use of this new policy tool.

First, section 201 of the Financial Services Regulatory Relief Act of 2006 originally provided the Fed authority to pay interest on "balances maintained at a Federal Reserve bank by or on behalf of a depository institution." Section 203 of the same Act set October 1, 2011 as the effective date for this amendment to the Federal Reserve Act. Section 128 of the Emergency Economic Stabilization Act of 2008 then amended section 203 of the earlier Act by advancing the effective date to October 1, 2008.

The operational complication arises because other, non-depository institutions, including U.S. government-sponsored enterprises (GSEs) and Federal Home Loan Banks, are also eligible to hold deposits at Federal Reserve banks but remain ineligible, according to the word of law, to receive interest payments on those deposits. In theory, banks could borrow reserves from those non-bank institutions at the fed funds rate and hold the reserves in their own interest-earning accounts at the Fed. This arbitrage activity would then keep the fed funds rate, if not above then at least very close to, IOER. In practice, however, a myriad of regulatory and institutional constraints has limited banks' ability and willingness to exploit this arbitrage opportunity. And for reasons as yet unknown, the Federal Reserve itself appears to have stymied attempts by a newly organized "narrow bank," described by Derby (2018), Koning (2018), and Selgin (2018b) among others, to provide a free-market solution to this problem.

As a result, in the Fed's new system, the floor on the funds rate continues to be set not by IOER, but rather by the interest rate on overnight reverse repurchase agreements (ON RRP) that the central bank designed to pay interest on the short-term obligations it

issues, not just to GSEs and Federal Home Loan Banks, but to numerous other nonbank institutions, including money market mutual funds.

Goodfriend (2015: 8) notes:

The Fed's use of ON RRP is unfortunate because the use of managed liabilities on a large scale via ON RRP addresses an *operational issue* by violating an *implicit principle of central banking* in the United States—that where possible the central bank should minimize its interference in financial intermediation and credit allocation in managing the monetary system.

In other words, an oversight in the original legislation, not allowing the Fed to pay interest on all deposits held at the Federal Reserve banks, has inadvertently led to the creation of ON RRP that further expand the Fed's reach into private financial markets. This should be easy for Congress to fix, exactly as suggested by Goodfriend (2015), through legislative amendments that either allow the Fed to pay interest on deposits held by the GSEs and Federal Home Loan Banks or restrict the Federal Reserve banks to accept deposits only from the depository institutions already authorized to receive interest on reserves. Alternatively, if the Fed were to allow it, the free market could fix this, too, through the operation of narrow banks that accept deposits from nonbank financial institutions and hold the funds as reserves at the Fed.

Second, section 201 of the Financial Services Regulatory Relief Act of 2006 granted the power to set interest rates on reserves to the Federal Reserve Board of Governors, not to the FOMC. This allocation of power makes sense if the principal rationale for paying interest on reserves is the efficiency argument originally articulated by Tolley and Friedman. As noted by Plosser (2017) and Selgin (2018a), however, now that IOER is being used as one of the key levers in the Fed's floor system for targeting the federal funds rate, a potential problem of governance arises. What happens if a majority on the FOMC vote to change the fed funds rate target, but a majority on the Federal Reserve Board refuses to change IOER? Again, this problem has an easy fix: Congress should amend the 2006 Act, reassigning to the entire FOMC the power to set IOER.

There are bigger risks, however, posed by the Fed's new ability to expand its balance sheet seemingly without limit, using its authority to pay IOER. These risks are both economic and political.

Economically, after specifically buying longer-term U.S. Treasury and government agency bonds in its large-scale asset purchase programs, the Fed has exposed itself to interest rate risk. In what Goodfriend (2014) has aptly called "monetary policy as a carry trade," the Federal Reserve now borrows short and lends long, earning profits so long as the yield curve continues to slope upward but facing losses if the yield curve inverts. Studies by Carpenter et al. (2013), Greenlaw et al. (2013), and Christensen, Lopez, and Rudebusch (2015) present simulations suggesting these economic risks are manageable. Yet it is still worth considering that similar risks were once faced—and presumably deemed manageable—at Bear Stearns and Lehman Brothers. As Bassetto and Messer (2013) clearly and skillfully show, the Fed could minimize the economic risks posed by its expanded balance sheet by matching its interest-bearing liabilities—reserves and reverse repurchase agreements—with interest-earning assets of similar maturity, such as very short-term U.S. Treasury bills.

The political risks of the Fed's ability to expand its balance sheet almost indefinitely loom even larger. Reserves and reverse repurchase agreements represent a low-cost source of funds that the Fed has already used to finance a large portfolio of mortgage-backed securities, thereby actively channeling funds to a specific sector of the private economy. And the Fixing America's Surface Transportation Act of 2015 drew directly on the Fed's surplus capital, earned as profits from its carry trade, to help fund federal highway spending; the Bipartisan Budget Act of 2018 did the same to finance more general increases in government spending. The risks of pushing still further are described most vividly by Plosser (2017: 8):

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. . . . Congress would be free to lobby the Fed through political pressure or legislation to manage the portfolio for political ends. . . . 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.

One way of managing this risk would be for the Fed to commit to a “Treasury only” policy according to which, in the future, it agrees to purchase only direct obligations of the U.S. Treasury. Then, specific spending initiatives or credit market interventions could be undertaken only through an act of Congress. But a better way might be to remove temptation altogether, by abandoning IOER.

Conclusion

In modern central banking as in modern design, it is often true that less is more: monetary policy works best when the central bank’s focus is narrow. By using its monopoly supply of base money to stabilize the aggregate price level, the central bank creates the most favorable environment within which the private economy adjusts most efficiently to shocks and remains closest to its long-run growth path. Though originally conceived of as a tool for promoting further economic efficiency, IOER has threatened the Fed’s ability to remain focused on its core functions.

Upon adoption in the midst of the financial crisis, IOER made monetary policy perversely less accommodative than it should have been, contributing to the recession that followed. Indeed, Dutkowsky and VanHoose (2018) point out that reducing IOER more rapidly than the federal funds rate would make Fed policy more expansionary when the next downturn threatens. Moreover, even if the Fed’s IOER policy has mitigated the impact of large increases in base money on the price level, it has left the central bank with a large balance sheet—exposing the Fed to significant economic losses and political pressures, all of which could lead to *higher* inflation down the road.

Finally, IOER, as implemented, led the Fed to become more deeply entrenched in financial markets and more actively engaged in the allocation of credit. As Taylor (2016: 719) notes, IOER “enables the Fed to be more like a discretionary multipurpose institution rather than the rule-like limited purpose institution that

has delivered good policy in the past and that can deliver good policy in the future.”

Having previously proposed a system involving interest on required reserves, Friedman (1969) showed that the same efficiency condition could be achieved by asking the central bank to steadily contract the money supply to produce enough aggregate price deflation to reduce nominal interest rates to zero. Zero nominal interest rates are, of course, linked more closely in central bankers’ minds to the Keynesian liquidity trap than to Friedman’s rule for the “optimum quantity of money.” Nevertheless, outcomes approximating the Friedman rule can still be achieved by policies that simply aim to keep inflation low and stable. The best policy would be for the Fed to shrink its balance sheet as quickly as possible, eliminate IOER and ON RRP, and restore the emphasis on long-run price stability.

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