

7.5: Controlling the Money Supply

Learning Objective

1. Learn the mechanisms (or tools) the U.S. Federal Reserve Bank can use to control the U.S. money supply.

The size of the money stock in a country is primarily controlled by its central bank. In the United States, the central bank is the Federal Reserve Bank while the main group affecting the money supply is the Federal Open Market Committee (FOMC). This committee meets approximately every six weeks and is the body that determines monetary policy. There are twelve voting members, including the seven members of the Fed Board of Governors and five presidents drawn from the twelve Federal Reserve banks on a rotating basis. The current Chairman of the Board of Governors is **Ben Bernanke** (as of January 2010). Because Bernanke heads the group that controls the money supply of the largest economy in the world, and because the FOMC's actions can have immediate and dramatic effects on interest rates and hence the overall United States and international economic condition, he is perhaps the most economically influential person in the world today. As you'll read later, because of his importance, anything he says in public can have tremendous repercussions throughout the international marketplace.

The Fed has three main levers that can be applied to affect the money supply within the economy: (1) open market operations, (2) **reserve requirement** changes, and (3) changes in the **discount rate**.

The Fed's First Lever: Open Market Operations

The most common lever used by the Fed is open market operations. This refers to Fed purchases or sales of U.S. government Treasury bonds or bills. The "open market" refers to the secondary market for these types of bonds. (The market is called secondary because the government originally issued the bonds at some time in the past.)

When the Fed purchases bonds on the open market it will result in an increase in the money supply. If it sells bonds on the open market, it will result in a decrease in the money supply.

Here's why. A purchase of bonds means the Fed buys a U.S. government Treasury bond from one of its primary dealers. This includes one of twenty-three financial institutions authorized to conduct trades with the Fed. These dealers regularly trade government bonds on the secondary market and treat the Fed as one of their regular customers. It is worth highlighting that bonds sold on the secondary open market are bonds issued by the government months or years before and will not mature for several months or years in the future. Thus when the Fed purchases a bond from a primary dealer in the future, when that bond matures, the government would have to pay back the Fed, which is the new owner of that bond.

When the **open market operation (OMO)** purchase is made, the Fed will credit that dealer's reserve deposits with the sale price of the bond (e.g., \$1 million). The Fed will receive the IOU, or "I owe you" (i.e., bond certificate), in exchange. The money used by the Fed to purchase this bond does not need to come from somewhere. The Fed doesn't need gold, other deposits, or anything else to cover this payment. Instead, the payment is created out of thin air. An accounting notation is made to indicate that the bank selling the bond now has an extra \$1 million in its reserve account.

At this point, there is still no change in the money supply. However, because of the increase in its reserves, the dealer now has additional money to lend out somewhere else, perhaps to earn a greater rate of return. When the dealer does lend it, it will create a demand deposit account for the borrower and since a demand deposit is a part of the M1 money supply, money has now been created.

As shown in all introductory macroeconomics textbooks, the initial loan, once spent by the borrower, is ultimately deposited in checking accounts in other banks. These increases in deposits can in turn lead to further loans, subject to maintenance of the bank's deposit reserve requirements. Each new loan made creates additional demand deposits and hence leads to further increases in the M1 money supply. This is called the money multiplier process. Through this process, each \$1 million bond purchase by the Fed can lead to an increase in the overall money supply many times that level.

The opposite effect will occur if the Fed sells a bond in an OMO. In this case, the Fed receives payment from a dealer (as in our previous example) in exchange for a previously issued government bond. (It is important to remember that the Fed does not issue government bonds; government bonds are issued by the U.S. Treasury department. If the Fed were holding a mature government bond, the Treasury would be obligated to pay off the face value to the Fed, just as if it were a private business or bank.) The payment made by the dealer comes from its reserve assets. These reserves support the dealer's abilities to make loans and in turn to

stimulate the money creation process. Now that its reserves are reduced, the dealer's ability to create demand deposits via loans is reduced and hence the money supply is also reduced accordingly.

A more detailed description of open market operations can be found at New York Federal Reserve Bank's Web site at <http://www.ny.frb.org/aboutthefed/fedpoint/fed32.html>.

The Fed's Second Lever: Reserve Requirement Changes

When the Fed lowers the reserve requirement on deposits, the money supply increases. When the Fed raises the reserve requirement on deposits, the money supply decreases.

The reserve requirement is a rule set by the Fed that must be satisfied by all depository institutions, including commercial banks, savings banks, thrift institutions, and credit unions. The rule requires that a fraction of the bank's total transactions deposits (e.g., this would include checking accounts but not certificates of deposit) be held as a reserve either in the form of coin and currency in its vault or as a deposit (reserve) held at the Fed. The current reserve requirement in the United States (as of December 2009) is 10 percent for deposits over \$55.2 million. (For smaller banks—that is, those with lower total deposits—the reserve requirement is lower.)

As discussed above, the reserve requirement affects the ability of the banking system to create additional demand deposits through the money creation process. For example, with a reserve requirement of 10 percent, Bank A, which receives a deposit of \$100, will be allowed to lend out \$90 of that deposit, holding back \$10 as a reserve. The \$90 loan will result in the creation of a \$90 demand deposit in the name of the borrower, and since this is a part of the money supply M1, it rises accordingly. When the borrower spends the \$90, a check will be drawn on Bank A's deposits and this \$90 will be transferred to another checking account, say, in Bank B. Since Bank B's deposits have now risen by \$90, it will be allowed to lend out \$81 tomorrow, holding back \$9 (10 percent) as a reserve. This \$81 will make its way to another bank, leading to another increase in deposits, allowing another increase in loans, and so on. The total amount of demand deposits (*DD*) created through this process is given by the formula

$$DD = \$100 + (.9)\$100 + (.9)(.9)\$100 + (.9)(.9)(.9)\$100 + \dots$$

This simplifies to

$$DD = \$100 / (1 - 0.9) = \$1,000$$

or

$$DD = \$100 / RR$$

where *RR* refers to the reserve requirement.

This example shows that if the reserve requirement is 10 percent, the Fed could increase the money supply by \$1,000 by purchasing a \$100 Treasury bill (T-bill) in the open market. However, if the reserve requirement were 5 percent, a \$100 T-bill purchase would lead to a \$2,000 increase in the money supply.

However, the reserve requirement not only affects the Fed's ability to create new money but also allows the banking system to create more demand deposits (hence more money) out of the total deposits it now has. Thus if the Fed were to lower the reserve requirement to 5 percent, the banking system would be able to increase the volume of its loans considerably and it would lead to a substantial increase in the money supply.

Because small changes in the reserve requirement can have substantial effects on the money supply, the Fed does not use reserve requirement changes as a primary lever to adjust the money supply.

A more detailed description of open market operations can be found at New York Federal Reserve Bank Web site at <http://www.ny.frb.org/aboutthefed/fedpoint/fed45.html>.

The Fed's Third Lever: Discount Rate/Federal Funds Rate Changes

When the Fed lowers its target federal funds rate and discount rate, it signals an expanded money supply and lower overall interest rates.

When the Fed raises its target federal funds rate and discount rate, it signals a reduced money supply and higher overall interest rates.

In news stories immediately after the FOMC meets, one is likely to read that the Fed raised (or lowered) interest rates yesterday. For many who read this, it sounds as if the Fed “sets” the interest rates charged by banks. In actuality, the Fed only sets one interest rate, and that is the discount rate. The rate that is announced every month is not the discount rate, but the federal funds rate. The **federal funds rate** is the interest rate banks charge each other for short-term (usually overnight) loans. The Fed does not actually set the federal funds rate, but it does employ open market operations to target this rate at a desired level. Thus what is announced at the end of each FOMC meeting is the target federal funds rate.

The main reason banks make overnight loans to each other each day is to maintain their reserve requirements. Each day some banks may end up with excess reserves. Other banks may find themselves short of reserves. Those banks with excess reserves would prefer to loan out as much as possible at some rate of interest rather than earning nothing. Those banks short of reserves are required by law to raise up their reserves to the required level. Thus banks lend money to each other each night.

If there is excess demand for money overnight relative to supply, the Fed keeps the discount window open. The discount window refers to a policy by the Fed to lend money on a short-term basis (usually overnight) to financial institutions. The interest rate charged on these loans is called the discount rate. Before 2003, banks needed to demonstrate that they had exhausted all other options before coming to the discount window. After 2003, the Fed revised its policies and set a primary credit discount rate and a secondary credit discount rate. Primary credit rates are set 100 basis points (1 percent) above the federal funds rate and are available only to very sound, financially strong banks. Secondary credit rates are set 150 basis points above the federal funds target rate and are available to banks not eligible for primary credit. Although these loans are typically made overnight, they can be extended for longer periods and can be used for any purpose.

Before the changes in discount window policy in 2003, very few banks sought loans through the discount window. Hence, it was not a very effective lever in monetary policy.

However, the announcement of the federal funds target rate after each FOMC meeting does remain an important signal about the future course of Fed monetary policy. If the FOMC announces a lower target federal funds rate, one should expect expanded money supply, perhaps achieved through open market operations. If the FOMC announces a higher target rate, one should prepare for a more **contractionary monetary policy** to follow.

A more detailed description of the discount window can be found on the New York Federal Reserve Bank Web site at <http://www.ny.frb.org/aboutthefed/fedpoint/fed18.html>. For more information about federal funds, go to <http://www.ny.frb.org/aboutthefed/fedpoint/fed15.html>.

Key takeaways

- When the Federal Reserve Bank (a.k.a. “Federal Reserve,” or more informally, “the Fed”) purchases bonds on the open market it will result in an increase in the U.S. money supply. If it sells bonds in the open market, it will result in a decrease in the money supply.
- When the Fed lowers the reserve requirement on deposits, the U.S. money supply increases. When the Fed raises the reserve requirement on deposits, the money supply decreases.
- When the Fed lowers its target federal funds rate and discount rate, it signals an expanded U.S. money supply and lower overall interest rates.
- When the Fed raises its target federal funds rate and discount rate, it signals a reduced U.S. money supply and higher overall interest rates.

exercise

1. **Jeopardy Questions.** As in the popular television game show, you are given an answer to a question and you must respond with the question. For example, if the answer is “a tax on imports,” then the correct question is “What is a tariff?”
 - Of *increase, decrease, or no change*, the effect on the money supply if the central bank sells government bonds.
 - Of *increase, decrease, or no change*, the effect on the money supply if the central bank lowers the reserve requirement.
 - Of *increase, decrease, or no change*, the effect on the money supply if the central bank lowers the discount rate.
 - The name given to the interest rate charged by the Federal Reserve Bank on loans it provides to commercial banks
 - The name given to the interest rate charged by commercial banks on overnight loans made to other banks.

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