

Activity 6.1

Reserve Requirements and the Multiplier

The primary function of the Federal Reserve is to influence the growth of the money supply in order to promote a healthy, growing economy with stable prices. One of the Fed’s tools for accomplishing this task is setting the reserve requirements, i.e., the percent of deposits that must be set aside by a bank in its vault or in its account at the Fed. Banks may not lend these required reserves. However, any reserves held by banks beyond those required by the Fed are excess reserves, which banks can lend to other customers. This fractional reserve system actually allows banks to create money.

For each of the following questions, carry decimals out to two digits when appropriate.

1. If \$1,000 is deposited in the bank, calculate how much the bank must hold in reserve for each of the following reserve requirements. How much is the required reserve?
 - A. 1% _____ C. 10% _____ E. 15% _____
 - B. 5% _____ D. 12.5% _____ F. 25% _____

2. If \$1,000 is deposited in the bank, calculate how much the bank can lend for each of the following reserve requirements. How much is the excess reserve?
 - A. 1% _____ C. 10% _____ E. 15% _____
 - B. 5% _____ D. 12.5% _____ F. 25% _____

Money is created when the bank makes loans to customers. To illustrate how money can be “created,” look at the form shown below. We will begin with two assumptions:

- a. The reserve requirement is 10 percent and the bank will lend all of its excess reserves.
- b. All money that is lent will be returned to the same bank in the form of demand deposits (for example, if Laura borrowed \$1,000 to buy a bike from Eric, Eric would deposit his \$1,000 back in the same bank that issued Laura the loan).

3. Fill in the blanks below. Carry decimals out to two digits when appropriate.

Account Holder	New Deposits	Required Reserves	Excess Reserves
A. Eric	\$1,000.00	_____	\$900.00
B. Juan	\$900.00	\$90.00	_____
C. LaTandra	\$810.00	_____	_____
D. Angie	_____	\$72.90	_____
E. Huang Suk	_____	_____	\$590.49

Activity 6.1 continued

Each new deposit is a demand deposit; thus, it is counted in M1, the narrowest definition of the money supply. It consists of currency, coins, and demand deposits. In this example, before the bank issued any loans, M1 equalled \$1,000. But as it loaned the first \$900 of excess reserves, the money supply rose to \$1,900 because of the new demand deposit. In only 5 rounds of spending, M1 rose from \$1,000 to \$4,095.10!

What would happen if the bank continued to lend its excess reserves? The money supply would continue to increase. How much money would be created if the bank continued to lend its excess reserves to the last penny?

To find this, we must calculate the money multiplier. The money multiplier determines how much money can be created in the economy from an initial deposit. The formula for the money multiplier is:

$$\text{Money multiplier} = \frac{1}{\text{reserve requirement}}$$

In this example, the Federal Reserve set the reserve requirement at 10 percent. So the money multiplier in this example would be:

$$\text{Money multiplier} = \frac{1}{10} = 10$$

To find out the total increase in the money supply, the formula is:

$$\text{Total increase} = \text{Multiplier} \times \text{deposit}$$

The multiplier is 10 and the deposit is \$1,000. So the total increase of the money supply would be:

$$\text{Total increase} = 10 \times \$1,000 = \$10,000$$

To find out how much money can be created following an initial deposit, the formula is:

$$\text{Expansion of the Money Supply} = \text{Multiplier} \times \text{Excess Reserves}$$

The multiplier is 10, and excess reserves from the initial bank deposit are \$900. So the potential expansion of money (M1) would be:

$$\text{Expansion of the Money Supply} = 10 \times \$900 = \$9000$$

For each of the following questions, carry out decimals to two digits when appropriate.

4. Calculate the money multiplier for each of the following reserve requirements.

A. 1% _____ C. 10% _____ E. 15% _____

B. 5% _____ D. 12.5% _____ F. 25% _____

5. If a bank holds \$1,000 in excess reserves, calculate the total amount of money that could be created for each of the following reserve requirements.

A. 1% _____ C. 10% _____ E. 15% _____

B. 5% _____ D. 12.5% _____ F. 25% _____

To see how reserve requirements limit the expansion of the money supply, all we need to do is set a reserve requirement of nearly zero. If there were no reserve requirement, the multiplier would approach infinity:

$$\text{Money multiplier} = \frac{1}{.00001}$$

6. Why wouldn't we want unlimited growth in the money supply? _____

7. Why don't we want to have zero growth in the money supply? _____