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THE SUPPLY OF MONEY

It is best to avoid the word “money” when talking about fiscal policy. It is incorrect to say that an increase in government spending increases the amount of money in the economy and, therefore, aggregate demand. Replace the word “money” with “income” in the previous sentence and it becomes accurate.

The money supply in the United States is controlled by the Federal Reserve. When the government deficit spends, this does not change the money supply. The money in circulation may be used more intensely, but the number of dollars does not change with fiscal policy.

Money is anything that society generally accepts in payment for a good or service. This is a very broad definition and allows for many things to be counted as money. There have been societies that accepted beads and clamshells in exchange for goods and services.

Experts in the field of money and banking disagree on what should be included in the money supply because they disagree on what our society generally accepts in exchange for goods and services. Certainly, currency—coins and paper money—is the most widely accepted form of money in our society. And checks written on bank deposits are accepted almost as readily as currency. Bankers refer to checking accounts, and accounts that function like checking accounts, as *transaction accounts*. In the opinion of many experts, currency, transaction accounts, and traveler’s checks are the only items generally accepted in payment in the United States. This definition of money is referred to as M1 and totaled \$3.2 trillion in 2016. See Table 16.1.

Credit Cards

Credit cards are perhaps more widely accepted than checks, but credit cards are not part of the money supply—they are merely a convenient way of taking out a loan from a bank. When you pay for something with your credit card, the bank that sponsors your credit card is actually paying the merchant for the item purchased. The bank records this transaction like a

loan on its books. Then the bank hounds you for repayment of the loan and interest is charged if you do not pay the entire amount in a short period of time. Credit cards are one way banks use their depositors' money to make loans. Since we count the amount of money deposited into checking accounts as part of M1, it would be redundant to count credit cards also.

TIP

Most people think of money as currency, but transaction accounts (checking accounts) are 50 percent of M1 and savings accounts are the biggest part of M2.

Savings Accounts and CDs

Many experts think that more than just the three items included in M1 should be counted in the money supply. For instance, money in savings accounts might be part of the money supply. True, hardly any merchants will accept your passbook savings account and deduct from it when you make a purchase, but it is very easy to withdraw money from your savings account and make the purchase. Similarly, certificates of deposit are easily cashed (although there are stiff penalties for early withdrawal on these accounts), although no merchant will accept one for payment.

The issue here is liquidity—the ability to turn an asset into cash rapidly and without loss. Savings accounts and certificates of deposit are not generally accepted to pay for things, but they are very liquid and should, therefore, be counted as money. The definition of money known as M2 includes everything in M1 plus money deposited in savings accounts, certificates of deposit, and retail money funds.

M1 and M2 are the most common definitions of money. However, there are several alternative definitions such as “M3” and “MZM.” These alternative definitions of money include items that are less liquid such as eurodollars.

Table 16.1 The Money Supply in the United States, 2016 (Billions of Dollars)

	M1	M2
Currency	1,383.3	3,245.3
Transaction accounts	1,859.7	8,509.4
Traveler's checks	2.3	378.4
Total	<u>3,245.3</u>	<u>690.8</u>
		12,823.9

Source: Federal Reserve Bank of the United States

FIAT MONEY

There is a lot of gold in Fort Knox and a smaller stash in the vault of the Federal Reserve Bank of New York, but none of this gold is used to back the money supply. The United States, and most nations of the world, use *fiat money*. This means that the coins and paper money have nothing standing behind them except the fact that they are *legal tender*.

Legal tender means that the coin or paper money must be accepted in exchange for goods or services by the decree of the government. Still, Confederate currency was legal tender during the Civil War and even die-hard Southerners wouldn't accept it. That is because far too much of it was supplied by the Confederate authorities. This reveals the key to understanding how fiat currency works—its supply must be kept relatively limited.

From 1873 until 1933 the United States was on some form of the gold standard. The money supply was backed by gold or a combination of gold and silver. The primary advantage of the gold standard is that the supply of money must be kept limited since the supply

of gold is limited. However, this system can be too confining when an increase in the supply of money is warranted and there is not an increase in the amount of gold held by the government.

A fiat monetary system is more flexible in that the gold holdings of the government need not increase in order to expand the nation's supply of money. By the same token, nations that do not keep the supply of their fiat currency limited will see it diminish in value, sometimes to the point of becoming worthless.

What Is Money Good for?

Most people think that money is good for only one thing—spending. True, textbooks refer to money as a “medium of exchange.” Money is a much more efficient way to exchange goods and services than barter. Barter requires a double coincidence of wants; you have to find someone who has what you want and wants what you have in exchange. Money obviates the need for this and allows us to spend our time more productively.

However, people use money in another way all the time: to make comparisons. Which corporation is bigger, Procter and Gamble or Pfizer? The assets of Pfizer are worth about \$190 billion, while the assets of Procter and Gamble are worth \$220 billion; Pfizer is smaller than Procter and Gamble by this measure. Notice that dollar figures were used to make this comparison. This is using money as a unit of account. Consider another example. Suppose you win a drawing and you can have the grand prize, a Ford Mustang, or \$10,000. Most people would take the car based on the comparison that a new Ford Mustang is worth well over \$10,000. Again, money is being used to compare things.

Finally, money also serves as a store of value. You can work hard for 40 years and stuff 20 percent of each paycheck under your mattress. After you retire you can live like a king. This is using money to store the value of your hard labor during your working years. Of course, money is a poor store of value during inflationary times. The \$600,000 under the mattress can buy less and less as prices rise. On the other hand, money is an excellent store of value during deflations. The \$600,000 can buy more and more goods and services as prices fall.

Table 16.2 The Functions of Money

- Medium of exchange—money is used to buy goods and services
- Unit of account—money is used to measure and compare
- Store of value—money is used to accumulate wealth

THE FEDERAL RESERVE SYSTEM

To understand how the money supply can be changed, it is necessary to understand the Federal Reserve System, or Fed, for short. The Fed is the central bank of the United States. This means that it controls the money supply and supervises all the depository institutions within the country. All of the banks, savings and loans, credit unions, and mutual savings banks report to the Fed each week. The Fed can audit any of these institutions at any time and would have to approve any mergers and acquisitions.

The Fed operates as the bank of banks. If you need a loan, you might go to a bank. If a bank needs a loan, it may borrow from the Fed. If you feel uncomfortable carrying around a lot of cash, you might deposit some of that cash in your account at a bank. If a bank feels

uncomfortable having a lot of cash in its vault, it may deposit some of that vault cash in its account at the Fed.

FACTS ABOUT THE FED

1. There are 12 branches of the Fed located in major cities throughout the nation. This makes it convenient for banks and other depository institutions to do their banking.
2. The main headquarters of the Fed is in Washington, D.C.
3. The President of the United States appoints the seven members of the Board of Governors of the Federal Reserve System.
4. The President also appoints one of the members to be the chairman of the Board of Governors and another member to be the vice chairman.
5. All the members of the Board of Governors serve 14-year terms.
6. The Board of Governors makes the important decisions concerning the money supply. Should M1 and M2 be increased? Decreased? Held steady?

The Fed is a quasi-governmental institution. The people working at the Fed are paid by the federal government, but the Fed is not part of the executive, legislative, or judicial branches of government. The Board of Governors makes decisions concerning the money supply in complete autonomy. The Fed is not responsible to the President or Congress, although it regularly reports to both on its operations and intentions for the money supply.

Fractional Reserve Banking

Banks and other depository institutions keep only a fraction of the money deposited with them on hand. Most of any given deposit is used to make loans or other investments. Nevertheless, banks have plenty of cash on hand to meet their withdrawal needs. A bank manager's worst nightmare is to run short of cash.

The Fed's regulation D requires all depository institutions to keep 10 percent of the funds deposited in transaction accounts as reserves. Transaction accounts are checking accounts and other accounts that function as checking accounts, such as NOW accounts and share draft accounts. Reserves must be held against transaction deposits only. Savings accounts and certificates of deposit have no reserve requirement. Banks can hold their required reserves in their vault or in their account at the Fed. By the way, currency held in a bank's vault is not counted as part of the money supply.

Many people think that the Fed requires banks to keep aside 10 percent of the money deposited in transaction accounts to ensure that there will be cash on hand to meet withdrawal needs. This is not true. As stated, bankers will make sure to have enough money on hand to meet withdrawal needs without any requirements from the Fed. Reserve requirements, as we shall see below, help the Fed control the money supply.

T-accounts

In order to understand fractional reserve banking, it can be instructive to look at the balance sheet, or T-account, of a hypothetical commercial bank. Recent exams in AP

Macroeconomics have featured multiple-choice and free-response questions that require knowledge of T-accounts.

T-accounts are an accounting tool that may be used for recording transactions. On the left side of a T-account, we record transactions involving the bank's assets. Changes in the bank's liabilities are recorded on the right-hand side of the ledger. Consider the balance sheet of Bank A when a customer deposits \$100 into a checking account:

Commercial Bank A	
Assets	Liabilities
+\$100 currency	+\$100 demand deposits

The bank has \$100 more currency in its vault. That is an asset. But the bank also has a new liability: \$100 in a customer's checking account that it must be prepared to reimburse at any moment. Notice that this transaction, by itself, has no effect on the money supply. The currency inside a bank's vault is not part of M1 or M2, but demand deposits are included in both. The customer's deposit lowers currency holdings of the public by \$100. However, checking accounts are increased by \$100.

As you know, \$10 of this deposit are required reserves and the remaining \$90 are excess reserves. The transaction above could just as well be recorded as:

Commercial Bank A	
Assets	Liabilities
+\$10 required reserves	+\$100 demand deposits
+\$90 excess reserves	

Now consider what happens when the bank makes a loan with its excess reserves.

Commercial Bank A	
Assets	Liabilities
+\$10 required reserves	+\$100 demand deposits
+\$90 excess reserves	
-\$90 excess reserves	
+\$90 loan	

The bank no longer has \$90 in excess reserves, but it has another asset –\$90 in loans that hopefully will be repaid some day in the future with interest.

Assume the loan was used to buy flowers and at the end of the day the florist deposits the \$90 in his checking account at Bank B.

Commercial Bank B	
Assets	Liabilities
+\$9 required reserves	+\$90 demand deposits
+\$81 excess reserves	

The bank holds 10 percent of the deposit aside as required reserves. The remaining \$81 is excess reserves. However, it is critical to notice that this deposit increased the money supply, be it M1 or M2, by \$90. How so? Demand deposits are part of the money supply, and they went up by \$90. Did the currency holdings of the public decrease by \$90? Did demand depos-

TIP

A balance sheet must always stay balanced. If an amount is deducted from one side, then an equal amount must be added to the same side, or deducted from the other side.

its at any other bank fail because of this transaction? No. When a bank makes a loan it creates money because it leads to increases in transaction accounts while no transaction accounts, or currency holdings of the public, are affected by the loan.

A similar scenario occurs if Bank A uses its \$90 in excess reserves to buy an investment rather than make a loan. Suppose Bank A buys a collectible doll as a financial investment. Whoever sold Bank A the doll deposits the \$90 in their bank, say Bank B:

Commercial Bank A		Commercial Bank B	
Assets	Liabilities	Assets	Liabilities
-\$90 excess reserves		+\$9 required reserves	+\$90 demand deposits
+\$90 collectible doll		+\$81 excess reserves	

Bank B shows an increase in demand deposits of \$90, which are part of M1 or M2, and no bank has lost demand deposits because of the transaction. The point of this analysis is to show that banks create money when they make loans or buy financial assets.

The process works in reverse as well. Banks destroy money when loans are repaid or they sell financial investments. To show money destruction, let's say Bank A sells its collectible doll some years later for \$90. (Alas, the doll did not provide any financial reward.) The doll's new owner pays with a check from Bank B:

Commercial Bank A		Commercial Bank B	
Assets	Liabilities	Assets	Liabilities
-\$90 collectible doll		-\$9 required reserves	-\$90 demand deposits
+\$90 excess reserves		-\$81 excess reserves	

Demand deposits in the banking system decrease by \$90 without a compensating increase, thus decreasing M1 or M2. You may be thinking that the money supply is uncontrolled since it depends on banks' preferences for making loans or buying financial investments. But that is incorrect. Under normal circumstances, banks can be counted on to use just about all their excess reserves for loans or investments because that is how profits are maximized. In the next section, we shall see that the Fed controls the money supply by controlling the amount of reserves banks have for loans and investments.

The Money Expansion Process

Imagine that a counterfeiter prints up \$1,000 in phony bills and spends the fake money at a jewelry store. At the end of the day the jeweler deposits the counterfeit money into his bank. The bank, not detecting the phony bills, credits the jeweler's transaction account by \$1,000. The bank must hold \$100 of the \$1,000 aside as required reserves. The remaining \$900 can be used as the bank sees fit. Typically, excess reserves such as these \$900 are used to make loans or buy investments since that is how the bank makes profits.

Now suppose the bank loans the \$900 to someone applying for a home improvement loan. The \$900 ends up being spent on paint. The owner of the paint store deposits the \$900 into a transaction account. Notice that this deposit is boosting transaction accounts by \$900 and transaction accounts are part of the money supply as measured by M1 or M2. In other words, the money supply is increased when banks make loans with their excess reserves.

And this is not the end of the story. The bank that received the \$900 deposit from the paint store must hold 10 percent of the deposit, or \$90, as required reserves. The rest of the deposit is excess reserves and the bank can use these in any way they wish. Suppose the bank

buys some real estate as an investment with the \$810 in excess reserves. Whoever sold the real estate to the bank now has a check for \$810. If this check is deposited into a transaction account, the money supply will be going up again, this time \$810.

Again, this is not the end of the story. The bank that receives the deposit of \$810 will hold 10 percent, or \$81, aside as required reserves. The remaining \$729 is excess reserves that the bank may use to make a loan or buy an investment.

When all is said and done, the original \$1,000 in counterfeit money will have led to a \$10,000 increase in the money supply. This is because of the money expansion process where banks create transaction account money by using their reserves to make loans or buy investments. Table 16.3 outlines the money expansion process for this example.

Remember that money deposited into transaction accounts is part of the money supply. When counterfeiters deposit \$1,000 into their transaction account, the money supply ends up increasing by \$10,000. This is because of all the subsidiary deposits that occur because of the original \$1,000 deposit. The column labeled “deposits into transaction accounts” sums to \$10,000.

Two formulas help us determine how much the money supply will increase because of a deposit from outside the system. The first formula is for the money multiplier:

$$\text{Money Multiplier} = 1 / \text{Reserve Requirement}$$

In our case the reserve requirement is 10 percent:

$$\text{Money Multiplier} = 1 / 0.10 = 10$$

Table 16.3 The Money Expansion Process

	Deposits into transaction accounts	Required reserves	Excess reserves
Bank 1 (Counterfeiter's bank)	\$1,000	\$100	\$900 (used to make a loan)
Bank 2 (Paint store's bank)	900	90	810 (used to buy real estate)
Bank 3 (Real estate seller's bank)	810	81	729
Bank 4	729	72.90	656.10
.	.	.	.
.	.	.	.
.	.	.	.
	<u>\$10,000</u>		

This tells us that any deposit from outside the banking system, such as counterfeit money, will change the money supply by 10 times the amount of the deposit.

The second formula gives the change in the money supply because of the initial change in bank reserves:

Change in the Money Supply = Money Multiplier \times Change in Bank Reserves

In our example the money multiplier is 10 and the initial change in bank reserves is the \$1,000 in counterfeit money:

$$\text{Change in the Money Supply} = 10 \times \$1,000 = \$10,000$$

If the reserve requirement was five percent and the counterfeiters deposited \$4,000 in fake money, the change in the money supply would be:

$$\text{Money Multiplier} = 1/0.05 = 20$$

$$\text{Change in the Money Supply} = 20 \times \$4,000 = \$80,000$$

Policy Tools of the Federal Reserve

The previous examples illustrate why counterfeiting is considered to be such a serious crime. A small amount of counterfeit money can lead to a significant change in the money supply because of the monetary expansion process, but the examples also indicate how the Fed could change the money supply.

The Fed could print money and deposit it into a bank and the monetary expansion process would take over. The money supply would increase by a multiple of the Fed's deposit. And what's more, the initial deposit isn't counterfeit.

As it turns out, there are several ways the Fed could change the reserves of the banking system and, therefore, the money supply. These methods are the policy tools of the Fed.

1. The Fed could *raise or lower the reserve requirements* for depository institutions. If the reserve requirement was lowered, banks would have more excess reserves and could make more loans and investments. This would increase the money supply. To decrease the money supply the Fed would raise reserve requirements.

2. Another policy tool involves the *discount rate*. The discount rate is the rate of interest the Fed charges when it makes loans to depository institutions. Remember that if you want a loan you might go to a bank, whereas a bank that needs a loan may go to the Fed. The Fed charges banks a rather low rate of interest on the loans it makes, thus the name discount rate.

If the Fed lowers the discount rate, more banks are encouraged to borrow. These borrowings by banks from the Fed increase bank reserves. The money supply will increase by a multiple of the borrowings from the Fed.

As an illustration, suppose the Fed lowers the discount rate by half of a percentage point. Say that the lower discount rate encourages banks to borrow \$12 million more than usual from the Fed. Assuming a 10 percent reserve requirement, the money supply would then increase by \$120 million:

$$\text{Money Multiplier} = 1/\text{Reserve Requirement}$$

$$\text{Money Multiplier} = 1/0.10 = 10$$

$$\text{Change in the Money Supply} = \text{Money Multiplier} \times \text{Change in Bank Reserves}$$

$$\text{Change in the Money Supply} = 10 \times \$12 \text{ million} = \$120 \text{ million}$$

If the Fed wanted to decrease the money supply, then the discount rate should be raised. Raising the discount rate discourages banks from borrowing from the Fed, and banks, therefore, have less reserves. A decrease in reserves translates into a multiple decrease in the money supply.

During the recent financial crisis the Fed made loans to non-depository institutions. For the first time, so-called term auction facilities allowed the Fed to make loans to troubled financial institutions.

3. The third policy tool available to the Fed to initiate changes in the money supply is *open market operations*. Open market operations is when the Fed buys and sells government securities in the secondary market. Government securities are IOUs that the government issues when it borrows money. They sometimes go by the names Treasury bills, bonds, or notes. The federal government of the United States has borrowed trillions of dollars from individuals and corporations, both foreign and domestic.

The Fed expanded its open market operations as it dealt with the financial crisis of 2008–2009 and set a precedent by buying assets other than government securities from a variety of entities holding those assets. For instance, the Fed bought mortgage-backed securities from Fannie Mae, Freddie Mac, and the Federal Home Loan Bank.

Secondary Market

When the government borrows money it issues a government security to the lender that states the amount of the loan, the rate of interest, and the length of the loan. However, the lender need not hold the government security until it matures. At any time the lender may sell the government security to another investor. This is done in the *secondary market*.

Lenders wishing to sell government security that have a relatively high rate of interest attached to them will experience a profit in the secondary market, while those with relatively low rates will experience a loss. But the Fed does not buy and sell government securities in the secondary market with an eye toward making financial gains. The Fed participates in the secondary market for government securities in order to change the money supply.

Imagine what happens when the Fed buys government securities in the secondary market. The Fed pays for the securities with a check that the seller deposits in a bank account. This deposit is an increase in bank reserves from outside the system. The money supply will increase by a multiple of this increase in bank reserves.

To take a specific example, if the reserve requirement is 10 percent and the Fed wants to increase the money supply by \$50 million, then the Fed would buy \$5 million worth of government securities in the secondary market.

$$\text{Money Multiplier} = 1/\text{Reserve Requirement}$$

$$\text{Money Multiplier} = 1/0.10 = 10$$

$$\text{Change in the Money Supply} = \text{Money Multiplier} \times \text{Change in Bank Reserves}$$

$$\text{Change in the Money Supply} = 10 \times \$5 \text{ million} = \$50 \text{ million}$$

If the Fed wanted to decrease the money supply, it would sell government securities in the secondary market. Persons or corporations that buy the securities will pay with a check. The Fed cashes the check to draw the reserves out of the banking system and does not deposit proceeds of the sale back into the banking system. In this way bank reserves are depleted. The

money supply falls by a multiple of the decline in bank reserves.

Specifically, if the Fed sells \$6 million worth of government securities in the secondary market, and the reserve requirement is five percent, then the money supply will fall by \$120 million.

$$\text{Money Multiplier} = 1/\text{Reserve Requirement}$$

$$\text{Money Multiplier} = 1/0.05 = 20$$

$$\text{Change in the Money Supply} = \text{Money Multiplier} \times \text{Change in Bank Reserves}$$

$$\text{Change in the Money Supply} = 20 \times -\$6 \text{ million} = -\$120 \text{ million}$$

Table 16.4 summarizes the policy tools of the Fed.

Table 16.4 Policy Tools of the Federal Reserve

Tool	Description	To Increase Money Supply	To Decrease Money Supply
Change reserve requirements	Change the percentage of each deposit that banks must hold aside	Lower the reserve requirement	Raise the reserve requirement
Change the discount rate	Change the rate of interest the Fed charges on bank borrowings	Lower the discount rate	Raise the discount rate
Open market operations	Buy or sell government securities in the secondary market	Buy government securities	Sell government securities



SUMMARY

- Money is anything generally accepted to pay for goods and services. Certainly, currency, transaction accounts, and traveler's checks are generally accepted. This definition of money is known as M1. Many experts think that other highly liquid assets should be considered money. These include savings accounts, certificates of deposit, and other liquid assets. Adding these three items to M1 gives M2, another prevalent definition of money.
- The money supply in the United States, like most nations, is not backed by gold or silver or any precious commodity. Fiat money is money because the government says it is money. Experience has shown that it is extremely important to keep the supply of fiat money relatively limited if it is to function correctly.
- Money is good for spending (a medium of exchange), for comparing things (a unit of account), and as an investment vehicle (a store of value). The United States is on a fractional reserve system where depository institutions keep only a fraction of each deposit on hand. Most of the money deposited in a bank is used to make loans and buy investments.

- The Federal Reserve is the central bank of the United States and controls the money supply. It does this mostly with open market operations, but can also alter the discount rate or change reserve requirements. Any of these three techniques changes the reserves of the banking system. The money supply changes by a multiple of the change in bank reserves.



TERMS

Certificate of Deposit debt instrument that is similar to a savings account except the interest rate is slightly greater and the deposit cannot be drawn on without penalty

Currency coins and paper money

Discount Rate the rate of interest the Fed charges when it makes loans to depository institutions

Excess Reserves the amount of any deposit that does not have to be held aside and may be used to make loans and buy investments

Federal Reserve the central bank of the United States

Fiat Money money that is not backed by any precious commodity

Government Securities IOUs that the government issues when it borrows money

Liquidity the ability to turn an asset into cash rapidly and without loss

M1 currency, transaction accounts, and travelers' checks

M2 M1 plus savings accounts, certificates of deposit, and other liquid assets

Money anything that society generally accepts in payment for a good or service

Money Multiplier = $1/\text{Reserve Requirement}$, the multiple by which the money supply will change because of a change in bank reserves

Open Market Operations activities in which the Fed buys and sells government securities in the secondary market

Required Reserves the amount of any deposit that must be held aside and not used to make loans or buy investments

Reserve Requirement the percentage of any deposit that must be held aside and not used to make loans or buy investments

Savings Account an account at a depository institution that earns interest while the funds are readily available but cannot be withdrawn with checks

Secondary Market place where government securities that have already been issued may be bought or sold

Transaction Account a checking account at a bank or a similar account at some other depository institution

FORMULAS

Money Multiplier = $1/\text{Reserve Requirement}$

Change in the Money Supply = $\text{Money Multiplier} \times \text{Change in Bank Reserves}$

MULTIPLE-CHOICE REVIEW QUESTIONS

- Which of the following is not included in M1?
 - Coins
 - Paper money
 - Travelers' checks
 - Credit cards
 - Transaction accounts
- Which of the following is not included in M2?
 - Currency
 - Travelers' checks
 - Certificates of deposit
 - Savings accounts
 - Credit cards
- Which of the following statements is true?
 - Some of the things included in M2 are not as liquid as the things in M1.
 - M2 is smaller than M1.
 - M1 is backed by gold and M2 is backed by silver.
 - The biggest component of M1 is currency.
 - The biggest component of M2 is currency.
- Fiat money
 - is not backed by any precious commodity.
 - can be exchanged for gold.
 - is backed by gold, but cannot be exchanged for it.
 - is not legal tender.
 - can be backed by gold or silver.
- The Federal Reserve is
 - part of the legislative branch of government.
 - the monetary authority for banks, but not other depository institutions.
 - part of the judicial branch of government.
 - in control of the money supply.
 - in control of government spending.
- Required reserves
 - can be used by banks to make loans or buy investments.
 - can be held in a bank's vault or its account at the Fed.
 - must be kept in a bank's vault.
 - must be used to make loans.
 - ensure that banks will have enough cash on hand to meet their withdrawals.
- The secondary market for government securities is
 - where used items are traded.
 - located in smaller cities.
 - where the government borrows money.
 - where government securities that have already been issued may be bought or sold.
 - where government securities are issued.
- If the reserve requirement is 2 percent, then the money multiplier is
 - 5
 - 5 percent
 - 50
 - 50 percent
 - one half
- If the Fed buys bonds in the secondary market
 - the money supply will increase.
 - the money supply will decrease.
 - the money supply will not be affected.
 - the discount rate would be affected.
 - reserve requirements would have to be increased in tandem.

10. Which of the following would lead to an expansion of the money supply?
- (A) The Fed raises the discount rate.
 - (B) The Fed buys government securities in the secondary market.
 - (C) The Federal government deficit spends.
 - (D) The Fed raises reserve requirements.
 - (E) Taxes are reduced.
11. Assume the reserve requirement is 10 percent. If the Fed sells \$29 million worth of government securities in an open market operation, then the money supply can
- (A) increase by \$2.9 million.
 - (B) decrease by \$2.9 million.
 - (C) increase by \$290 million.
 - (D) decrease by \$290 million.
 - (E) increase by \$26.1 million.
12. Assume the reserve requirement is 5 percent. If the Fed buys \$4 million worth of government securities in an open market operation, then the money supply can
- (A) increase by \$1.25 million.
 - (B) decrease by \$1.25 million.
 - (C) increase by \$20 million.
 - (D) decrease by \$20 million.
 - (E) increase by \$80 million.
13. When the Fed lowers the discount rate its intention is to
- (A) give depository institutions a break on their borrowings.
 - (B) signal participants in financial markets that a recession is coming.
 - (C) signal participants in financial markets that an inflationary period is coming.
 - (D) lower prices in the economy.
 - (E) encourage borrowing by depository institutions so that the money supply may expand.
14. Lowering reserve requirements would
- (A) force banks to hold more reserves and make more loans.
 - (B) allow banks to make more loans and buy more investments thus decreasing the money supply.
 - (C) allow banks to make more loans and buy more investments thus increasing the money supply.
 - (D) allow banks more freedom to merge and acquire other businesses.
 - (E) force banks to sell investments so that fewer funds are held in reserve.
15. The Fed's Board of Governors has _____ members, each serving _____-year terms.
- (A) 14, 7
 - (B) 7, 14
 - (C) 8, 8
 - (D) 50, 2
 - (E) 8, 10

FREE-RESPONSE REVIEW QUESTIONS

1. Assume the reserve requirement is 10 percent. If the Fed buys \$10,000 worth of government securities in the secondary market, will the money supply expand or shrink? By exactly how much after all is said and done?
2. Explain why the money supply changes when the Fed buys \$10,000 worth of government securities in the secondary market. Why is the change in the money supply not \$10,000?
3. Suppose that depository institutions did not use all of their excess reserves to make loans and buy investments. For example, if the reserve requirement was 10 percent, depository institutions would hold 20 percent of their deposits idle. How would this affect your answer to 1. above?

Multiple-Choice Review Answers

- | | | | |
|--------|--------|---------|---------|
| 1. (D) | 5. (D) | 9. (A) | 13. (E) |
| 2. (E) | 6. (B) | 10. (B) | 14. (C) |
| 3. (A) | 7. (D) | 11. (D) | 15. (B) |
| 4. (A) | 8. (C) | 12. (E) | |

Free-Response Review Answers

1. If the Fed buys \$10,000 worth of government securities in the secondary market, the money supply expands. When the Fed pays for the securities the sellers will deposit their checks into the banking system. The reserves of the banking system will increase by \$10,000. The money supply will increase by ten times that amount, or \$100,000, because the money multiplier is 10 in this case. (Money multiplier = $1/0.10 = 10$.)
2. The money supply increases because when the Fed buys securities in the secondary market, this increases the reserves of banks where the checks are deposited. The reserves of these banks go up by \$10,000. Now these banks are holding more reserves than they are required to by the Fed's reserve requirements. The banks make loans and buy investments with these excess reserves and this serves to increase transaction accounts. Transaction accounts are part of the money supply.
3. If banks do not use all of their excess reserves to make loans and buy investments, then the money expansion process is not as effective. When a bank makes a loan, this money ends up as a deposit elsewhere, usually at another bank. If banks prefer to hold extra reserves, then the loans will not be as large and the increase in the money supply because of the \$10,000 increase in reserves also will not be as large. If banks have a 10 percent reserve requirement and hold 10 percent more in extra reserves, this means that the money multiplier is 5 ($= 1/0.2$) and the money supply will expand to only \$50,000, not \$100,000.