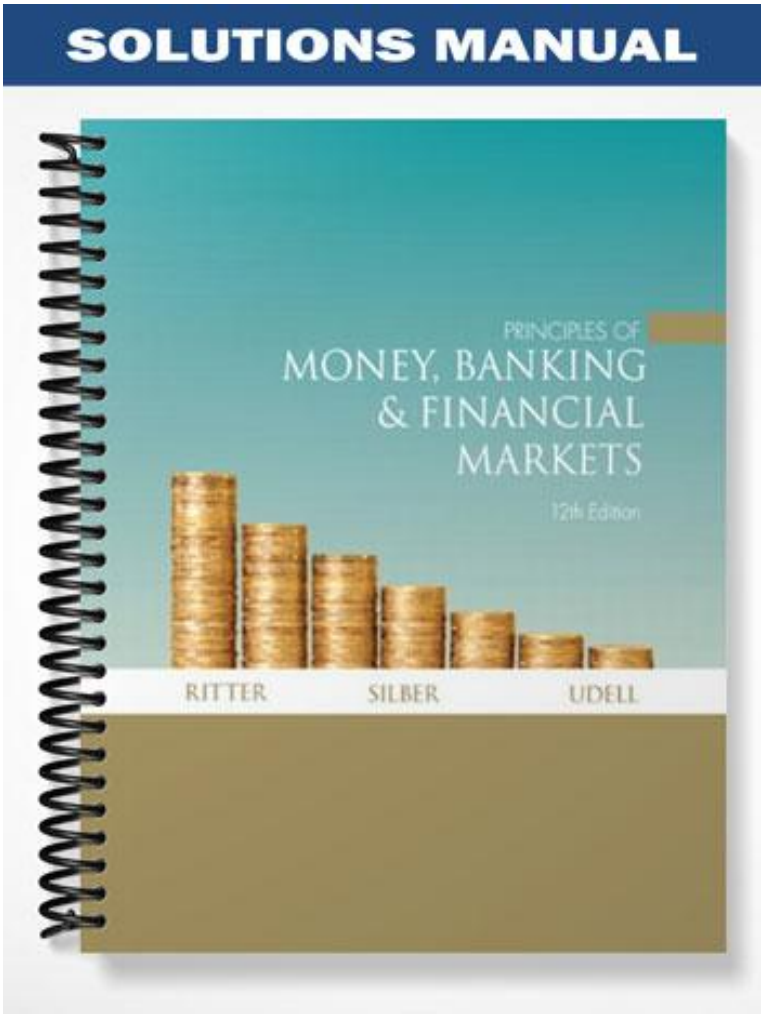
SOLUTIONS MANUAL



Chapter 2
The Role of Money in the Macroeconomy

■ Chapter Outline

I. Introducing Money
   a. Who determines our money supply?
   b. The importance of money: Money versus barter
   c. The importance of money: Financial institutions and markets

II. Money, the Economy, and Inflation
   a. Bank reserves and the money supply
   b. How large should the money supply be?
   c. Money and inflation

■ Chapter Summary

This chapter introduces the basic definitions, functions, and macroeconomic significance of money. Money is a financial asset that serves three functions: medium of exchange, unit of account, and store of value. Although the key distinguishing characteristic of money is that it serves as a medium of exchange, the difficulty in identifying monetary assets in the actual economy results in somewhat arbitrary empirical definitions of money (e.g., M_1, M_2). The reason for the difficulty lies in the fact that liquidity is continuous. As a result, no clear line exists between financial assets that do and do not serve as a medium of exchange. Money also vastly improves the efficiency of market economies by reducing the transactions costs of trade relative to what they would be in an economy without money—a barter economy. Money need not have intrinsic value (it does not in today's economies); it need only be generally acceptable as a means of payment. Though in the past countries such as the United States have used commodity-backed money (e.g., money backed by gold), this is no longer the case. The central bank (the Federal Reserve System in the United States and the European Central Bank within 15 European Union nations) simply "creates" whatever amount of money it desires. It accomplishes this in part through the profit-seeking behavior of commercial banks and savings and loans that make loans and create deposits for their customers.

Money's macroeconomic significance differs in the short and long run. As long as people increase spending when they find themselves with larger quantities of money, changes in the money supply or in its rate of growth will stimulate demand for goods and services. In the short run, if prices do not rise immediately, this will cause output to increase. But in the long run, as output growth is not unlimited and more money does not increase productive capacity, more money results in higher average prices in the economy, and more rapid rates of money growth result in higher rates of inflation. This is most obvious in hyperinflations.

■ Teaching

This chapter introduces the basic definitions, functions, and macroeconomic significance of money. Students are likely to be familiar with these concepts from a principles course. However, they probably need continual reminding about the difference between money and income. By discussing how an economy would operate without money, the chapter highlights the important role that money plays in reducing transactions costs. Lectures should emphasize the concept of liquidity and its link to the various measures of money. They should also stress that liquidity is a continuum and that the divisions among the definitions of money are arbitrary. Economists are increasingly using the M_2 over the M_1 definition of money, because which financial assets do and do not circulate as a medium of exchange has become increasingly blurred with deregulation and financial innovation (e.g., minimum checking account balances that people rarely draw on are included in M_1, while money market mutual fund shares on which checks can be written are not included in M_1, though it is not clear which of these is treated as more liquid by their owners).

The role of money in allocating resources across time is introduced. The discussion is in the spirit of a preview and should get students to start thinking about the nature and role of financial intermediaries.

Next come brief introductory remarks about the money creation process. Students are reacquainted with the idea that money is not backed by a tangible good such as gold. It should be emphasized that money creation takes place as the result of decisions by the central bank in conjunction with natural profit-maximizing decisions carried out by depository institutions.

Students often find interesting a discussion of hyperinflation examples. Hyperinflation is also a useful topic for establishing the connection between money growth and inflation and the importance of public confidence in the working of a modern monetary system.

Recently, the Fed has shown concern about the possibility of deflation—a falling general price level. Japan's extended difficulties in the last decade have been marked by just such an experience. Deflation results when money supply and velocity changes do not keep pace with output changes. It is important to emphasize the difference between deflation and falling prices for isolated products (e.g., computers). The reason deflation can be a significant problem is that most debts are denominated in nominal dollars. Falling prices make it more expensive to repay a given amount of dollars. Although deflation is rightly considered a phenomenon that should be avoided, it has not always been associated with recession or depression. In the late 1800s, for example, the U.S. price level fell steadily by modest amounts even as the economy grew.

As a preview of future chapters, instructors may find it useful to discuss what has happened to the velocity of M_1 in recent years, why it happened, and the consequences of velocity instability for the Federal Reserve.

Useful Internet Sites

1. www.federalreserve.gov—for a wealth of information about the economy. This site will be mentioned in nearly every chapter as it contains key data series on interest rates and quantities for virtually all financial variables of interest. It also contains descriptive material about the Federal Reserve System and the conduct of monetary policy. Finally, it contains links to the 12 Federal Reserve District Banks, each of which has even more useful information.

2. http://www.ex.ac.uk/~RDavies/arian/government.html—for a brief look at the money supply from a libertarian perspective.

■ Discussion Questions

1. Credit cards and travelers' checks are widely accepted as a medium of exchange. Should they be considered part of the money supply?

   Travelers' checks are in M_1. There are many reasons to exclude credit cards from money definitions; perhaps the most compelling is that, though credit cards provide purchasing power, they are actually a line of credit, i.e., an instantly accessible loan, rather than a financial asset like money. The actual payment to the merchant will come from the credit card-issuing bank.

2. Is money necessary in an advanced economy? Are there alternative means of carrying out transactions and allocating resources over time?

   It is hard to imagine a realistic alternative. And if money were to somehow vanish, would we not eventually contrive one think of the money that appears when an economy enters a hyperinflation.

3. Is it necessary to have something of value backing up money? What stands behind money in the United States?

   Nothing but confidence in its acceptability by all economic agents within a country both in the private and the public sectors when conducting all economic transactions.

4. What happens when a person has too much money? What about when an economy has too much money?

   A person will spend it on goods and services or on a less liquid financial asset. An economy can have too much money only relative to its current real output and price levels. If the central bank wishes to maintain a stable price level, a monetary expansion beyond the rate of output growth (given velocity) will be too much money.

5. Is it possible to have inflation without monetary expansion in the short run? What about the long run? What about the reverse—monetary expansion without inflation?

   Short-run inflation can occur without monetary expansion if real output falls or velocity increases. In the long run, neither real output contraction nor velocity increase are likely to continue at a sustained rate. So monetary expansion is necessary for inflation in the long run. A short-run monetary expansion may not produce inflation if output grows or velocity decreases enough to offset the inflationary effects of the monetary expansion. But in the long run, a money growth rate greater than the growth rate of real output will generate inflation.

6. Discuss the conditions required to allow an EU nation to replace its currency with the Euro?

   Within these nations the Euro had to be universally accepted as a medium of exchange, meaning that henceforth all economic transactions would be conducted in this new money. It also had to be used as a standard of value, or unit of account, so that all prices, wages, salaries, and assets would be converted from their previous currency values such as French francs and German marks into euros at an agreed-upon exchange rate. Lastly, it had to be utilized as a store of value, being used in such financial instruments as bank savings accounts and CDs.

■ Answers to Questions in Text

1. M_1 is the best measure of the money supply for the medium of exchange role. M_1 contains currency and demand deposits, the assets generally acceptable as means of payment. Given reduced regulations and technology changes, however, the medium of exchange role is increasingly spread across several of the somewhat arbitrary empirical definitions of money (M_1, M_2).

2. A good medium of exchange must be universally acceptable in trade. In addition, the medium of exchange should have minimal uncertainty over its value in trade and be a good store of value. Finally, it should be divisible so that it can serve as a unit of account.

3. The value of money is determined by its purchasing power. If the price level rises, the value of money declines because the purchasing power of each monetary unit is reduced.

4. Most lenders prefer short-term, liquid financial assets, while most borrowers prefer longer-term loans. Deposit-type money offers the ultimate in liquidity and is thus attractive to lenders (depositors) who are willing to hold some of their monetary assets in this form. In so doing, they increase bank reserves and the amount of lending banks can do. Without deposit-type money, households would have to meet their liquidity needs with cash and would be less willing to lend. Thus the overall level of economic activity, including consumption, saving, and investment, would diminish.

5. No, the money supply is linked to the GDP via velocity. A central determinant of the effectiveness of monetary policy is the predictability and stability of velocity. This increase in the money supply could be offset by a fall in velocity or enhanced by its increase; the reverse is also possible.

6. More money does not always lead to inflation: Velocity can fall and output can rise. In the long run, inflation cannot continue without increases in the money supply.

7. If it costs $35,000 a year to go to college now, it will cost $140,000 if the price level quadruples. In real terms, however, there would be no change in incomes, and other prices would rise by the same proportion.

8. Such a shift will reduce M_1 and increase M_2 because demand and other checkable deposits are part of both M_1 and M_2, but money market deposit accounts and money market mutual funds are only part of M_2.

9. Assuming that the Fed does nothing to offset the change, U.S. currency would leave the U.S. economy, reducing the amount of the monetary base in the United States. Reserves in the U.S. banks would decline and the money supply would fall.

10. A breakdown of a country's institutional structure, perhaps even a revolution, is likely with hyperinflation. However, gradual inflation is unlikely to cause the fundamental changes of which Lenin spoke.

■ Essay Questions

1. Describe the characteristics an asset must possess in order to serve as a medium of exchange. Which of these is most important for the operation of the economy?

   The characteristics are: general acceptability in trade (medium of exchange) by all economic agents, high degree of certainty of value (store of value), and divisibility (unit of account). Being a medium of exchange is most crucial.

2. Is it possible for a nonmonetary economy to save and invest? How does money improve how resources are allocated over time?

   Yes, it is possible to save and invest under a barter economy, but it is highly inefficient. The saver and investor must be the same person. Saving occurs as real assets are acquired, so consumption must be less than income. Money allows for the separation of saving and investment decisions. This increases specialization and expands economic growth.

3. What is the "right" amount of money in an economic system?

   There should be enough money to employ all resources and not enough to cause inflation. That is, the right amount of money can only be determined relative to the economy's real output and price levels. The Federal Reserve sets monetary policy, which is a vital determinant of the money supply.

4. Describe how changes in the money supply affect GDP. When might this be inflationary?

   Changes in the money supply affect people's liquidity, which then affects their spending on goods and assets. The closer an economy is to full employment, the more likely it is to be inflationary. Often an increase M_1 tends to generate an rise in spending while a decrease in the money supply produces the opposite effect on the economy.

5. Define the velocity of money. What determines velocity? How are changes in velocity related to inflation/deflation?

   Velocity is the average number of times a unit of money is used to purchase goods and services during a given time period, normally one year. Velocity (nominal GDP/money supply) is determined by the public's relative preference for money versus other assets. Rising velocity can be a short-run source of inflation, while falling velocity can be a short-run cause of deflation.

6. What happens to money and velocity during hyperinflation? What happens to the economy? Cite some historical examples.

   The money supply increases tremendously fast, followed by hyperinflation. Velocity rises toward infinity as people lose all confidence in money. Barter and the use of alternative currencies (e.g., the U.S. dollar in recent cases) are two ways that people can avoid holding rapidly devaluing domestic currency during a hyperinflation. Examples include Germany in 1923, Hungary in 1946, and Bolivia in the mid-1980s.