

Macroeconomics in an Open Economy

Chapter Summary

Nearly all economies are **open economies** that trade with and invest in other economies. A **closed economy** has no interactions in trade or finance with other economies. The **balance of payments** is the record of a country's trade with other countries in goods, services, and assets. The **nominal exchange rate** is the value of one country's currency in terms of another country's currency. The exchange rate is determined in the foreign exchange market by the demand for and supply of a country's currency. **Currency appreciation** occurs when a currency's market value increases relative to another currency. **Currency depreciation** occurs when a currency's market value decreases relative to another currency.

When the government runs a budget deficit, national saving will decline unless private saving increases by the full amount of the budget deficit, which is unlikely. As the saving and investment equation ($S = I + NFI$) shows, the result of a decline in national saving must be a decline in either domestic investment or net foreign investment.

When the Federal Reserve engages in an expansionary monetary policy, it buys government bonds to lower interest rates and increase aggregate demand. When the Fed wants to slow the rate of economic growth to reduce inflation, it engages in a contractionary monetary policy. With a contractionary policy, the Fed sells government bonds to increase interest rates and reduce aggregate demand. Monetary policy has a greater impact on aggregate demand in an open economy than in a closed economy. To engage in an expansionary fiscal policy, the government increases government spending or cuts taxes. An expansionary fiscal policy can lead to higher interest rates. A contractionary fiscal policy will reduce the budget deficit and may lower interest rates. Fiscal policy has a smaller impact on aggregate demand in an open economy than in a closed economy.

Learning Objectives

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

1. **Explain how the balance of payments is calculated.** Nearly all economies are **open economies** that trade with and invest in other economies. The **balance of payments** is the record of a country's trade with other countries in goods, services, and assets. The **current account** shows a country's exports and imports of goods and services. The **financial account** shows the purchases of assets a country has made abroad and foreign purchases of assets in the country. The **balance of trade** is the difference between the value of the goods a country exports and the value of the goods a country imports. Apart from measurement errors, the sum of the current account and the financial account must equal zero. Therefore, the balance of payments must also equal zero.

2. **Explain how exchange rates are determined and how changes in exchange rates affect the prices of imports and exports.** The **nominal exchange rate** is the value of one country's currency in terms of another country's currency. The exchange rate is determined in the foreign exchange market by the demand for and supply of a country's currency. Changes in the exchange rate are caused by shifts in demand or supply. The three main sets of factors that cause the supply and demand curves in the foreign exchange market to shift are:
 - a. Changes in the demand for U.S. produced goods and services and changes in the demand for foreign produced goods and services.
 - b. Changes in the desire to invest in the United States and changes in the desire to invest in foreign countries.
 - c. Changes in the expectations of currency traders – particularly *speculators* – concerning the likely future value of the dollar and the likely future values of foreign currencies.

3. A currency **appreciates** when its market value rises relative to another currency. A currency **depreciates** when its market value falls relative to another currency. The **real exchange rate** is the price of domestic goods in terms of foreign goods. The real exchange rate is calculated by multiplying the nominal exchange rate by the ratio of the domestic price level to the foreign price level.

4. **Explain the saving and investment equation.** A current account deficit must be exactly offset by a financial account surplus. The financial account is equal to net capital flows, which is equal to net foreign investment, but with the opposite sign. Because the current account balance is roughly equal to net exports, we can conclude that net exports will equal net foreign investment. National saving is equal to private saving plus government saving. Private saving is equal to national income minus consumption and minus taxes. Government saving is the difference between taxes and government spending. As we saw in previous chapters, GDP (or national income) is equal to the sum of investment, consumption, government spending, and net exports. We can use this fact, our definitions of private and government saving, and the fact that net exports equal net foreign investment, to arrive at an important relationship known as the **saving and investment equation**: $S = I + NFI$.

5. **Explain the effect of a government budget deficit on investment in an open economy.** When the government runs a budget deficit, national saving will decline unless private saving increases by the amount of the budget deficit, which is unlikely. As the saving and investment equation, $S = I + NFI$, shows, the result of a decline in national saving must be a decline in either domestic investment or net foreign investment.

6. **Discuss the difference between the effectiveness of monetary and fiscal policy in an open economy and in a closed economy.** When the Federal Reserve engages in an expansionary monetary policy, it buys government bonds to lower interest rates and increase aggregate demand. In a closed economy, the main effect of lower interest rates is on domestic investment spending and purchases of consumer durables. In an open economy, lower interest rates will also cause an increase in net exports. When the Fed wants to slow the rate of economic growth to reduce inflation, it engages in a contractionary monetary policy. With a contractionary monetary policy, the Fed sells government bonds to increase interest rates and reduce aggregate demand. In a closed economy, the main effect is once again on domestic investment and purchases of consumer durables. In an open economy, higher interest rates will also reduce net exports. We can conclude that monetary policy has a greater impact on aggregate demand in an open economy than in a closed economy. To engage in an expansionary fiscal policy, the government increases government spending or cuts taxes. An expansionary fiscal policy can lead to higher interest rates. In a closed economy, the main effect of higher interest rates is on domestic investment spending and spending on consumer durables. In an open economy, higher interest rates will also reduce net exports. A contractionary fiscal policy will reduce the budget deficit

and may lower interest rates. In a closed economy, lower interest rates increase domestic investment and spending on consumer durables. In an open economy, lower interest rates also increase net exports. We can conclude that fiscal policy has a smaller impact on aggregate demand in an open economy than in a closed economy.

Chapter Review

Chapter Opener: NewPage Paper versus China (pages 584-585)

NewPage, a paper manufacturing firm in Dayton, Ohio, produces glossy paper used in catalogs and magazines. In recent years, the company's strongest competition is from Chinese paper firms. Chinese firms have advantages selling in the United States because they pay their workers about one tenth of what U.S. firms pay their workers. In addition to this, NewPage thought it was at a disadvantage because the Chinese government was giving Chinese paper firms special tax breaks. Because of the Chinese tax breaks, the U.S. Department of Commerce imposed a 10 percent to 20 percent tariff on imports of glossy paper from China. While paper firms like NewPage applauded this action, U.S. publishing firms that use the paper products complained that the action would increase their costs and the prices of their products would rise.

Countries with a high level of net exports must also have a high level of net foreign investment. If the net foreign investment takes the form of stocks and bonds, it causes little political friction. If the net foreign investment comes in the form of purchasing foreign firms, it may cause political difficulties as occurred, for example, when Chinese firms attempted to buy U.S. oil company Unocal and U.S. appliance maker Maytag.

Helpful Study Hint

Read *An Inside Look* at the end of the chapter for an article from the *Economist* about the U.S. current account deficit. In 2006, the current account deficit was \$857 billion – 6.5 percent of U.S. GDP. Even though economists have argued that a country can't indefinitely sustain a large current account deficit, they believe that the United States may be the exception to that rule. Why? One explanation is that many investors in developing countries can't buy stocks and bonds issued by domestic firms because of weak property rights and court systems in those countries. Those investors invest abroad – particularly in the United States.

Helpful Study Hint

Imagine that you are about to take out a bank loan to purchase a car. If a foreign country, such as South Korea, sells its holdings of U.S. Treasury bonds, would that action affect the interest rate on your car loan? *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.

17.1 The Balance of Payments: Linking the United States to the International Economy (pages 586-590)

Learning Objective 1 Explain how the balance of payments is calculated.

Most economies in the world today are open economies. An **open economy** has interactions with other economies through the trading of goods and services and financial assets. A **closed economy** has no interactions or trade with other countries. The best way to look at a country's financial interactions with other countries is to look at its balance of payments. The **balance of payments** is the record of a country's trade with other countries in goods, services and assets. The balance of payments includes three accounts: the current account, the financial account, and the capital account.

The **current account** measures current flows of funds into and out of a country. The current account includes:

- Net exports (Exports – Imports).
- Net investment income (the difference between investment income earned by U.S. residents in other countries and investment income on U.S. investments paid to residents in all other countries).
- Net transfers (the difference between transfers received by U.S. residents and transfers made to individuals in other countries by U.S. residents).

Note that these terms are defined from the perspective of the United States. We could also calculate net investment income or net transfers for France or any other country.

The **balance of trade**, which is the difference between goods exported and imported, is the largest component of the current account. If exports are greater than imports, there is a balance of trade surplus. If exports are less than imports, there is a balance of trade deficit.

Helpful Study Hint

Net exports are the sum of the balance of trade and the balance of services. The balance of services is the difference between the value of a country's exports of services and the value of its imports of services.

The **financial account** records the purchases of assets a country has made abroad and foreign purchases of assets in the country. A capital outflow occurs when an individual or firm in the United States buys a financial asset issued by a foreign company or government or builds a factory in another country. A capital inflow occurs when a foreign individual or firm buys a bond issued by a U.S. firm or the U.S. government or builds a factory in the United States. The financial account is a measure of net capital flows, or the difference between capital inflows and capital outflows. **Net foreign investment** is the opposite of net capital flows and is capital outflows minus capital inflows.

The **capital account** is less important than the financial account or the current account. It measures the net flow of funds for things like migrants' transfers and the purchase and sale of nonproduced, nonfinancial assets (such as trademarks, patents, or copyrights). In the discussion that follows, we will not focus on the capital account because it is very small.

The sum of the current account, the financial account, and the capital account is the balance of payments. The balance of payments must always be zero because if the current account is negative (the typical situation for the United States), more dollars flowed out of the United States as a result of U.S. households and firms buying foreign goods and services than flowed back into the United States as a result of the United States selling goods and services to foreign households and firms. These extra dollars were either used to buy U.S. financial assets or to buy physical assets, such as office buildings or factories, in the United States, or were added to foreign dollar holdings. Changes in foreign holding of U.S. dollars are called official reserve transactions. Foreign investment in the United States and additions to foreign holdings of dollars are positive entries in the financial account. The positive entries in the financial account exactly equal the negative entries in the current account. As a result, the current account plus the financial account will sum to zero.

 **Helpful Study Hint**

Remember, we are ignoring the capital account. If the current account and the financial account do not sum to zero, as they should, there has been some form of measurement error. An entry in the balance of payments called the “statistical discrepancy” accounts for the measurement error.

Spend some time reviewing Table 17-1, “The Balance of Payments of the United States, 2006,” on page 587 of the main text. The table shows the current account, financial account, and balance on capital account for the United States in 2006. The balance of payments is zero.

Read *Don’t Let This Happen to YOU! Don’t Confuse the Balance of Trade, the Current Account Balance, and the Balance of Payments*. Remember, the balance of trade includes the flow of goods between countries – but it does not include services.

The current account balance includes:

1. The balance of trade.
2. The balance of services.
3. Net investment income.
4. Net transfers.

The balance of payments is the sum of the current account and the financial account balances and must always equal zero. When the phrase “balance of payments surplus” or “balance of payments deficit” is used, it usually is a mistaken reference to the balance of trade, or the phrase is addressing the balance of payments without including changes in currency holdings, or official reserve transactions in the financial account.

17.2 LEARNING OBJECTIVE

17.2 The Foreign Exchange Market and Exchange Rates (pages 590-597)

Learning Objective 2 Explain how exchange rates are determined and how changes in exchange rates affect the prices of imports and exports.

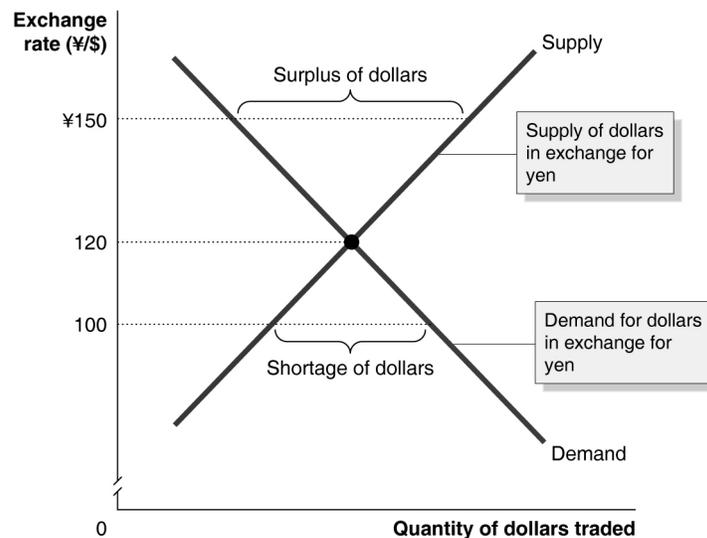
The exchange rate is the price of one currency in terms of another currency. For example, the **nominal exchange rate** between the dollar and the yen (¥) can be expressed as ¥120 = \$1. (This exchange rate means

that the price of 1 U.S. dollar in the market for foreign exchange is 120 yen. Instead of stating the exchange rate as the number of yen per dollar, we could state it as number of dollars per yen: $\text{¥}1 = \$0.0083$ (which we can calculate as $\$1/\text{¥}120$). The exchange rate is determined by the demand for and supply of dollars in the foreign exchange market. In a graph with the exchange rate plotted on the vertical axis, the demand curve for dollars is downward sloping. The demand for dollars comes from three sources:

- Consumers and firms in other countries that would like to buy goods and services made in the United States.
- Consumers and firms in other countries that would like to buy U.S. assets, such as buildings, bonds, and stocks.
- Currency traders that believe the value of the dollar will increase over time.

The supply of dollars in exchange for yen is upward sloping. When the value of the dollar is high, the demand for Japanese goods is high and U.S. households and firms supply a larger quantity of dollars in exchange for the yen necessary to buy these Japanese goods. When the value of the dollar is low, Japanese goods are expensive, so U.S. households and firms want to buy a smaller quantity of Japanese goods and consequently need a smaller quantity of yen. This results in an upward-sloping supply curve for dollars in international exchange markets.

Textbook Figure 17-2, reproduced below, shows the demand for and supply of U.S. dollars in exchange for Japanese yen.



Helpful Study Hint

The supply of dollars is the result of the desire of U.S. households and firms to buy Japanese goods, services, and assets. To obtain the yen necessary to buy Japanese goods, services, and assets, U.S. residents supply dollars.

As the exchange rate increases in the graph (from $\text{¥}100 = \$1$, to $\text{¥}120 = \$1$, to $\text{¥}150 = \$1$), U.S. goods, services, and financial assets are more expensive to households and firms in Japan. As U.S. goods become more expensive, Japanese households and firms will buy fewer U.S. goods and need fewer dollars. This explains why the demand curve for dollars is downward sloping. As the exchange rate increases, Japanese

goods, services, and assets become cheaper to households and firms in the United States. As Japanese goods get cheaper, U.S. consumers and firms will want to buy more Japanese goods. To buy more, they will need more yen, and to get those yen they will supply more dollars. This explains why the supply curve for dollars is upward sloping.

 Helpful Study Hint

At an exchange rate of $¥150 = \$1$, a $¥5,000$ shirt will cost $\$33.33$.
 At an exchange rate of $¥120 = \$1$, the same $¥5,000$ shirt will cost $\$41.67$.
 At an exchange rate of $¥150 = \$1$, a $\$50$ shirt will cost $¥7,500$.
 At an exchange rate of $¥120 = \$1$, the same $\$50$ shirt will cost $¥6,000$.

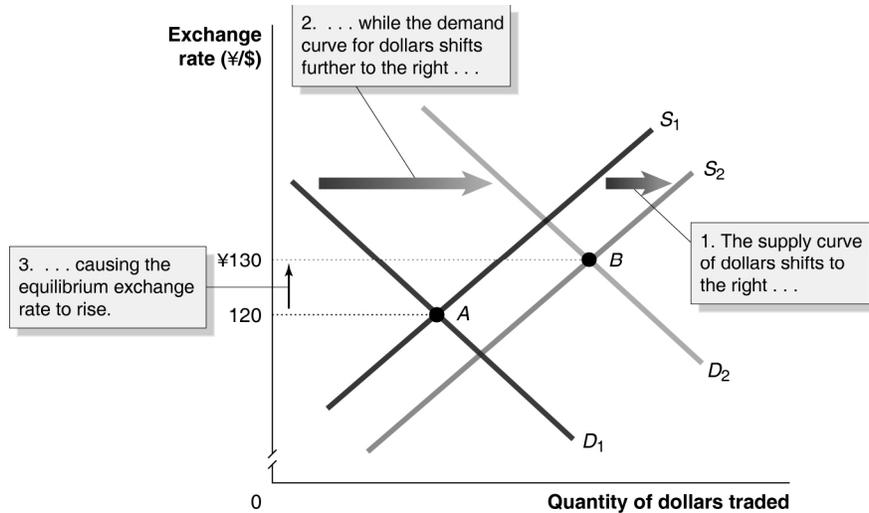
Equilibrium occurs where the quantity of dollars supplied equals the quantity of dollars demanded in the foreign exchange market. In the graph, equilibrium occurs at an exchange rate of $¥120 = \$1$. A **currency appreciates** when it rises in value compared to other currencies, and a **currency depreciates** when its value falls compared to other currencies.

The equilibrium exchange rate changes due to changes in the demand for and supply of dollars. The three main factors that cause the demand and supply curves in the foreign exchange market to shift are:

- Changes in the demand for U.S. produced goods and services and changes in the demand for foreign produced goods and services.
- Changes in foreigners' desire to buy assets in the United States and changes in U.S. residents' desire to buy assets in foreign countries.
- Changes in currency traders' expectations about the future value of the dollar and the future value of other currencies.

The demand curve for dollars will shift to the right when households and firms in Japan want to buy more U.S. goods and services or more U.S. assets. This will happen as incomes rise in Japan, or U.S. interest rates rise. The demand curve for dollars will also shift to the right when speculators decide that the value of the dollar will rise relative to the yen. The supply of dollars will shift to the right when U.S. consumers and firms want to buy more Japanese goods and services or more Japanese assets. This will happen as U.S. incomes rise, or interest rates rise in Japan, or **speculators** believe the yen will rise in value relative to the dollar.

The change in the exchange rate over time depends on changes in the supply of and demand for a currency. The following textbook Figure 17-3 shows the exchange rate increasing when the demand curve shifts out more than the supply curve.



While this model works well for major currencies, such as the dollar, euro, pound and yen, not all exchange rates are determined by demand and supply. For example, the Chinese yuan-dollar exchange rate is set by the Chinese government.

Exchange rate changes will affect the quantities of exports and imports. As a country's currency appreciates, other countries' goods and services become cheaper, and its goods and services become more expensive when sold in other countries. Consequently, as a country's currency appreciates, its exports should fall and its imports should rise, causing net exports to decline. Similarly, as a country's currency depreciates, its net exports should increase.

The **real exchange rate** measures the price of domestic goods in terms of foreign goods. The relative prices between two countries' goods and services are based on two variables, the relative price levels and the nominal exchange rate. The real exchange rate is calculated as:

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic price level}}{\text{Foreign price level}}$$

Changes in nominal exchange rates or changes in relative prices cause the real exchange rate to change. Real exchange rates are reported as index numbers, with one year chosen as the base year. The main value of real exchange rates is to track changes over time.

Extra Solved Problem 17-2

Chapter 17 of the textbook includes three Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

Using Exchange Rates

Supports Learning Objective 2: Explain how exchange rates are determined and how changes in exchange rates affect the prices of imports and exports.

Suppose that the exchange rate between the euro and the dollar is now $\$1.21 = \text{€}1$. How much will a $\$20.00$ bottle of California wine cost in the euro area (ignoring transportation costs)? How much will a $\text{€}30$ bottle of French wine cost in the United States (ignoring transportation costs)?

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem is about understanding exchange rates, so you may want to review the section “The Foreign Exchange Market and Exchange Rates,” which begins on page 590 of the textbook.

Step 2: Calculate the price of the bottle of California wine in the euro area using the current exchange rate.

At the current exchange rate of $\$1.21 = \text{€}1$, we can calculate the price using the formula:

$$\text{Price in the United States} = \text{Exchange rate } (\$/\text{€}) \times \text{Price in the euro area.}$$

$$\$20.00 = \$1.21/\text{€} \times \text{Price in the euro area.}$$

$$\text{Price in the euro area} = \$20.00/\$1.21/\text{€} = \text{€}16.53.$$

Step 3: Calculate the price of the bottle of French wine in the United States using the current exchange rate.

At the current exchange rate of $\$1.21 = \text{€}1$, we can calculate the price using the formula:

$$\text{Price in the United States} = \text{Exchange rate } (\$/\text{€}) \times \text{Price in the euro area.}$$

$$\text{Price in the United States} = \$1.21/\text{€} \times \text{€}30 = \$36.30.$$

Helpful Study Hint

Read *Making the Connection: Exchange Rates in the Financial Pages*. The business pages in most newspapers list exchange rates between the dollar and most other major currencies. The exchange rate (using the dollar – euro [€] exchange rate as an example) is usually listed both as dollars per unit of foreign currency (for example, $\$1.330/\text{€}$) and as units of foreign currency per dollar ($\text{€}0.752/\text{\$}$). When individuals buy foreign currency, they usually buy it from banks, which charge a fee for the

transaction, so the price paid by individual currency purchasers is not what is listed in newspapers.

 Helpful Study Hint

Read *Don't Let This Happen to YOU! Don't Confuse What Happens When a Currency Appreciates with What Happens When it Depreciates*. Exchange rates can be expressed in two ways. For example, as dollars per yen or yen per dollar. If the yen per dollar number increases (from ¥100/dollar to ¥120/dollar), we say that the dollar has appreciated and the yen has depreciated. Dollars are more expensive when purchased in exchange for yen. If the dollar per yen number increases (from \$0.01/yen to \$0.105/yen), the dollar has depreciated and the yen has appreciated. Yen are more expensive when purchased in exchange for dollars.

17.3 LEARNING OBJECTIVE

17.3 The International Sector and National Saving and Investment (pages 597-601)

Learning Objective 3 Explain the saving and investment equation.

When a household spends more than it earns, it must sell assets – such as stocks or bonds – or borrow. The same is true for a country. When a country has an excess of imports over exports, it must sell assets or borrow. In balance of payment terms, a country's current account deficit must be offset by a financial account surplus (or net foreign investment). In equation form, this is:

$$\text{Current Account Balance} + \text{Financial Account Balance} = 0$$

or,

$$\text{Current Account Balance} = - \text{Financial Account Balance}$$

or,

$$\text{Net Exports} = \text{Net Foreign Investment.}$$

 Helpful Study Hint

The relationship between net exports and net foreign investment given in this equation tells us that countries such as the United States that import more than they export must borrow more from abroad than they lend abroad. If net exports are negative – as they usually are for the United States – then net foreign investment will also be negative.

In Chapter 9, we saw the following

$$\text{National Saving} = \text{Private saving} + \text{Public saving}$$

or,

$$S = S_{\text{private}} + S_{\text{public}}.$$

And, by definition:

$$S_{\text{private}} = \text{National Income} - \text{Consumption} - \text{Taxes}$$

or,

$$S_{\text{private}} = Y - C - T.$$

And,

$$S_{\text{public}} = \text{Taxes} - \text{Government Spending}$$

or,

$$S_{\text{public}} = T - G.$$

And, since $Y = C + I + G + NX$, then

$$S = I + NX.$$

Because net exports equal net foreign investment, we can now state the **saving and investment equation**:

$$\text{National Saving} = \text{Domestic Investment} + \text{Net Foreign Investment}$$

or,

$$S = I + NFI$$

or,

$$S - I = NFI.$$



Helpful Study Hint

The saving and investment equation tells us that a country's saving is either invested domestically (I) or abroad (NFI).

For the United States, where NX is typically negative and NFI is typically positive, the amount of domestic investment is greater than the level of national saving. The level of investment over and above the level of national saving is financed by borrowing from abroad (which means NFI is negative).

In countries like Japan, where saving is typically greater than domestic investment, net foreign investment is positive, and has taken the form, to give one example, of building automobile factories in the United States.

17.4 The Effect of a Government Budget Deficit on Investment (pages 601-603)

Learning Objective 4 Explain the effect of a government budget deficit on investment in an open economy.

The saving and investment equation also helps us understand the role of government budget deficits. When the government runs a budget deficit ($T < G$, or $S_{\text{public}} < 0$), national saving will decline unless private saving increases by the amount of the budget deficit, which is unlikely. This decrease in national saving will lead to a decrease in domestic investment or net foreign investment. The bonds the U.S. Treasury sells to finance the deficit may increase interest rates, which will discourage domestic investment. In addition, the higher interest rates will also increase the demand for U.S. financial assets, which will increase the demand for dollars foreigners need to buy these assets. This will increase the exchange rate, which will lead to lower exports from the United States and higher imports to the United States. Net exports, and therefore net foreign investment, will fall. When a budget deficit leads to a decline in net exports, the result is sometimes referred to as the twin deficits. The experience of the United States and other countries shows, however, that a budget deficit is not always accompanied by a current account deficit as indicated by the twin deficits idea.

Extra Solved Problem 17-4

Chapter 17 of the textbook includes three Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

U.S. Budget Deficits and Investment

Supports Learning Objective 4: Explain the effect of a government budget deficit on investment in an open economy.

Figure 17-5 on page 602 in the textbook shows that the United States had large federal budget deficits and large current account deficits in the early 1980s, but not in the 1990s. Federal Reserve chairman Ben Bernanke offered an explanation for these changes in the federal budget and current account.

“...over the past decade a combination of diverse forces has created a significant increase in the global supply of saving...which helps to explain both the increase in the U.S. current account deficit and the relatively low level of long-term interest rates in the world today...All investment in new capital goods must be financed in some manner. In a closed economy...the funding for investment would be provided entirely by the country’s national saving...but...virtually all economies today are open economies, and well-developed international capital markets allow savers to lend to those who wish to make capital investments in any country...In the United States, national saving...falls considerably short of U.S. capital investment...this shortfall is made up by net foreign borrowing...[one reason for] the emergence of a global saving glut...is

the strong saving motive of rich countries with aging populations...With slowly growing...workforces, as well as high capital-labor ratios, many advanced economies outside the United States also face an apparent dearth of domestic opportunities...a possibly more important source of the rise in the global supply of saving is the recent metamorphosis of the developing world from a net user to a net supplier of funds to international capital markets.”

Global Account Balances			
(billions of U.S. dollars)			
Countries	1996	2000	2004
Industrial	\$41.5	-\$331.5	-\$400.3
United States	-120.2	-413.4	-665.9
Japan	65.7	119.6	171.8
Euro Area	78.5	-71.7	53.0
Developing	-90.4	131.2	326.4

“The increase in the U.S. current account deficit from 1996 to 2004 was matched by a shift toward surplus of equal magnitude in other countries. Most of this swing did not occur in industrial countries as a whole, but in developing countries. A key reason for this was a series of financial crises those countries experienced in the past decade. These crises caused rapid capital outflows, currency depreciation, declines in asset prices, weakened banking systems and recession. Some of these countries built up their foreign-exchange reserves as a buffer against potential future capital outflows. These countries issued debt to their citizens and used the proceeds to buy U.S. securities and other assets...The development... of new technologies and rising productivity ...with the country’s long-standing advantages such as lower political risk...made the U.S. economy exceptionally attractive to international investors...capital flowed rapidly into the United States, helping to fuel large appreciations in stock prices and the value of the dollar...Thus the rapid increase in the U.S. current account deficit between 1996 and 2000 was fueled to a significant extent both by increased global saving and the greater interest on the part of foreigners in investing in the United States.”

Source: Ben S. Bernanke. “The Global Savings Glut and the U.S. Current Account Deficit.” The Federal Reserve Board. April 14, 2005. <http://www.federalreserve.gov/boarddocs/speeches/2005/20050414/default.htm>

Bernanke argues that the pattern of international capital flows he describes—the developing world lending large amounts of saving to developed countries—has some benefits but could prove counterproductive if it persists. Briefly explain why it might be better for the United States and developing countries if the pattern of capital flows Bernanke describes is eventually reversed.

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem is about the impact of a government budget deficit, so you may want to review the section “The Effect of a Government Budget Deficit on Investment,” which begins on page 601 of the textbook.

Step 2: Explain whether it would be better for the United States and developing countries if the pattern of capital flows Bernanke describes is eventually reversed.

In the United States and other developed countries, workers have large quantities of capital to work with. Population is growing slowly and workforces are aging. These countries have very good reasons to save to support their future retirees. In contrast, developing countries have younger and more rapidly growing populations and offer relatively high returns to capital. Therefore, in the long run it would probably be better for developed countries to run current account surpluses and lend some of their savings to the developing world.

 **Helpful Study Hint**

Read *Making the Connection: Why is the United States Called the “World’s Largest Debtor”?* Since 1982, the United States has had a current account deficit in every year except 1991. During the 1980s, the U.S. budget deficits pushed up interest rates which attracted foreign investors to U.S. bonds. These deficits increased the exchange rate, which made U.S. products more expensive to the rest of the world and made the rest of the world’s goods cheaper in the United States. The result was a drop in exports and a rise in imports, producing a current account deficit. In the 1990s, when U.S. budget deficits were getting smaller and disappearing, the exchange rate remained high and current account deficits continued because foreign investors continued to purchase U.S. assets. In what is called a flight to quality, investors sold assets in other countries and purchased U.S. investments. Current account deficits imply net foreign investment is negative, or foreign investors are accumulating more U.S. assets than U.S. investors are accumulating foreign assets. At the end of 2006, foreign investors owned about \$2.7 trillion more of U.S. assets, such as stocks, bonds, and factories, than U.S. investors owned of foreign assets. This is why the United States is called the “world’s largest debtor.” With lower U.S. savings rates, this flow of funds into the U.S. has allowed the United States to maintain the high levels of domestic investment required for economic growth.

17.5 LEARNING OBJECTIVE

17.5 Monetary Policy and Fiscal Policy in an Open Economy (pages 604-605)

Learning Objective 5 Discuss the difference between the effectiveness of monetary and fiscal policy in an open economy and in a closed economy.

In a closed economy, an expansionary monetary policy lowers interest rates, which will increase aggregate demand by increasing demand for investment goods and consumer durables. In an open economy, the lower interest rates from the expansionary monetary policy will also affect the exchange rate. Lower U.S. interest rates will increase the demand by U.S. and foreign investors for foreign assets. This will lower the demand for the dollar relative to other currencies and cause the value of the dollar to fall, which will result in an increase in U.S. net exports. We can conclude that monetary policy has a greater impact on aggregate demand in an open economy than in a closed economy.

An expansionary fiscal policy will result in higher interest rates. In an open economy, these higher interest rates will lead to an increase in the foreign exchange value of the dollar, which will reduce net exports. So, in an open economy an expansionary fiscal policy may crowd out both investment spending and net exports. We can conclude that fiscal policy has a smaller impact on aggregate demand in an open economy than in a closed economy.

Extra Solved Problem 17-5

Chapter 17 of the textbook includes three Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems:

Monetary and Fiscal Policy in a Recession

Supports Learning Objective 5: Discuss the difference between the effectiveness of monetary and fiscal policy in an open economy and a closed economy.

Assume that the United States, an open economy, has slipped into a recession. Policymakers consider two different strategies for increasing aggregate demand. First, the Federal Reserve can use open market operations to lower the federal funds rate by one percentage point. Second, Congress and the president can pass legislation to cut income taxes.

- a. If the United States were a closed economy, would the Federal Reserve have to lower the federal funds rate by more or less than one percentage point to have the same impact on aggregate demand as in an open economy? Briefly explain your answer.
- b. In an open economy, as national income or GDP increases, so will spending on imports. Let's define the marginal propensity to import (MPI) as the increase in imports divided by the increase in GDP. Assume two different values for the MPI for the United States: $MPI = 0.10$ and $MPI = 0.20$. For which value of the MPI would an income tax cut have a greater impact on aggregate demand? Explain your answer.

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem concerns the impact of fiscal policy and monetary policy, so you may want to review the section “Monetary Policy and Fiscal Policy in an Open Economy,” which begins on page 604 of the textbook.

Step 2: Answer question (a) by explaining whether an expansionary monetary policy has a greater impact in a closed economy or in an open economy.

Because the United States has an open economy, open market operations that reduce the federal funds rate will cause some investors to switch from investing in U.S. financial assets to investing in foreign assets that have higher yields. As investors sell dollars to buy foreign currencies, the value of the dollar will fall relative to other currencies. The depreciation of the dollar will eventually cause U.S. exports to rise. If the United States was a closed economy, lowering the federal funds rate would have no effect on the exchange rate or exports. Therefore, the Federal Reserve would have to lower the federal funds rate by more than one percentage point to have the same impact on aggregate demand.

Step 3: Answer question (b) by explaining for which value of the MPI an income tax cut would have the greater impact on aggregate demand.

The multiplier effect of a given change in taxes or government spending would be greater in a closed economy than in an open economy. The *MPI* in a closed economy would equal zero because there would no increase in imports as GDP increases. In an open economy, the larger the value of the *MPI*, the larger the increase in imports as GDP increases, and, therefore, the larger the decline in net exports and aggregate demand. We can conclude that a given size tax cut will have a larger impact on aggregate demand when the *MPI* equals 0.10 than when the *MPI* equals 0.20, because with the smaller *MPI* there will be a smaller decrease in net exports.



Helpful Study Hint

Economics in YOUR Life! at the end of the chapter answers the question posed at the start of the chapter: Suppose you are getting ready to borrow money for a new car and you hear that the Bank of Korea is going to sell a large quantity of U.S. Treasury bonds. How does this action affect your loan? The increased supply of bonds will cause their prices to fall and the interest rates on them to rise. Other interest rates in the U.S. economy, including rates on car loans, are also likely to rise. This will make your car loan (and the payments on the car you intend to buy) more expensive. Economies are interdependent, and interest rates in the United States are influenced by the actions of other countries.

Key Terms

Balance of payments. The record of a country's trade with other countries in goods, services, and assets.

Balance of trade. The difference between the value of the goods a country exports and the value of the goods a country imports.

Capital account. The part of the balance of payments that records relatively minor transactions, such as migrants' transfers, and sales and purchases of nonproduced, nonfinancial assets.

Closed economy. An economy that has no interactions in trade or finance with other economies.

Currency appreciation. Occurs when the market value of a currency rises relative to another currency.

Currency depreciation. Occurs when the market value of a currency falls relative to another currency.

Current account. The part of the balance of payments that records a country's net exports, net investment income, and net transfers.

Financial account. The part of the balance of payments that records purchases of assets a country has made abroad and foreign purchases of assets in the country.

Net foreign investment. The difference between capital outflows from a country and capital inflows, also equal to net foreign direct investment plus net foreign portfolio investment.

Nominal exchange rate. The value of one country's currency in terms of another country's currency.

Open economy. An economy that has interactions in trade or finance with other economies.

Real exchange rate. The price of domestic goods in terms of foreign goods.

Saving and investment equation. An equation showing that national saving is equal to domestic investment plus net foreign investment.

Speculators. Currency traders who buy and sell foreign exchange in an attempt to profit by changes in exchange rates.

Self-Test

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

Multiple-Choice Questions

1. Nearly all economies in the world are
 - a. open economies.
 - b. closed economies.
 - c. able to trade in goods, but not services.
 - d. open to trade, but closed to investment and financial interactions with other economies.
2. The balance of payments is
 - a. a record of the assets and liabilities of one country relative to the assets and liabilities of other countries.
 - b. a record of a country's trade with other countries in goods, services, and assets.
 - c. a record of the payments made to other countries when a country engages in trade.
 - d. the difference between a country's exports and its imports.
3. The part of the balance of payments that records a country's exports and imports of goods and services is
 - a. the financial account.
 - b. the capital account.
 - c. the current account.
 - d. the international account.
4. In the balance of payments, the current account records
 - a. imports and exports of goods and services.
 - b. income received and income paid for investments between U.S. residents and foreigners.
 - c. the difference between transfers made to residents of other countries and transfers received by U.S. residents from other countries.
 - d. all of the above

5. In the balance of payments, the difference between the value of the goods a country exports and the value of the goods a country imports is called
 - a. the current account balance.
 - b. the balance of trade.
 - c. the balance of net exports.
 - d. the net export position.
6. The balance of trade
 - a. is equal to net exports.
 - b. is equal to the difference between exports of goods and imports of goods.
 - c. is always zero.
 - d. can never be negative.
7. In 2006, the United States ran a _____ with all of its major trading partners and with every region of the world.
 - a. trade surplus
 - b. trade deficit
 - c. trade balance
 - d. favorable surplus
8. In relation to the balance of payments, the net exports component of aggregate expenditures can be obtained by
 - a. subtracting the balance of trade from the balance of services.
 - b. adding together exports and imports.
 - c. subtracting exports from imports.
 - d. adding together the balance of trade and the balance of services.
9. From a balance of payments point of view, the net exports component of aggregate expenditures equals
 - a. the current account balance.
 - b. net income on investments.
 - c. net transfers.
 - d. none of the above
10. Purchases of assets a country has made abroad and foreign purchases of assets in the country are recorded in
 - a. the current account.
 - b. the financial account.
 - c. the capital account.
 - d. all of the above
11. In the financial account
 - a. there is a capital outflow from the United States when an investor in the United States buys a foreign bond.
 - b. there is a capital inflow into the United States when a U.S. firm builds a factory abroad.
 - c. foreign direct investment is always equal to the government budget deficit.
 - d. capital inflows and outflows are always equal.

12. When a foreign investor buys a bond issued by either a U.S. firm or the federal government, or when a foreign firm builds a factory in the United States, the transaction is recorded in the balance of payments as
- only a capital inflow.
 - only a capital outflow.
 - both a capital outflow and a capital inflow.
 - neither a capital outflow nor a capital inflow.
13. When firms build or buy facilities in foreign countries, they are engaging in foreign _____. When investors buy stocks or bonds issued in foreign countries, they are engaging in foreign _____.
- venture capital; venture investment
 - direct finance; indirect finance
 - direct investment; portfolio investment
 - capital investment; financial investment
14. Which of the following measures is closely associated with the concept of *net foreign investment*?
- net capital flows
 - capital outflows and capital inflows
 - net foreign direct investment and net foreign portfolio investment
 - all of the above
15. Which of the following is the least important component of the balance of payments?
- the current account
 - the financial account
 - the capital account
 - None of the above. All three components are equally important.
16. Which of the following statements about the balance of payments is correct?
- Foreign investment in the United States shows up as positive entry in the U.S. financial account.
 - Additions to foreign holdings of dollars show up as positive entries in the U.S. financial account.
 - A current account deficit must be exactly offset by a financial account surplus, leaving the balance of payments equal to zero.
 - All of the above statements are correct.
17. Which of the following statements is correct?
- A country that runs a current account surplus must also run a financial account surplus.
 - A country that runs a current account surplus must run a financial account deficit.
 - A country that runs a current account surplus may run a financial account surplus or deficit.
 - None of the above statements are correct.
18. The United States usually imports more goods than it exports, but it usually exports more services than it imports. As a result, the U.S. trade deficit is almost always
- smaller than the current account deficit.
 - larger than the current account deficit.
 - equal to the current account deficit.
 - equal to zero.

19. Which of the following determines how many units of a foreign currency you can purchase with one dollar?
- the real exchange rate
 - the nominal exchange rate
 - the inflation rate
 - the purchasing power parity of one dollar
20. Which of the following are sources of foreign demand for U.S. dollars?
- foreign firms and consumers who want to buy goods and services produced in the United States
 - foreign firms and consumers who want to invest in the United States
 - currency traders who believe that the value of the dollar in the future will be greater than its value today
 - all of the above
21. When the exchange rate is above the equilibrium exchange rate, there is a _____ of dollars, and consequently _____ pressure on the exchange rate.
- surplus; upward
 - surplus; downward
 - shortage; upward
 - shortage; downward
22. Currency _____ occurs when the market value of a country's currency rises relative to the value of another country's currency, while currency _____ occurs when the market value of a country's currency declines relative to value of another country's currency.
- appreciation; depreciation
 - depreciation; appreciation
 - valuation; devaluation
 - devaluation; valuation
23. If the exchange rate changes from $¥100 = \$1$ to $¥120 = \$1$, the dollar has _____ and the yen has _____.
- appreciated; depreciated
 - depreciated; appreciated
 - revalued; devalued
 - devalued; revalued
24. Which of the following factors cause both the demand curve and the supply curve for dollars in the foreign exchange market to shift?
- changes in the demand for U.S.-produced goods and services and changes in the demand for foreign produced goods and services
 - changes in the desire to invest in the United States and changes in the desire to invest in foreign countries
 - changes in the expectations of currency traders concerning the likely future value of the dollar and the likely future value of foreign currencies
 - all of the above

25. Currency traders who buy and sell foreign exchange in an attempt to profit from changes in exchange rates are
- hedgers.
 - speculators.
 - arbitrageurs.
 - risk takers.
26. When will the demand curve for dollars shift to the right?
- when incomes in Japan fall
 - when interest rates in the United States fall
 - when speculators decide that the value of the dollar will rise relative to the value of the yen
 - all of the above
27. An increase in interest rates in Japan will
- leave the supply curve of dollars unchanged.
 - shift the supply curve of dollars to the right.
 - shift the supply curve of dollars to the left.
 - shift the demand curve for dollars to the right.
28. A recession in the United States will
- leave the supply curve of dollars unchanged.
 - shift the supply curve of dollars to the right.
 - shift the supply curve of dollars to the left.
 - shift the demand curve for dollars to the right.
29. In the foreign exchange market for dollars, which of the following will cause the equilibrium exchange rate to rise?
- an increase in supply that is greater than an increase in demand
 - a decrease in demand that is greater than an increase in supply
 - a decrease in supply that is greater than a decrease in demand
 - a decrease in demand accompanied by an increase in supply
30. A depreciation in the domestic currency will
- increase exports and decrease imports, thereby increasing net exports.
 - increase exports and imports, thereby increasing net exports.
 - decrease exports and increase imports, thereby decreasing net exports.
 - decrease exports and imports, thereby decreasing net exports.
31. Which two factors do economists combine to establish the real exchange rate between two countries?
- the balance of payments and whether or not the currency of either country faces a shortage or surplus in the foreign exchange market
 - the money supply in each country and the fixed exchange rate between the two countries
 - the relative price levels and the nominal exchange rate between the two countries' currencies
 - net exports and whether there is currency appreciation or depreciation between the two countries
32. If the exchange rate between the U.S. dollar and the yen is $\$1 = ¥100$, the price level in the United States is 110 and the price level in Japan is 100, what is the real exchange rate?
- 90.90
 - 110
 - 121
 - 1.10

33. If the dollar price of a euro is \$1.45, then the euro price of a dollar is
- €1.45.
 - €1.00.
 - €0.69.
 - €0.45.
34. In which of the following situations does a country experience a net capital inflow and a financial account surplus?
- when the country sells more assets to foreigners than it buys from foreigners
 - when the country borrows more from foreigners than it lends to foreigners
 - when the country runs a current account deficit
 - all of the above
35. Which of the following statements is correct?
- Net exports is roughly equal to the current account balance.
 - The financial account balance is roughly equal to net capital flows.
 - Net capital flows are roughly equal to net foreign investment, but with the opposite sign.
 - all of the above
36. When imports are greater than exports, as is usually the case for the United States, which of the following must be true?
- There will be a net capital inflow as people in the United States sell assets and borrow to pay for the surplus of imports over exports.
 - The United States must be a net borrower from abroad.
 - U.S. net foreign investment must be negative.
 - all of the above
37. An increase in income in both the United States and the United Kingdom income will
- increase both the demand and supply for pounds and cause the dollar to appreciate.
 - increase the demand for pounds and cause the dollar to appreciate.
 - increase the supply of pounds and cause the dollar to appreciate.
 - increase the supply and demand for pounds and have an uncertain effect on the exchange rate.
38. Which of the following is the saving-investment equation?
- Private Saving = National Income – Consumption – Taxes
 - National Saving = Domestic Investment + Net Foreign Investment
 - Public Saving = Taxes – Government Spending
 - Domestic Investment = Private Saving + Public Saving
39. The savings and investment equation shows that
- the government budget's must always be balanced.
 - $S = I$ at all times.
 - $S = I + NFI$.
 - net exports are always positive.
40. Given the definition of net foreign investment, a country such as the United States that has negative net foreign investment must be
- investing less than it is saving domestically.
 - saving less than it is investing domestically.
 - experiencing positive net exports.
 - a net lender, not a borrower.

41. Budget deficits may reduce
 - a. domestic investment but not net foreign investment.
 - b. net foreign investment but not domestic investment.
 - c. both domestic investment and net foreign investment.
 - d. neither domestic investment nor net foreign investment.

42. A country experiences twin deficits when a government budget deficit causes
 - a. a capital account deficit.
 - b. a service exports deficit.
 - c. a current account deficit.
 - d. a financial account deficit.

43. What impact does the additional policy channel available in an open economy have?
 - a. It increases the ability of an expansionary monetary policy to affect aggregate demand.
 - b. It decreases the ability of an expansionary monetary policy to affect aggregate demand.
 - c. It does not have any impact on the ability of an expansionary monetary policy to affect aggregate demand.
 - d. It has an indeterminate effect, sometimes increasing and sometimes decreasing the ability of an expansionary monetary policy to affect aggregate demand.

44. In an open economy, an expansionary fiscal policy may be _____ effective because the crowding out effect could be _____.
 - a. more; larger
 - b. more; smaller
 - c. less; larger
 - d. less; smaller

45. In an open economy, a contractionary fiscal policy will have a _____ impact on aggregate demand, and therefore will be _____ effective in slowing down an economy.
 - a. larger; more
 - b. larger; less
 - c. smaller; more
 - d. smaller; less

Short Answer Questions

1. Explain why a current account surplus implies a financial account deficit.

2. Suppose that the exchange rate between the dollar and the British pound is $\text{£}0.58 = \$1$, or $\$1.72 = \text{£}1$. In dollars, what will be the price of a $\text{£}40$ West End London theater ticket? How much will a $\$60$ Broadway play ticket cost in pounds?

3. Suppose that real GDP is rising in both the United States and Japan. Using a graph showing the demand for and supply of dollars in the foreign exchange market, predict what will happen to the exchange rate.

4. Suppose that the government runs a budget deficit. Under what circumstances will this lead to a current account deficit?

5. Why is the ability of monetary and fiscal policy to influence aggregate demand different in an open economy than in a closed economy?

6. Suppose *The Appeal* by John Grisham has a price of \$19.97 at a U.S. bookstore, and *Harry Potter and the Deathly Hallows* by J. K. Rowling has a price of £9.95 at a U.K. bookstore. If the exchange rate is \$2.08 = £1, then what will be the price of *Harry Potter* in the United States (ignoring transportation charges) and what will be the price of *The Appeal* in the United Kingdom (ignoring transportation costs)?
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True/False Questions

- T F 1. If a country's exports of goods exceed its imports of goods, there will be a balance of trade surplus.
- T F 2. Net investment income measures the difference between income received by U.S. residents from investments abroad and income paid on investments in the United States to residents of other countries.
- T F 3. The purchase of a bond issued by a German corporation by a U.S. resident represents a capital inflow.
- T F 4. Net capital flows is the same as net foreign investment.
- T F 5. The balance of payments will have the same value as the balance of trade.
- T F 6. Suppose the dollar/euro exchange rate is \$1.18 = €1.00. The price of a dollar, in terms of euros, is €0.95 = \$1.00.
- T F 7. If the price of a euro increases from \$1.18 to \$1.20, then the dollar has appreciated.
- T F 8. An increase in the U.S. interest rate will increase the demand for dollars in the foreign exchange market and shift the demand for dollars to the right.
- T F 9. An increase in the supply of dollars lowers the exchange rate and causes the value of the dollar to appreciate.
- T F 10. As the dollar appreciates, net exports will rise, increasing aggregate demand.
- T F 11. Public saving is always positive.
- T F 12. If domestic investment is larger than national saving, then net foreign investment must be positive.
- T F 13. An increase in the federal budget deficit always causes an increase in the current account deficit.
- T F 14. An expansionary monetary policy will tend to cause the domestic currency to depreciate.
- T F 15. Fiscal policy will cause smaller changes in aggregate demand in an open economy than in a closed economy.

Answers to the Self-Test

Multiple-Choice Questions

Question	Answer	Comment
1	a	Nearly all economies are open economies and have extensive interactions in trade or finance with other countries.
2	b	The best way to understand the interactions between one economy and other economies is through the balance of payments. The balance of payments provides a record of a country's trade with other countries in goods, services, and assets.
3	c	The current account records a country's exports and imports of goods and services. The current account represents current, or short-term, flows of funds into and out of a country.
4	d	The current account for the United States includes imports and exports of goods and services, income received by U.S. residents from investments in other countries, income paid on investments in the United States owned by residents of other countries, and the difference between transfers made to residents of other countries and transfers received by U.S. residents from other countries.
5	b	The difference between the value of the goods a country exports and the value of the goods a country imports is called the balance of trade.
6	b	The balance of trade is defined as exports of goods minus imports of goods.
7	b	As Figure 17-1 shows, in 2006, the United States ran a trade deficit with all of its major trading partners and with every region of the world.
8	d	Net exports is a component of aggregate expenditures. Net exports can be calculated by adding together the balance of trade and the balance of services.
9	d	Net exports is a component of aggregate expenditures. Net exports can be calculated by adding together the balance of trade and the balance of services. Technically, net exports is not equal to the current account balance, because the current account balance also includes net income on investments and net transfers.
10	b	The financial account records purchases of assets a country has made abroad and foreign purchases of assets in the country. The financial account records long-term flows of funds into and out of a country.
11	a	When a U.S. investor buys a foreign bond, dollars flow out of the United States to the other country. This is a capital outflow.
12	a	When an investor in the United States buys a bond issued by a foreign company or government, or when a U.S. firm builds a factory in another country, there is a <i>capital outflow</i> from the United States. There is a <i>capital inflow</i> into the United States when a foreign investor buys a bond issued by a U.S. firm or by the federal government or when a foreign firm builds a factory in the United States.
13	c	When firms build or buy facilities in foreign countries, they are engaging in foreign direct investment. When investors buy stocks or bonds issued in another country, they are engaging in foreign portfolio investment.

- 14 d A closely related concept to net capital flows is net foreign investment, which is equal to capital outflows minus capital inflows. Net foreign investment is the difference between capital outflows from a country and capital inflows, and also equal to net foreign direct investment plus net foreign portfolio investment. Net capital flows and net foreign investment are always equal, but have opposite signs: When net capital flows are positive, net foreign investment is negative, and when net capital flows are negative, net foreign investment is positive.
- 15 c A less important part of the balance of payments is called the capital account. The capital account records relatively minor transactions such as migrants' transfers and sales and purchases of nonproduced, nonfinancial assets.
- 16 d Changes in foreign holdings of dollars are known as official reserve transactions. Foreign investment in the United States or additions to foreign holdings of dollars both show up as positive entries in the U.S. financial account. Therefore, a current account deficit must be exactly offset by a financial account surplus, leaving the balance of payments equal to zero. Similarly, a country such as China or Japan, that runs a current account surplus, must run a financial account deficit of exactly the same size.
- 17 b It is impossible to run a current surplus *and* a financial account surplus simultaneously. A country that runs a current account surplus *must* run a financial account deficit, and vice versa.
- 18 b The balance of trade includes only trade in goods; it does not include services. This observation is important because the United States usually imports more goods than it exports, but it usually exports more services than it imports. As a result, the U.S. trade deficit is almost always larger than the current account deficit. The current account balance includes the balance of trade, the balance of services, net income on investments, and net transfers. Net income on investments and net transfers are much smaller than the balance of trade and the balance on services.
- 19 b The nominal exchange rate determines how many units of a foreign currency you can purchase with one dollar.
- 20 d There are three sources of foreign currency demand for the U.S. dollar: 1) Foreign firms and consumers who want to buy goods and services produced in the United States; 2) Foreign firms and consumers who want to invest in the United States either through foreign direct investment—buying or building factories or other facilities in the United States—or through foreign portfolio investment—buying stocks and bonds issued in the United States; and, 3) Currency traders who believe that the value of the dollar in the future will be greater than its value today.
- 21 b As Figure 17-2 shows, at exchange rates above the equilibrium exchange rate, there will be a surplus of dollars and downward pressure on the exchange rate. The surplus and the downward pressure will not be eliminated until the exchange rate falls to equilibrium.
- 22 a Currency appreciation occurs when the market value of a country's currency rises relative to the value of another country's currency. Currency depreciation occurs when the market value of a country's currency declines relative to the value of another country's currency.

- 23 a When a currency appreciates, it increases in value relative to another currency. When it depreciates, it decreases in value relative to another currency. More precisely, currency A appreciates relative to currency B if, after a change in the exchange rate, one unit of currency A will buy more units of currency B. Currency X depreciates relative to currency Y if, after a change in the exchange rate, one unit of currency X will buy fewer units of currency X. If the exchange rate changes from ¥100 = \$1 to ¥120 = \$1, the dollar has appreciated and the yen has depreciated, because it now takes more yen to buy one dollar.
- 24 d The supply and demand curves for dollars in the foreign exchange market shift with changes in the demand for U.S.-produced goods and services and changes in the demand for foreign-produced goods and services, changes in the desire to invest in the United States and changes in the desire to invest in foreign countries, and changes in the expectations of currency traders concerning the likely future value of the dollar and the likely future value of foreign currencies.
- 25 b Speculators buy and sell foreign exchange in an attempt to profit from changes in exchange rates. If a speculator becomes convinced that the value of the dollar is going to rise in the future relative to the value of the yen, the speculator will sell yen and buy dollars now. A speculator is anyone who buys or sells a good today because they expect the price to change in the future.
- 26 c When incomes in Japan rise, when interest rates in the United States rise, or when speculators decide that the value of the dollar will rise relative to the value of the yen, the demand curve for dollars shifts to the right.
- 27 b An increase in interest rates in Japan will make financial instruments in Japan more attractive to U.S. savers. This will cause the supply of dollars to shift to the right, as U.S. savers use their dollars to purchase yen.
- 28 c A recession in the United States will decrease the demand for Japanese products and cause the supply curve for dollars to shift to the left. Similarly, a decrease in interest rates in Japan will make financial instruments in Japan less attractive and cause the supply curve of dollars to shift to the left. And if traders become convinced that the future value of the yen will be lower relative to the dollar, the supply curve will also shift to the left.
- 29 c A decrease in the supply of dollars will increase the equilibrium exchange rate, holding other factors constant. A decrease in the demand for dollars will decrease the equilibrium exchange rate, holding other factors constant. In this case, the demand curve and the supply curve have both shifted, but because the supply curve has shifted to the left by more than the demand curve, the equilibrium exchange rate will increase.
- 30 a Depreciation in the domestic currency will increase exports and decrease imports, thereby increasing net exports. An appreciation in the domestic currency should have the opposite effect: Exports should fall and imports should rise, which will reduce net exports, aggregate demand, and real GDP.
- 31 c An important factor in determining the level of a country's exports to and imports from another country is the relative prices of each country's goods. The relative prices of two countries' goods are determined by two factors: the relative price levels in the two countries and the nominal exchange rate between the two countries' currencies. Economists combine these two factors in the real exchange rate.

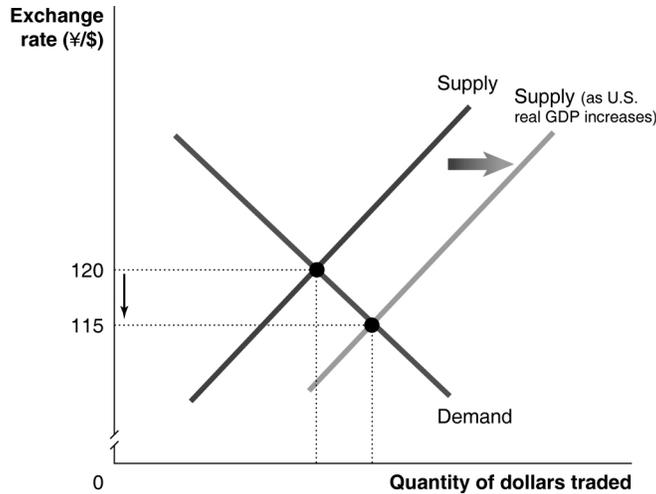
- 32 b The real exchange rate is computed as follows: real exchange rate = nominal exchange rate \times (domestic price level/foreign price level). In this case, $100 \times (110/100) = 100 \times 1.1 = 110$. This means that the prices of U.S. goods and services are 10 percent higher relative to the prices of Japanese goods and services.
- 33 c $1/\$1.45/\text{€} = \text{€}0.69/\text{\$}$.
- 34 d When a country sells more assets to foreigners than it buys from foreigners, or borrows more from foreigners than it lends to foreigners – as it must if it is running a current account deficit – the country experiences a net capital inflow and a financial account surplus.
- 35 d Net exports are roughly equal to the current account balance. Also, the financial account balance is roughly equal to net capital flows, which are in turn equal to net foreign investment, but with the opposite sign.
- 36 d When imports are greater than exports, net exports are negative and there will be a net capital inflow as people in the United States sell assets and borrow to pay for the surplus of imports over exports. Therefore, net capital flows will be equal to net exports (but with the opposite sign), and net foreign investment will also be equal to net exports (and with the same sign). Because net exports are usually negative for the United States, in most years, the United States must be a net borrower from abroad and U.S. net foreign investment will be negative.
- 37 d The increase in income will increase purchases in the other country, increasing the demand for that country’s currency. This will increase both the supply and demand for pounds. Because both curves are shifting to the right, and because we do not know the size of each shift, the impact on the exchange rate is uncertain.
- 38 b National Saving = Private Saving + Public Saving, and net exports equal net foreign investment. From these equalities we deduct the saving-investment equation, which can be written as: National Saving = Domestic Investment + Net Foreign Investment. The saving and investment equation tells us that a country’s saving will be invested either domestically or overseas.
- 39 c By definition, $S = I + NFI$. This is true by definition.
- 40 b A country such as the United States, that has negative net foreign investment, must be saving less than it is investing domestically. To see this, rewrite the saving and investment equation by moving domestic investment to the left-hand side: $S - I = NFI$. If net foreign investment is negative – as it is for the United States nearly every year – domestic investment (I) must be greater than national saving (S).
- 41 c Higher interest rates will discourage some businesses from borrowing funds to build new factories or to buy new equipment or computers. Also, higher interest rates on financial assets in the United States will attract foreign investors. Investors in Great Britain, Canada, or Japan will have to buy U.S. dollars in order to purchase bonds in the United States. This greater demand for dollars will increase their value relative to foreign currencies. As the value of the dollar rises, exports from the United States will fall and imports to the United States will rise. Net exports and, therefore, net foreign investment will fall.

- 42 c When a government budget deficit leads to a decline in net exports, the result is sometimes referred to as the *twin deficits*. The twin deficits refers to the possibility that a government budget deficit will also lead to a current account deficit. The twin deficits first became widely discussed in the United States during the early 1980s when the federal government ran a large budget deficit that resulted in high interest rates, a high exchange value of the dollar, and a large current account deficit.
- 43 a In a closed economy, the main effect of lower interest rates is on domestic investment spending and purchases of consumer durables. In an open economy, lower interest rates will also affect the exchange rate between the dollar and other economies. Lower interest rates will cause some investors in the United States and abroad to switch from investing in U.S. financial assets to investing in foreign financial assets. This switch will lower the demand for the dollar relative to foreign currencies and cause its value to decline. A lower exchange rate will decrease the price of U.S. products in foreign markets and increase the price of foreign products in the United States. As a result, net exports will increase. This additional policy channel will increase the ability of an expansionary monetary policy to affect aggregate demand.
- 44 c An expansionary fiscal policy may result in higher interest rates. In a closed economy, the main effect of higher interest rates is to reduce domestic investment spending and purchases of consumer durables. In an open economy, higher interest rates will also lead to an increase in the foreign exchange value of the dollar and a decrease in net exports. Therefore, in an open economy, an expansionary fiscal policy may be less effective because the crowding out effect may be larger. In a closed economy, only consumption and investment are crowded out by an expansionary fiscal policy. In an open economy, net exports may also be crowded out.
- 45 d A contractionary fiscal policy cuts government spending or raises taxes to reduce household disposable income and consumption spending. But a contractionary fiscal policy also reduces the federal budget deficit (or increases the budget surplus), which may lower interest rates. Lower interest rates will increase domestic investment and purchases of consumer durables, thereby offsetting some of the reduction in government spending and increases in taxes. In an open economy, lower interest rates will also reduce the foreign exchange value of the dollar and increase net exports. Therefore, in an open economy, a contractionary fiscal policy will have a smaller impact on aggregate demand, and therefore will be less effective in slowing down an economy. In summary: Fiscal policy has a smaller impact on aggregate demand in an open economy than in a closed economy.

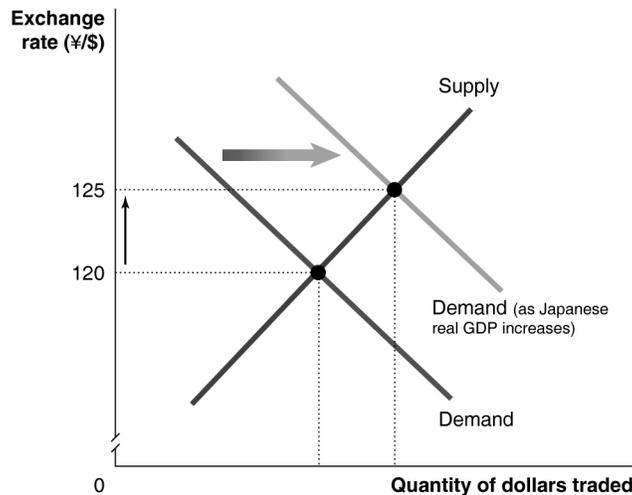
Short Answer Responses

1. When the current account is positive (net exports are positive), a country is selling more goods abroad than it is buying from abroad. This means that more of other currencies are coming into the country from the sale of goods than are leaving the country from the purchase of goods. These foreign currencies are used either to purchase financial assets or physical assets in the other country (these transactions are not part of net exports) or held as additional units of foreign currency. Both of those options are considered capital outflows and are negative entries in the balance of payments. The financial account balance should then be the same size as the current account balance but with the opposite sign.

2. The West End London theater ticket that costs £40 will cost \$68.80 ($£40 \times \$1.72/£ = \68.80). The Broadway theater ticket that costs \$60.00 will cost £34.80 ($\$60.00 \times £.058/\$ = £34.80$). Note that $1/1.72 = 0.58$.
3. An increase in U.S. real GDP will increase spending in the United States. Consumers and firms in the United States will buy more U.S. goods and also more Japanese goods. As U.S. consumers and firms buy more Japanese goods, they must buy more yen, which implies that they must supply more dollars in the foreign exchange market. Rising U.S. real GDP will increase the supply of dollars. This is shown in the graph below:



An increase in Japanese real GDP will increase spending in Japan. Consumers and firms in Japan will buy more Japanese goods and also more U.S. goods. As Japanese consumers and firms buy more U.S. goods, they must buy more dollars, which implies an increase in the demand for dollars in the foreign exchange market. Rising Japanese real GDP will increase the demand for dollars. This is shown in the graph below:



The increase in U.S. real GDP increases the supply of dollars. This lowers the (¥/\$) exchange rate and causes the value of the dollar to depreciate. The increase in Japanese real GDP increases the demand for dollars. This increases the (¥/\$) exchange rate and causes the value of the dollar to appreciate. If both of these events happen at the same time, then the impact on the exchange rate is uncertain. It is

not possible to tell if the size of the increase in demand will be larger, smaller, or the same size as the size of the increase in supply.

4. According to the saving and investment equation,

$$S = S_{\text{private}} + S_{\text{public}} = I + NFI.$$

A budget deficit enters the equation as a negative value for S_{public} , and because the current account balance = – financial account balance or net current account balance = net foreign investment, an increase in the budget deficit (S_{public} falls) will lower NFI or the current account if domestic saving does not increase or domestic investment does not fall. Therefore, we can conclude that a budget deficit may lead to a current account deficit but there is no guarantee that it will do so.

5. Because monetary and fiscal policy affect the interest rate, these policies also affect the exchange rate in an open economy. Expansionary monetary policy tends to lower the interest rate; in an open economy the lower U.S. interest rate makes foreign financial assets more attractive (and U.S. financial assets less attractive to investors outside the United States). This will result in an increase in the supply of dollars and a decrease in the demand for dollars in the foreign exchange market. This will cause the dollar to depreciate. The lower value of the dollar will increase exports and lower imports. This will increase net exports and provide additional increases in aggregate demand compared with the effects of monetary policy in a closed economy. The expansionary fiscal policy will lead to a higher interest rate. In an open economy, the higher interest rate will make U.S. financial assets more attractive to consumers and firms outside the United States (and make foreign assets less attractive to U.S. investors). This will increase the demand for dollars and reduce the supply of dollars in the foreign exchange market. This will cause the dollar to appreciate. The higher value of the dollar will cause exports to decrease and imports to increase. This will reduce net exports and reduce the level of aggregate demand (this is an added form of crowding out) compared with the effects of fiscal policy in a closed economy.
6. With the exchange rate of $\$2.08 = \pounds 1$, *Harry Potter* will have a price in the United States of $\$20.70$ ($\pounds 9.95 \times \$2.08/\pounds = \20.70). *The Appeal* will have a price of $\pounds 9.60$ ($= \$19.97/\$2.08/\pounds$) in the United Kingdom.

True/False Answers

1. T
2. T
3. F The purchase of a bond of a corporation or government of another country by a U.S. resident represents a capital outflow.
4. F Net capital flows and net foreign investment (NFI) are equal but of opposite signs (if one is positive, the other is negative).
5. F The balance of payments is the sum of the current account balance (the sum of the balance of trade and balance of services), the financial account balance, and the capital account balance. The balance of trade can be positive, negative, or zero. The balance of payments will always be zero.
6. F The price of a dollar, in terms of the euro, will be $\text{€}0.85 = \$1.00$ ($0.85 = 1/1.18$).
7. F If the price of a euro increases from $\$1.18$ to $\$1.20$, then the euro has gotten more expensive to U.S. citizens, or the dollar has fallen in value. So, the dollar has depreciated.
8. T
9. F An increase in the supply of dollars will lower the exchange rate and cause the value of the dollar to depreciate.

- 10. F As the dollar appreciates, net exports will fall, which will cause a reduction in the level of aggregate demand.
- 11. F Public saving is equal to taxes minus government purchases. Public saving will be positive if there is a budget surplus, and negative if there is a budget deficit.
- 12. F Because $S = I + NFI$, if $I > S$, then NFI must be negative.
- 13. F An increase in the federal budget deficit will increase the current account deficit only if private saving and domestic investment do not change.
- 14. T
- 15. T