

The International Financial System

Chapter Summary

When countries agree on how exchange rates should be determined, economists say that there is an **exchange rate system**. A **floating currency** is the outcome of a country allowing its currency's exchange rate to be determined by demand and supply. The current exchange rate system is a **managed float exchange rate system** under which the value of most currencies is determined by demand and supply, with occasional government intervention. A **fixed exchange rate system** is a system under which countries agree to keep the exchange rates among their currencies fixed.

The theory of **purchasing power parity** states that in the long run, exchange rates move to equalize the purchasing power of different currencies. This theory helps to explain some of the long-run movements in the value of the U.S. dollar relative to other currencies. Purchasing power parity does not provide a complete explanation of movements in exchange rates for several reasons, including the existence of **tariffs**, taxes imposed by a government on imports, and **quotas**, government-imposed limits on the quantity of a good that can be imported. When a country keeps its currency's exchange rate fixed against another country's currency, it is **pegging** its currency.

Learning Objectives

When you finish this chapter, you should be able to:

1. **Understand how different exchange rate systems operate.** When countries agree on how exchange rates should be determined, economists say that there is an **exchange rate system**. A currency floats when its exchange rate is determined by demand and supply. The current exchange rate system is a **managed float exchange rate system** under which the value of most currencies is determined by demand and supply, with occasional government intervention. A **fixed exchange rate system** is a system under which countries agree to keep the exchange rates among their currencies fixed. Under the gold standard, the exchange rate between two currencies was automatically determined by the quantity of gold in each currency. By the end of the Great Depression of the 1930s, every country had abandoned the gold standard. Under the Bretton Woods System, which was in place between 1944 and the early 1970s, the United States agreed to exchange dollars for gold at a price of \$35 per ounce. The central banks of all other members of the system pledged to buy and sell their currencies at a fixed rate against the dollar.

2. **Discuss the three key features of the current exchange rate system.** The three key aspects of the current exchange rate system are:
- The U.S. dollar floats against other major currencies.
 - Most countries in Western Europe have adopted the euro as their common currency.
 - Some developing countries have fixed their currency's exchange rate against the dollar or against another major currency.

Since 1973, the value of the U.S. dollar has fluctuated widely against other major currencies. The theory of **purchasing power parity** states that, in the long run, exchange rates move to equalize the purchasing power of different currencies. This theory helps to explain some of the long-run movements in the value of the U.S. dollar relative to other currencies. Currently 13 countries of the European Union use a common currency, known as the **euro**. The experience of the countries using the euro will provide economists with information on the costs and benefits to countries from using the same currency. When a country keeps its currency's exchange rate fixed against another country's currency, it is pegging its currency. Pegging can result in problems similar to the problems countries encountered with fixed exchange rates under the Bretton Woods system. If investors become convinced that a country pegging its exchange rate will eventually allow the exchange rate to decline to a lower level, the demand curve for the currency will shift to the left, which makes it more difficult for the country's central bank to maintain the pegged exchange rate. The tendency for investors to sell a currency whose value they expect to decline is referred to as destabilizing speculation.

3. **Discuss the growth of international capital markets.** A key reason that exchange rates fluctuate is that investors seek out the best investments they can find anywhere in the world. Since 1980, the markets for stocks and bonds have become global. Foreign purchases of U.S. corporate bonds and stocks and U.S. government bonds have increased greatly just in the period since 1995. As a result, firms around the world are no longer forced to rely on only the savings of domestic households for funds.

Appendix: Explain the gold standard and the Bretton Woods System. While the chapter covers the current exchange rate system, the appendix covers two earlier systems: the gold standard and the Bretton Woods system. Together, these systems lasted from the early nineteenth century through the early 1970s. Your instructor may assign this appendix.

Chapter Review

Chapter Opener: Molson Coors Deals with Fluctuating Exchange Rates (pages 614-615)

Molson Coors Brewing Company faces exchange rate risk. The company sells beer in many different international markets. The company must convert revenues earned in Canada, the United Kingdom, and the United States back into U.S. dollars, the home currency. Changes in the exchange rate make the value of these conversions uncertain. Before its merger with Coors, Molson Breweries purchased the Montreal Canadiens hockey team in 1957. In 2001, Molson decided to sell the team, partly because of exchange rate problems. Molson was required to pay salaries and other operating expenses in U.S. dollars. Most of the team's revenues were from sales of tickets and radio and TV broadcasting, which were received in Canadian dollars. During the 1990's, as the Canadian dollar fell in value against the U.S. dollar, the team's costs rose more than its revenues.

 Helpful Study Hint

Read *An Inside Look* at the end of the chapter for a news article from the *Wall Street Journal* that explains government-imposed capital controls in Asia that restrict foreign investors' ability to speculate in these countries' currencies. Most investors believe that capital controls are bad for the international system because, they contend, markets allocate capital more efficiently than do governments.

Would you like to spend part of your career working overseas? Imagine that you accept a job in Spain and plan to work and live there for 10 years. Also imagine that the average productivity of Spanish firms is expected to grow faster than that of U.S. firms. What will your accumulated savings in euros be worth in U.S. dollars ten years from now? The *Economics in YOUR Life!* at the start of this chapter poses this question. Keep the question in mind as you read the chapter. The authors will answer the question at the end of the chapter.

18.1 LEARNING OBJECTIVE

18.1 Exchange Rate Systems (pages 616-617)

Learning Objective 1 Understand how different exchange rate systems operate.

An **exchange rate system** is the method that countries use to determine the exchange rates among their currencies. Some countries use a **floating currency system**, where the exchange rate is determined by the demand and supply of the currency in foreign exchange markets. Other countries, including the United States, occasionally intervene to buy and sell their currencies or other currencies to affect exchange rates. This is called a **managed float exchange rate system**. Until 1971, exchange rates were determined by a **fixed exchange rate system**, where the exchange rates remained constant for long periods of time. The gold standard was a fixed exchange rate system that lasted from the nineteenth century until the 1930s. The Bretton Woods system was also a fixed exchange rate system and lasted from 1944 to 1971.

Extra Solved Problem 18-1

Chapter 18 of the textbook includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

A Tale of Two Currencies

Supports Learning Objective 1: Understand how different exchange rate systems operate.

From 1994 to July 2005, China maintained a fixed exchange rate between its currency – called the renminbi (which means “people’s currency” in Chinese) or yuan – and the U.S. dollar. The exchange rate was 8.28 yuan per dollar. Pegging the yuan to the dollar reduced the risk of losses from changes in the exchange rate for anyone doing business in China. Assume that Apple, a firm with headquarters in the United States, establishes a manufacturing plant in Beijing. If Apple earns a profit of 1 million yuan in June 2005 this is equivalent to \$120,773. If the exchange rate had changed to 10 yuan per dollar, Apple’s profit would only equal \$100,000. Unlike China, Canada has a floating exchange rate. A floating

exchange rate increases the risk faced by those engaging in international trade and investment. The *Making the Connection* on page 618 of the textbook provides an example of the impact of exchange rate fluctuations on the owners of the Toronto Blue Jays, whose revenue is primarily in Canadian dollars but whose player salaries and some other expenses are paid in U.S. dollars. A fixed exchange rate creates other problems when the exchange rate differs greatly from the fundamental value of the currency. One way to measure the fundamental value of a currency is by computing its purchasing power parity. In the long run, floating exchange rates should adjust to reflect equivalent purchasing power. (Other factors can keep purchasing power parity from completely explaining exchange rates. See the section “What Determines Exchange Rates in the Long Run?” beginning on page 619 of the textbook). The World Bank compared the actual exchange rates of China and Canada to their purchasing power parity (PPP) conversion factors (the number of units of a country’s currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States) for 2003.

	Actual Exchange Rate	PPP Exchange Rate
China	8.28	1.8
Canada	1.4	1.2

Source: 2005 World Development Indicators. Table 5.7, Relative Prices and Exchange Rates.
http://devdata.worldbank.org/wdi2005/Table5_7.htm

Critics of the Chinese exchange rate policy, including U.S. government officials, claimed that the yuan was undervalued. Assume that the purchasing power parity exchange rate accurately measures the relative purchasing power of the dollar and yuan in 2003.

- Explain how the undervalued yuan affected trade between the United States and China.
- Based on its purchasing power parity, was the Canadian dollar overvalued or undervalued relative to the U.S. dollar in 2003?
- On July 21, 2005 the Chinese government changed the exchange rate between the yuan and the dollar to a new fixed rate of 8.11 yuan to the dollar. Did this action cause the yuan to appreciate or depreciate relative to the U.S. dollar?

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem concerns foreign exchange rates, so you may want to review the section “Exchange Rate Systems,” which begins on page 616 of the textbook.

Step 2: Answer question (a) by explaining how the undervalued yuan affected trade between the United States and China.

If the purchasing power parity exchange rate is accurate, it implies that \$100 had the same purchasing power as 180 yuan in 2003. But if someone had exchanged dollars at the fixed exchange rate, she would have received 828 yuan (ignoring transactions costs). If similar goods could be purchased in both countries, it would be much cheaper to buy them in China – by first exchanging dollars for yuan – than it would be to buy them in the United States. The overvalued yuan resulted in greater U.S. imports from China and a lower level of U.S. exports to China than if the exchange rate equaled the purchasing power parity exchange rate.

Step 3: Answer question (b) by explaining whether, based on its purchasing power parity, the Canadian dollar was overvalued or undervalued relative to the U.S. dollar in 2003.

The actual exchange rate was 1.4. This means that 100 U.S. dollars would buy 140 Canadian dollars. Because the purchasing power parity exchange rate was 1.2, 100 U.S. dollars should have exchanged for only 120 Canadian dollars. So, the U.S. dollar was overvalued or the Canadian dollar was undervalued. But remember that the purchasing power parity is only an approximation of the fundamental value of the Canadian and U.S. dollars.

Step 4: Answer question (c) by explaining whether the yuan appreciated or depreciated relative to the U.S. dollar when on July 21, 2005 the Chinese government changed the fixed exchange rate to 8.11 yuan per dollar.

Because fewer yuan were required to buy one dollar, the dollar depreciated as the exchange rate fell. This meant that the yuan appreciated or increased in value relative to the dollar. Some U.S. government officials expressed their preference for an even larger appreciation.

 Helpful Study Hint

Read *Don't Let this Happen to YOU! Remember that Modern Currencies are Fiat Money*. Even though the United States owns a large amount of gold, held in Fort Knox, Kentucky and the basement of the Federal Reserve Bank of New York, this gold does not back U.S. currency. The U.S. dollar is an example of fiat money that does not have to be exchanged by the central bank for gold or some other commodity money. U.S. currency is money mainly because the government says it is money and people are willing to accept it in exchange for goods and services.

18.2 LEARNING OBJECTIVE

18.2 The Current Exchange Rate System (pages 617-631)

Learning Objective 2 Discuss the three key features of the current exchange rate system.

The current world exchange rate system has three important features:

1. The United States allows the dollar to float against other major currencies.
2. Most countries in Western Europe have adopted a single currency, the **euro**.
3. Some developing countries have tried to keep their currencies fixed against the dollar or other major currencies.

Over time, the value of the dollar fluctuates against other major currencies, increasing in value against some, and decreasing in value against others. In the short run, the two most important causes of exchange rate movements are interest rate changes and changes in investors' expectations about the future value of currencies.

In the long run, exchange rates move to the point where it is possible to buy the same amount of goods and services with an equivalent amount of currencies. This is the principle of **purchasing power parity**. If a good or service is cheaper in one country than in another country, consumers and firms will try to buy that good from the country with the lower price. That action will drive up the price of the cheaper

country's currency, increasing the price of the good to the rest of the world. This will continue until there is no longer an advantage to buying the good in one country or another.

 **Helpful Study Hint**

Purchasing power parity should imply that:

The price of a good in Japan = exchange rate (¥/\$) x the price of the good in the United States.

Or,

The price of a good in the United States = (1/exchange rate (¥/\$)) x the price of the good in Japan, where (1/exchange rate (¥/\$)) = exchange rate (\$/¥).

Several complications may keep purchasing power parity from exactly holding, even in the long run:

- Not all goods are traded internationally. If the services of a plumber are more expensive in the United States than in the United Kingdom, after adjusting for exchange rates, homeowners will not go to the United Kingdom to hire a plumber to fix a clogged drain.
- Consumer preferences for products are different across countries.
- Countries impose barriers to trade. **Tariffs** and **quotas** limit the price adjustments of some goods.
- Shipping, storage, and insurance costs will also affect the foreign price of domestic goods. Consider goods that must be handled carefully (wine) or that must be kept refrigerated (frozen orange juice).

 **Helpful Study Hint**

A quota limits the amount of a good that can be imported.

A tariff is a tax imposed by the government on imports.

There are four main determinants of exchange rates in the long run:

- **Relative price levels.** Purchasing power parity is the most powerful long-run determinant of exchange rates.
- **Relative rates of productivity growth.** If Japanese productivity grows faster than U.S. productivity, then Japan should have relatively lower prices, causing the value of the yen to rise relative to the dollar.
- **Preference for domestic and foreign goods.** If consumers and firms in Japan prefer U.S. products to Japanese products, the demand for U.S. products will increase, which will increase the value of the U.S. dollar.
- **Tariffs and quotas.** A tariff or quota forces domestic manufacturers to buy more expensive domestic goods. Tariffs and quotas lead toward higher exchange rates.

A second aspect of the current exchange rate system is the introduction of a common currency, the **euro**, in most Western European countries. See Figure 18-2 on page 623 of the main text for a map showing the countries that have adopted the Euro. The European Central Bank (ECB) controls the quantity of euros. The ECB operates very similarly to the Federal Reserve System. A common currency can make it easier for consumers and firms to buy and sell goods across country borders. The increased ease of cross-border trade can aid in growth of the countries using the common currency. Potential drawbacks of using a common currency are that:

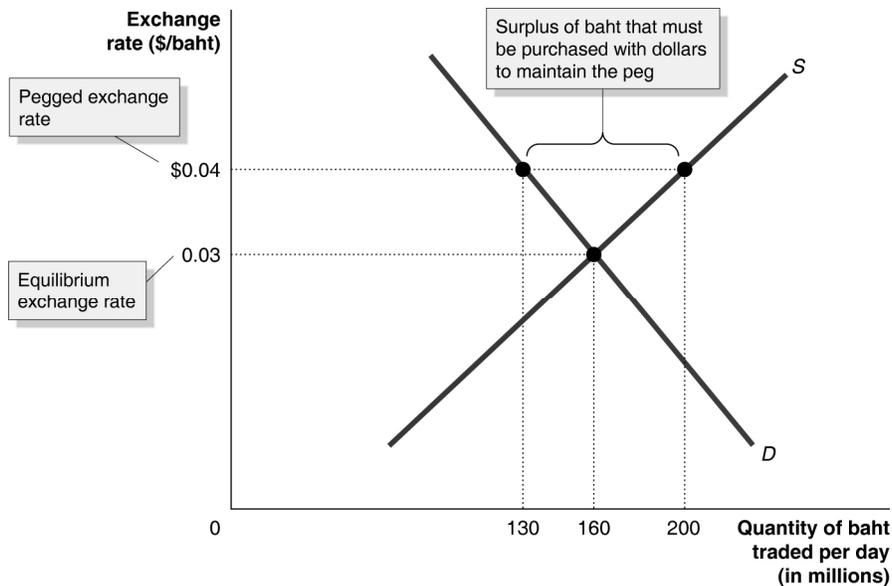
1. The participating countries can no longer undertake independent monetary policies.
2. An individual country's currency cannot change in value during a recession to stimulate aggregate demand.

A third important feature of the current exchange rate system is that some countries have attempted to keep their exchange rates fixed against the dollar or other major currencies. When a country keeps its exchange rate fixed compared to another country's currency, its currency is **pegged** to the other currency. With the exchange rate between countries fixed, business planning is much easier.

 **Helpful Study Hint**

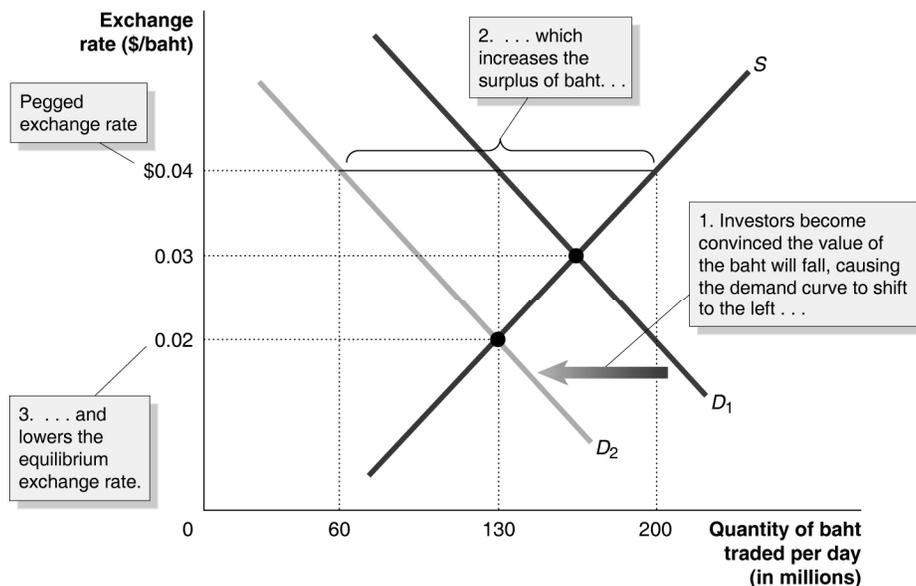
For instance, if the exchange rate is fixed, the interest on a loan from a U.S. bank to a business in Thailand that is repayable in dollars will always be a constant number of units of Thai currency (the baht). If the exchange rate changes, the loan payment will also change.

Because there is no guarantee that the market exchange rate will be the same as the pegged exchange rate, the government must be willing to buy its currency with dollars or buy dollars with its currency to maintain the exchange rate at the pegged rate. If a currency is pegged at a value above the market exchange rate, the currency is said to be overvalued. If the currency is pegged at a value below the exchange rate, the currency is said to be undervalued. The recent trend is for pegged exchange rate systems to be replaced with managed floating exchange rate systems. The textbook uses the case of Thai baht in the late 1990s to illustrate the problems that countries may encounter when they attempt to peg the value of their currencies. In textbook Figure 18-3, Thailand must buy their currency (the baht) to maintain the pegged exchange rate at \$0.04.



Pegging made it easier for Thai firms to export products to the United States and protected Thai firms that had taken out dollar loans. The Thai government ran into problems in 1997 when they had used up their dollar reserves buying their currency on the exchange market. The Thai government increased domestic interest rates in hopes of attracting dollars to increase the government's dollar reserves. The Thai government was afraid of the negative consequences of abandoning the peg even though it had led to the baht being overvalued.

The higher interest rates made it difficult for Thai firms and households to borrow, and domestic consumption and investment fell, pushing the economy into a recession. The high interest rates caused speculators to sell the baht in exchange for dollars in anticipation of a future lower exchange rate due to the Thai government's problems with maintaining the pegged rate. This destabilizing speculation is shown in textbook Figure 18-4 reproduced below.



Foreign investors also began to sell off their investments and exchange baht for dollars. This capital flight forced the Bank of Thailand to run through its dollar reserves. In 1997 when the Thai government abandoned the peg and let the currency float, Thai firms that had to make loan payments in dollars discovered that the value of these payments in baht had increased. Many firms declared bankruptcy, which pushed the Thai economy deeper into recession. The fear that they might experience the same problems as Thailand caused other countries also to abandon their pegged currencies. As a result of these events, the number of pegged exchange rates has fallen dramatically. Most countries that have pegged exchange rates are small and trade only with one big country. Several Caribbean countries peg their currency to the dollar, and several African countries, because of their French background, peg their currency to the euro.

The Chinese yuan was pegged against the dollar in 1994 at 8.28 yuan to the dollar. The pegging against the dollar ensured Chinese exporters a stable dollar price for what they sell in the United States. For the Chinese government to maintain this pegged rate, it had to buy dollars with yuan. By 2005, the Chinese government had accumulated about \$700 billion in U.S. dollars which were used to purchase U.S. Treasury Bonds. The Chinese government began to allow the yuan to float in 2005. By mid-2007, the exchange rate was about 7.62 yuan per dollar.

 Helpful Study Hint

There are four *Making the Connection* features in section 18.2. Here is a summary of each:

The Toronto Blue Jays Gain from the Rising Value of the Canadian Dollar

The Toronto Blue Jays must pay their baseball players in U.S. dollars. In addition, most of their away game expenses are in U.S. dollars. Because of the increasing value of the Canadian dollar, the currency in which the team generates revenues, the team has found that its expenses have been falling. Instead of having to make payroll payments of 125 million in Canadian dollars, the team had to only pay \$90 million in Canadian dollars. In addition, because of the stronger Canadian dollar, attendance at spring training games increased 33 percent as more Canadians traveled to Florida to attend these games.

The Big Mac Theory of Exchange Rates

The *Economist* magazine has been using the price of a Big Mac to examine purchasing power parity. Under purchasing power parity, the price of a Big Mac should be the same in all countries after converting the price to a single currency using the exchange rate. So if Big Macs sell for an average of \$3.22 in the United States and ¥280 in Japan, for purchasing power parity to hold, the exchange rate should be $¥280/\$3.22$ or $¥87 = \$1.00$. The actual exchange rate in early 2007 was $¥121 = \$1.00$, so in terms of Big Mac purchasing power, the yen was undervalued. It should have taken 28 percent fewer yen to buy a dollar than it actually did.

Was the Euro Undervalued or Overvalued in 2007?

It is difficult to determine if a currency is undervalued or overvalued. Stephen Jen of the investment firm Morgan Stanley tried to determine if the euro was undervalued or overvalued. The dollar has declined in value from 1.13 euros per dollar in 2002 to 0.74 euros per dollar in 2007. Jen studied economic variables that have been correlated with exchange rate movements in the past. He then used current values of these variables to determine if the euro was undervalued or overvalued. He concluded that the euro was overvalued.

Crisis and Recovery in South Korea

The South Korean government pegged the value of its currency, the won, in terms of U.S. dollars to make it easier for South Korean firms (like Hyundai) to trade with the United States and to protect firms that had taken out loans in dollars. Following the Thai government's decision to abandon the peg of its currency against the dollar, the South Korean government allowed the won to float in October 1997. South Korea had attempted to maintain the peg by increasing interest rates. This increase in interest rates reduced aggregate demand and pushed the economy into a severe recession. Unlike other East Asian countries, South Korea bounced back quickly. This is because of:

1. A \$21 billion loan from the International Monetary Fund that helped stabilize the won.
2. The ability of South Korean firms to obtain financing through the stock and bond markets.
3. The flexibility of its labor market that allowed wages to fall to offset the effects of the falling value of the won on profits.

Extra Solved Problem 18-2

Chapter 18 of the textbook includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

Purchasing Power Parity Exchange Rates

Supports Learning Objective 2: Discuss the three key features of the current exchange rate system.

At a leading U.S. Internet bookstore, *Harry Potter and the Half-Blood Prince* by J.K. Rowling sells for \$16.99. The same book sells for £9.95 at a leading U.K. Internet bookstore. What is the implied purchasing power parity exchange rate? If the current exchange rate is £0.56 = \$1, is the dollar overvalued or undervalued?

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem requires an understanding of exchange rates, so you may want to review the section “The Current Exchange Rate System,” which begins on page 617 of the textbook.

Step 2: Calculate the purchasing power parity exchange rate.

The purchasing power parity exchange rate is the exchange rate such that the good sells for an equivalent price in each country. We can calculate it from the equation:

$$\text{Price in the United States} = \text{Exchange Rate } (\$/\text{£}) \times \text{price in the United Kingdom.}$$

Using the U.S. price of \$16.99 and the U.K. price of £9.95, the purchasing power parity exchange rate is calculated as:

$$\begin{aligned} \text{Exchange rate } (\text{£}/\$) &= \text{Price in the United Kingdom}/\text{Price in the United States} \\ &= \text{£}9.95/\text{\$}16.99 = \text{£}0.59/\text{\$}. \end{aligned}$$

This implies that if the exchange rate were £0.59 = \$1, then the Harry Potter book would sell for an equivalent price in both countries.

Step 3: Determine if the dollar is overvalued or undervalued at the current exchange rate of £0.56 = \$1.

The dollar is overvalued if the actual exchange rate (£/\$) is greater than the implied purchasing power parity exchange rate. The dollar is undervalued if the actual exchange rate is less than the implied purchasing power parity exchange rate. Since the actual exchange rate of £0.56 = \$1 is less than the implied exchange rate of £0.59 = \$1, we would say the dollar is currently undervalued.

18.3 LEARNING OBJECTIVE**18.3 International Capital Markets (pages 631-632)****Learning Objective 3** Discuss the growth of international capital markets.

One important reason for exchange rate fluctuations is savers seeking the highest rate of return they can find anywhere in the world. To purchase foreign financial assets, savers must first purchase foreign currency, and when they sell foreign assets, they must purchase their home currency with the foreign currency in which the asset is denominated. Shares of stocks and long-term debt, both corporate and government, are bought and sold in capital markets. The largest capital markets are in the United States, Europe, and Japan. The three most important financial centers are in New York, London, and Tokyo. The use of world capital markets has helped increase growth in the world economy. Firms are no longer limited to domestic savings to help finance investment spending, and household savings can be used to purchase assets anywhere in the world.

In the 1990s, the flow of foreign funds into U.S. stocks and bonds – which is called portfolio investment – increased substantially. Investors in the United Kingdom accounted for more than 40 percent of all foreign purchases of U.S. stocks and bonds. Investors in China accounted for 10 percent, and investors in Japan accounted for 5 percent. Globalization of financial markets has helped increase growth and efficiency in the world economy. It is now possible for savings from around the world to move to the highest possible return anywhere.

Extra Solved Problem 18-3

Chapter 18 of the textbook includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

Buying a Foreign Bond

Supports Learning Objective 3: Discuss the growth of international capital markets.

The globalization of capital markets means that for individuals and firms the opportunities for purchasing foreign financial assets have significantly increased. Not only can someone save by buying domestic government bonds or stocks, but he or she can save by buying bonds and stocks issued by foreign corporations or foreign governments.

In December 2004, the exchange rate between the dollar and the pound was \$1.93 = £1. In December 2005, the exchange rate between the dollar and the pound was \$1.74 = £1. Suppose that in December 2004, a U.K. resident paid \$1,000 for a bond paying 5 percent interest issued by a U.S. corporation.

Assume that the bond will mature in one year, at which time the U.K. resident will be paid back the \$1,000 value of the bond. What would the rate of return on this investment be for this year, taking into account the change in the dollar-pound exchange rate during 2005?

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem requires an understanding of the current exchange rate system, so you may want to review the section “International Capital Markets,” which begins on page 631 of the textbook.

Step 2: Determine the price of the bond in the U.S.

To buy the U.S. bond, the U.K. resident must first buy U.S. dollars. The cost of \$1,000 at the December 2004 exchange rate would be

$$£518.13 (\$1,000 / \$1.93/£ = £518.13).$$

Step 3: Determine the interest earned from holding the bond.

Because the bond was issued by a U.S. corporation, it will pay interest in dollars. With a 5 percent interest rate, the interest income will be

$$0.05 \times \$1,000 = \$50.$$

Step 4: Determine the rate of return earned on the investment by the U.K. resident.

After one year, the bond holder will receive the interest payment of \$50 and the value of the bond of \$1,000, or a total of \$1,050. The U.K. resident can then convert this back to pounds at the December 2005 exchange rate of \$1.74 = £1. This conversion will result in the investor receiving

$$\$1,050 / \$1.74/£ = £603.45.$$

Thus, the rate of return the U.K. resident receives from investing in the bond is 16.5 percent:

$$(\£603.45 - \£518.13) / \£518.13 = 0.165 \text{ or } 16.5 \text{ percent}.$$

The U.K. resident not only earned interest income from investing in the bond, but also gained from the increasing value of the dollar over that time period.



Helpful Study Hint

Economics in YOUR Life! at the end of the chapter answers the question posed at the start of the chapter. If you were to work in Spain instead of the United States, and if Spain’s productivity increases faster than the U.S.’s productivity, what would happen to the value of the money you had saved in euros in Spain? In this chapter, we see that if the productivity of firms in one country increases faster than the productivity of firms in another country, the value of the faster growing country’s currency should, other things equal, increase against the slower growing country’s currency. However, because Spain is only one of the 13

countries using the euro, the value of productivity increases in Spain on the value of the euro may not be large.

Key Terms

Bretton Woods System. An exchange rate system that lasted from 1944 to 1971, under which countries pledged to buy and sell their currencies at a fixed rate against the dollar.

Capital controls. Limits on the flow of foreign exchange and financial investment across countries.

Devaluation. A reduction in a fixed exchange rate.

Euro. The common currency of many European countries.

Exchange rate system. An agreement among countries on how exchange rates should be determined.

Fixed exchange rate system. A system under which countries agree to keep the exchange rates among their currencies fixed.

Floating currency. The outcome of a country allowing its currency's exchange rate to be determined by demand and supply.

International Monetary Fund (IMF). An international organization that provides foreign currency loans to central banks and oversees the operation of the international monetary system.

Managed float exchange rate system. The current exchange rate system under which the value of most currencies is determined by demand and supply, with occasional government intervention.

Pegging. The decision by a country to keep the exchange rate fixed between its currency and another currency.

Purchasing power parity. The theory that, in the long run, exchange rates move to equalize the purchasing power of different currencies.

Revaluation. An increase in a fixed exchange rate.

Quota. A limit on the quantity of a good that can be imported.

Tariff. A tax imposed by a government on imports.

Appendix

The Gold Standard and the Bretton Woods System (pages 639-645)

LEARNING OBJECTIVE: Explain the gold standard and the Bretton Woods system.

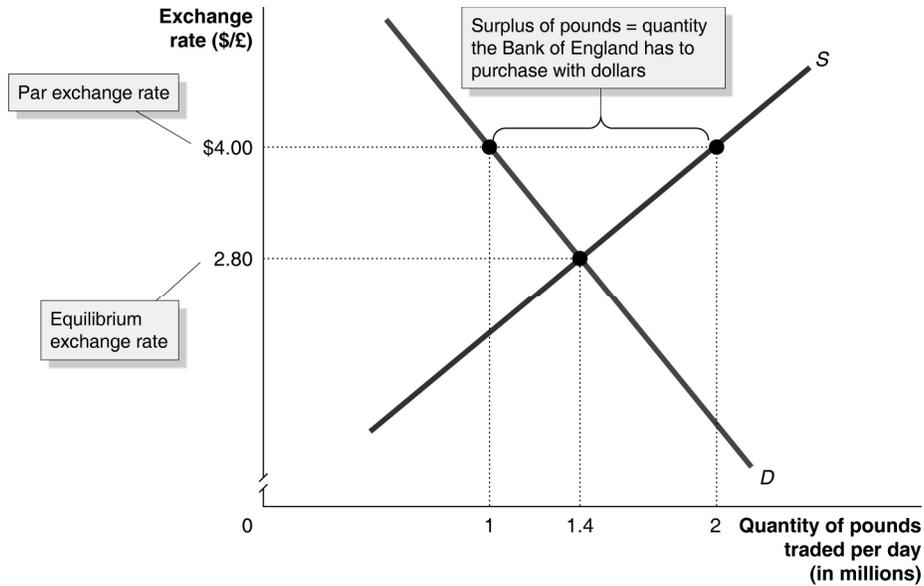
The Gold Standard (pages 641-642)

The gold standard was the basis of the exchange rate system from the early nineteenth century to the 1930s. Under the gold standard, each country's currency could be redeemed for a given quantity of gold. Therefore, exchange rates were determined by the relative amounts of gold in each country's currency. If there was one-fifth of an ounce of gold in a U.S. dollar and one ounce of gold in a British pound, the exchange rate would be $\$5.00 = \pounds 1.00$. Under the gold standard, the quantity of money depended on the quantity of gold a country owned. Many countries abandoned the gold standard during the 1930s because under that system monetary expansion was limited by the quantity of gold and countries could not follow independent monetary policies. During the Great Depression of the 1930s, countries on the gold standard experienced larger declines in real GDP than did countries not on the gold standard.

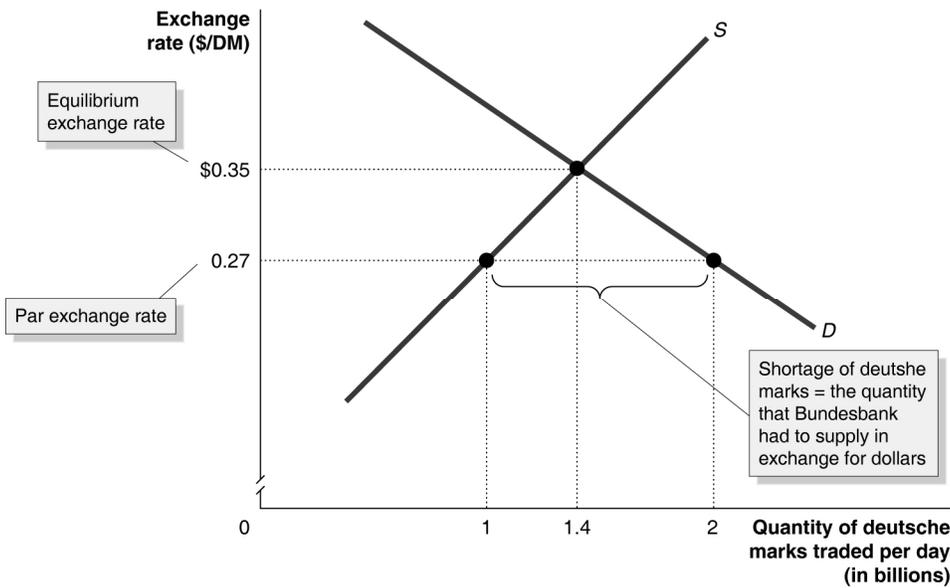
The Bretton Woods System (pages 642-643)

After the collapse of the gold standard, a conference held in Bretton Woods, New Hampshire created an exchange rate system in which the United States agreed to buy and sell gold at a fixed price of \$35 per ounce. The central banks of other countries agreed to buy and sell their currencies at a fixed rate against the dollar. Under this system, central banks were required to sell dollar reserves in exchange for domestic currency. If a central bank ran out of dollar reserves, it could borrow dollars from the newly created **International Monetary Fund**, which was designed to oversee the operations of the exchange rate system and approve adjustments to the agreed-on exchange rates.

Under the **Bretton Woods system**, a fixed exchange rate was called the par exchange rate. If the market exchange rate was different from the par exchange rate, the central bank would intervene in the market and buy or sell its country's currency in exchange for dollars. A persistent surplus or shortage of domestic currency was evidence of a fundamental disequilibrium (the par exchange rate was not equal to the equilibrium exchange rate) and required an adjustment in the par exchange rate. A reduction in the fixed exchange rate was referred to as a **devaluation** and an increase in the fixed exchange rate was a **revaluation**. A surplus of currency is shown in textbook Figure 18A-1 reproduced below. The graph shows that the par exchange rate of the pound against the dollar is higher than the equilibrium exchange rate. As a result, the Bank of England has to purchase pounds in exchange for dollars to maintain the exchange rate at the agreed upon level.



Textbook Figure 18A-2 reproduced below shows that the par exchange rate of the German deutsche mark against the dollar is lower than the equilibrium exchange, resulting in a surplus of U.S. dollars that the West German central bank must buy in exchange for marks to maintain the exchange rate.



The Bretton Woods system began to collapse in the late 1960s when the dollar value of reserves held in other countries exceeded the value of the U.S. stock of gold, so that the United States would not be able to redeem dollars at the agreed on \$35 per ounce price. In addition, some countries, particularly West Germany, were reluctant to devalue their currencies when faced with a fundamental disequilibrium. In August 1971, President Nixon decided to abandon the U.S. commitment to redeem dollars for gold. By 1973, the Bretton Woods system was effectively finished and was replaced by the current exchange rate system of floating rates.

Key Terms – Appendix

Bretton Woods System. An exchange rate system that lasted from 1944 to 1971, under which countries pledged to buy and sell their currencies at a fixed rate against the dollar.

Capital controls. Limits on the flow of foreign exchange and financial investment across countries.

Devaluation. A reduction in a fixed exchange rate.

International Monetary Fund (IMF). An international organization that provides foreign currency loans to central banks and oversees the operation of the international monetary system.

Revaluation. An increase in a fixed exchange rate.

Self-Test

(Answers are provided at the end of the Self-Test.)

Multiple-Choice Questions

1. A country that allows demand and supply to determine the value of its currency is said to have
 - a. a pegged exchange rate.
 - b. a fixed exchange rate system.
 - c. a managed float exchange rate system.
 - d. a floating currency.
2. An agreement among countries on how exchange rates should be determined is called
 - a. an exchange rate system.
 - b. a fixed exchange rate mechanism.
 - c. an integrated exchange rate approach.
 - d. a Bretton Woods solution.
3. Which of the following happens in a managed float exchange rate system?
 - a. Countries agree to keep the value of their currencies constant.
 - b. Countries agree not to intervene in foreign exchange markets.
 - c. Countries will occasionally intervene to buy and sell their currency or other currencies in order to affect exchange rates.
 - d. Countries allow their currencies' exchange rates to be determined solely by demand and supply.
4. When countries agree to keep the value of their currencies constant, there is
 - a. a fixed exchange rate system.
 - b. a managed float exchange rate system.
 - c. no exchange rate system.
 - d. exchange rate integration.

5. The theory of purchasing power parity states that, in the long run
 - a. exchange rates move to equalize the purchasing power of different currencies.
 - b. exchange rates are determined by movements in interest rates.
 - c. exchange rates are determined by changes in investors' expectations about the future values of currencies.
 - d. all of the above

6. According to purchasing power parity
 - a. inflation rates should be the same in all countries.
 - b. exchange rates move to equalize the purchasing power of different currencies.
 - c. exchange rates will not change.
 - d. countries can gain from trading.

7. Which of the following is *not* a reason why purchasing power parity is not a complete explanation of exchange rates?
 - a. Not all products can be traded internationally.
 - b. Products and consumer preferences are different across countries.
 - c. Countries have different wage rates.
 - d. Countries impose barriers to trade.

8. Which of the following facts keeps purchasing power parity from being a complete explanation of exchange rates?
 - a. The fact that all products are traded internationally.
 - b. The fact that products and consumer preferences are different across countries.
 - c. The fact that most countries don't have any barriers to trade.
 - d. All of the above

9. A quota is
 - a. a limit on the quantity of a good that can be imported.
 - b. an agreement to voluntarily restrain the quantity of goods that a country may import into another country.
 - c. a tax on imported goods.
 - d. a tax on exported goods.

10. In June 2005, a Big Mac sold for 6,000 pesos in Colombia and \$3.00 in the United States. The exchange rate in June 2005 was 2,300 pesos per dollar. So, on Big Mac purchasing power parity grounds, the Colombian peso was
 - a. undervalued against the dollar.
 - b. overvalued against the dollar.
 - c. neither overvalued nor undervalued. Purchasing power parity between the Colombian peso and the dollar held.
 - d. devalued against the dollar.

11. If prices in Colombia have risen faster on average than prices in the United States, while prices in Japan have risen more slowly, it must be true that in the long run the U.S. dollar has _____ value against the Colombian peso, and _____ value against the Japanese yen.
 - a. gained; lost
 - b. lost; gained
 - c. maintained; gained
 - d. gained; maintained

12. If the average productivity of Colombian firms increases faster than the average productivity of U.S. firms, then
- Colombian products will become relatively more expensive than U.S. products.
 - the demand for Colombian products will fall relative to U.S. products.
 - the value of the Colombian peso should rise against the dollar.
 - All of the above
13. If consumers in the United States increase their demand for Colombian coffee, the result will be to
- decrease the value of the Colombian peso relative to the dollar.
 - increase the value of the Colombian peso relative to the dollar.
 - have no effect on the value of the Colombian peso relative to the dollar.
 - increase the demand for dollars.
14. The euro
- is the currency of all European countries.
 - is used only in France, Italy, Spain, and Germany.
 - has the same dollar value as a British pound.
 - is controlled by the European Central bank (ECB).
15. Which of the following statements is *not* correct about the creation of the euro?
- The euro will help economic growth in the EU countries by making it easier for consumers and firms to buy and sell across borders.
 - The euro will reduce costs and increase competition.
 - The euro will increase the ability of participating countries to run independent monetary policies.
 - The euro is used as currency in Germany, France, and Italy among other countries.
16. When the value of a currency falls, the prices of imports _____. If imports are a significant fraction of the goods consumers buy, this fall in the value of the currency may significantly _____ the inflation rate.
- rise; increase
 - rise; decrease
 - fall; increase
 - fall; decrease
17. Pegging refers to the decision by a country to
- share the same currency with another country, such as the decision of EU countries to adopt the euro.
 - allow two currencies to circulate simultaneously within the country.
 - keep the exchange rate fixed between its currency and another currency.
 - share the same fiscal policy with one or more countries.
18. When currency traders become convinced that countries will have to abandon their pegged exchange rates, a wave of selling of these countries' currencies may occur. These waves of selling are sometimes referred to as
- speculative attacks.
 - arbitrage.
 - hedging.
 - currency blitzes.

19. The trend in pegging has been toward
- replacing fixed exchange rates with pegged exchange rates.
 - replacing managed floating exchange rates with pegged exchange rates.
 - replacing pegged exchange rates with managed floating exchange rates.
 - replacing pegged exchange rates with fixed exchange rates.
20. China has pegged its exchange rate with the U.S. dollar at a rate (in terms of yuan per dollar) above the equilibrium exchange rate. We can conclude that
- the Chinese Central bank must sell dollars to maintain this rate.
 - the yuan is undervalued.
 - Chinese exports to the United States and imports from the United States will be equal.
 - the Chinese Central bank must buy yuan to maintain this rate.
21. Like other countries that underwent an exchange rate crisis, South Korea had attempted to maintain the value of the won by _____ domestic interest rates. The result was a sharp _____ in aggregate demand and a severe _____.
- lowering; increase; inflation
 - raising; decline; recession
 - lowering; decrease; deflation
 - raising; increase; recession
22. If Chinese savers increase their demand for U.S. Treasury bills, the demand for dollars will _____, and the value of the dollar will _____.
- increase; rise
 - increase; fall
 - decrease; rise
 - decrease; fall
23. Shares of stock and long-term debt, including corporate and government bonds and bank loans, are bought and sold in
- capital markets.
 - money markets.
 - investment markets.
 - foreign exchange markets.
24. In the 1980s and 1990s, European governments _____ many restrictions on foreign investments in financial markets. Then, U.S. and other foreign investors _____ investments in Europe and European investors _____ investments in foreign markets.
- removed; increased; increased
 - imposed; decreased; decreased
 - removed; increased; decreased
 - imposed; decreased; increased
25. Today, the U.S. capital market is
- larger than all of the foreign capital markets combined.
 - smaller than any of the capital markets operating in Europe and Japan.
 - smaller than the markets operating in Europe and Japan but larger than the markets operating in Latin America and East Asia.
 - large, but there are also large capital markets operating in Europe and Japan and somewhat smaller markets operating in Latin America and East Asia.

26. The three most important international financial centers today are
- Zurich, Paris, and Montreal.
 - New York, London, and Tokyo.
 - Seoul, Moscow, and Buenos Aires.
 - Los Angeles, London, and Shanghai.
27. By 2007, corporations, banks, and governments had raised more than _____ in funds on global financial markets.
- \$1 billion
 - \$10 billion
 - \$100 billion
 - \$1 trillion
28. During the 1990s, the flow of foreign funds into U.S. stocks and bonds
- increased dramatically.
 - decreased substantially.
 - remained fairly stable.
 - was practically nonexistent.
29. Which of the following statements about foreign purchases of U.S. stocks and bonds is correct?
- Since 1995, there has been a large rise in foreign purchases of bonds issued by U.S. corporations and by the federal government.
 - Falling stock prices in the United States caused a fall in foreign ownership of corporate stocks between 2001 and 2006.
 - Foreign investment in stocks and bonds in 2006 was more than twice as great as it was in 1995.
 - All of the above
30. Which of the following reflects the distribution of foreign purchases of U.S. stocks and bonds?
- Investors in the United Kingdom accounted for more than 40 percent of all foreign purchases of U.S. stocks and bonds.
 - Investors in Japan, China, and other Asian countries accounted for 25 percent of all foreign purchases of U.S. stocks and bonds.
 - Investors from European countries other than the United Kingdom accounted for 11 percent of all foreign purchases of U.S. stocks and bonds.
 - All of the above
31. The globalization of financial markets has helped to
- increase growth and efficiency in the world economy.
 - allow for the savings of investors around the world to be channeled to the best investments available.
 - allow firms in nearly every country to tap into the savings of investors around the world in order to find the funds needed for expansion.
 - All of the above
32. Under the gold standard, the central bank
- has substantial control over the money supply and a highly effective way of conducting monetary policy.
 - lacks the control of the money supply necessary to pursue an active monetary policy.
 - has control of monetary policy, but not of fiscal policy.
 - can manipulate the economy in precise ways by adjusting its supply of gold.

33. Which of the following periods marks the collapse of the gold standard?
- The 1930s
 - The 1920s
 - The 1940s
 - The 1970s
34. A tariff is
- a limit on the quantity of goods that a country may import into another country.
 - an agreement to voluntarily restrain the quantity of goods that a country may import into another country.
 - a tax on imported goods.
 - a tax on exported goods.
35. The Bretton Woods System was
- an agreement between participating countries to reduce trade barriers.
 - an agreement in which central banks pledged to buy and sell their currencies at a fixed rate against the dollar.
 - an agreement in which the exchange rate between two currencies was automatically determined by the quantity of gold in each currency.
 - an agreement by countries to go off the gold standard to allow their central banks to expand the money supply and pay for war expenditures.
36. The International Monetary Fund (IMF) is an organization that
- provides foreign currency loans to central banks.
 - oversees the operation of the international monetary system.
 - approves adjustments to agreements regarding fixed exchange rates.
 - All of the above
37. Under the Bretton Woods System, if the par exchange rate was above equilibrium, the result would be
- a shortage of domestic currency in the foreign exchange market.
 - a surplus of domestic currency in the foreign exchange market.
 - a shift to the left of the demand curve for domestic currency.
 - a shift to the right of the demand curve for domestic currency.
38. Which of the following is *not* a determinant of the exchange rate in the long run?
- relative price levels
 - rates of productivity growth
 - tariffs and quotas
 - population growth rates
39. In a fixed exchange rate system, when the par exchange rate is above the equilibrium exchange rate, the central bank must
- use its own currency to buy foreign currency.
 - use foreign currency to buy its own currency.
 - expand the domestic money supply to drive down interest rates.
 - be willing in the short run to accept a lower unemployment rate at the expense of a higher inflation rate.

40. A reduction of a fixed exchange rate is a(n) _____, and an increase in a fixed exchange rate is a(n) _____.
- appreciation; depreciation
 - depreciation; appreciation
 - revaluation; devaluation
 - devaluation; revaluation
41. Which of the following factors contributed to the collapse of the Bretton Woods system?
- After 1963, the total number of dollars held by foreign central banks was larger than the gold reserves of the United States.
 - The credibility of the U.S. promise to redeem dollars for gold was called into question.
 - Some countries with undervalued currencies, particularly West Germany, were unwilling to revalue their currencies.
 - All of the above
42. Refer to the market for Deutsche marks in a fixed exchange rate system. Suppose that the par exchange rate is below the equilibrium exchange rate. In this situation, the quantity of Deutsche marks demanded is _____ than the quantity of Deutsche marks supplied. To maintain the exchange rate at par, the Bundesbank would have to _____ dollars and _____ Deutsche marks.
- greater; buy; sell
 - greater; sell; buy
 - less; buy; sell
 - less; sell; buy
43. Capital controls are
- requirements that force countries with undervalued currencies to revalue their currencies.
 - limits on the flow of foreign exchange and financial wealth across countries.
 - measures that allow countries to adjust their exchange rates when evidence of a fundamental disequilibrium in that country's exchange rate exists.
 - All of the above.
44. Actions by investors that make it more difficult for a central bank to maintain a fixed exchange rate are referred to as
- a fundamental disequilibrium.
 - a panic run.
 - an exchange rate market bubble.
 - destabilizing speculation.
45. Among the important aspects of the exchange rate system today is that
- the United States allows the dollar to float against other major currencies (with some intervention by central banks).
 - many countries in Western Europe have adopted a single currency, the euro.
 - some developing countries have attempted to keep their currency's exchange rate fixed against the dollar, or against another major currency.
 - All of the above

Short Answer Questions

1. What is the difference between a floating and managed exchange rate system?

2. Based on purchasing power parity, how much should a Bob Dylan DVD, which costs \$18.99 in the United States, cost in London if the pound exchange rate is $\text{£}0.56 = \$1$?

3. Ignoring transportation costs, suppose that we discover that the price of the Bob Dylan DVD (in Question 2) is $\text{£}8.97$. How is it possible to earn a profit buying and selling the DVD? How will this action lead to the elimination of the profits? How would the answer be different if we did not ignore transportation costs? (Prices from amazon.com and amazon.com.uk)

4. Suppose that in 2008, the U.S. inflation rate was 2.7 percent and the Canadian inflation rate was 1.8 percent. Based upon this, other things equal, would we expect the dollar to appreciate or depreciate relative to the Canadian dollar?

5. The interest payment of a business loan from a U.S. bank to a firm in Thailand is \$100,000 per year. How will the interest rate payments change if the exchange rate changes from 25 baht = \$1 to 30 baht = \$1?

6. When we buy bonds in other countries, it is necessary to think not only about the exchange rate now, because we need to buy foreign currency in order to purchase the bond, but also the exchange rate when the bond matures, when we would want to convert the end value back into our currency. Suppose the current price of a U.K. bond is £960, and the bond has a face value of £1,000. Suppose that the exchange rate is \$2.08 = £1, and we expect the exchange rate to change to \$2.10 = £1 at the time the bond matures in one year. Based upon this, what would be the interest rate on the bond?

True/False Questions

- T F 1. A floating currency's exchange rate is determined by the demand and supply of the currency.
- T F 2. In a managed float exchange rate system, the exchange rate is determined by the demand and supply of the currency.
- T F 3. The gold standard is a fixed exchange rate system.
- T F 4. The value of the U.S. dollar is fixed against most other major currencies.
- T F 5. Purchasing power parity implies that a good that costs \$5 will cost ¥5 in Japan.
- T F 6. Purchasing power parity implies that in the long run, exchange rates are determined by relative real GDP growth.
- T F 7. Because some goods are not traded internationally, purchasing power parity may not hold for those goods.
- T F 8. Tariffs and quotas may keep purchasing power parity from holding for all goods.
- T F 9. Suppose that based upon Big Mac prices, the implied exchange rate between the yen and the dollar is ¥85 = \$1, and the actual exchange rate is ¥120 = \$1. We can conclude that the yen is undervalued against the dollar.
- T F 10. If people in Japan increase their preferences for U.S. goods, this will increase the demand for dollars and cause the yen to increase in value.
- T F 11. The euro exchange rate is determined by the European Central Bank.

- T F 12. The euro makes it easier for consumers and firms to buy and sell goods between countries that use the euro.
- T F 13. A fixed exchange rate makes business planning more difficult.
- T F 14. To peg a country's exchange rate, the country's government must buy or sell its currency to keep its price (the exchange rate) at the pegged rate.
- T F 15. In international capital markets, savers buy and sell bonds and stocks only from their own country.

Answers to the Self-Test

Multiple-Choice Questions

Question	Answer	Comment
1	d	A country that allows demand and supply to determine the value of its currency is said to have a floating currency.
2	a	When countries can agree on how exchange rates should be determined, economists say that there is an exchange rate system.
3	c	In a managed float exchange rate system, countries will occasionally intervene to buy and sell their currencies or other currencies in order to affect exchange rates.
4	a	When countries agree to keep the value of their currencies constant, they are using a fixed exchange rate system.
5	a	It seems reasonable that, in the long run, exchange rates should be at a level that makes it possible to buy the same amount of goods and services with the equivalent amount of any country's currency. In other words, the purchasing power of every country's currency should be the same. The idea that, in the long run, exchange rates move to equalize the purchasing power of different currencies is referred to as the theory of purchasing power parity.
6	b	Purchasing power parity says that exchange rates should adjust so that goods cost the same amount in different currencies. If this is not true, people will purchase the cheaper good, and that extra demand will drive the prices to similar levels.
7	c	Exchange rates adjust for differences in wages, so differences in wages will not affect purchasing power parity.
8	b	The three factors that keep purchasing power parity from being a complete explanation of exchange rates are: 1) the fact that most products are not traded internationally, 2) products and consumer preferences are different across countries, and 3) countries impose barriers to trade.
9	a	A quota is a limit on the quantity of a good that can be imported. For instance, the United States has a quota on imports of sugar. As a result, the price of sugar in the United States is much higher than the price of sugar in other countries. Economists have estimated that the price of sugar in the U.S. is about three times what it would be without the quota.

- 10 a If a Big Mac sold for 6,000 pesos in Colombia and \$3.00 in the United States, for purchasing power parity to hold, the exchange rate should have been $6,000/\$3.00$, or 2,000 pesos = \$1. The actual exchange rate in June 2005 was 2,300 pesos = \$1. So, on Big Mac purchasing power parity grounds, the Colombian peso was *undervalued* against the dollar by 13 percent ($((2,300 - 2,000)/2,300) \times 100 = 13$ percent).
- 11 a If prices in Colombia have risen faster on average than prices in the United States, while prices in Japan have risen more slowly, this difference in inflation rates is a key reason why the U.S. dollar would have gained value against the Colombian peso, while losing value against the Japanese yen.
- 12 c If the average productivity of Colombian firms increases faster than the average productivity of U.S. firms, Colombian products will become relatively less expensive than U.S. products, which increases the demand for Colombian products relative to U.S. products. The value of the Colombian peso should rise against the dollar.
- 13 b If consumers in the U.S. increase their preferences for Colombian products, the demand for pesos will increase relative to the demand for dollars, and the Colombian peso will increase in value relative to the U.S. dollar.
- 14 d Not all European countries use the euro. The euro is issued and controlled by the European Central Bank.
- 15 c The statement is incorrect. The creation of the euro will help growth in the EU countries. Having a common currency makes it easier for consumers and firms to buy and sell across borders. This change should reduce costs and increase competition. However, the participating countries are no longer able to run independent monetary policies. And with fixed exchange rates, the value of one country's currency cannot fall during a recession, thereby expanding net exports to help revive aggregate demand.
- 16 a When the value of a currency falls, the prices of imports rise. If imports are a significant fraction of the goods consumers buy, a fall in the value of the currency may significantly increase the inflation rate.
- 17 c Pegging is the decision by a country to keep the exchange rate fixed between its currency and another currency.
- 18 a As the textbook describes the destabilizing speculation against the Thai baht, many currency traders became convinced that East Asian countries, such as South Korea, Indonesia, and Malaysia, would have to follow Thailand and abandon their pegged exchange rates. The result was a wave of speculative selling of these countries' currencies. These waves of selling are sometimes referred to as speculative attacks.
- 19 c Following the disastrous experience of the East Asian countries, the number of countries with pegged exchange rates declined sharply. Overall, the trend has been toward replacing pegged exchange rates with managed floating exchange rates.
- 20 b Because the Chinese central bank is keeping the exchange rate too high, the yuan is considered to be undervalued.
- 21 b Like other countries that underwent an exchange rate crisis, South Korea had attempted to maintain the value of the won by raising domestic interest rates. The result was a sharp decline in aggregate demand and a severe recession. However, unlike other East Asian countries—particularly Thailand and Indonesia—that made only slow progress in recovering from exchange rate crises, South Korea bounced back rapidly.

- 22 a We have seen that a key reason that exchange rates fluctuate is that in the current economy, investors seek out the best investments they can find anywhere in the world. For instance, if Chinese investors increase their demand for U.S. Treasury bills, the demand for dollars will increase, and the value of the dollar will rise.
- 23 a Shares of stock and long-term debt, including corporate and government bonds and bank loans, are bought and sold in *capital markets*.
- 24 a In the 1980s and 1990s, European governments removed many restrictions on foreign investments in financial markets. It became possible for U.S. and other foreign investors to freely invest in Europe and for European investors to freely invest in foreign markets.
- 25 d At one time, the U.S. capital market was larger than all foreign capital markets combined, but this is no longer true. Today, there are large capital markets operating in Europe and Japan and somewhat smaller markets operating in Latin America and East Asia.
- 26 b The three most important international financial centers today are New York, London, and Tokyo. Each day the front page of the on-line version of the Wall Street Journal displays not just the Dow Jones Industrial Average and the Standard and Poor's 500 stock indexes of U.S. stocks, but also the Nikkei 225 average of Japanese stocks and the Euro STOXX 50 index of European stocks.
- 27 d By 2007, corporations, banks, and governments raised more than \$1 trillion in funds on global financial markets.
- 28 a During the 1990s, the flow of foreign funds into U.S. stocks and bonds – or portfolio investments – increased dramatically. As Figure 18-5 shows, since 1995, there has been a dramatic increase in foreign purchases of bonds issued by corporations and by the federal government.
- 29 d Since 1995, there has been a large rise in foreign purchases of bonds issued by U.S. corporations and by the federal government. Even though falling stock prices in the United States caused a fall in foreign ownership of corporate stocks between 2001 and 2006, foreign investment in these securities was still more than twice as great as it was in 1995.
- 30 d As shown in Figure 18-6 on page 632 of the textbook, the percentages given in a., b., and c. are all correct.
- 31 d The globalization of financial markets has helped increase growth and efficiency in the world economy. It is now possible for the savings of investors around the world to be channeled to the best investments available. It also possible for firms in nearly every country to tap the savings of investors around the world to gain the funds needed for expansion. Firms no longer are forced to rely only on the savings of domestic investors to finance investment.
- 32 b Under the gold standard, the central bank cannot determine how much gold will be discovered. It therefore lacks the control of the money supply necessary to pursue an active monetary policy. If the gold standard is adhered to in foreign exchange markets with a fixed exchange rate, the problem becomes worse as pressures on the exchange rate can cause gold inflows and outflows, further weakening the central bank's control of the money supply.
- 33 a In 1931, Great Britain became the first major country to abandon the gold standard. A number of other countries also went off the gold standard that year. The United States remained on the gold standard until 1933, and a few countries, including France, Italy, and Belgium, stayed on even longer. By the late 1930s, the gold standard had collapsed.

- 34 c A tariff is a tax on imported goods. The United States started the tariff wars in June 1930 by enacting the Smoot-Hawley Tariff, which raised the average U.S. tariff rate to more than 50 percent. Many other countries raised tariffs during the next few years, leading to a collapse in world trade and contributing to the severity of the Great Depression.
- 35 b A conference held in Bretton Woods, New Hampshire in 1944 set up a system in which the United States pledged to buy or sell gold at a fixed price of \$35 per ounce. The central banks of all other members of the new Bretton Woods System pledged to buy and sell their currencies at a fixed rate against the dollar.
- 36 d Under the Bretton Woods System, central banks were committed to selling dollars in exchange for their own currencies. This commitment required them to hold dollar reserves. If a central bank ran out of dollar reserves, it could borrow them from the newly created International Monetary Fund (IMF). The IMF is an international organization that provides foreign currency loans to central banks and oversees the operation of the international monetary system. In addition to providing loans to central banks that were short of dollar reserves, the IMF would oversee the operation of the system and approve adjustments to the agreed on fixed exchange rates.
- 37 b Under the Bretton Woods System, central banks were obligated to defend par exchange rates by buying and selling their countries' currencies at fixed rates against the dollar. If the par exchange rate was above equilibrium, the result would be a surplus of domestic currency in the foreign exchange market. If the par exchange rate was below equilibrium, the result would be a shortage of domestic currency.
- 38 d Population growth rates will influence output growth, but will have no direct effect on exchange rates in the long run.
- 39 b In the textbook example, the quantity of pounds demanded by people wanting to buy British goods and services or wanting to purchase British assets is smaller than the quantity of pounds supplied by people who would like to exchange them for dollars. As a result, the Bank of England must use dollars to buy the surplus of £1 million per day.
- 40 d In the early years of the Bretton Woods System, many countries found that their currencies were *overvalued* versus the dollar, meaning that their par exchange rates were too high. A reduction of a fixed exchange rate is a devaluation; and an increase in a fixed exchange rate is a revaluation. In 1949, there was a devaluation of several currencies, including the British pound, reflecting the fact that those currencies had been overvalued against the dollar.
- 41 d All of the factors above contributed to the collapse of the Bretton Woods system.

- 42 a Under the Bretton Woods System, the Bundesbank, the German central bank, was required to buy and sell Deutsche marks for dollars at a rate of \$0.27 per Deutsche mark. The equilibrium that would have prevailed in the foreign exchange market if the Bundesbank did not intervene was about \$0.35 per Deutsche mark. Because the par exchange rate was below the equilibrium exchange rate, the quantity of Deutsche marks demanded by people wanting to buy German goods and services, or wanting to invest in German assets, was greater than the quantity of Deutsche marks supplied by people who wanted to exchange them for dollars. To maintain the exchange rate at a par of \$0.27 per Deutsche mark, the Bundesbank had to buy dollars and sell Deutsche marks. The amount of Deutsche marks supplied by the Bundesbank was equal to the shortage of Deutsche marks at the par exchange rate.
- 43 b During the 1960s, most European countries, including Germany, relaxed their capital controls. Capital controls are limits on the flow of foreign exchange and financial investment across countries. The loosening of capital controls made it easier for investors to speculate on changes in exchange rates.
- 44 d In the Bretton Woods System, an increased demand for a given currency by investors hoping to make a profit from an expected revaluation will increase demand for the currency. Because of this expectation, the central bank has to increase the quantity it supplies in exchange for dollars, raising the risk of inflation. Because these actions by investors make it more difficult to maintain a fixed exchange rate, they are referred to as *destabilizing speculation*.
- 45 d All of the above are important aspects of the exchange rate system today.

Short Answer Responses

1. A floating exchange rate is determined by the demand and supply of one currency compared to another currency. A change in supply and/or demand, caused by such events as interest rate changes or price changes, will change the exchange rate. In a managed floating exchange rate system, the government may decide that the exchange rate change is not in the country's best interests, and decide to offset the change in the exchange rate. To do this, the government must intervene in the foreign exchange market. For instance, if the ¥/\$ exchange rate rose from ¥120/\$ to ¥130/\$ and the Bank of Japan wanted to return the rate to the ¥120/\$ level, they might do so by reducing the demand for dollars (by tariffs or quotas) or by increasing the supply of dollars by buying yen with U.S. dollars.
2. According to purchasing power parity, adjusted for exchange rates, traded goods should cost the same in all countries. Therefore the Bob Dylan DVD which costs \$18.99 in the U.S. should cost $\$18.99 \times \pounds 0.56/\$ = \pounds 10.63$.
3. You could take \$16.02 and exchange that dollar amount for £8.97, which is enough to buy the DVD in London. You could then sell the DVD in the United States for \$18.99, giving you a profit of \$2.97. If you exchanged enough dollars for pounds to buy one million DVDs in London, you would make a profit of \$2.97 million. Unfortunately, as you continued to exchange dollars for pounds, you would drive up the value of the pound until the exchange rate reached the point where you would no longer make a profit. Transportation costs will also eat up part, or maybe all, of your profit. For instance, if it costs \$3.00 to ship the British DVD to the United States, all of your potential profit would be eliminated.
4. Because prices are rising relatively slower in Canada, goods and services should be increasing in price relatively slower in Canada, which will increase the demand for Canadian goods relative to the (more expensive) U.S. goods. As a result, there will be an increase in the supply of U.S. dollars in

exchange for Canadian dollars and a decrease in demand for U.S. dollars (by Canadians who will not be buying as many of the more expensive U.S. goods). This will cause the U.S. dollar to depreciate (the Canadian dollar will appreciate).

5. Exchange rate changes can provide considerable uncertainty in day-to-day business operations. If a firm in Thailand borrows from a U.S. bank and has a \$100,000 per year interest payment, that payment is fixed in dollars. The price to the firm depends upon the exchange rate. If the exchange rate is 25 baht = \$1, then the interest payment will be 2,500,000 baht, but if the exchange rate were to rise to 30 baht = \$1, then the same fixed dollar interest payment would rise to 3,000,000 baht. Note that if the Thai firm sells products in the U.S., the exchange rate change will also change the firm's revenues. This will not happen if the firm sells products only in Thailand.
6. If the exchange rate is \$2.08 = £1, to purchase the U.K. bond, the U.S. price would be \$1,996.80 (= $\$2.08/\text{£} \times \text{£}960 = \$1,996.80$). When the bond matured in one year the £1,000 be worth \$2,080 (= $\text{£}1,000 \times \$2.08/\text{£} = \$2,080$). Based on this, the interest rate on the bond would be 4.17 percent (= $100 \times (\$2,080 - \$1,996.80)/\$1,996.80 = 4.17$ percent). Now if the exchange rate was \$2.10 = £1 when the bond matured, the £1,000 would be worth \$2,100 (= $\$2.10/\text{£} \times \text{£}1,000 = \$2,100$) and the interest rate would be 5.17 percent (= $100 \times (\$2,100 - \$1,996.80)/\$1,996.80 = 5.17$ percent).

True/False Answers

1. T
2. F The managed float exchange rate system's exchange rate is determined by demand and supply but with occasional government intervention.
3. T
4. F The dollar is a floating currency.
5. F The good will cost $\$5 \times (\text{exchange rate } (\text{¥}/\$))$, so if the exchange rate were $\text{¥}120 = \$1$, then the good should cost $\text{¥}600$.
6. F Actually, purchasing power parity implies that exchange rates will change to equalize purchasing power across countries.
7. T
8. T
9. T
10. F If people in Japan increase their preferences for U.S. goods, this will increase the demand for dollars and cause the yen to decrease in value (or the dollar to increase in value).
11. F The euro is a floating currency.
12. T
13. F A fixed exchange rate eliminates a source of uncertainty. See Short Answer Question 5. above.
14. T
15. F In international capital markets, savers may buy and sell bonds and stocks from many different countries.