Chapter 14
Monetary Policy

Chapter Overview
The objectives and the mechanics of monetary policy are covered in this chapter. It is organized around seven major topics: (1) interest rate determination; (2) the balance sheet of the Federal Reserve Banks; (3) the tools of monetary policy; (4) Federal Reserve targeting of the Federal funds rate; (5) the cause-effect chain of monetary policy; (6) an evaluation of the advantages and disadvantages of monetary policy; and (7) a brief, but important, synopsis of mainstream theory and policies. The purpose of the concluding sections is to summarize all the macro theory developed so far and fit the pieces together as an integrated whole for students.

Instructional Objectives
After completing this chapter, students should be able to:

1. Identify the goals of monetary policy.
2. Identify two types of demand for money and the main determinant of each.
3. Describe the relationship between GDP and the interest rate and each type of money demand.
4. Explain what is meant by equilibrium in the money market and the equilibrium rate of interest.
5. Explain the relationship between bond prices and the money market.
6. List the principal assets and liabilities of the Federal Reserve Banks.
7. Explain how each of the three tools of monetary policy may be used by the Fed to expand and to contract the money supply.
8. Explain the relative importance of the monetary policy tools.
9. Describe how the Fed targets the Federal funds rate as part of its monetary policy actions.
10. Describe expansionary and restrictive monetary policies, and explain why and how they are used.
11. Explain the Taylor rule and describe how it relates to current Fed policy.
12. Explain the cause-effect chain between monetary policy and changes in equilibrium GDP.
13. Demonstrate graphically the money market and how a change in the money supply will affect the interest rate.
14. Show the effects of interest rate changes on investment spending.
15. Describe the impact of changes in investment on aggregate demand and equilibrium GDP.
16. Contrast the effects of an expansionary monetary policy with the effects of a restrictive monetary policy.
17. List two strengths and three shortcomings of monetary policy.
18. Describe the arguments for and against “inflation targeting” versus a more discretionary “artful management” approach to monetary policy.
19. Summarize the connections between AD-AS, the price level, real output, and stabilization (fiscal and monetary) policy.
20. Define and identify terms and concepts at the end of the chapter.
Lecture Notes

I. Introduction to Monetary Policy
   A. Learning objectives – In this chapter students will learn:
      1. How the equilibrium interest rate is determined in the market for money.
      2. The goals and tools of monetary policy.
      3. About the Federal funds rate and how the Fed controls it.
      4. The mechanisms by which monetary policy affects GDP and the price level.
      5. The effectiveness of monetary policy and its shortcomings.
   B. Reemphasize Chapter 12’s points: The Fed’s Board of Governors formulates policy, and twelve Federal Reserve Banks implement policy.
   C. The fundamental objective of monetary policy is to aid the economy in achieving full-employment output with stable prices.
      1. To do this, the Fed changes the nation’s money supply.
      2. To change money supply, the Fed manipulates size of excess reserves held by banks.
   D. Monetary policy has a very powerful impact on the economy, and the Chairman of the Fed’s Board of Governors, Ben Bernanke currently, is sometimes called the second most powerful person in the U.S.

II. The Demand for Money: Two Components
   A. Transactions demand, \( D_T \), is money kept for purchases and will vary directly with GDP (Figure 14.1a).
   B. Asset demand, \( D_A \), is money kept as a store of value for later use. Asset demand varies inversely with the interest rate, since that is the price of holding idle money (Figure 14.1b).
   C. Total demand will equal quantities of money demanded for assets plus that for transactions (Figure 14.1c).

III. The Market for Money: Interaction of Money Supply and Demand
   A. Key Graph 14.1c illustrates the money market. It combines demand with supply of money.
   B. If the quantity demanded exceeds the quantity supplied, people sell assets like bonds to get money. This causes bond supply to rise, bond prices to fall, and a higher market rate of interest.
   C. If the quantity supplied exceeds the quantity demanded, people reduce money holdings by buying other assets like bonds. Bond prices rise, and lower market rates of interest result (see example in text).

IV. Consolidated Balance Sheet of the Federal Reserve Banks
   A. The assets column on the Fed’s balance sheet contains two major items.
      1. Securities, which are federal government bonds purchased by Fed, and
      2. Loans to commercial banks (Note: again commercial banks term is used even though the chapter analysis also applies to other thrift institutions.)
   B. The liability side of the balance sheet contains three major items.
1. Reserves of banks held as deposits at Federal Reserve Banks,
2. U.S. Treasury deposits of tax receipts and borrowed funds, and
3. Federal Reserve Notes outstanding, our paper currency.

V. The Fed has Three Major “Tools” of Monetary Policy

A. Open-market operations refer to the Fed’s buying and selling of government bonds.
   1. Buying securities will increase bank reserves and the money supply (see Figure 14.2).
      a. If the Fed buys directly from banks, then bank reserves go up by the value of the
         securities sold to the Fed. See impact on balance sheets using text example.
      b. If the Fed buys from the general public, people receive checks from the Fed and then
         deposit the checks at their bank. Bank customer deposits rise and therefore bank
         reserves rise by the same amount. Follow text example to see the impact.
         i. Banks’ lending ability rises with new excess reserves.
         ii. Money supply rises directly with increased deposits by the public.
      c. When Fed buys bonds from bankers, reserves rise and excess reserves rise by same
         amount since no checkable deposit was created.
      d. When Fed buys from public, some of the new reserves are required reserves for the
         new checkable deposits.
      e. Conclusion: When the Fed buys securities, bank reserves will increase and the
         money supply potentially can rise by a multiple of these reserves.
      f. Note: When the Fed sells securities, points a-e above will be reversed. Bank
         reserves will go down, and eventually the money supply will go down by a multiple
         of the banks’ decrease in reserves.
      g. How the Fed attracts buyers or sellers:
         i. When Fed buys, it raises demand and price of bonds, which in turn lowers
            effective interest rate on bonds. The higher price and lower interest rates make
            selling bonds to Fed attractive.
         ii. When Fed sells, the bond supply increases and bond prices fall, which raises the
             effective interest rate yield on bonds. The lower price and higher interest rates
             make buying bonds from Fed attractive.

B. The reserve ratio is another “tool” of monetary policy. It is the fraction of reserves required
   relative to their customer deposits.
   1. Raising the reserve ratio increases required reserves and shrinks excess reserves. Any
      loss of excess reserves shrinks banks’ lending ability and, therefore, the potential money
      supply by a multiple amount of the change in excess reserves.
   2. Lowering the reserve ratio decreases the required reserves and expands excess reserves.
      Gain in excess reserves increases banks’ lending ability and, therefore, the potential
      money supply by a multiple amount of the increase in excess reserves.
   3. Changing the reserve ratio has two effects.
      a. It affects the size of excess reserves.
      b. It changes the size of the monetary multiplier. For example, if ratio is raised from 10
         percent to 20 percent, the multiplier falls from 10 to 5.
4. Changing the reserve ratio is very powerful since it affects banks’ lending ability immediately. It could create instability, so Fed rarely changes it.

5. Table 14.2 provides illustrations.

C. The third “tool” is the discount rate, which is the interest rate that the Fed charges to commercial banks that borrow from the Fed.
   1. An increase in the discount rate signals that borrowing reserves is more difficult and will tend to shrink excess reserves.
   2. A decrease in the discount rate signals that borrowing reserves will be easier and will tend to expand excess reserves.

D. For several reasons, open-market operations give the Fed most control of the three “tools.”
   1. Open-market operations are most important. This decision is flexible because securities can be bought or sold quickly and in great quantities. Reserves change quickly in response.
   2. The reserve ratio is rarely changed since this could destabilize bank’s lending and profit positions.
   3. Changing the discount rate has become a passive tool of monetary policy. The Fed sets their target for the Federal funds rate, and then sets the discount rate at 1 percentage point above that target.

VI. Targeting the Federal Funds Rate

A. The Federal funds rate is the interest rate that banks charge each other for overnight loans.

B. Banks lend to each other from their excess reserves, but because the Fed is the only supplier of Federal funds (the currency used as reserves), it can set the Federal funds rate and then use open-market operations to make sure that rate is achieved.
   1. The Fed will increase the availability of reserves if it wants the Federal funds rate to fall (or keep it from rising).
   2. Reserves will be withdrawn if the Fed wants to raise the Federal funds rate (or keep it from falling).

C. The Fed may use an expansionary monetary policy if the economy is experiencing a recession and rising rates of unemployment.
   1. The Fed will initially announce a lower target for the Federal funds rate, then use open-market operations (buying bonds in this case). The Fed may also lower the reserve ratio or the discount rate.
   2. Increasing reserves will generate two results:
      a. The supply of Federal funds will increase, lowering the Federal funds rate.
      b. Through the money multiplier process, a greater expansion of the money supply will occur. (See Chapter 12 for a refresher on that process)
   3. Expansionary monetary policy will put downward pressure on interest rates, including the prime interest rate – the benchmark interest rate used by banks to set many other interest rates.

D. Restrictive monetary policy is used to combat rising inflation.
1. The initial step is for the Fed to announce a higher target for the Federal funds rate, followed by the selling of bonds to soak up reserves. Raising the reserve ratio and/or discount rate is also an option.

2. Reducing reserves will produce results opposite of what we saw for an expansionary monetary policy.
   a. The reduced supply of Federal funds will raise the Federal funds rate to the new target.
   b. Multiple contraction of the money supply, through the money multiplier process (Chapter 12).

3. Restrictive monetary policy results in higher interest rates, including the prime rate.

E. Consider This … The Fed as a Sponge

If reserves in the banking system are like a bowl of water, the Fed can use open-market operations as a sponge that can change the amount of water (reserves) in the bowl.

1. If there are too many reserves, the Fed “soaks up” the excess by selling bonds.
2. If the Fed wants more reserves in the system, it “squeezes the sponge” by buying bonds.

F. The Taylor Rule – Stanford economist John Taylor has proposed a rule for targeting the Federal funds rate. It assumes a target inflation rate of 2% and has three components:

1. If real GDP rises by 1 percent above potential, the Federal funds rate should be raised by one-half a percentage point.
2. If inflation rises by 1 percentage point above its target, the Federal funds rate should be raised by one-half a percentage point.
3. When real GDP is at its potential and inflation is at its target, the Federal funds rate should be at 4% (implying a real interest rate of 2%).
4. The rules work in reverse as well, if real GDP is below its potential and inflation is below the 2% target.
5. While the Fed has roughly followed the Taylor rule in recent years, it has also deviated under certain circumstances (e.g. the threat of deflation)

VII. Monetary Policy, Real GDP, and the Price Level: How Policy Affects the Economy

A. Cause-effect chain:

1. Money market impact is shown in Key Graph 14.5.
   a. Supply of money is assumed to be set by the Fed.
   b. Interaction of supply and demand determines the market rate of interest, as seen in Figure 14.5a.
   c. Interest rate determines amount of investment businesses will be willing to make. Investment demand is inversely related to interest rates, as seen in Figure 14.5b.
   d. Effect of interest rate changes on level of investment is great because interest cost of large, long-term investment is sizable part of investment cost.
   e. As investment rises or falls, equilibrium GDP rises or falls by a multiple amount, as seen in Figure 14.5c.
2. Expansionary monetary policy: The Fed takes steps to increase excess reserves, which lowers the interest rate and increases investment which, in turn, increases aggregate demand and real GDP. (See Column 1, Table 14.3)

3. Restrictive monetary policy is the reverse of an expansionary monetary policy: Excess reserves fall, which raises interest rate, which decreases investment, which, in turn, reduces aggregate demand and inflation. (See Column 2, Table 14.3)

VIII. Monetary Policy: Evaluation and Issues

A. Strengths of monetary policy:
   1. It is speedier and more flexible than fiscal policy since the Fed can buy and sell securities daily.
   2. It is less political. Fed Board members are isolated from political pressure, since they serve 14-year terms, and policy changes are more subtle and not noticed as much as fiscal policy changes. It is easier to make good, but unpopular decisions.

B. Recent monetary policy
   2. To counter the recession that began in March 2001, the Fed pursued an easy money policy that saw the prime interest rate fall from 9.5 percent at the end of 2000 to 4.25 percent in December 2002.
   3. The Fed has been praised for helping the U.S. economy maintain simultaneously full employment, price stability, and economic growth for over four years. They have also received credit for swift and strong responses to the September 11, 2001, terrorist attacks, significant declines in the stock market, and the overall recessionary conditions.

C. Problems and complications:
   1. Recognition and operational lags impair the Fed’s ability to quickly recognize the need for policy change and to affect that change in a timely fashion. Although policy changes can be implemented rapidly, there is a lag of at least 3 to 6 months before the changes will have their full impact.
   2. Cyclical asymmetry may exist: a restrictive monetary policy works effectively to brake inflation, but an expansionary monetary policy is not always as effective in stimulating the economy from recession. “You can lead a horse to water, but you can’t make it drink.”
   3. **Consider This … Pushing on a String**
      Japan’s ineffective expansionary monetary policy illustrates the potential inability of monetary policy to bring an economy out of recession. While pulling on a string (restrictive monetary policy) is likely to move the attached object to its desired destination, pushing on a string is not.
   4. The impact on investment may be less than traditionally thought. Japan provides a case example. Despite interest rates of zero, investment spending remained low during the recession.
D. “Artful Management” or “Inflation Targeting”?

1. The Fed under Alan Greenspan managed the money supply such that the U.S. economy enjoyed price stability, high levels of employment, and strong economic growth. This leads some to argue that the Fed should take an active policy role and attempt to pursue all of those objectives in setting policy.

2. Ben Bernanke replaced Alan Greenspan in early 2006. Many are wondering whether or not Bernanke has Greenspan’s intuition.

3. Out of concern that the Fed’s success under Greenspan may not be reproducible, some argue for inflation targeting. This narrower policy objective, which has been successful in other industrialized economies, would make monetary policy more predictable and “transparent” to those in the economy making decisions based on Fed action.

4. Skeptics of inflation targeting argue that that approach is too narrow, and that successes of other nations should be viewed carefully given the relative lack of global inflationary pressure in recent years.

IX. The Big Picture (see Key Graph, Figure 14.6) Shows Many Interrelationships

A. Fiscal and monetary policy are interrelated. The impact of an increase in government spending will depend on whether it is accommodated by monetary policy. For example, if government spending comes from money borrowed from the general public, it may be offset by a decline in private spending, but if the government borrows from the Fed or if the Fed increases the money supply, then the initial increase in government spending may not be counteracted by a decline in private spending.

B. Study Key Graph 14.6 and you will see that the levels of output, employment, income, and prices all result from the interaction of aggregate supply and aggregate demand. In particular, note the items shown in red that constitute, or are strongly influenced by, public policy.

C. Try Quick Quiz 14.6.

X. LAST WORD: For the Fed, Life is a Metaphor

A. The media use colorful terms to describe the Federal Reserve Board and its chair, Ben Bernanke. They may loosen or tighten reins while riding herd on a rambunctious economy!

B. The Fed has been depicted as a mechanic, with references to loosening or tightening things, and to the economy running beautifully or acting sluggish, accelerating, or going out of control.

C. The warrior metaphor has been used—fighting inflation, plotting strategy, protecting the dollar from attack.

D. The Fed has been depicted as the fall guy in terms of administration officials “leaning heavily” on it and telling the Fed to ease up or to relax.

E. As a cosmic force, the Fed satisfies three criteria—power, mystery, and a New York office.