

Module C. Monetary Policy: How Is It Conducted and How Does It Affect the Economy?

Note: This feature provides supplementary analysis for the material in Part 3 of *Common Sense Economics*.

In addition to fiscal policy, monetary policy provides policy makers with a tool that may be used to alter total demand, output, and employment. This feature will focus on money and the conduct of monetary policy. It will also analyze both the potential and limitations of monetary policy as a tool with which to promote economic growth and stability.¹

WHAT IS MONEY?

Money is the item that is generally used to purchase goods, services, resources, assets, and as the means of payment for debt. Most modern money is merely paper or electronic digits indicating funds in a bank account. Thus, money has little or no intrinsic value. Nonetheless, it performs vitally important functions. Most important, it simplifies exchange by reducing transaction costs. Money frees us from bartering for everything thus making it possible for us to derive more gains from trade. As a result, we are all better able to specialize in the supply of those things that we do best, purchase a wide range of goods and services, and achieve higher living standards than would otherwise be possible. Money greases the wheels of exchange.

Money also acts as a store of value. It serves as an asset that makes it possible for us to maintain purchasing power for use in the future when prices are stable. However, the purchasing power of a unit of money—a dollar, for example—is inversely related to the general level of prices. When inflation occurs and the price level increases, the purchasing power of money declines—as does its usefulness as a store of value. This imposes a cost on people holding money.

Money also serves as a unit of account. Just as we use yards or meters to measure distance, we use units of money—the dollar in the United States—to measure the value of exchange and cost of goods, services, assets, and resources.

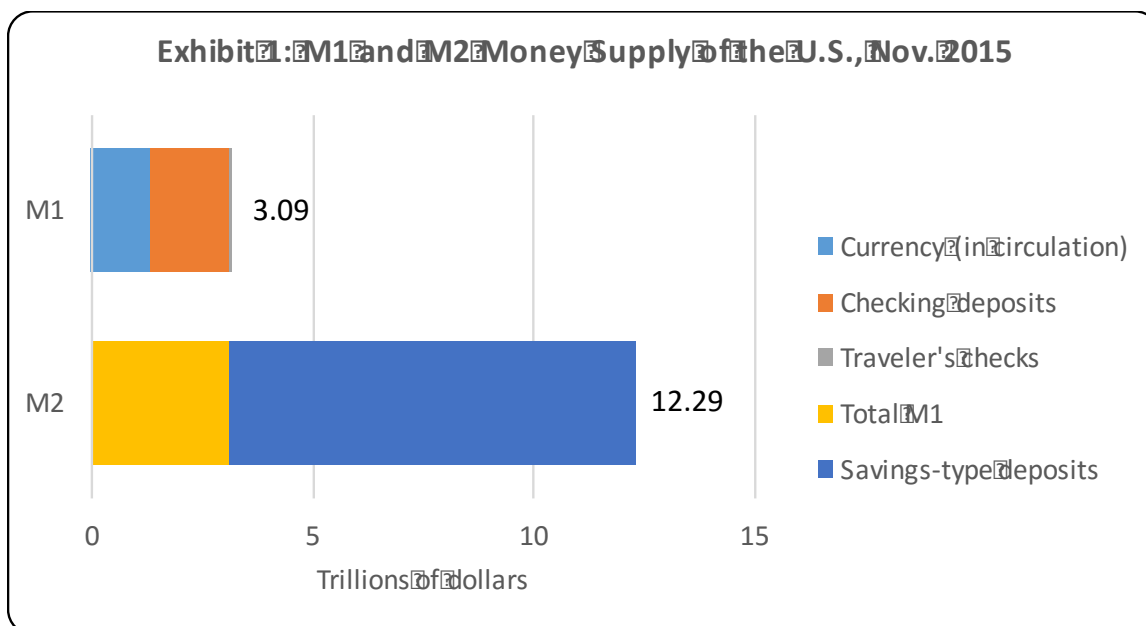
WHAT COUNTS AS MONEY?

How is the money supply measured? There is not a single answer to this question. Economists generally stress the importance of two measures of the money supply—M1 and M2.

M1 Money Supply. This narrow measure of the money supply reflects the importance of money as a medium of exchange. Items we use to purchase things are included in this measure. The M1 money supply has three components (1) currency and coins, (2) checkable deposits, and (3) travelers checks. All of these items are readily accepted as a means of making payment.

M2 Money Supply. In modern economies, several financial assets can be easily converted into checking deposits or currency; therefore, the line between money and “near monies” is often blurred. The M2 money supply is a broader measure that includes savings deposits and other financial instruments that can quickly and easily be converted into checking deposits and cash. The M2 money supply includes all the items included in M1 plus (1) savings deposits, (2) time deposits of less than \$100,000 at all depository institutions, and (3) money market mutual funds. The M2 money supply more fully reflects the store of value function of money.

On the next page, **Exhibit 1** presents the M1 and M2 money supply data for the United States as of November 2015. The M1 money supply was \$3.09 trillion, while the M2 figure was \$ 12.29 trillion. Thus, the M2 money supply is currently approximately four times that of M1.



Source: www.federalreserve.gov

It is important to distinguish between money and credit. Money is a financial asset that provides the holder with future purchasing power. Credit is a liability acquired when one borrows funds and draws against future streams of income. This distinction makes it clear that credit card balances are not part of the money supply. When you make a purchase with a credit card, you are not paying for the item now. Instead, you are borrowing funds from the company that issued the card and making a promise to repay in the future. The outstanding balance on your credit card is a liability, not an asset. It reflects the amount you owe to the card issuer. Thus, credit card spending and outstanding balances on credit cards are not part of the money supply.

FRACTIONAL RESERVE BANKING

The banking system is an important component of the capital market. Commercial banks, saving and loan institutions, and credit unions are all part of the banking system of the United States. They all provide banking services. Like other private businesses, banks are profit-seeking operations. Banks provide services (for example, the safekeeping of funds and checking account services) and pay interest to attract both checking and savings depositors. They help bring together people who want to save for the future and

those who want to borrow in order to undertake investment projects. The primary source of revenue for banks is the income they derive from their loans and investments.

The United States has a fractional reserve banking system. Banks use a portion of the deposits of their customers to extend loans and make investments. They are required to maintain only a fraction of their assets in the form of reserves, that is, assets that could be used to redeem the funds of their depositors. Vault cash and deposits with the central bank—the Federal Reserve in the United States—count as reserves because the bank can use these funds to meet the withdrawal demands of its depositors.

Because only a fraction of the bank assets must be held as reserves against the checking and savings deposits of customers, the system is called a **fractional reserve banking system**. The reserves of a bank would be insufficient to meet the demands of its customers if they all sought to make withdrawals at the same time. During normal times, however, some customers will want to make withdrawals and reduce their deposits, but others will be making deposits that add to their account. So banks typically do not run into problems even though they maintain only a fraction of their assets in reserve against their checking and savings deposits.

The Federal Reserve, often referred to as the Fed, sets the level of reserves that banks are required to maintain against their checking deposits. While the required reserve ratio varies by bank size, the typical bank is required to maintain about 10 percent of its checking deposits in the form of reserves: vault cash and deposits with the Fed. Currently, banks are not required to maintain reserves against their savings deposits.

Under a fractional reserve system, when banks extend additional loans, they create additional checking deposits and thereby expand the money supply. Suppose you have \$1,000 in cash and decide to deposit it in your checking account at a local bank. If the reserve requirement is 10 percent, your bank must keep \$100 or 10 percent of your \$1,000 deposit as reserves, but the other \$900 generates excess reserves for the bank. These excess reserves can be used to extend additional loans. If the bank extends a new loan, the person borrowing the funds would acquire \$900 in the form of either checkable deposits or cash. These new funds would add to the money supply. No one else has less money, and the person taking out the loan now has an additional \$900. Moreover, the

process does not end there. If the person borrowing the funds uses them to buy something, perhaps a new television set, the merchant selling the TV set would acquire the \$900. If the merchant then deposits those funds in a bank, this too will create additional excess reserves that could be used to extend still more loans and generate an additional expansion in the money supply.

HOW THE FED CONTROLS THE MONEY SUPPLY

Most countries have a central bank that controls the money supply and conducts monetary policy. As we have noted, the central bank of the United States is the Federal Reserve System. The European Central Bank is the central bank for countries using the euro as their currency. In the United Kingdom, the central bank is the Bank of England; in Canada, it is the Bank of Canada; in Japan, it is the Bank of Japan.

Central banks are responsible for the conduct of monetary policy. In the United States, the Federal Reserve is supposed to control the money supply and provide a monetary climate that is in the best interest of the entire economy. Unlike commercial banks, the Federal Reserve is not a profit-making institution. The earnings of the Fed, over and above its expenses, belong to the U.S. Treasury.

The Board of Governors is the decision-making center of the Federal Reserve System. This powerful board consists of seven members, each appointed to a staggered fourteen-year term by the President of the U.S. with the advice and consent of the U.S. Senate. The President designates one of the seven members as chair for a four-year term.

The Board of Governors of the Fed establishes the rules and regulations that apply to all banking institutions. It sets the reserve requirements and regulates the composition of the asset holdings of banks. Moreover, The Federal Open Market Committee (FOMC) consists of twelve members—the seven members of the Board of Governors of the Federal Reserve System; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis. This committee determines the Fed's policy with respect to the purchase

and sale of government bonds and other financial assets. As we will soon see, this is a major tool the Fed uses to conduct monetary policy.

The Fed now has four major tools it can use to control the money supply: (1) the establishment of reserve requirements for banks, (2) buying and selling U.S. government securities and other financial assets in the open market, (3) the volume of loans extended to banks and other institutions, and (4) the interest rate it pays banks on funds held as reserves. We now turn to the explanation of how these tools influence the money supply.

Reserve Requirements. The Fed sets the level of reserves that banks are required to maintain against the checking deposits of their customers. If the Fed wants to expand the money supply, it would reduce the reserve requirements, which would create additional excess reserves for banks. In turn, the additional excess reserves would encourage banks to extend more loans and thereby expand the money supply. In contrast, if the Fed wants to reduce the supply of money, it would increase the reserves banks are required to maintain against their checking deposits. This should reduce the excess reserves of banks and cause them to extend fewer loans, which would tend to reduce the money supply.

Changes in reserve requirements are a blunt tool. As a result, the Fed seldom uses this instrument to alter the money supply.

Open Market Operations. The most common tool used by the Fed to alter the money supply is open market operations—the buying and selling of U.S. securities and other financial assets on the open market. For six decades following World War II, the Fed purchased and sold only U.S. government securities in its conduct of open market operations. However, since December 2007, the Fed has been buying and selling a broader range of financial assets, including corporate bonds, commercial paper, and mortgage-backed securities. If the Fed wants to expand the money supply, it simply purchases more of these financial assets. It pays for them merely by writing a check on itself. Unlike you and me, the Fed does not have to check to see if it has adequate funds in its account. When the Fed buys things, it injects “new money” into the economy in the form of additional currency in circulation and deposits with commercial banks. In essence, the Fed creates money out of nothing.

If the Fed wants to reduce the money supply, it would sell some of its holdings of financial assets. As individuals and businesses purchase these assets from the Fed, they would draw down their bank deposits and drain reserves from the banking system. This would reduce the money supply both directly (by reducing checking deposits) and indirectly (by reducing the quantity of reserves available to the banking system).

Extension of Loans. When the Fed extends additional loans to banks or other borrowers, it injects additional reserves into the banking system and these loans will increase the money supply. If the Fed wants to expand the money supply, it will reduce the interest rate charged to borrowers and extend more loans. On the other hand, if it wants to reduce the money supply, it will increase the interest rate charged to borrowers and reduce the volume of its outstanding loans.

Historically, the Fed has extended loans only to banks and only for the purpose of providing them with funds to meet temporary reserve deficiencies. These loans were almost always for short periods of time in order to provide the bank with some time to reduce its outstanding loans and improve its reserve position. However, the Fed response to the severe downturn of 2008 changed all of this dramatically. The Fed sharply increased the volume of its outstanding credit and it began extending loans to non-bank financial institutions such as insurance companies and brokerage firms. These loans were often for lengthy time periods such as five to ten years. Like other Fed loans, these new types of loans injected additional reserves into the banking system and were intended to expand the money supply through new loans.

Interest Rate Fed Pays Banks on Reserves. Beginning in October 2008, the Fed began paying commercial banks interest on their reserves. As of December 2015, the interest rate the Fed was paying banks on their reserves was approximately a half of a percentage point. However, the Fed can set the interest rate paid on reserves at whatever level it chooses.

If the Fed wants the banks to expand the money supply by extending more loans, it will set the interest rate it pays on excess reserves at a very low level, possibly even zero. This will encourage banks to reduce their excess reserves, extend more loans for businesses and other purposes, and thereby expand the supply of money. On the other

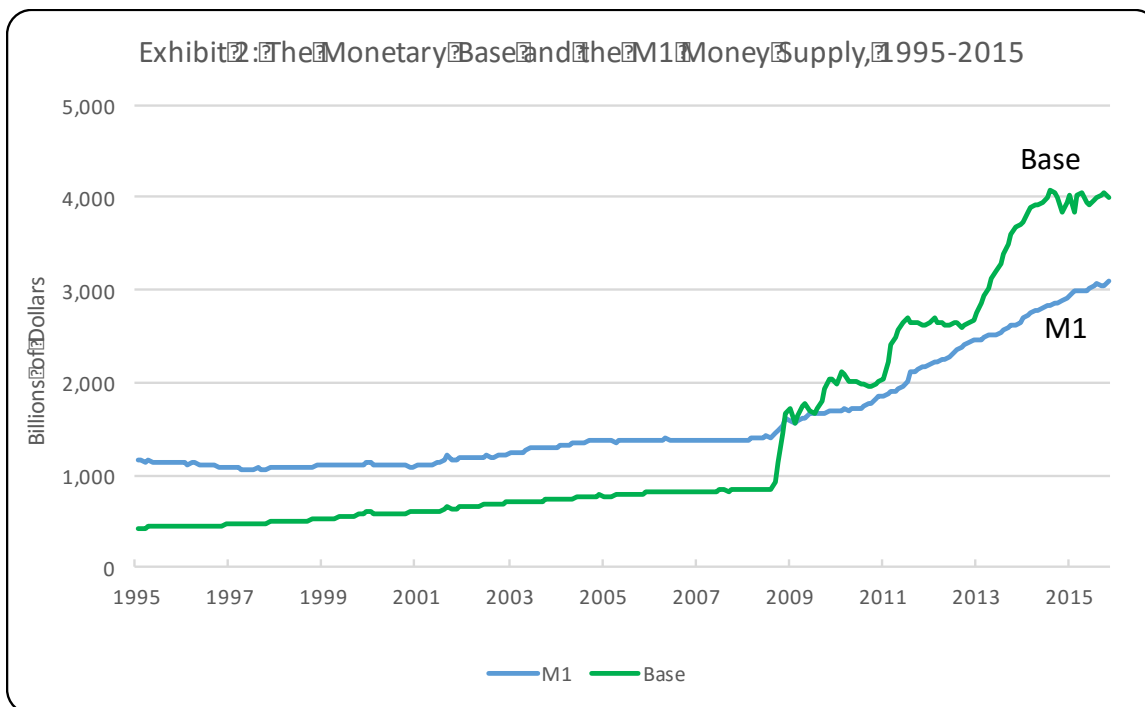
hand, if the Fed wants to reduce the money supply, it can increase the interest rate paid on excess reserves and thereby provide commercial banks with a stronger incentive to hold excess reserves rather than extend more loans. This will tend to reduce the money supply.

Summarizing, if the Fed wants to increase the money supply, it can decrease reserve requirements, purchase additional financial assets, extend additional loans, and/or lower the interest rate it pays banks on excess reserves. On the other hand, if the Fed wanted to reduce the money supply, it could increase the reserve requirements, sell some of its asset holdings, extend fewer loans, and/or pay banks a higher interest rate on their excess reserves. Because the Fed usually seeks only small changes in the money stock (or its rate of increase), it seldom makes large changes in the tools that it uses to control the money supply.

RECENT MONETARY POLICY

As our analysis indicates, the Fed creates either currency or bank reserves when it purchases more assets and extends more loans. Currency and bank reserves form the foundation for the money supply. Economists refer to the currency in circulation plus the reserves of commercial banks (vault cash and reserve deposits with the Fed) as the monetary base. The monetary base is the foundation for the M1 money supply. The currency in circulation contributes directly to the money supply, while the bank reserves provide the underpinnings for checking deposits.

Historically, as the Fed has injected additional reserves into the system and thereby expanded the monetary base, the M1 money supply generally increased by a similar proportion. When the Fed increased the monetary base by purchasing more assets and extending more loans, some of the additional reserves would flow into currency and the remainder into bank reserves. In turn, banks almost always used the additional reserves to extend more loans and undertake more investments until the excess reserves were negligible. Thus, the monetary base and the M1 money supply moved together. See Exhibit 2 on the next page.



Source: www.federalreserve.gov

Exhibit 2 tracks the monetary base and M1 money supply during 1995-2015. Note how the two moved together prior to 2008. But all of this changed during the second half of 2008. Responding to the severe economic downturn, the Fed sharply increased its purchases and loans. As Exhibit 2 shows, the monetary base (currency plus the bank reserves) jumped from \$828 billion at mid-year 2008 to \$1.63 trillion in early 2009 and to more than \$4 trillion in 2015. Thus, the monetary base has more than quadrupled since 2008. The M1 money supply grew a little more rapidly during this period, but its growth was far less rapid than that of the monetary base. Why? The growth of excess reserves provides the answer. Rather than use the huge injection of reserves to extend more loans and make more investments, a large share were held as excess reserves by the banks. Given the weak demand for loans and uncertainty about the future, the banks substantially increased their excess reserves and, as a result, the M1 money supply expanded much less rapidly than the monetary base.

HOW DOES MONETARY POLICY INFLUENCE THE ECONOMY?

When the Fed writes a check on itself in order to purchase more financial assets or extend additional loans, it creates additional bank reserves and expands the money supply. This expansionary monetary policy will tend to lower interest rates. In turn, the lower interest rates will encourage investment and consumption spending. As a result, total demand will increase and this expansion in demand will tend to stimulate output and employment. Thus, in the short run, a shift to a more expansionary monetary policy will generally exert a positive impact on demand, output, and employment. (Note: this is what the Fed was trying to do during 2008-2010. As Exhibit 2 illustrates, the Fed more than doubled the available reserves during this period. Short-term interest rates were pushed to near zero. Nonetheless, the initial impact on output and employment was weak.)

Just the opposite occurs if the Fed shifts to a more restrictive monetary policy. If the Fed sells some of its current asset holdings, the buyers of these assets will use some of their money deposits to purchase the assets from the Fed. This will drain reserves from the banking system and reduce the money supply. As a result, banks will have fewer funds available for lending, which will cause interest rates to rise. The higher interest rates will make current investment and consumption more expensive, making business and household spending on credit less attractive. Thus, total demand will decline, reducing both output and employment.

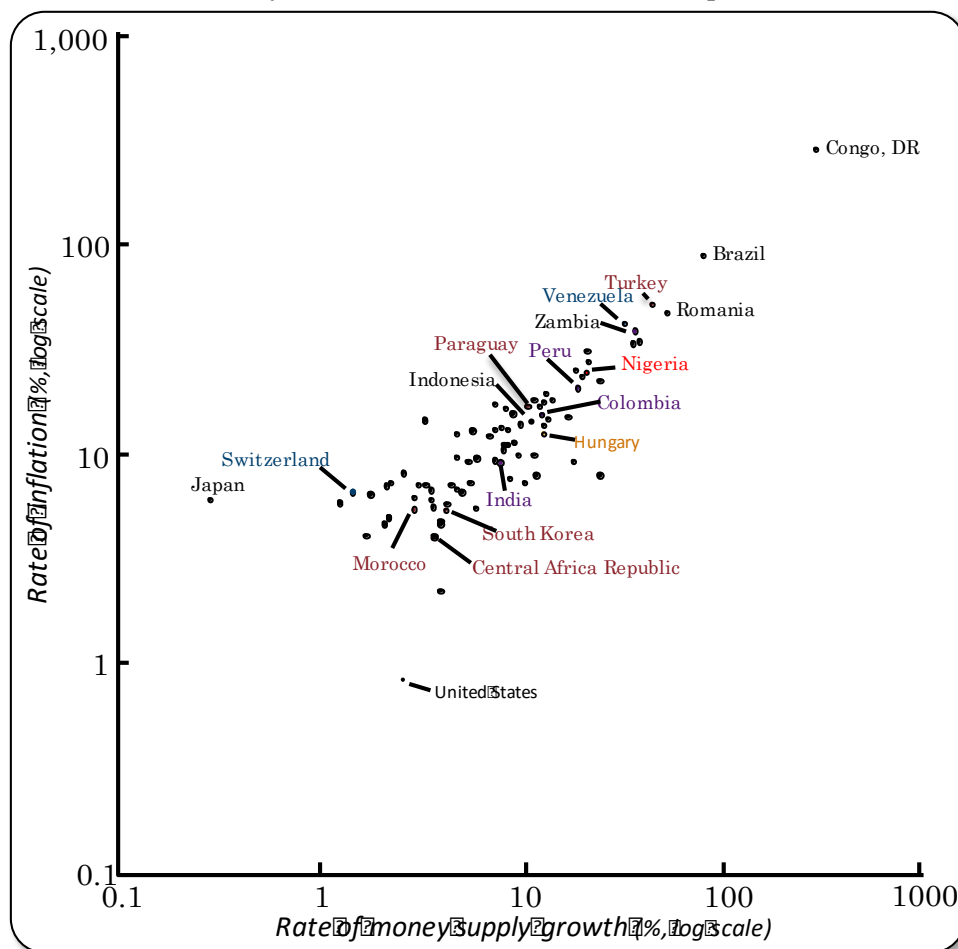
In summary, a shift to a more expansionary monetary policy will tend to increase output and employment, while a shift to a more restrictive policy will have the opposite effect. However, two additional factors complicate the use of monetary policy as a tool with which to promote economic stability. First, while a shift to expansionary monetary policy generally stimulates output and employment in the short run, if the expansionary policy is continued over a lengthy time period, the result will be inflation. Second, there are long and variable lags between a shift in monetary policy and when the shift begins to exert a significant impact on demand, output, and employment. We will now consider each of these issues.

MONEY AND INFLATION

What would happen if the monetary authorities follow a highly expansionary monetary policy over a lengthy period of time? The answer is inflation. (Note: this point is also covered in Part II, Element 5 of *Common Sense Economics*.) The linkage between rapid growth of the money supply and inflation is one of the most consistent in all of economics. When the money supply is increased rapidly, there is “more money chasing the available goods and services.” This will lead to persistently rising prices. With time, people will eventually anticipate the rising prices and will want to protect the purchasing power of their money. Consequently, they will build the expectation of inflation into their long-term agreements. Nominal interest rates will rise to reflect the expectation of inflation. Similarly, the expectation of inflation will be built into collective bargaining agreements and other long-term contracts. Once this happens, the expansionary monetary policy will fail to stimulate real output and employment. In fact, the higher inflation rates will generate uncertainty and this will retard economic activity.

Exhibit 3 on the next page illustrates the relationship between money growth and inflation. Here, the annual growth rate of the money supply (adjusted for the growth rate of the nation’s output) is measured on the x-axis and the rate of inflation on the y-axis for ninety-three countries for which data were available during the 1990–2010 period. Note how countries with single-digit rates of money growth—for example, Morocco, Central African Republic, India, Japan, South Korea, Switzerland, and the United States—also experienced single-digit rates of inflation. Similarly, countries with rates of money growth in the 10 to 25 percent range experienced rates of inflation in this same range. The data for Peru, Colombia, Indonesia, Hungary, Paraguay, and Nigeria illustrate this point. Countries like Zambia and Venezuela, with money growth rates in the 30 to 50 percent range, had inflation rates within this same range. Finally, look at the data for Brazil and the Democratic Republic of Congo. The average annual rate of money growth of these countries exceeded 100 percent during 1990–2010. So, too, did their rates of inflation.

Exhibit 3: Money and Inflation: An International Comparison, 1990-2010



MONETARY POLICY AS A STABILIZATION TOOL

Shifts in monetary policy can influence both economic activity and the rate of inflation. A shift to a more expansionary monetary policy will tend to stimulate output and employment, while a shift to a more restrictive policy will reduce total demand and place downward pressure on the general level of prices. Thus, monetary policy provides policy makers with a variety of tools to fight both recession and inflation.

But there is a major problem: it takes time for monetary policy to work. Studies indicate that 6 to 30 months will pass before a shift in monetary policy exerts much impact on output and employment. The time lag before there is much affect on the general level of prices is sometimes even longer. Moreover, the time lags of monetary policy are not only lengthy, but historically they have been quite variable. Given our

limited forecasting ability, these time lags make it difficult for policy makers to institute changes in monetary policy in a manner that will promote economic stability.

Further, if shifts in monetary policy are improperly timed, they will become a source of instability. In fact, Milton Friedman, the recipient of the 1976 Nobel Prize in Economics, argued that erratic monetary policy was the major source of economic instability in the United States. Friedman summarized his position in the following manner:

“Every major contraction in this country has been either produced by monetary disorder or greatly exacerbated by monetary disorder. Every major inflation episode has been produced by monetary expansion.”²

Clearly monetary policy is a two-edged sword. If timed correctly, it can promote economic stability, but if timed incorrectly, it can be a major source of instability. Rather than shifting back and forth between expansion and restriction in an effort to smooth the ups and downs of the business cycle, many economists believe that monetary policy makers should simply follow a steady and highly predictable path in order to reduce disturbances arising from monetary sources. Given the unpredictable time lags, veering one direction and then the other is likely to generate instability rather than reduce it.

CONCLUSION

Most economists believe that shifts in monetary policy exert a strong impact on total demand, output and employment in the short run, but the longer-term impact will be almost exclusively on the general level of prices. However, the time lags between when a monetary policy shift is instituted and when it exerts a significant impact on output and employment are both lengthy and variable. This limits the potential effectiveness of monetary policy as a stabilization tool. Monetary policy is generally most effective when it follows a steady course that keeps the inflation rate low. When approximate price stability is achieved, unexpected changes in the general level of prices will not disrupt long-term investments and contracts. Thus, when monetary policy makers keep the inflation rate low and steady, they have done their part to promote economic stability and the smooth operation of markets.

Endnotes

1. This supplement borrows freely from James Gwartney, Richard Stroup, Russell Sobel, and David Macpherson, *Economics: Private and Public Choice*, (Cengage South-Western, 2010), Chapters 13 and 14.
2. Milton Friedman, “The Role of Monetary Policy,” *American Economic Review* (March 1968): 12.

Short response questions:

1. What is the most important function of money? List the components of the M1 money supply?
2. Indicate how each of the following actions would affect the money supply?
(Answer either increase, decrease, or no change)
 - a. the purchase of \$10 billion of Treasury bonds by the Fed
 - b. an increase in the interest rate the Fed charges banks for loans
 - c. an increase in the volume of loans the Fed extends to financial institutions
 - d. a business owner deposits \$10,000 of cash into her bank account
 - e. the Fed increases the required reserves imposed on banks
 - f. the Fed increases the interest rate that it pays banks on excess reserves
3. If the Fed shifts to a more expansionary monetary policy, what is likely to happen to interest rates, output, and employment during the next 6 to 18 months? If the Fed expands the money supply rapidly during the next several years, what is the most likely impact of this policy?
4. Will the Fed be able to shift back and forth between expansionary and restrictive monetary policy in a manner that will reduce economic instability? Why or why not?

The answer key is available to instructors who adopt *Common Sense Economics* (St. Martin's Press). Details on how to adopt are provided at: <http://commonsenseeconomics.com/adopt>