

Reserve Requirement

by Sophia



WHAT'S COVERED

This tutorial will cover the classification of money according to its liquidity into the categories of M0, M1, and M2. We will revisit the Federal Open Market Committee, or FOMC, and discuss how the reserve requirement is one of the tools used by the FOMC to control how much money banks are required to keep on reserve.

Our discussion breaks down as follows:

1. What Is Money?
2. Liquidity: M0, M1, and M2
3. FOMC
4. Fractional Reserve System
5. Reserve Requirement
6. Money Creation

1. What Is Money?

As a reminder, money serves three functions:

Function of Money	Purpose
Medium of Exchange	Used as an intermediary to facilitate non-barter based trade; in other words, it allows us to get what we want (e.g., debit card, cash, check)
Store of Value	Has a recognized value that can be stored and retrieved
Unit of Account	Allows comparison of the value of different items; used in financial transactions and record keeping

So, what is money? Most people tend to think of money as bills and coins. However, if money is anything that fits those three functions and allows us to get what we want, would checks and debit cards also be considered

money? What else could it be?

2. Liquidity: M0, M1, and M2

Let's briefly touch upon the concept of liquidity. Depending on how easy or difficult it is to spend a certain type of money, we can classify it accordingly.

Some forms of money, like physical cash, are very easy to go out and spend right now. This is an extremely liquid form of money.

Other forms of money, like the money in a savings account, involve a few more steps to be able to spend. Again, this deals with the concept of liquidity.

Forms of money can be classified according to their liquidity.

M0 is the most liquid form of money. It is the narrowest definition of money and includes physical cash in circulation.

M1 takes one step further. It includes M0, but it also includes checking accounts. It is still liquid, because, for instance, you can write a check or swipe a debit card on your checking account.

M2 is M1 (which includes M0) plus all the time deposits. This is the broadest definition of money and also the least liquid. Savings accounts and money market mutual funds are what we refer to as time deposits.



TERMS TO KNOW

M0

The narrowest definition of money; includes only the stock of physical currency

M1

Includes demand deposits (checking account balances) + M0 (stock of physical currency)

M2

Time deposits + M1 (demand deposits + stock of physical currency)

3. FOMC

Now, we are discussing these different parts of the money supply because it is the FOMC, or the Federal Open Market Committee, that manages this money supply.

The FOMC is part of the Federal Reserve and they meet eight times a year to manage our nation's money supply.

The tools that the FOMC uses to control our M0, M1, and M2 are:

- The reserve requirement
- Open market operations
- Fed funds market
- Discount rate

Each of these tools is the subject of a separate tutorial, but today's tutorial is on the reserve requirement, so let's dive in.

4. Fractional Reserve System

So, how do banks make money? As you are likely aware, if banks existed simply to store our money, they would not profit. When we deposit money into a checking account at a bank, we can demand that money at any time.

However, banks make money by lending out a portion of customer deposits and charging interest. So, for every dollar held in the vault or reserves, there could be multiple dollars in multiple checking accounts on which customers have the ability to write checks. This is called a fractional reserve system.

Now, this may sound a bit suspect, but the system works as long as certain things do not go wrong--meaning, what are the chances that everyone will show up at the bank/ATMs at the same time, demanding all of their money?

The likelihood is not very high that this will happen, and as long as the demand for cash on any given day is less than the cash that the bank is actually holding in reserve, this system functions. It allows banks to make more loans and earn more interest. This is essentially how banks create money in our economy.

However, if banks lend out too much money, or if people show up demanding all the cash in their accounts and the bank cannot meet these demands, the bank fails or goes bankrupt.

This used to happen a lot in our country's history, so the Fed started regulating how much of these reserves the banks must hold in their vaults or at the regional Fed bank.

5. Reserve Requirement

Reserves are a portion of deposits required to be held by a bank. They are usually kept to maintain reserve requirements as set by the Fed.

The **reserve requirement** is the required amount of depository liabilities as set by the Fed that a bank must hold. It is typically quoted as a percentage.

IN CONTEXT

Suppose you deposit \$1,000 right now into your checking account and the reserve requirement set by the Fed is 10%, this means that your bank has to hold on to \$100 of that \$1,000 as reserves. They can lend out the rest, or \$900.

If the reserve requirement goes up, the bank cannot lend out as much money. So, for instance, if it rises to 20%, they would have to hold on to \$200 and could only lend out \$800.

If the reserve requirement falls, they can lend out more money. If it fell to 5%, they would only have to hold on to \$50 as reserves and could lend out \$950.

Therefore, these changes in the reserve requirement change the ability of banks to make loans.



TERMS TO KNOW

Reserves

A portion of deposits required to be held by a bank; reserves usually are kept to maintain reserve requirements, as set by the Fed

Reserve Requirement

The required amount of depository liabilities as set by the Fed that a bank must hold, typically quoted as a percentage

6. Money Creation

In our economy, lending equals money creation.

⇒ **EXAMPLE** When a bank makes a loan from the money that you have deposited, they have created money. This is because you still have the ability to write a check or demand that cash that you have deposited, but since they loaned out some of that money, someone else now has money that they did not have before. In that way, money is created.

IN CONTEXT

Let's walk through a real-world example, using a reserve requirement of 10%. Suppose you take out a loan for \$1,000, so now, you have \$1,000 that you did not have before.

This is physical cash, representing money in M0. You deposit it into your checking account, so now it is in M1. So, what is your bank going to do next?

If the reserve requirement is 10%, your bank lends out \$900 to somebody else and holds on to their required \$100. That person who received the \$900 now deposits their money into a bank and that bank lends out \$810, or 90% of what they are allowed to loan out. They hold on to 10%, or \$90.

So, this process continues. Your initial deposit to the bank and the subsequent loans have caused the money supply to increase by \$2,710 so far, which is \$1,000 + \$900 + \$810. As long as banks are lending out a portion of the money, this will continue.

How do we figure out how much it continues? Well, we need to find the **money multiplier**, which is 1 divided by the reserve requirement.



FORMULA TO KNOW

Money Multiplier

$$\text{Multiplier} = 1 / R$$

In this case, we plug in 10%, or .10, as our reserve requirement, which gives us a money multiplier of 10.

$$1 / .10 = 10$$

That means that if we take our initial loan, the \$1,000 in M0 times our multiplier of 10, it will lead to a potential \$10,000 increase in checkable deposits in M1.

$$\$1,000 \times 10 = \$10,000$$

The money multiplier is defined as the increase in the money supply resulting from the ability of banks to loan deposits. The value is equal to reciprocal of the prevailing reserve ratio--or $1 / R$, where R is the reserve ration.



TRY IT

What kind of impact does this have? Let's try another example and see. What if the reserve requirement were 50% instead of 10%? If we go through the exact same process, you will see that the bank cannot lend out as much money.

Again, suppose you take out a loan for \$1,000. With a reserve requirement of 50%, how much money will they lend out? Well, 50% of \$1,000 is \$500, so they need to reserve that amount and can lend out the remaining \$500.

That person receiving the loan now has money that they did not have before and they deposit it. Their bank, then, lends out \$250, holding onto the required 50%, or \$250. Each time there is less and less money available for the bank to re-lend out because they have to hold on to more of it.

This process continues, and using our same equation, the money multiplier is 2.

$$1 / .50 = 2$$

Therefore, the initial \$1,000 deposit can only create \$2,000.

Now, if there was actually a reserve requirement of 100%, meaning banks had to hold onto all money deposited, there is no ability to create money. There is no multiplier effect. The greater the supply of funds that banks can loan out, the greater their ability to increase our money supply.

Therefore, if the Fed wants to increase the money supply, they make it easier for banks to make loans and they lower the reserve requirement. If they want to decrease the money supply or contract it, they do the opposite and raise the reserve requirement.

So, in addition to giving the Fed the power to control of the size of M1, the reserve requirement has been a very powerful tool by helping to prevent bank runs, because banks must report about these reserves every single day. Consumers can have confidence that their bank will have the money they can demand at any time.



TERM TO KNOW

Money Multiplier

The increase in the money supply resulting from the ability of banks to loan deposits; the value is equal to the reciprocal of the prevailing reserve ratio or $1/R$, where R is the reserve ratio



SUMMARY

Today we reviewed **what money is** and how we can classify money according to **liquidity** into the categories of **M0**, **M1**, and **M2**. We learned that the Federal Open Market Committee, or **FOMC**, is the organization in our country who manages and makes decisions about the supply of money. We learned how banks make money by lending out a portion of customer deposits and charging interest, known as a **fractional reserve system**.

The main focus of the tutorial discussed how the **reserve requirement** is one of the Fed tools that allows them to control how much money banks must keep on reserve. Lastly, we learned that the **money multiplier**-- $1 \text{ over } R$ --shows us how much money can be created through loans.

Source: Adapted from Sophia instructor Kate Eskra.



TERMS TO KNOW

M0

The narrowest definition of money; includes only the stock of physical currency.

M1

Includes demand deposits (checking account balances) + M0 (stock of physical currency).

M2

Time deposits + M1 (demand deposits + stock of physical currency).

Money Multiplier

The increase in the money supply resulting from the ability of banks to loan deposits; the value is equal to the reciprocal of the prevailing reserve ratio or $1/R$, where R is the reserve ratio.

Reserve Requirement

The required amount of depository liabilities as set by the Fed that a bank must hold, typically quoted as a percentage.

Reserves

A portion of deposits required to be held by a bank; reserves usually are kept to maintain reserve requirements, as set by the Fed.