

## Exchange Rates, the Balance of Payments, and Trade Deficits

**I**F YOU TAKE a U.S. dollar to the bank and ask to exchange it for U.S. currency, you will get a puzzled look. If you persist, you may get a dollar's worth of change: One U.S. dollar can buy exactly one U.S. dollar. But on March 6, 2001, for example, 1 U.S. dollar could buy 885,000 Turkish lira, 1.93 Australian dollars, .68 British pounds, 1.54 Canadian dollars, 1.07 European euros, 118.88 Japanese yen, or 9.66 Mexican pesos. What explains this seemingly haphazard array of exchange rates? ■ In Chapter 37 we examined comparative advantage as the underlying economic basis of world trade and discussed the effects of barriers to free trade. Now we introduce the monetary or financial aspects of international trade: How are currencies of different nations exchanged when import and export transactions occur? What is meant by a “favorable” or an “unfavorable” balance of payments? What is the difference between flexible exchange rates and fixed exchange rates? What are the causes and consequences of the large U.S. trade deficits?

### ■ Financing International Trade

One factor that makes international trade different from domestic trade is the involvement of different national currencies. When a U.S. firm exports goods to a Mexican firm, the U.S. exporter wants to be paid in dollars. But the Mexican importer possesses pesos. The importer must exchange pesos for dollars before the U.S. export transaction can occur.

This problem is resolved in foreign exchange markets, in which dollars can purchase Mexican pesos, European euros, South Korean won, British pounds, Japanese yen, or any other currency, and

vice versa. Sponsored by major banks in New York, London, Zurich, Tokyo, and elsewhere, foreign exchange markets facilitate exports and imports.

### *U.S. Export Transaction*

Suppose a U.S. exporter agrees to sell \$300,000 of computers to a British firm. Assume, for simplicity, that the rate of exchange—the rate at which pounds can be exchanged for, or converted into, dollars, and vice versa—is \$2 for £1 (the actual exchange rate is about \$1.50 = 1 pound). This means the British importer must pay the equivalent of £150,000 to the

news from the WTO. List and summarize three recent news items relating to the WTO. Search the sections Trade Topics and Resources to find information on both international trade and the environment and international trade and poverty. Summarize the WTO's major conclusions on these two topics.

14. **Web-Based Question:** *The U.S. International Trade Commission—what is it and what does it do?* Go to [www.usitc.gov](http://www.usitc.gov) to determine the duties of

the U.S. International Trade Commission (USITC). How does this organization differ from the World Trade Organization (question 13)? From the site map, find Sunset Reviews to determine what they are and how they relate to the Uruguay Round agreement of the WTO. Go to New Releases and identify and briefly describe three USITC rulings relating to charges of unfair international trade practices that harm U.S. producers.

U.S. exporter to obtain the \$300,000 worth of computers. Also assume that all buyers of pounds and dollars are in the United States and Great Britain. Let's follow the steps in the transaction:

- To pay for the computers, the British buyer draws a check for £150,000 on its checking account in a London bank and sends it to the U.S. exporter.
- But the U.S. exporting firm must pay its bills in dollars, not pounds. So the exporter sells the £150,000 check on the London bank to its bank in, say, New York City, which is a dealer in foreign exchange. The bank adds \$300,000 to the U.S. exporter's checking account for the £150,000 check.
- The New York bank deposits the £150,000 in a correspondent London bank for future sale to some U.S. buyer who needs pounds.

Note this important point: *U.S. exports create a foreign demand for dollars, and the fulfillment of that demand increases the supply of foreign currencies (pounds, in this case) owned by U.S. banks and available to U.S. buyers.*

### U.S. Import Transaction

Why would the New York bank be willing to buy pounds for dollars? As just indicated, the New York bank is a dealer in foreign exchange; it is in the business of buying (for a fee) and selling (also for a fee) one currency for another.

Let's now examine how the New York bank would sell pounds for dollars to finance a U.S. import (British export) transaction. Suppose a U.S. retail firm wants to import £150,000 of compact discs produced in Britain by a hot new musical group. Again, let's track the steps in the transaction:

- The U.S. importer purchases £150,000 at the \$2 = £1 exchange rate by writing a check for \$300,000 on its New York bank. Because the British exporting firm wants to be paid in pounds rather than dollars, the U.S. importer must exchange dollars for pounds, which it does by going to the New York bank and purchasing £150,000 for \$300,000. (Perhaps the U.S. importer purchases the same £150,000 that the New York bank acquired from the U.S. exporter.)
- The U.S. importer sends its newly purchased check for £150,000 to the British firm, which deposits it in the London bank.

Here we see that *U.S. imports create a domestic demand for foreign currencies (pounds, in this case), and the fulfillment of that demand reduces the supplies of foreign*

*currencies (again, pounds) held by U.S. banks and available to U.S. consumers.*

The combined export and import transactions bring one more point into focus. U.S. exports (the computers) make available, or "earn," a supply of foreign currencies for U.S. banks, and U.S. imports (the compact discs) create a demand for those currencies. In a broad sense, any nation's exports finance or "pay for" its imports. Exports provide the foreign currencies needed to pay for imports.

Postscript: Although our examples are confined to exporting and importing goods, demand for and supplies of pounds also arise from transactions involving services and the payment of interest and dividends on foreign investments. The United States demands pounds not only to buy imports but also to buy insurance and transportation services from the British, to vacation in London, to pay dividends and interest on British investments in the United States, and to make new financial and real investments in Britain. (Key Question 2)

## The Balance of Payments

A nation's **balance of payments** is the sum of all the transactions that take place between its residents and the residents of all foreign nations. Those transactions include exports and imports of goods, exports and imports of services, tourist expenditures, interest and dividends received or paid abroad, and purchases and sales of financial or real assets abroad. The U.S. Commerce Department's Bureau of Economic Analysis compiles the balance-of-payments statement each year. *The statement shows all the payments a nation receives from foreign countries and all the payments it makes to them.*

Table 38.1 is a simplified balance-of-payments statement for the United States in 1999. Let's take a close look at this accounting statement to see what it reveals about U.S. international trade and finance. To help our explanation, we divide the single balance-of-payments account into three of its components: the *current account*, the *capital account*, and the *official reserves account*.

### Current Account

The top portion of Table 38.1 summarizes U.S. trade in currently produced goods and services and is called the **current account**. Items 1 and 2 show U.S. exports and imports of goods (merchandise) in 1999. U.S. exports have a *plus* (+) sign because they

**Table 38.1****The U.S. Balance of Payments, 1999 (in Billions)**

<b>Current account</b>		
(1) U.S. goods exports	\$+ 684	
(2) U.S. goods imports	-1030	
(3) <b>Balance on goods</b>		\$- 346
(4) U.S. exports of services	+ 272	
(5) U.S. imports of services	- 191	
(6) <b>Balance on services</b>		+ 81
(7) <b>Balance on goods and services</b>		- 265
(8) Net investment income	- 18	
(9) Net transfers	- 48	
(10) <b>Balance on current account</b>		<b>-331</b>
<b>Capital account</b>		
(11) Foreign purchases of assets in the United States	+ 760*	
(12) U.S. purchases of assets abroad	- 438*	
(13) <b>Balance on capital account</b>		<b>+322</b>
<b>Official reserves account</b>		
(14) <b>Official reserves</b>		<b>+ 9</b>
		<b>\$ 0</b>

\*Includes one-half of a \$12 billion statistical discrepancy that is listed in the capital account  
 Source: Survey of Current Business, October 2000 ([www.bea.doc.gov](http://www.bea.doc.gov)).

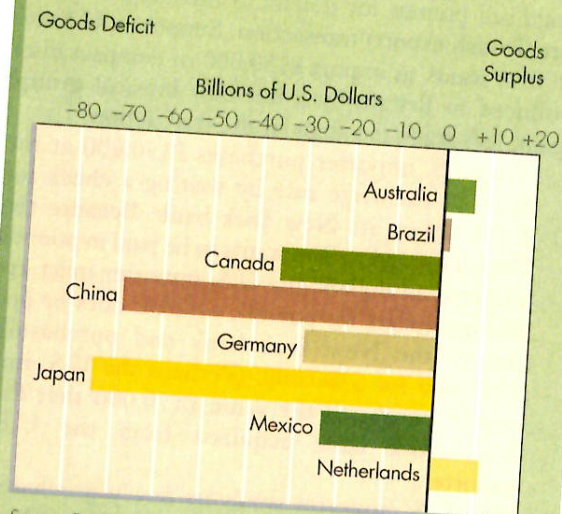
are a *credit*; they earn and make available foreign exchange in the United States. As you saw in the preceding section, any export-type transaction that obligates foreigners to make “inpayments” to the United States generates supplies of foreign currencies in the U.S. banks.

U.S. imports have a *minus* (–) sign because they are a *debit*; they reduce the stock of foreign currencies in the United States. Our earlier discussion of trade financing indicated that U.S. imports obligate the United States to make “outpayments” to the rest of the world that reduce available supplies of foreign currencies held by U.S. banks.

**Balance on Goods** Items 1 and 2 in Table 38.1 reveal that in 1999 U.S. goods exports of \$684 billion did not earn enough foreign currencies to finance U.S. goods imports of \$1030 billion. A country’s *balance of trade on goods* is the difference between its exports and its imports of goods. If exports exceed imports, the result is a surplus on the balance of goods. If imports exceed exports, there is a trade deficit on the balance of goods. We note in item 3 that in 1999 the United States incurred a trade deficit on goods of \$346 billion. (Global Perspective 38.1 shows U.S. trade deficits and surpluses relative to selected nations.)

**GLOBAL PERSPECTIVE 38.1****U.S. Trade Balances in Goods, Selected Nations, 1999**

The United States has large trade deficits in goods with several nations, in particular, Japan and China.



Source: Department of Commerce, Bureau of Economic Analysis, [www.bea.doc.gov/](http://www.bea.doc.gov/)

**Balance on Services** The United States exports not only goods, such as airplanes and computer software, but also services, such as insurance, consulting, travel, and brokerage services, to residents of foreign nations. Item 4 in Table 38.1 shows that these service “exports” totaled \$272 billion in 1999 and are a credit (thus the + sign). Item 5 indicates that the United States “imports” similar services from foreigners; those service imports were \$191 billion in 1999 and are a debit (thus the – sign). So the balance on services (item 6) in 1999 was \$81 billion.

The **balance on goods and services** shown as item 7 is the difference between U.S. exports of goods and services (items 1 and 4) and U.S. imports of goods and services (items 2 and 5). In 1999, U.S. imports of goods and services exceeded U.S. exports of goods and services by \$265 billion. So a **trade deficit** (or “unfavorable balance of trade”) occurred. In contrast, a **trade surplus** (or “favorable balance of trade”) occurs when exports of goods and services exceed imports of goods and services.

**Balance on Current Account** Item 8, *net investment income*, represents the difference between (1) the interest and dividend payments foreigners paid the United States for the use of exported U.S. capital and (2) the interest and dividends the United States paid for the use of foreign capital invested in the United States. Observe that in 1999 U.S. net investment income was a negative \$18 billion worth of foreign currencies.

Item 9 shows net transfers, both public and private, between the United States and the rest of the world. Included here is foreign aid, pensions paid to U.S. citizens living abroad, and remittances by immigrants to relatives abroad. These \$48 billion of transfers are net U.S. outpayments that decrease available supplies of foreign exchange. They are, in a sense, the exporting of goodwill and the importing of “thank-you notes.”

By adding all transactions in the current account, we obtain the **balance on current account** shown in item 10. In 1999 the United States had a current account deficit of \$331 billion. This means that the U.S. current account transactions (items 2, 5, 8, and 9) created outpayments of foreign currencies from the United States greater than the inpayments of foreign currencies to the United States.

## Capital Account

The second account within the overall balance-of-trade account is the **capital account**, which summarizes the purchase or sale of real or financial assets and the corresponding flows of monetary payments that accompany them. For example, a foreign firm may buy a real asset, say, an office building in the United States, or a financial asset, for instance, a U.S. government security. Both kinds of transaction involve the “export” of the ownership of U.S. assets from the United States in return for inpayments of foreign currency. As indicated in line 11, these “exports” of ownership of assets are designated *foreign purchases of assets in the United States*. They have a + sign because, like exports of U.S. goods and services, they represent inpayments of foreign currencies.

Conversely, a U.S. firm may buy, say, a hotel chain (real asset) in a foreign country or some of the common stock (financial asset) of a foreign firm. Both transactions involve the “import” of the ownership of the real or financial assets to the United States and are paid for by outpayments of foreign currencies. These “imports” are designated *U.S. purchases of assets abroad* and, as shown in line 12, have a – sign; like U.S. imports of goods and services, they represent outpayments of foreign currencies from the United States.

Items 11 and 12 combined yield a **balance on capital account** of +\$322 billion for 1999 (line 13). In 1999 the United States “exported” \$760 billion of ownership of its real and financial assets and “imported” \$438 billion. This capital account surplus brought in \$322 billion of foreign currencies to the United States.

## Official Reserves Account

The third account in the overall balance of payments is the official reserves account. The central banks of nations hold quantities of foreign currencies called **official reserves**. These reserves can be drawn on to make up any net deficit in the combined current and capital accounts (much as you would draw on your savings to pay for a special purchase). In 1999 the United States had a \$9 billion deficit in the combined current and capital accounts (line 10 minus line 13). This balance in the U.S. international payments required that the U.S. government deplete its official reserves of foreign currencies by \$9 billion (item 14). The + sign indicates that this drawing

down and exporting of reserves is a credit—an inpayment from official reserves that was needed to balance the overall balance-of-payments account.

In some years, the current and capital accounts balances are positive, meaning that the United States earned more foreign currencies than it needed. The surplus would create outpayments, not to other countries, but to the stock of official reserves. As such, item 13 would have a – sign because it is a debit.

The three components of the balance of payments (the current account, the capital account, and the official reserves account) must together equal zero. Every unit of foreign exchange used (as reflected in a minus outpayment or debit transaction) must have a source (a plus inpayment or credit transaction).

### Payments Deficits and Surpluses

Although the balance of payments must always sum to zero, economists and political officials speak of **balance-of-payments deficits and surpluses**; they are referring to imbalances between the current and capital accounts (line 10 minus line 13) that cause a drawing down or a building up of foreign currencies. A drawing down of official reserves (to create a positive official reserves entry in Table 38.1) measures a nation's balance-of-payments deficit; a building up of official reserves (which is shown as a negative official reserves entry) measures a nation's balance-of-payments surplus.

A balance-of-payments deficit is not necessarily bad, nor is a balance-of-payments surplus necessarily good. Both simply happen. However, any nation's official reserves are limited. Persistent payments deficits, which must be financed by drawing down those reserves, would ultimately deplete the reserves. That nation would have to adopt policies to correct its balance of payments. Such policies might require painful macroeconomic adjustments, trade barriers and similar restrictions, or a major depreciation of its currency. For this reason, nations seek to achieve payments balance, at least over several-year periods.

It is clear from Table 38.1 that in 1999 the United States had a large current account deficit, a large capital account surplus, and a relatively small payments deficit. Large current account deficits have been the norm for the United States in recent years. We need to examine the causes and consequences of trade deficits but will defer that discussion until later in this chapter. (**Key Question 3**)

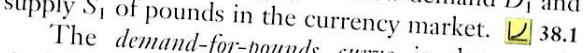
### QUICK REVIEW 38.1

- U.S. exports create a foreign demand for dollars, and fulfillment of that demand increases the domestic supply of foreign currencies; U.S. imports create a domestic demand for foreign currencies, and fulfillment of that demand reduces the supplies of foreign currency held by U.S. banks.
- The current account balance is a nation's exports of goods and services less its imports of goods and services plus its net investment income and net transfers.
- The capital account balance is a nation's sale of real and financial assets to people living abroad less its purchases of real and financial assets from foreigners.
- A balance-of-payments deficit occurs when the sum of the balances on current and capital accounts is negative; a balance-of-payments surplus arises when the sum of the balances on current and capital accounts is positive.

### Flexible Exchange Rates

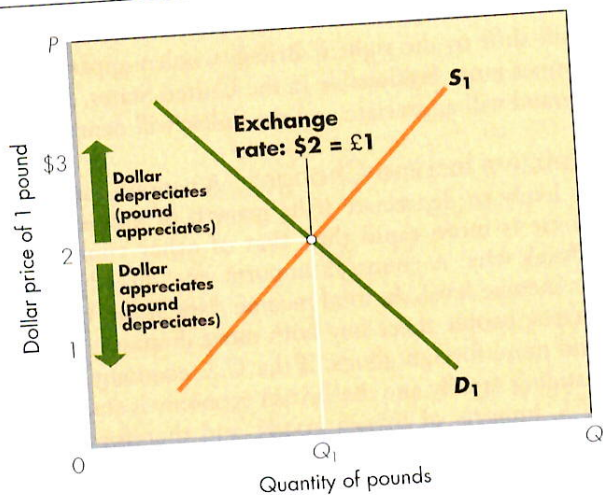
Both the size and the persistence of a nation's balance-of-payments deficits and surpluses and the adjustments it must make to correct those imbalances depend on the system of exchange rates being used. There are two "pure" types of exchange-rate systems:

- A **flexible- or floating-exchange-rate system** through which demand and supply determine exchange rates and in which no government intervention occurs.
- A **fixed-exchange-rate system** through which governments determine exchange rates and make necessary adjustments in their economies to maintain those rates.

We begin by looking at flexible exchange rates. Let's examine the rate, or price, at which U.S. dollars might be exchanged for British pounds. In **Figure 38.1 (Key Graph)** we show demand  $D_1$  and supply  $S_1$  of pounds in the currency market.  38.1

The *demand-for-pounds curve* is downward-sloping because all British goods and services will be cheaper to the United States if pounds become less expensive to the United States. That is, at lower dollar prices for pounds, the United States can get more pounds and therefore more British goods and services per dollar. To buy those cheaper British goods, U.S. consumers will increase the quantity of pounds they demand.

# KEY GRAPH



**Figure 38.1**

**The market for foreign currency (pounds).** The intersection of the demand-for-pounds curve  $D_1$  and the supply-of-pounds curve  $S_1$  determines the equilibrium dollar price of pounds, here, \$2. That means that the exchange rate is \$2 = £1. The upward green arrow is a reminder that a higher dollar price of pounds (say, \$3 = £1, caused by a shift in either the demand or the supply curve) means that the dollar has depreciated (the pound has appreciated). The downward green arrow tells us that a lower dollar price of pounds (say, \$1 = £1, again caused by a shift in either the demand or the supply curve) means that the dollar has appreciated (the pound has depreciated).

## Quick Quiz 38.1

- Which of the following statements is true?
  - The quantity of pounds demanded falls when the dollar appreciates.
  - The quantity of pounds supplied declines as the dollar price of the pound rises.
  - At the equilibrium exchange rate, the pound price of \$1 is  $\frac{1}{2}$  pound.
  - The dollar appreciates if the demand for pounds increases.
- At the price of \$2 for 1 pound in this figure:
  - the dollar-pound exchange rate is unstable.
  - the quantity of pounds supplied equals the quantity demanded.
  - the dollar price of 1 pound equals the pound price of \$1.
  - U.S. goods exports to Britain must equal U.S. goods imports from Britain.
- Other things equal, a leftward shift of the demand curve in this figure:
  - would depreciate the dollar.
  - would create a shortage of pounds at the previous price of \$2 for 1 pound.
  - might be caused by a major recession in the United States.
  - might be caused by a significant rise of real interest rates in Britain.
- Other things equal, a rightward shift of the supply curve in this figure would:
  - depreciate the dollar and might be caused by a significant rise of real interest rates in Britain.
  - depreciate the dollar and might be caused by a significant fall of real interest rates in Britain.
  - appreciate the dollar and might be caused by a significant rise of real interest rates in the United States.
  - appreciate the dollar and might be caused by a significant fall of interest rates in the United States.

Answers: 1. c; 2. b; 3. c; 4. c

The *supply-of-pounds* curve is upward-sloping because the British will purchase more U.S. goods when the dollar price of pounds rises (that is, as the pound price of dollars falls). When the British buy more U.S. goods, they supply a greater quantity of pounds to the foreign exchange market. In other words, they must exchange pounds for dollars to purchase U.S. goods. So, when the dollar price of pounds rises, the quantity of pounds supplied goes up.

The intersection of the supply curve and the demand curve will determine the dollar price of pounds. Here, that price (exchange rate) is \$2 for £1.

## Depreciation and Appreciation

An exchange rate determined by market forces can, and often does, change daily like stock and bond prices. When the dollar price of pounds *rises*, for example, from \$2 = £1 to \$3 = £1, the dollar has

*depreciated* relative to the pound (and the pound has appreciated relative to the dollar). When a currency depreciates, more units of it (dollars) are needed to buy a single unit of some other currency (a pound).

When the dollar price of pounds *falls*, for example, from  $\$2 = \pounds 1$  to  $\$1 = \pounds 1$ , the dollar has *appreciated* relative to the pound. When a currency appreciates, fewer units of it (dollars) are needed to buy a single unit of some other currency (pounds).

In our U.S.-Britain illustrations, depreciation of the dollar means an appreciation of the pound, and vice versa. When the dollar price of a pound jumps from  $\$2 = \pounds 1$  to  $\$3 = \pounds 1$ , the pound has appreciated relative to the dollar because it takes fewer pounds to buy  $\$1$ . At  $\$2 = \pounds 1$ , it took  $\pounds \frac{1}{2}$  to buy  $\$1$ ; at  $\$3 = \pounds 1$ , it takes only  $\pounds \frac{1}{3}$  to buy  $\$1$ . Conversely, when the dollar appreciated relative to the pound, the pound depreciated relative to the dollar. More pounds were needed to buy a dollar.

### Determinants of Exchange Rates

What factors would cause a nation's currency to appreciate or depreciate in the market for foreign exchange? Here are three generalizations:

- If the demand for a nation's currency increases (all else equal), that currency will appreciate; if the demand declines, that currency will depreciate.
- If the supply of a nation's currency increases, that currency will depreciate; if the supply decreases, that currency will appreciate.
- If a nation's currency appreciates, some foreign currency depreciates relative to it.

With these generalizations in mind, let's examine the determinants of exchange rates—the factors that shift the demand or supply curve for a certain currency.

**Changes in Tastes** Any change in consumer tastes or preferences for the products of a foreign country may alter the demand for that nation's currency and change its exchange rate. If technological advances in U.S. wireless phones make them more attractive to British consumers and businesses, then the British will supply more pounds in the exchange market in order to purchase more U.S. wireless phones. The supply-of-pounds curve will shift to the right, causing the pound to depreciate and the dollar to appreciate.

In contrast, the U.S. demand-for-pounds curve will shift to the right if British woolen apparel becomes more fashionable in the United States. So the pound will appreciate and the dollar will depreciate.

**Relative Income Changes** A nation's currency is likely to depreciate if its growth of national income is more rapid than that of other countries. Here's why: A country's imports vary directly with its income level. As total income rises in the United States, people there buy both more domestic goods and more foreign goods. If the U.S. economy is expanding rapidly and the British economy is stagnant, U.S. imports of British goods, and therefore U.S. demands for pounds, will increase. The dollar price of pounds will rise, so the dollar will depreciate.

**Relative Price-Level Changes** Changes in the relative price levels of two nations may change the demand and supply of currencies and alter the exchange rate between the two nations' currencies.

The **purchasing-power-parity theory** holds that exchange rates equate the purchasing power of various currencies. That is, the exchange rates among national currencies adjust to match the ratios of the nations' price levels: If a certain market basket of goods costs \$10,000 in the United States and £5,000 in Great Britain, according to this theory the exchange rate will be  $\$2 = \pounds 1$ . That way, a dollar spent on goods sold in Britain, Japan, Turkey, and other nations will have equal purchasing power. **!** 38.1

In practice, however, exchange rates depart from purchasing power parity, even over long periods. Nevertheless, changes in relative price levels are a determinant of exchange rates. If, for example, the domestic price level rises rapidly in the United States and remains constant in Great Britain, U.S. consumers will seek out low-priced British goods, increasing the demand for pounds. The British will purchase fewer U.S. goods, reducing the supply of pounds. This combination of demand and supply changes will cause the pound to appreciate and the dollar to depreciate.

**Relative Interest Rates** Changes in relative interest rates between two countries may alter their exchange rate. Suppose that real interest rates rise in the United States but stay constant in Great Britain. British citizens will then find the United States an attractive place in which to make financial investments. To undertake these investments, they will



have to supply pounds in the foreign exchange market to obtain dollars. The increase in the supply of pounds results in depreciation of the pound and appreciation of the dollar.

**Speculation** Currency speculators are people who buy and sell currencies with an eye toward reselling or repurchasing them at a profit. Suppose speculators expect the U.S. economy to (1) grow more rapidly than the British economy and (2) experience a more rapid rise in its price level than will Britain. These expectations translate into an anticipation that the pound will appreciate and the dollar will depreciate. Speculators who are holding dollars will therefore try to convert them into pounds. This effort will increase the demand for pounds and cause the dollar price of pounds to rise (that is, cause the dollar to depreciate). A self-fulfilling prophecy occurs: The pound appreciates and the dollar depreciates because speculators act on the belief that these changes will in fact take place. In this way, speculation can cause changes in exchange rates. (We deal with currency speculation in more detail in this chapter's Last Word.)

Table 38.2 has more illustrations of the determinants of exchange rates; the table is worth careful study.

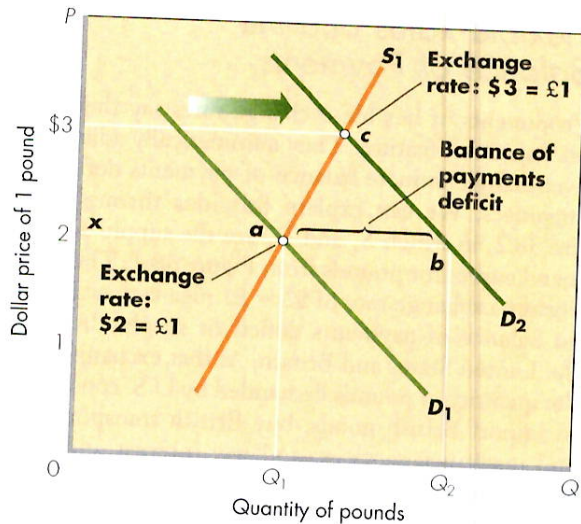
### Flexible Rates and the Balance of Payments

Proponents of flexible exchange rates say they have an important feature: They automatically adjust and eventually eliminate balance-of-payments deficits or surpluses. We can explain this idea through Figure 38.2, in which  $S_1$  and  $D_1$  are the supply and demand curves for pounds from Figure 38.1. The equilibrium exchange rate of  $\$2 = \pounds 1$  means that there is no balance-of-payments deficit or surplus between the United States and Britain. At that exchange rate, the quantity of pounds demanded by U.S. consumers to import British goods, buy British transportation and insurance services, and pay interest and dividends on British investments in the United States equals the amount of pounds supplied by the British in buying U.S. exports, purchasing services from the United States, and making interest and dividend payments on U.S. investments in Britain. The United States would have no need to either draw down or build up its official reserves to balance its payments.

Suppose tastes change and U.S. consumers buy more British automobiles; the U.S. price level increases relative to Britain's; or interest rates fall in the United States compared to those in Britain. Any or all of these changes will increase the U.S. demand

**Table 38.2**  
**Determinants of Exchange Rates: Factors That Change the Demand for or the Supply of a Particular Currency and Thus Alter the Exchange Rate**

Determinant	Examples
Change in tastes	Japanese autos decline in popularity in the United States (Japanese yen depreciates; U.S. dollar appreciates). European tourists flock to the United States (U.S. dollar appreciates; European euro depreciates).
Change in relative incomes	England encounters a recession, reducing its imports, while U.S. real output and real income surge, increasing U.S. imports (British pound appreciates; U.S. dollar depreciates).
Change in relative prices	Switzerland experiences a 3% inflation rate compared to Canada's 10% rate (Swiss franc appreciates; Canadian dollar depreciates).
Change in relative real interest rates	The Federal Reserve drives up interest rates in the United States, while the Bank of England takes no such action (U.S. dollar appreciates; British pound depreciates).
Speculation	Currency traders believe South Korea will have much greater inflation than Taiwan (South Korean won depreciates; Taiwan dollar appreciates). Currency traders think Finland's interest rates will plummet relative to Denmark's rates (Finland's markka depreciates; Denmark's krone appreciates).



**Figure 38.2**

**Adjustments under flexible exchange rates and fixed exchange rates.** Under flexible exchange rates, a shift in the demand for pounds from  $D_1$  to  $D_2$ , other things equal, would cause a U.S. balance-of-payments deficit  $ab$ . That deficit would be corrected by a change in the exchange rate from  $\$2 = \text{£}1$  to  $\$3 = \text{£}1$ . Under fixed exchange rates, the United States would cover the shortage of pounds  $ab$  by using international monetary reserves, restricting trade, implementing exchange controls, or enacting a contractionary stabilization policy.

for British pounds, for example, from  $D_1$  to  $D_2$  in Figure 38.2.

If the exchange rate remains at the initial  $\$2 = \text{£}1$ , a U.S. balance-of-payments deficit will occur in the amount of  $ab$ . At the  $\$2 = \text{£}1$  rate, U.S. consumers will demand the quantity of pounds shown by point  $b$  but Britain will supply only the amount shown by  $a$ . There will be a shortage of pounds. But this shortage will not last because this is a competitive market. Instead, the dollar price of pounds will rise (the dollar will depreciate) until the balance-of-payments deficit is eliminated. That occurs at the new equilibrium exchange rate of  $\$3 = \text{£}1$ , where the quantities of pounds demanded and supplied are again equal.

To explain why this occurred, we reemphasize that the exchange rate links all domestic (U.S.) prices with all foreign (British) prices. The dollar price of a foreign good is found by multiplying the foreign price by the exchange rate (in dollars per unit of the foreign currency). At an exchange rate of  $\$2 = \text{£}1$ , a British automobile priced at  $\text{£}15,000$  will cost a U.S. consumer  $\$30,000$  ( $= 15,000 \times \$2$ ).

A change in the exchange rate alters the prices of all British goods to U.S. consumers and all U.S.

goods to British buyers. The shift in the exchange rate (here from  $\$2 = \text{£}1$  to  $\$3 = \text{£}1$ ) changes the relative attractiveness of U.S. imports and exports and restores equilibrium in the U.S. (and British) balance of payments. From the U.S. view, as the dollar price of pounds changes from  $\$2$  to  $\$3$ , the British auto priced at  $\text{£}15,000$ , which formerly cost a U.S. consumer  $\$30,000$ , now costs  $\$45,000$  ( $= 15,000 \times \$3$ ). Other British goods will also cost U.S. consumers more, and U.S. imports of British goods will decline. A movement from point  $b$  toward point  $c$  in Figure 38.2 graphically illustrates this concept.

From Britain's standpoint, the exchange rate (the pound price of dollars) has fallen (from  $\text{£}\frac{1}{2}$  to  $\text{£}\frac{1}{3}$  for  $\$1$ ). The international value of the pound has appreciated. The British previously got only  $\$2$  for  $\text{£}1$ ; now they get  $\$3$  for  $\text{£}1$ . U.S. goods are therefore cheaper to the British, and U.S. exports to Britain will rise. In Figure 38.2, this is shown by a movement from point  $a$  toward point  $c$ .

The two adjustments—a decrease in U.S. imports from Britain and an increase in U.S. exports to Britain—are just what are needed to correct the U.S. balance-of-payments deficit. These changes end when, at point  $c$ , the quantities of British pounds demanded and supplied are equal. (**Key Questions 6 and 9**)

### Disadvantages of Flexible Exchange Rates

Even though flexible exchange rates automatically work to eliminate payment imbalances, they may cause several significant problems.

**Uncertainty and Diminished Trade** The risks and uncertainties associated with flexible exchange rates may discourage the flow of trade. Suppose a U.S. automobile dealer contracts to purchase 10 British cars for  $\text{£}150,000$ . At the current exchange rate of, say,  $\$2$  for  $\text{£}1$ , the U.S. importer expects to pay  $\$300,000$  for these automobiles. But if during the 3-month delivery period the rate of exchange shifts to  $\$3$  for  $\text{£}1$ , the  $\text{£}150,000$  payment contracted by the U.S. importer will be  $\$450,000$ .

That increase in the dollar price of pounds may thus turn the U.S. importer's anticipated profit into substantial loss. Aware of the possibility of an adverse change in the exchange rate, the U.S. importer may not be willing to assume the risks involved. The U.S. firm may confine its operations to domestic

automobiles, so international trade in this product will not occur.

The same thing can happen with investments. Assume that when the exchange rate is \$3 to £1, a U.S. firm invests \$30,000 (or £10,000) in a British enterprise. It estimates a return of 10 percent; that is, it anticipates annual earnings of \$3000 or £1000. Suppose these expectations prove correct in that the British firm earns £1000 in the first year on the £10,000 investment. But suppose that during the year, the value of the dollar appreciates to \$2 = £1. The absolute return is now only \$2000 (rather than \$3000), and the rate of return falls from the anticipated 10 percent to only  $6\frac{2}{3}$  percent ( $= \$2000/\$30,000$ ). Investment is risky in any case. The added risk of changing exchange rates may persuade the U.S. investor not to venture overseas.<sup>1</sup>

**Terms-of-Trade Changes** A decline in the international value of its currency will worsen a nation's terms of trade. For example, an increase in the dollar price of a pound will mean that the United States must export more goods and services to finance a specific level of imports from Britain.

**Instability** Flexible exchange rates may destabilize the domestic economy, because wide fluctuations stimulate and then depress industries producing exported goods. If the U.S. economy is operating at full employment and its currency depreciates, as in our illustration, the results will be inflationary, for two reasons. (1) Foreign demand for U.S. goods may rise, increasing total spending and pulling up U.S. prices. Also, the prices of all U.S. imports will increase. (2) Conversely, appreciation of the dollar will lower U.S. exports and increase imports, possibly causing unemployment.

Flexible or floating exchange rates may also complicate the use of domestic stabilization policies in seeking full employment and price stability. This is especially true for nations whose exports and imports are large relative to their total domestic output.

## Fixed Exchange Rates

To circumvent the disadvantages of flexible exchange rates, at times nations have fixed or "pegged" their exchange rates. For our analysis of fixed exchange

<sup>1</sup>You will see in this chapter's Last Word, however, that a trader can circumvent part of the risk of unfavorable exchange-rate fluctuations by "hedging" in the "futures market" or "forward market" for foreign exchange.

rates, we assume that the United States and Britain agree to maintain a \$2 = £1 exchange rate.

The problem is that such a government agreement cannot keep from changing the demand for and the supply of pounds. With the rate fixed, a shift in demand or supply will threaten the fixed-exchange-rate system, and government must intervene to ensure that the exchange rate is maintained.

In Figure 38.2, suppose the U.S. demand for pounds increases from  $D_1$  to  $D_2$  and a U.S. payment deficit  $ab$  arises. Now, the new equilibrium exchange rate ( $\$3 = \text{£}1$ ) is below the fixed exchange rate ( $\$2 = \text{£}1$ ). How can the United States prevent the shortage of pounds from driving the exchange rate up to the new equilibrium level? How can it maintain the fixed exchange rate? The answer is by altering market demand or market supply or both so that they will intersect at the \$2 = £1 rate. There are several ways to do this.

## Use of Reserves

One way to maintain a fixed exchange rate is to manipulate the market through the use of official reserves. Such manipulations are called **currency interventions**. By selling part of its reserves of pounds, the U.S. government could increase the supply of pounds, shifting supply curve  $S_1$  to the right so that it intersects  $D_2$  at  $b$  in Figure 38.2 and thereby maintains the exchange rate at \$2 = £1.

How do official reserves originate? Perhaps a balance-of-payments surplus occurred in the past. The U.S. government would have purchased that surplus. That is, at some earlier time the U.S. government may have spent dollars to buy the surplus pounds that were threatening to reduce the exchange rate to below the \$2 = £1 fixed rate. Those purchases would have bolstered the U.S. official reserves of pounds.

Nations have also used gold as "international money" to obtain official reserves. In our example, the U.S. government could sell some of its gold to Britain to obtain pounds. It could then sell pounds for dollars. That would shift the supply-of-pounds curve to the right, and the \$2 = £1 exchange rate could be maintained.

It is critical that the amount of reserves and gold be enough to accomplish the required increase in the supply of pounds. There is no problem if deficits and surpluses occur more or less randomly and are of similar size. Then, last year's balance-of-payments surplus with Britain will increase the U.S. reserve of

pounds, and that reserve can be used to “finance” this year’s deficit. But if the United States encounters persistent and sizable deficits for an extended period, it may exhaust its reserves, and thus be forced to abandon fixed exchange rates. Or, at the least, a nation whose reserves are inadequate must use less appealing options to maintain exchange rates. Let’s consider some of those options.

### Trade Policies

To maintain fixed exchange rates, a nation can try to control the flow of trade and finance directly. The United States could try to maintain the \$2 = £1 exchange rate in the face of a shortage of pounds by discouraging imports (thereby reducing the demand for pounds) and encouraging exports (thus increasing the supply of pounds). Imports could be reduced by means of new tariffs or import quotas; special taxes could be levied on the interest and dividends U.S. financial investors receive from foreign investments. Also, the U.S. government could subsidize certain U.S. exports to increase the supply of pounds.

The fundamental problem is that these policies reduce the volume of world trade and change its makeup from what is economically desirable. When nations impose tariffs, quotas, and the like, they lose some of the economic benefits of a free flow of world trade. That loss should not be underestimated: Trade barriers by one nation lead to retaliatory responses from other nations, multiplying the loss.

### Exchange Controls and Rationing

Another option is to adopt exchange controls and rationing. Under **exchange controls** the U.S. government could handle the problem of a pound shortage by requiring that all pounds obtained by U.S. exporters be sold to the Federal government. Then the government would allocate or ration this short supply of pounds (represented by  $xz$  in Figure 38.2) among various U.S. importers, who actually demand the quantity  $ab$ . In effect, this policy would restrict the value of U.S. imports to the amount of foreign exchange earned by U.S. exports. Assuming balance in the capital account, there would then be no balance-of-payments deficit. U.S. demand for British imports with the value  $ab$  would simply not be fulfilled.

There are major objections to exchange controls:

- **Distorted trade** Like tariffs, quotas, and export subsidies (trade controls), exchange controls

would distort the pattern of international trade away from the pattern suggested by comparative advantage.

- **Favoritism** The process of rationing scarce foreign exchange might lead to government favoritism toward selected importers (big contributors to reelection campaigns, for example).
- **Restricted choice** Controls would limit freedom of consumer choice. The U.S. consumers who prefer Volkswagens might have to buy Chevrolets. The business opportunities for some U.S. importers might be impaired if the government were to limit imports.
- **Black markets** Enforcement problems are likely under exchange controls. U.S. importers might want foreign exchange badly enough to pay more than the \$2 = £1 official rate, setting the stage for black-market dealings between importers and illegal sellers of foreign exchange.

### Domestic Macroeconomic Adjustments

A final way to maintain a fixed exchange rate would be to use domestic stabilization policies (monetary policy and fiscal policy) to eliminate the shortage of foreign currency. Tax hikes, reductions in government spending, and a high-interest-rate policy would reduce total spending in the U.S. economy and, consequently, domestic income. Because the volume of imports varies directly with domestic income, demand for British goods, and therefore for pounds, would be restrained.

If these “contractionary” policies served to reduce the domestic price level relative to Britain’s, U.S. buyers of consumer and capital goods would divert their demands from British goods to U.S. goods, reducing the demand for pounds. Moreover, the high-interest-rate policy would lift U.S. interest rates relative to those in Britain.

Lower prices on U.S. goods and higher U.S. interest rates would increase British imports of U.S. goods and would increase British financial investment in the United States. Both developments would increase the supply of pounds. The combination of a decrease in the demand for and an increase in the supply of pounds would reduce or eliminate the original U.S. balance-of-payments deficit. In Figure 38.2 the new supply and demand curves would intersect at some new equilibrium point on line  $ab$ , where the exchange rate remains at \$2 = £1.

Maintaining fixed exchange rates by such means is hardly appealing. The “price” of exchange-rate stability for the United States would be a decline in output, employment, and price levels—in other words, a recession. Eliminating a balance-of-payments deficit and achieving domestic stability are both important national economic goals, but to sacrifice stability to balance payments would be to let the tail wag the dog.

### QUICK REVIEW 38.2

- In a system in which exchange rates are flexible (meaning that they are free to float), the rates are determined by the demand for and supply of individual national currencies in the foreign-exchange market.
- Determinants of flexible exchange rates (factors that shift currency supply and demand curves) include changes in (a) tastes, (b) relative national incomes, (c) relative price levels, (d) real interest rates, and (e) speculation.
- Under a system of fixed exchange rates, nations set their exchange rates and then maintain them by buying or selling reserves of currencies, establishing trade barriers, employing exchange controls, or incurring inflation or recession.

## International Exchange-Rate Systems

In recent times the world’s nations have used three different exchange-rate systems: a fixed-rate system, a modified fixed-rate system, and a modified flexible-rate system.

### The Gold Standard: Fixed Exchange Rates

Between 1879 and 1934 the major nations of the world adhered to a fixed-rate system called the **gold standard**. Under this system, each nation must:

- Define its currency in terms of a quantity of gold.
- Maintain a fixed relationship between its stock of gold and its money supply.
- Allow gold to be freely exported and imported.

If each nation defines its currency in terms of gold, the various national currencies will have fixed relationships to one another. For example, if the United States defines \$1 as worth 25 grains of gold, and Britain defines £1 as worth 50 grains of gold, then a

British pound is worth  $2 \times 25$  grains, or \$2. This exchange rate was fixed under the gold standard. The exchange rate did not change in response to changes in currency demand and supply.

**Gold Flows** If we ignore the costs of packing, insuring, and shipping gold between countries, under the gold standard the rate of exchange would not vary from this  $\$2 = \pounds 1$  rate. No one in the United States would pay more than  $\$2 = \pounds 1$  because 50 grains of gold could always be bought for \$2 in the United States and sold for £1 in Britain. Nor would the British pay more than £1 for \$2. Why should they when they could buy 50 grains of gold in Britain for £1 and sell it in the United States for \$2?

Under the gold standard, the potential free flow of gold between nations resulted in fixed exchange rates.

**Domestic Macroeconomic Adjustments** When currency demand or supply changes, the gold standard requires domestic macroeconomic adjustments to maintain the fixed exchange rate. To see why, suppose that U.S. tastes change such that U.S. consumers want to buy more British goods. The resulting increase in the demand for pounds creates a shortage of pounds in the United States (recall Figure 38.2), implying a U.S. balance-of-payments deficit.

What will happen? Remember that the rules of the gold standard prohibit the exchange rate from moving from the fixed  $\$2 = \pounds 1$  rate. The rate cannot move to, say, a new equilibrium at  $\$3 = \pounds 1$  to correct the imbalance. Instead, gold will flow from the United States to Britain to correct the payments imbalance.

But recall that the gold standard requires that participants maintain a fixed relationship between their domestic money supplies and their quantities of gold. The flow of gold from the United States to Britain will require a reduction of the money supply in the United States. Other things equal, that will reduce total spending in the United States and lower U.S. real domestic output, employment, income, and, perhaps, prices. Also, the decline in the money supply will boost U.S. interest rates.

The opposite will occur in Britain. The inflow of gold will increase the money supply, and this will increase total spending in Britain. Domestic output, employment, income, and, perhaps, prices will rise. The British interest rate will fall.

Declining U.S. incomes and prices will reduce the U.S. demand for British goods and therefore reduce the U.S. demand for pounds. Lower interest rates in Britain will make it less attractive for U.S. investors to make financial investments there, also lessening the demand for pounds. For all these reasons, the demand for pounds in the United States will decline. In Britain, higher incomes, prices, and interest rates will make U.S. imports and U.S. financial investments more attractive. In buying these imports and making these financial investments, British citizens will supply more pounds in the exchange market.

In short, domestic macroeconomic adjustments in the United States and Britain, triggered by the international flow of gold, will produce new demand and supply conditions for pounds such that the \$2 = £1 exchange rate is maintained. After all the adjustments are made, the United States will not have a payments deficit and Britain will not have a payments surplus.

So the gold standard has the advantage of maintaining stable exchange rates and correcting balance-of-payments deficits and surpluses automatically. However, its critical drawback is that nations must accept domestic adjustments in such distasteful forms as unemployment and falling incomes, on the one hand, or inflation, on the other hand. Under the gold standard, a nation's money supply is altered by changes in supply and demand in currency markets, and nations cannot establish their own monetary policy in their own national interest. If the United States, for example, were to experience declining output and income, the loss of gold under the gold standard would reduce the U.S. money supply. That would increase interest rates, retard borrowing and spending, and produce further declines in output and income.

**Collapse of the Gold Standard** The gold standard collapsed under the weight of the worldwide Depression of the 1930s. As domestic output and employment fell worldwide, the restoration of prosperity became the primary goal of afflicted nations. They responded by enacting protectionist measures to reduce imports. The idea was to get their economies moving again by promoting consumption of domestically produced goods. To make their exports less expensive abroad, many nations redefined their currencies at lower levels in terms of gold. For example, a country that had previously defined the value of its currency at 1 unit = 25 ounces of gold might redefine it as 1 unit = 10 ounces of

gold. Such redefining is an example of **devaluation**—a deliberate action by government to reduce the international value of its currency. A series of such devaluations in the 1930s meant that exchange rates were no longer fixed. That violated a major tenet of the gold standard, and the system broke down.

### The Bretton Woods System

The Great Depression and the Second World War left world trade and the world monetary system in shambles. To lay the groundwork for a new international monetary system, in 1944 major nations held an international conference at Bretton Woods, New Hampshire. The conference produced a commitment to a modified fixed-exchange-rate system called an *adjustable-peg system*, or, simply, the **Bretton Woods system**. The new system sought to capture the advantages of the old gold standard (fixed exchange rate) while avoiding its disadvantages (painful domestic macroeconomic adjustments).

Furthermore, the conference created the **International Monetary Fund (IMF)** to make the new exchange-rate system feasible and workable. The new international monetary system managed through the IMF prevailed with modifications until 1971. (The IMF still plays a basic role in international finance; in recent years it has performed a major role in providing loans to developing countries, nations experiencing financial crises, and nations making the transition from communism to capitalism.)

**IMF and Pegged Exchange Rates** How did the adjustable-peg system of exchange rates work? First, as with the gold standard, each IMF member had to define its currency in terms of gold (or dollars), thus establishing rates of exchange between its currency and the currencies of all other members. In addition, each nation was obligated to keep its exchange rate stable with respect to every other currency. To do so, nations would have to use their official currency reserves to intervene in foreign exchange markets.

Assume again that the U.S. dollar and the British pound were “pegged” to each other at \$2 = £1. And suppose again that the demand for pounds temporarily increases so that a shortage of pounds occurs in the United States (the United States has a balance-of-payments deficit). How can the United States keep its pledge to maintain a \$2 = £1 exchange rate when the new equilibrium rate is, say, \$3 = £1? As we noted previously, the United States

can supply additional pounds to the exchange market, increasing the supply of pounds such that the equilibrium exchange rate falls back to  $\$2 = \pounds 1$ .

Under the Bretton Woods system there were three main sources of the needed pounds:

- **Official reserves** The United States might currently possess pounds in its official reserves as the result of past actions against a payments surplus.
- **Gold sales** The U.S. government might sell some of its gold to Britain for pounds. The proceeds would then be offered in the exchange market to augment the supply of pounds.
- **IMF borrowing** The needed pounds might be borrowed from the IMF. Nations participating in the Bretton Woods system were required to make contributions to the IMF based on the size of their national income, population, and volume of trade. If necessary, the United States could borrow pounds on a short-term basis from the IMF by supplying its own currency as collateral.

### Fundamental Imbalances: Adjusting the Peg

The Bretton Woods system recognized that from time to time a nation may be confronted with persistent and sizable balance-of-payments problems that cannot be corrected through the means listed above. In such cases, the nation would eventually run out of official reserves and be unable to maintain its fixed-exchange-rate system. The Bretton Woods remedy was correction by devaluation, that is, by an “orderly” reduction of the nation’s pegged exchange rate. Also, the IMF allowed each member nation to alter the value of its currency by 10 percent, on its own, to correct a so-called fundamental (persistent and continuing) balance-of-payments deficit. Larger exchange-rate changes required the permission of the Fund’s board of directors.

By requiring approval of significant rate changes, the Fund guarded against arbitrary and competitive currency devaluations by nations seeking only to boost output in their own countries at the expense of other countries. In our example, devaluation of the dollar would increase U.S. exports and lower U.S. imports, correcting its persistent payments deficit.

### Demise of the Bretton Woods System

Under this adjustable-peg system, nations came to accept gold and the dollar as international reserves. The acceptability of gold as an international medium of exchange derived from its earlier use under the

gold standard. Other nations accepted the dollar as international money because the United States had accumulated large quantities of gold, and between 1934 and 1971 it maintained a policy of buying gold from, and selling gold to, foreign governments at a fixed price of \$35 per ounce. The dollar was convertible into gold on demand, so the dollar came to be regarded as a substitute for gold, or “as good as gold.” And since the discovery of new gold was limited, the growing volume of dollars helped provide a medium of exchange for the expanding world trade.

But a major problem arose. The United States had persistent payments deficits throughout the 1950s and 1960s. Those deficits were financed in part by U.S. gold reserves but mostly by payment of U.S. dollars. As the amount of dollars held by foreigners soared and the U.S. gold reserves dwindled, other nations began to question whether the dollar was really “as good as gold.” The ability of the United States to continue to convert dollars into gold at \$35 per ounce became increasingly doubtful, as did the role of dollars as international monetary reserves. Thus the dilemma was: To maintain the dollar as a reserve medium, the U.S. payments deficit had to be eliminated. But elimination of the payments deficit would remove the source of additional dollar reserves and thus limit the growth of international trade and finance.

The problem culminated in 1971 when the United States ended its 37-year-old policy of exchanging gold for dollars at \$35 per ounce. It severed the link between gold and the international value of the dollar, thereby “floating” the dollar and letting market forces determine its value. The floating of the dollar withdrew U.S. support from the Bretton Woods system of fixed exchange rates and, in effect, ended the system.

### The Current System: The Managed Float

The current international exchange-rate system (1971–present) is an “almost” flexible system called **managed floating exchange rates**. Exchange rates among major currencies are free to float to their equilibrium market levels, but nations occasionally use currency interventions in the foreign exchange market to stabilize or alter market exchange rates.

Normally, the major trading nations allow their exchange rates to float up or down to equilibrium levels based on supply and demand in the foreign exchange market. They recognize that changing

economic conditions among nations require continuing changes in equilibrium exchange rates to avoid persistent payments deficits or surpluses. They rely on freely operating foreign exchange markets to accomplish the necessary adjustments. The result has been considerably more volatile exchange rates than those during the Bretton Woods era.

But nations also recognize that certain trends in the movement of equilibrium exchange rates may be at odds with national or international objectives. On occasion, nations therefore intervene in the foreign exchange market by buying or selling large amounts of specific currencies. This way, they can “manage” or stabilize exchange rates by influencing currency demand and supply.

For example, in 1987 the Group of Seven industrial nations (G-7 nations)—the United States, Germany, Japan, Britain, France, Italy, and Canada—agreed to stabilize the value of the dollar. During the previous 2 years the dollar had declined rapidly because of large U.S. trade deficits. Although the U.S. trade deficits remained sizable, the G-7 nations concluded that further dollar depreciation might disrupt economic growth in member nations (other than the United States). The G-7 nations therefore purchased large amounts of dollars to boost the dollar’s value. Since 1987 the G-7 nations (now G-8 with the addition of Russia) have periodically intervened in foreign exchange markets to stabilize currency values.

In 2000, the United States and the European nations sold dollars and bought euros in an effort to stabilize the falling value of the euro relative to the dollar. In the previous year the euro (€) had depreciated from \$1 = €1.17 to \$1 = €.87.

The current exchange-rate system is thus an “almost” flexible exchange-rate system. The “almost” refers mainly to the periodic currency interventions by governments; it also refers to the fact that the actual system is more complicated than described. While the major currencies such as dollars, euros, pounds, and yen fluctuate in response to changing supply and demand, some developing nations peg their currencies to the dollar and allow their currencies to fluctuate with it against other currencies. Also, some nations peg the value of their currencies to a “basket” or group of other currencies.

How well has the managed float worked? It has both proponents and critics.

**In Support of the Managed Float** Proponents of the managed-float system argue that it has functioned far better than many experts antici-

pated. Skeptics had predicted that fluctuating exchange rates would reduce world trade and finance. But in real terms world trade under the managed float has grown tremendously over the past several decades. Moreover, as supporters are quick to point out, currency crises such as those in Mexico and southeast Asia in the last half of the 1990s were not the result of the floating-exchange-rate system itself. Rather, the abrupt currency devaluations and depreciations resulted from internal problems in those nations, in conjunction with the nations’ tendency to peg their currencies to the dollar or to a basket of currencies. In some cases, flexible exchange rates would have made these adjustments far more gradual.

Proponents also point out that the managed float has weathered severe economic turbulence that might have caused a fixed-rate system to break down. Such events as extraordinary oil price increases in 1973–1974 and again in 1981–1983, inflationary recessions in several nations in the mid-1970s, major national recessions in the early 1980s, and large U.S. budget deficits in the 1980s and the first half of the 1990s all caused substantial imbalances in international trade and finance. Flexible rates enabled the system to adjust to those events, whereas the same events would have put unbearable pressures on a fixed-rate system.

**Concerns with the Managed Float** There is still much sentiment in favor of greater exchange-rate stability. Those favoring more stable exchange rates see problems with the current system. They argue that the excessive volatility of exchange rates under the managed float threatens the prosperity of economies that rely heavily on exports. Several financial crises in individual nations (for example, Mexico, South Korea, Indonesia, Thailand, Russia, and Brazil) have resulted from abrupt changes in exchange rates. These crises have led to massive “bailouts” of those economies via IMF loans. The IMF bailouts, in turn, may encourage nations to undertake risky and inappropriate economic policies since they know that, if need be, the IMF will come to the rescue. Moreover, some exchange-rate volatility has occurred even when underlying economic and financial conditions were relatively stable, suggesting that speculation plays too large a role in determining exchange rates.

Perhaps more importantly, assert the critics, the managed float has not eliminated trade imbalances, as flexible rates are supposed to do. Thus, the United States has run persistent trade deficits for many years,



while Japan has run persistent surpluses. Changes in exchange rates between dollars and yen have not yet corrected these imbalances, as is supposed to be the case under flexible exchange rates.

Skeptics say the managed float is basically a “nonsystem”; the guidelines concerning what each nation may or may not do with its exchange rates are not specific enough to keep the system working in the long run. Nations inevitably will be tempted to intervene in the foreign exchange market, not merely to smooth out short-term fluctuations in exchange rates but to prop up their currency if it is chronically weak or to manipulate the exchange rate to achieve domestic stabilization goals.

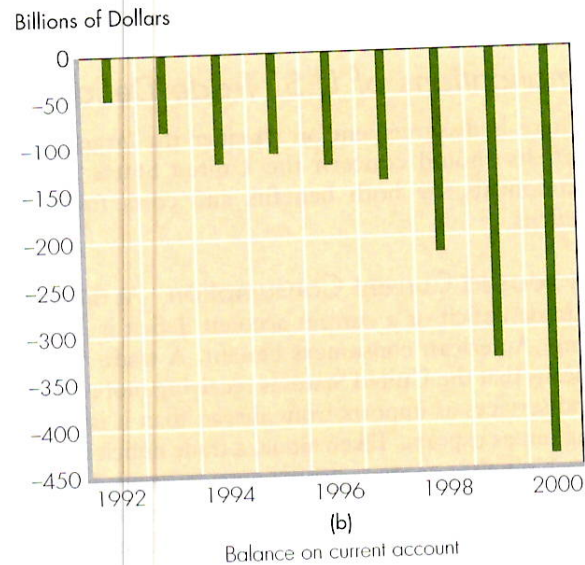
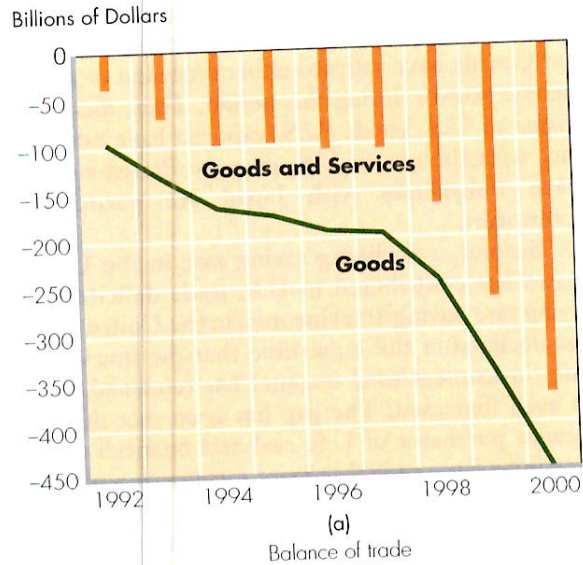
So what are we to conclude? Flexible exchange rates have not worked perfectly, but they have not failed miserably. Thus far they have survived, and no doubt have eased, several major shocks to the international trading system. Meanwhile, the “managed” part of the float has given nations some sense of control over their collective economic destinies. On balance, most economists favor continuation of the present system of “almost” flexible exchange rates.

**QUICK REVIEW 38.3**

- Under the gold standard (1879–1934), nations fixed exchange rates by valuing their currencies in terms of gold, by tying their stocks of money to gold, and by allowing gold to flow between nations when balance-of-payments deficits and surpluses occurred.
- The Bretton Woods exchange-rate system (1944–1971) fixed or pegged exchange rates but permitted orderly adjustments of the pegs under special circumstances.
- The managed floating system of exchange rates (1971–present) relies on foreign exchange markets to establish equilibrium exchange rates. The system permits nations to buy and sell foreign currency to stabilize short-term changes in exchange rates or to correct exchange-rate imbalances that are negatively affecting the world economy.

**Recent U.S. Trade Deficits**

Figure 38.3 reveals that U.S. trade and current account deficits over the past several years were large and persistent. For example, the trade deficit on goods for 2000 was \$450 billion. That year, the trade deficit on goods and services was \$369 billion, and the current account deficit was \$435 billion.



**Figure 38.3**

**Recent U.S. trade deficits.** U.S. trade deficits in (a) “goods” and “goods and services” and (b) the current account recently have been very large.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, [www.bea.doc.gov/](http://www.bea.doc.gov/).

**Causes of the Trade Deficits**

There are several reasons for these persistent trade deficits. First, since 1992 the U.S. economy has grown more rapidly than the economies of several major trading nations. This growth of income has

boosted U.S. purchases of foreign goods (U.S. imports). In contrast, Japan, some European nations, and Canada have suffered either recession or slower income growth during this period. Thus, their purchases of U.S. goods (U.S. exports) have not kept pace with the rise of U.S. imports. Persistent U.S. trade imbalances with Japan are particularly noteworthy.

Second, a declining saving rate in the United States has contributed to U.S. trade deficits. The saving rate (saving/total income) in the United States has declined at the same time that the investment rate (investment/total income) has remained stable or even increased. The gap has been met through foreign purchases of U.S. real and financial assets, creating a large capital account surplus. Because foreigners are financing more of U.S. investment, U.S. citizens are able to save less and consume more, including consumption of imported goods. That is, the capital account surplus may partly cause the trade deficit, not simply result from it.

### *Implications of U.S. Trade Deficits*

There is disagreement on whether the large trade deficits should concern the United States. Most economists see both benefits and costs to trade deficits.

**Increased Current Consumption** At the time a trade deficit or a current account deficit is occurring, American consumers benefit. A trade deficit means that the United States is receiving more goods and services as imports from abroad than it is sending out as exports. Taken alone, a trade deficit allows the United States to consume outside its production possibilities curve. It augments the domestic standard of living. But there is a catch: The gain in present consumption may come at the expense of reduced future consumption.

**Increased U.S. Indebtedness** A trade deficit is considered “unfavorable” because it must be financed by borrowing from the rest of the world, selling off assets, or dipping into foreign currency reserves. Recall that current account deficits are financed primarily by net inpayments of foreign currencies to the United States. When U.S. exports are insufficient to finance U.S. imports, the United States increases both its debt to people abroad and the value of foreign claims against assets in the United States. Financing of the U.S. trade deficit has resulted in a larger foreign accumulation of claims against U.S. financial and real assets than the U.S. claim against foreign assets. Today, the United States is the world’s largest debtor nation. In 1999, foreigners owned \$1.5 billion more of U.S. assets (corporations, land, stocks, bonds, loan notes) than the United States owned in foreign assets.

If the United States wants to regain ownership of these domestic assets, at some future time it will have to export more than it imports. At that time, domestic consumption will be lower because the United States will need to send more of its output abroad than it receives as imports. Therefore, the current consumption gains delivered by U.S. current account deficits may mean permanent debt, permanent foreign ownership, or large sacrifices of future consumption.

We say “may mean” above because the foreign lending to U.S. firms and foreign investment in the United States increases the U.S. capital stock. U.S. production capacity therefore might increase more rapidly than otherwise because of a large surplus on the capital account. Faster increases in production capacity and real GDP enhance the economy’s ability to service foreign debt and buy back real capital, if that is desired.

In short, U.S. trade deficits are a mixed blessing. Their long-term impacts are largely unknown.

## Speculation in Currency Markets

### Are Speculators a Negative or a Positive Influence in Currency Markets and International Trade?

Most people buy foreign currency to facilitate the purchase of goods or services from another country. A U.S. importer buys Japanese yen to purchase Japanese autos. A Hong Kong financial investor purchases Australian dollars to invest in the Australian stock market. But there is another group of participants in the currency market—speculators—that buys and sells foreign currencies in the hope of reselling or rebuying them later at a profit.

#### Contributing to Exchange-Rate Fluctuations

Speculators were much in the news in late 1997 and 1998 when they were widely accused of driving down the values of the South Korean won, Thailand baht, Malaysian ringgit, and Indonesian rupiah. The value of these currencies fell by as much as 50 percent within 1 month, and speculators undoubtedly contributed to the swiftness of those declines. The expectation of currency depreciation (or appreciation) can be self-fulfilling. If speculators, for example, expect the Indonesian rupiah to be devalued or to depreciate, they quickly sell rupiah and buy currencies that they think will increase in relative value. The sharp increase in the supply of rupiah indeed reduces its value; this reduction then may trigger further selling of rupiah in expectation of further declines in its value.

But changed economic realities, not speculation, are normally the underlying causes of changes in currency values. That was largely the case with the southeast Asian countries in which actual and threatened bankruptcies in the financial and manufacturing sectors undermined confidence in the strength of the currencies. Anticipating the eventual declines in currency values, speculators simply hastened those declines. That is, the declines in value probably would have occurred with or without speculators.

Moreover, on a daily basis, speculation clearly has positive effects in foreign exchange markets.

#### Smoothing Out Short-Term Fluctuations in Currency Prices

When temporarily weak demand or strong supply reduces a currency's value, speculators quickly buy the currency, adding to its demand and strengthening its value. When temporarily strong demand or weak supply increases a currency's value, speculators sell the currency. That selling increases the supply of the currency and

reduces its value. In this way speculators smooth out supply and demand, and thus exchange rates, over short time periods. This day-to-day exchange-rate stabilization aids international trade.

**Absorbing Risk** Speculators also absorb risk that others do not want to bear. Because of potential adverse changes in exchange rates, international transactions are riskier than domestic transactions. Suppose AnyTime, a hypothetical retailer, signs a contract with a Swiss manufacturer to buy 10,000 Swatch watches to be delivered in 3 months. The stipulated price is 75 Swiss francs per watch, which in dollars is \$50 per watch at the present exchange rate of, say, \$1 = 1.5 francs. AnyTime's total bill for the 10,000 watches will be \$500,000 (= 750,000 francs).

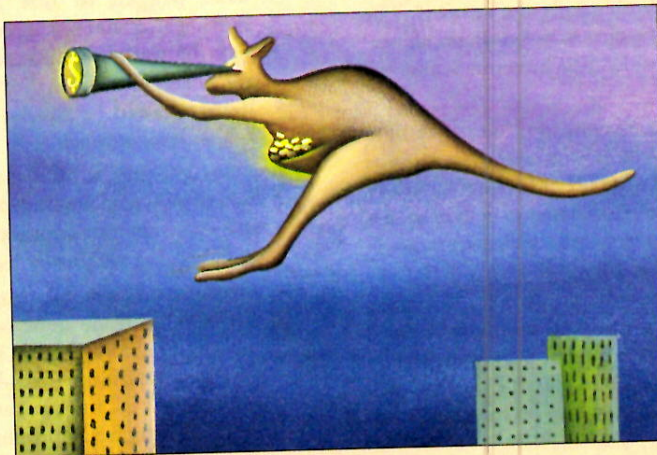
But if the Swiss franc were to appreciate, say, to \$1 = 1 franc, the dollar price per watch would rise from \$50 to \$75 and AnyTime would owe \$750,000 for the watches (= 750,000 francs). AnyTime may reduce the risk of such an unfavorable exchange-rate fluctuation by hedging in the futures market. Hedging is an action by a buyer or a seller to protect against a change in future prices. The futures market is a market in which currencies are bought and sold at prices fixed now, for delivery at a specified date in the future.

AnyTime can purchase the needed 750,000 francs at the current \$1 = 1.5 francs exchange rate, but with delivery in 3 months when the Swiss watches are delivered. And here is where speculators come in. For a price determined in the futures market, they agree to deliver the 750,000 francs to AnyTime in 3 months at the \$1 = 1.5 francs exchange rate, regardless of the exchange rate then. The speculators need not own francs when the agreement is made. If the Swiss franc depreciates to, say, \$1 = 2 francs in this period, the speculators profit. They can buy the 750,000 francs stipulated in the contract for \$375,000, pocketing the difference between that amount and the \$500,000 AnyTime has agreed to pay for the 750,000 francs. If the Swiss franc appreciates, the speculators, but not AnyTime, suffer a loss.

The amount AnyTime must pay for this "exchange-rate insurance" will depend on how the market views the likelihood of the franc depreciating, appreciating, or staying constant over the 3-month period. As in all competitive markets, supply and demand determine the price of the futures contract.

The futures market thus eliminates much of the exchange-rate risk associated with buying foreign goods for future delivery. Without it, AnyTime might have decided against importing Swiss watches. But the futures market and currency speculators greatly increase the likelihood that the transaction will occur. Operating through the futures market, speculation promotes international trade.

In short, although speculators in currency markets occasionally contribute to swings in exchange rates, on a day-to-day basis they play a positive role in currency markets.



## SUMMARY

1. U.S. exports create a foreign demand for dollars and make a supply of foreign exchange available to the United States. Conversely, U.S. imports create a demand for foreign exchange and make a supply of dollars available to foreigners. Generally, a nation's exports earn the foreign currencies needed to pay for its imports.
2. The balance of payments records all international trade and financial transactions taking place between a given nation and the rest of the world. The balance on goods and services (the trade balance) compares exports and imports of both goods and services. The current account balance includes not only goods and services transactions but also net investment income and net transfers.
3. A deficit in the current account may be offset by a surplus in the capital account. Conversely, a surplus in the current account may be offset by a deficit in the capital account. A balance-of-payments deficit occurs when the sum of the current and capital accounts is negative. Such a deficit is financed with official reserves. A balance-of-payments surplus occurs when the sum of the current and capital accounts is positive. A payments surplus results in an increase in official reserves. The desirability of a balance-of-payments deficit or surplus depends on its size and its persistence.
4. Flexible or floating exchange rates between international currencies are determined by the demand for and supply of those currencies. Under flexible rates a currency will depreciate or appreciate as a result of changes in tastes, relative income changes, relative price changes, relative changes in real interest rates, and speculation.
5. The maintenance of fixed exchange rates requires adequate reserves to accommodate periodic payments deficits. If reserves are inadequate, nations must invoke protectionist trade policies, engage in exchange controls, or endure undesirable domestic macroeconomic adjustments.
6. The gold standard, a fixed-rate system, provided exchange-rate stability until its disintegration during the 1930s. Under this system, gold flows between nations precipitated sometimes painful changes in price, income, and employment levels in bringing about international equilibrium.
7. Under the Bretton Woods system, exchange rates were pegged to one another and were stable. Participating nations were obligated to maintain these rates by using stabilization funds, gold, or loans from the IMF. Persistent or "fundamental" payments deficits could be resolved by IMF-sanctioned currency devaluations.
8. Since 1971 the world's major nations have used a system of managed floating exchange rates. Market forces generally set rates, although governments intervene with varying frequency to alter their exchange rates.
9. Over the past several years the United States experienced large trade deficits. Causes include (a) faster growth of income in the United States than in some European nations, Canada, and Japan, resulting in expanding U.S. imports, and (b) a declining U.S. saving rate, which has produced a large capital account surplus and has freed U.S. income for spending on imports.
10. U.S. trade deficits have produced current increases in the living standards of U.S. consumers. The accompanying surpluses on the capital account have increased U.S. debt to the rest of the world and increased foreign ownership of assets in the United States. This greater foreign investment in the United States, however, has undoubtedly increased U.S. production possibilities.

## TERMS AND CONCEPTS

balance of payments	capital account	fixed exchange-rate system	Bretton Woods system
current account	balance on capital account	purchasing-power-parity theory	International Monetary Fund (IMF)
balance on goods and services	official reserves	currency interventions	managed floating exchange rates
trade deficit	balance-of-payments deficits and surpluses	exchange controls	
trade surplus	flexible- or floating-exchange-rate system	gold standard	
balance on current account		devaluation	

## STUDY QUESTIONS

- Explain how a U.S. automobile importer might finance a shipment of Toyotas from Japan. Trace the steps as to how a U.S. export of machinery to Italy might be financed. Explain: "U.S. exports earn supplies of foreign currencies that Americans can use to finance imports."
- Key Question** Indicate whether each of the following creates a demand for or a supply of European euros in foreign exchange markets:
  - A U.S. airline firm purchases several Airbus planes assembled in France.
  - A German automobile firm decides to build an assembly plant in South Carolina.
  - A U.S. college student decides to spend a year studying at the Sorbonne in Paris.
  - An Italian manufacturer ships machinery from one Italian port to another on a Liberian freighter.
  - The U.S. economy grows faster than the French economy.
  - A U.S. government bond held by a Spanish citizen matures, and the loan amount is paid back to that person.
  - It is widely believed that the euro will depreciate in the near future.
- Key Question** Alpha's balance-of-payments data for 2001 are shown below. All figures are in billions of dollars. What are (a) the balance of trade, (b) the balance on goods and services, (c) the balance on current account, and (d) the balance on capital account? Does Alpha have a balance-of-payments deficit or surplus? Explain.
 

Goods exports	+ \$40	Net transfers	+ \$10
Goods imports	- 30	Foreign purchases	
Service exports	+ 15	of assets in the	
Service imports	- 10	United States	+ 10
Net investment income	- 5	U.S. purchases of	
		assets abroad	- 40
		Official reserves	+ 10
- "A rise in the dollar price of yen necessarily means a fall in the yen price of dollars." Do you agree? Illustrate and elaborate: "The critical thing about exchange rates is that they provide a direct link between the prices of goods and services produced in all trading nations of the world." Explain the purchasing-power-parity theory of exchange rates.
- Suppose that a Swiss watchmaker imports watch components from Sweden and exports watches to the United States. Also suppose the dollar depreciates, and the Swedish krona appreciates, relative to the Swiss franc. Speculate as to how each would hurt the Swiss watchmaker.
- Key Question** Explain why the U.S. demand for Mexican pesos is downward-sloping and the supply of pesos to Americans is upward-sloping. Assuming a system of flexible exchange rates between Mexico and the United States, indicate whether each of the following would cause the Mexican peso to appreciate or depreciate:
  - The United States unilaterally reduces tariffs on Mexican products.
  - Mexico encounters severe inflation.
  - Deteriorating political relations reduce American tourism in Mexico.
  - The U.S. economy moves into a severe recession.
  - The United States engages in a high-interest-rate monetary policy.
  - Mexican products become more fashionable to U.S. consumers.
  - The Mexican government encourages U.S. firms to invest in Mexican oil fields.
  - The rate of productivity growth in the United States diminishes sharply.
- Explain why you agree or disagree with the following statements:
  - A country that grows faster than its major trading partners can expect the international value of its currency to depreciate.
  - A nation whose interest rate is rising more rapidly than interest rates in other nations can expect the international value of its currency to appreciate.
  - A country's currency will appreciate if its inflation rate is less than that of the rest of the world.
- "Exports pay for imports. Yet in 2000 the nations of the world exported about \$369 billion more worth of goods and services to the United States than they imported from the United States." Resolve the apparent inconsistency of these two statements.
- Key Question** Diagram a market in which the equilibrium dollar price of 1 unit of fictitious currency zec (Z) is \$5 (the exchange rate is  $\$5 = Z1$ ). Then show on your diagram a decline in the demand for zec.
  - Referring to your diagram, discuss the adjustment options the United States would have in maintaining the exchange rate at  $\$5 = Z1$  under a fixed-exchange-rate system.
  - How would the U.S. balance-of-payments surplus that is created (by the decline in demand) get resolved under a system of flexible exchange rates?

10. Compare and contrast the Bretton Woods system of exchange rates with that of the gold standard. What caused the collapse of the gold standard? What caused the demise of the Bretton Woods system?
11. Describe what is meant by the term “managed float.” Did the managed-float system precede or follow the adjustable-peg system? Explain.
12. What have been the major causes of the large U.S. trade deficits since 1992? What are the major benefits and costs associated with trade deficits? Explain: “A trade deficit means that a nation is receiving more goods and services from abroad than it is sending abroad.” How can that be called “unfavorable”?
13. **(Last Word)** Suppose Winter Sports—a hypothetical French retailer of snowboards—wants to order 5000 snowboards made in the United States. The price per board is \$200, the present exchange rate is 1 euro = \$1, and payment is due in dollars when the boards are delivered in 3 months. Use a numerical example to explain why exchange-rate risk might make the French retailer hesitant to place the order. How might speculators absorb some of Winter Sports’ risk?
14. **Web-Based Question:** *The U.S. balance on goods and services—what are the latest figures?* The U.S. Census Bureau reports the latest data on U.S. trade in goods and services at its website [www.census.gov/indicator/www/ustrade.html](http://www.census.gov/indicator/www/ustrade.html). Over the past month, has the trade balance in goods and services improved (that is, yielded a smaller deficit or a larger surplus) or deteriorated? Is the relative trade strength of the United States compared to the rest of the world in goods or in services? Which product groups had the largest increases in exports? Which had the largest increases in imports?
15. **Web-Based Question:** *The yen-dollar exchange rate* The Federal Reserve Board of Governors provides exchange rates for various currencies for the last decade at [www.federalreserve.gov/releases](http://www.federalreserve.gov/releases) (Foreign Exchange Rates; Historical Data). Has the dollar appreciated, depreciated, or remained constant relative to the Canadian dollar, the European euro, the Japanese yen, the Swedish krona, and the Swiss franc over the past 5 years?