

The Fed's New Tools Monetary Policy in the 21st Century

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Most investors are unaware that we have entered a period of unprecedented change in American monetary policy. For the past 80 years, the Federal Reserve has relied upon the familiar fed funds rate to adjust interest rates. Since 2008, extraordinary circumstances have forced the Fed to take unusual steps to bolster the economy, such as instituting three rounds of quantitative easing (QE). In the process, they have gutted the existing mechanisms of monetary policy. In their place are a handful of new tools, mostly untested, that the Fed believes will be able to effectively move and control interest rates.

This paper is a primer on the Federal Reserve, monetary policy, and the path to interest rate normalization. Section One provides some background on the Fed, how it functions, and the creation of money. Section Two describes the Fed's new tools and normalization. In Section Three, we discuss some historical precedents that may give us some insight into the Fed's actions.

For further information, there are citations and links throughout this paper. We highly recommend the following two articles, which give an excellent overview of these developments.

["The Fed's Policy Mechanics Retool for a Rise in Interest Rates." The New York Times, September 13, 2015.](#)

["Fed Exit Plan May Be a Bumpy Ride for Investors." Marketwatch, September 16, 2014.](#)

Section One: The Federal Reserve

Congress has given the Fed a “dual mandate”: to achieve maximum employment and low inflation. It also has a third, unofficial objective to maintain reasonable and stable interest rates. In pursuit of these policy goals, the Federal Reserve takes actions that affect the money supply of the U.S. economy. Historically, the Fed has had three main tools:

Reserve Requirements: this is the amount of money that depository institutions must hold in reserve as collateral against their loans. The reserve requirement is a fraction of banks’ total deposits – currently 10%. Reserves that contribute to the 10% requirement are called “required reserves” – anything beyond 10% is held as “excess reserves.” In a typical interest rate environment, banks will meet their required reserve obligations and reduce their holdings of excess reserves. The less money banks are required to hold as reserves, the more they can lend to the public. Technically, the Fed can change the reserve requirement whenever it likes. The last time the Fed moved this rate was 1992, from 12% to 10%. In the 1930s, it was as high as 26% - more on that later. In the modern day, the Fed avoids using this tool, as it can have jarring effects on banks’ balance sheets.

Open Market Operations and the Fed Funds Rate: This is the most well known tool and the Fed’s preferred method for influencing interest rates. First, the Fed sets a target for short-term interest rates. It does this by targeting the fed funds rate – that is, the interest rate that banks charge one another for overnight loans. Because banks’ balance sheets are constantly in flux, they are often required to take out overnight loans from other banks to meet their reserve requirements. So how does the Fed affect this rate? By changing the overall level of reserves available to banks. The Fed either buys or sells short-term government bonds, which banks pay for with their bank reserves. This affects their ability to lend to one another and thus shifts the rate they charge for overnight loans. Banks then use the Fed Funds rate as a baseline for other short-term loans, and interest rates throughout the economy are affected. Example: The Fed decides to lower the Fed Funds rate by 25 BP. It will buy securities from banks and flood the system with reserves. Now that banks have more reserves, competition increases and rates decrease.

The Discount Rate: this is the interest rate that institutions are charged to borrow from the Federal Reserve. The Fed sets this rate higher than the target federal funds rate because they would prefer that banks borrow from one another. This is the “lender of last resort” rate. In the modern day, it is viewed as a sign of weakness

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for a firm to borrow from the Fed at the discount rate. However, during a financial crisis, this tool becomes an important way to provide liquidity to the financial sector. The discount rate always moves in tandem with the Fed Funds target rate.

How Do These Tools Affect the Money Supply?

It is often said that the Fed “prints money.” But this is a misnomer – the Fed simply sets the conditions for *commercial banks* to create money. Here’s an example:

Let’s say a bank has just sold a security worth \$100 to the Fed. The Fed credits their account with \$100 of reserves. At this point, all \$100 are held as excess reserves. The bank does what it does best, and decides to make a loan. However, due to the reserve requirement, the bank cannot loan out all \$100. So the bank makes a loan of \$90, and holds \$10 in reserve with the Fed.

The borrower withdraws the money and spends it. Where does it go? That \$90 ends up on deposit at another bank! So the cycle continues. This bank also makes a loan of \$81 and keeps \$9 on reserve. As the money moves through the economy, it is loaned, deposited, and reloaned many times. If you tally the value of the loans, \$90+\$81+\$72 etc. all the way to the final cents, that initial deposit of \$100 creates \$1000 of loans and \$100 of required reserves. In other words, \$100 of reserves expands the money supply by \$1000. Naturally, this is just an example – banks aren’t really making loans of just \$90. But in aggregate, this is how money is created.

If the reserve requirement is raised to, say 20%, then the cumulative mathematical effect is much smaller: \$100 of excess reserves would create just \$500 of deposits. An important concept here is the money multiplier, which answers the question: by how much does the money supply expand with each additional dollar of reserves? This is easily calculated by taking the reciprocal of the reserve requirement. At a 10% requirement, $1/0.1 =$ a money multiplier of 10. At a 20% requirement, $1/0.2 =$ a money multiplier of 5.

Because of the money multiplier effect, the reserve requirement is a very potent tool in monetary policy and is very rarely adjusted in modern times. Instead, the Fed focuses on increasing or decreasing the level of reserves in the banking system. To affect the money supply, the Fed simply has to make a splash. The money multiplier will turn that splash into a wave. Open market operations are therefore the normal tool used by the Fed to affect the money supply. If, for instance, the Fed buys large quantities of securities, banks will be flush with cash and eager to lend it out, stimulating the economy and rapidly increasing the money supply. If inflation becomes a problem, the

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Fed can sell securities to reduce bank reserves; instead of lending money, banks will begin calling in loans to meet their reserve requirements, contracting the money supply.

Further Reading:

["14 Questions About the Federal Reserve You Were Too Embarrassed to Ask" from Business Insider](#)

["Monetary Policy and the Federal Reserve" by the Congressional Research Service](#)

["Reserve Requirements: A Modern Perspective" from the Federal Reserve Bank of Atlanta \(Technical\)](#)

Section Two: The Economy Today

In 2009 in an Op-Ed piece for the Wall Street Journal, famed economist and “father” of supply-side economics Doctor Arthur Laffer warned that the sky was falling. “We can expect rapidly rising prices and much, much higher interest rates over the next four or five years, and a concomitant deleterious impact on output and employment not unlike the late 1970s.” ([Link - The Wall Street Journal](#)) Of course, even a casual observer can tell you that, instead of 1970s America, we got 1990s Japan. As of September 2015, year-over-year inflation is just 0.2%, and the interest rate on the 10-Year Treasury is about 2.15%. And in a recent interview with Business Insider, Dr. Laffer admitted he was wrong ([Link - Business Insider](#).) Or rather, he was partially wrong. As it turns out, he was actually on to something.

Where is the Inflation?

Something strange started happening in the aftermath of the “Great Recession”: banks suddenly started holding excess reserves. From a combination of QE1, QE2, Operation Twist, and QE3, the Fed bought \$3.2 trillion worth of securities and paid for them in reserves. Banks are now holding the vast majority of those reserves in their accounts - \$2.5 trillion worth! ([Link - The Federal Reserve](#)). This is perhaps what has Dr. Laffer so worried: banks should be lending their reserves and creating \$25 trillion of deposits in a roughly \$18 trillion economy – in other words, creating rampant inflation. But if the banks aren’t lending, there’s no money multiplier, and therefore no inflation. So what’s changed?

As always, there are many reasons ([Link - The Federal Reserve Bank of Cleveland](#)). First, banks aren’t lending because businesses are still shoring up their balance sheets. Second, they don’t have as much demand for loans because consumer spending is still depressed. Third, banks are facing a stricter regulatory environment and are being expected to justify loans that would have been very easy to approve before the recession. And fourth, like the mid-1930s, the banks are afraid that without liquidity they will be vulnerable to another recession.

There is another, more complex explanation, and it has to do with recent developments in Fed policy. In 2008, the Federal Reserve received Congressional authority to start paying interest on reserves (IOR) ([Link - The Federal Reserve Bank of Cleveland](#)). The theory is that, since banks are required to hold on to the reserves, they should be compensated for the funds they are not legally allowed to lend.

Currently, the Fed pays just 25 basis points on bank reserves – very little. However, compare that the Federal Funds rate, which currently hovers around 14 BP,

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and you will discover the culprit. Banks are earning a risk-free return on their reserves, which gives them very little incentive to lend them out. Without lending, you have no inflation.

The Fed's New Tools

IOR is the first of the Fed's "new tools", and the most important. In fact, it will be replacing open market operations as the Fed's primary monetary policy tool. It is easy to surmise the reason why – \$2.5 trillion of reserves. With so much liquidity in the market, the Fed can't drain all of the reserves without completely unwinding QE. But if they try to announce a new interest rate (say, 50 BP) and keep IOR at 25 BP, then banks will rapidly lend out their reserves to take advantage of the new rate. IOR is designed to leash in these reserves.

The Fed has a novel plan to move rates ([Link: How the Fed Will Normalize Interest Rates](#)). They will create a "corridor", or a range of two numbers that short-term rates will fluctuate between. First, they will announce a new fed funds target rate. In the past, they would announce a single number; this time, they will announce a range, for example, of 25-50 BP. Next, they will set a new interest rate on reserves. They will set this number as the ceiling of the range – in our example, they will set IOR to 50 BP. The primary purpose of IOR is to give banks an incentive to hold on to their reserves.

We have our ceiling – what about the floor? The Fed has determined that even when IOR is at 50 BP, real rates will sink below that rate. This is because most financial institutions are not member banks and thus are not eligible for IOR. Money market funds, securities lenders, Fannie Mae and Freddie Mac – they all need to make short-term investments. The Fed needs a way to transmit its short-term rate preferences to the broader market. So the Fed has created a second tool – reverse repurchase agreements, or reverse repos.

Very simply, the Fed offers non-bank institutions short-term treasuries for overnight loans at a rate above the floor. This will have the effect of propping up short-term interest rates to keep them from sinking back down to 0%. Over the last two years, the Fed has been experimenting with this tool, varying the amount offered, the interest rate, and other terms. Their current plan is to offer about \$300 billion of reverse repo, adding more money as necessary to meet market demand. ([Link: FAQ on Overnight Reverse Repos](#))

The Fed has one more tool, a long-term option – its portfolio of bonds and mortgage-backed securities. Right now, the Fed intends to hold on to their portfolio and is actively reinvesting the principal as they their securities mature. (Side note: they are

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not reinvesting the interest. The Fed passes remits all profits to the US Treasury.) If push come to shove, the Fed has the option of initiating a “quantitative tightening”, either by choosing to let their securities mature without reinvesting the principal, or by selling them on the open market. Of course, they are avoiding this option, as the market would correctly interpret such a move as outright monetary tightening.

What Happens Next?

We have described the Fed’s infrastructure for moving rates, using IOR as a ceiling and reverse repos to keep rates from slipping beneath the floor. The good news is that the Fed has dedicated itself to the task of raising rates at the right time and has announced it will take whatever steps necessary to adjust rates to the new target.

The bad news is that we are sailing into uncharted waters. There is an unprecedented amount of liquidity in the banking system, and controlling it with the normal mechanisms is virtually impossible. The Fed has yet to answer the fundamental question of whether its tools will effectively move rates from their current level. In many ways, we will not find out until they try.

Further Reading:

[Ben Bernanke: Federal Reserve’s Exist Strategy \(Corridor system explained in footnote #9\)](#)

[Federal Reserve Governor Alan Blinder explains the Fed’s tools and exit strategy \(Technical\).](#)

[PowerPoint: Visualizing the Federal Reserve’s exit strategy \(Corridor system: slides 20-21\)](#)

Section Three: Stories about Central Banking

There is much to learn about the future of monetary policy by examining the Fed's past actions and mistakes. For instance, Former Fed Chairman Ben Bernanke devoted much of his career to studying the causes of Great Depression. Economists Milton Friedman and Anna Schwartz famously argued that the Great Depression was completely avoidable – the Federal Reserve failed to bolster the money supply and give liquidity to their member banks, forcing an economic collapse. In 2002, Bernanke, then a Fed Governor, admitted in a speech honoring Milton Friedman: “Regarding the Great Depression: you’re right, we did it. We’re very sorry. But thanks to you we won’t do it again.” ([Link: The Federal Reserve.](#))

What did he mean by that?

The Case of Mississippi, 1929-1930

An interesting yet accidental experiment happened in 1929 at the beginning of the Great Depression ([Link: The National Bureau of Economic Research](#)). Caldwell and Company, headquartered in Nashville, TN, invested too heavily in poor quality securities and began to take massive losses. The conglomerate drained funds from its subsidiaries to cover the losses until eventually the entire operation collapsed. Bank runs became common throughout the South because depositors’ funds were not insured. As a banking crisis spread throughout the South, various Federal Reserve Banks were forced to respond.

The northern half of Mississippi was a part of the Eighth District headquartered in St. Louis, while the southern half was a member of the Sixth District, headquartered in Atlanta. The St. Louis Fed had a narrow view of their responsibilities and refused to act as a “lender of last resort” for many non-member banks, precipitating waves of bank runs across Northern Mississippi. The Atlanta Fed, however, quickly expanded liquidity facilities and helped banks meet their funding needs. In southern Mississippi, recovery occurred soon after the crisis. In northern Mississippi, the banking system fell apart, lending almost ceased, and unemployment rose as businesses were lost.

Unfortunately, throughout the 1929-1933 period, the mentality of the St. Louis Fed often prevailed and banks were left to their own devices to meet their funding needs. No doubt this episode of American history is one reason the Fed moved so quickly to offer liquidity to the banking system in 2008.

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Reserve Requirements and the Recession of 1937-1938

On a grander scale, the Fed almost destroyed the economy again in the late 1930s, even as the economy was pulling out of the Great Depression ([Link: The Federal Reserve Bank of Atlanta](#)). In 1936, the new Fed Chairman Marriner Eccles was worried about the buildup of excess reserves held by the banks. Banks were holding \$3 billion of required reserves and \$3 billion of excess reserves. At a reserve requirement of 13%, Eccles recognized that the excess reserves could potentially create \$24 billion of new money in an economy of \$84 billion. So over the course of 1937-38, the Federal Reserve bumped up the reserve requirement to 26% to “mop up” excess reserves.

Chairman Eccles’ mistake was assuming that the banks didn’t need the reserves. But in the early 1930s, thousands of banks had failed because they lacked the liquidity to deal with bank runs. When the Federal Reserve suddenly doubled reserve requirements, the banks stopped making loans in order to build up their excess reserves again. Without a cushion of liquidity, the banks didn’t feel safe lending, and without lending, businesses found themselves without the funds to continue operations. This pushed the economy back into a recession that caused an increase in unemployment of 5% and a drop in GDP of 10%.