

International Business Finance

Learning Objectives

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|----------------------|--|---|
| b¹ | Discuss the internationalization of business. | The Globalization of Product and Financial Markets |
| b² | Explain why foreign exchange rates in two different countries must be in line with each other. | Foreign Exchange Markets and Currency Exchange Rates |
| b³ | Discuss the concept of interest rate parity. | Interest Rate Parity |
| b⁴ | Explain the purchasing-power parity theory and the law of one price. | Purchasing-Power Parity and the Law of One Price |
| b⁵ | Discuss the risks that are unique to the capital-budgeting analysis of direct foreign investment. | Capital Budgeting for Direct Foreign Investment |

It is generally easier for firms to expand the market for their products rather than develop new products, which is why most large companies look for new markets around the world. That's certainly been the direction that McDonald's (MCD) has taken in recent years. Today, McDonald's operates more than 33,000 restaurants in over 123 countries. The busiest McDonald's restaurant in the world is not in America but thousands of miles away in Pushkin Square in Moscow, Russia. The store serves 40,000 customers a day, even more than it did on its opening day, January 31, 1990. The menu is essentially the same as in the United States, with the addition of cabbage pie among other traditional Russian food items.

Was this an expensive venture? It certainly was. In fact, the food plants that McDonald's built to supply burgers, fries, and everything else sold there cost more than \$60 million. In addition to the costs, there are a number of other factors that make opening an outlet outside of the United States both different and challenging. First, in order to keep the quality consistent with what is served at any McDonald's anywhere else in the world, McDonald's spent 6 years putting together a supply chain that would provide the necessary raw materials McDonald's demands. On top of that, there are risks associated with the Russian economy and its currency that are well beyond the scope of the risk exposures in the United States.

These risks all materialized in 1998 when the Russian economy, along with its currency, the ruble, tanked. In the summer of 1998, the Russian economy spun out of control, and in August the entire banking system failed, resulting in a catastrophic decline in the value of the ruble. Because McDonald's sells its Russian burgers for rubles, when it came time to trade the rubles for U.S. dollars, McDonald's Russian outlets were not worth

nearly as much as they were the year before. In spite of all this, the Moscow McDonald's has proven to be enormously successful since it opened. In fact, by 2012 there were 314 McDonald's restaurants in Russia with plans to open 40 to 45 new locations each year. It all goes to show that not all new investment opportunities require new products; introducing existing products to new international markets can be equally or even more profitable.



This chapter highlights the complications that an international business faces when it deals in multiple currencies. Effective strategies for reducing foreign exchange risk are discussed. Working-capital management and capital structure decisions in the international context are also covered.

The Globalization of Product and Financial Markets

b¹ Discuss the internationalization of business.

To say the least, the market for most products crosses many borders. In fact, some industries and states are highly dependent on the international economy. For example, the electronic consumer products and automobile industries are widely considered to be global industries. Ohio ranks fourth in the United States in terms of manufactured exports, and more than half of Ohio workers are employed by firms that depend to some extent on exports.

There has also been a rise in the global level of international portfolio and direct investment. Both direct and portfolio investments in the United States have been increasing faster than U.S. investment overseas. **Direct foreign investment (DFI)** occurs when the **multinational corporation (MNC)**, *a corporation with holdings and/or operations in more than one country*, has control over the investment, such as when it builds an offshore manufacturing facility. *Portfolio investment* involves financial assets with maturities greater than 1 year, such as the purchase of foreign stocks and bonds.

A major reason for direct foreign investment by U.S. companies is the high rates of return obtainable from these investments. And the amount of U.S. direct foreign investment (DFI) abroad is large and growing. Significant amounts of the total assets, sales, and profits of American MNCs are attributable to foreign investments and foreign operations. Direct foreign investment is not limited to American firms. Many European and Japanese firms have operations abroad, too. During the past decade, these firms have been increasing their sales and setting up production facilities abroad, especially in the United States.

Capital flows (portfolio investment) between countries have also been increasing. Many firms, investment companies, and individuals invest in the capital markets in foreign countries. The motivation is twofold: to obtain returns higher than those obtainable in the domestic capital markets and to reduce portfolio risk through international diversification. The increase in world trade and investment activity is reflected in the recent globalization of financial markets. The **Eurodollar** market is now larger than any domestic financial market, and U.S. companies are increasingly turning to this market for funds. Even companies and public entities that have no overseas presence are beginning to rely on this market for financing.

direct foreign investment (DFI) a company from one country making a physical investment, such as building a factory, in another country.

multinational corporation (MNC) a corporation with holdings and/or operations in more than one country.

Eurodollars U.S. dollars held by foreign (often European) banks and financial institutions outside the United States, and often as a result of payments to foreign companies for goods or services.

In addition, most national financial markets are becoming more integrated with global markets because of the rapid increase in the volume of interest rate and currency swaps. (We will discuss currency swaps later in the chapter.) Because of the widespread availability of these swaps, the currency denomination and the source country of financing for many globally integrated companies are dictated by accessibility and relative-cost considerations, regardless of the currency ultimately needed by the firm. Even a *purely domestic firm* that buys all its inputs and sells all its output in its home country is not immune to foreign competition, nor can it totally ignore the workings of the international financial markets.

Concept Check

- 1. Why do U.S. companies invest overseas?

b² Explain why foreign exchange rates in two different countries must be in line with each other.

foreign exchange (FX) market the market in which the currencies of various countries is traded.

Foreign Exchange Markets and Currency Exchange Rates

The **foreign exchange (FX) market** is by far the world’s largest financial market, with daily trading volumes of more than \$4 trillion. Trading in this market is dominated by a few key currencies including the U.S. dollar, the British pound sterling, the Japanese yen, and the euro. The FX market is an over-the-counter market with participants (buyers and sellers) located in major commercial and investment banks around the world. Table 16-1 lists the top 10 currencies traded in the FX market.

Some of the major participants in foreign exchange trading include the following:

- ◆ *Importers and exporters of goods and services.* For example, when a U.S. importer purchases goods from a Japanese manufacturer and pays using Japanese yen, the importer will need to convert dollars to yen in the FX market. Similarly, if an exporter is paid in a foreign firm’s domestic currency, it will enter the FX market to convert the payment to its home currency.
- ◆ *Investors and portfolio managers who purchase foreign stocks and bonds.* Investors who acquire the shares of foreign companies that are traded on a foreign exchange need foreign currency to complete the transaction.
- ◆ *Currency traders who make a market in one or more foreign currencies.* Currency traders buy and sell different currencies, hoping to make money from their trades.

TABLE 16-1 The Market for Foreign Exchange: Most Traded Currencies	
Currency	Percentage Shares of Average Daily Turnover
U.S. dollar	84.9
Euro	39.1
Japanese yen	19.0
Pound sterling	12.9
Australian dollar	7.6
Swiss franc	6.4
Canadian dollar	5.3
Hong Kong dollar	2.4
Swedish krona	2.2
New Zealand dollar	1.6
Other	18.6
Total	200.0

Note: The total is 200% since trading volume includes one trade for buying and one for selling on each transaction, such that volume is double-counted.
Source: Triennial Central Bank Survey (December 2011), Bank for International Settlements.

Foreign Exchange Rates

An **exchange rate** is simply the price of one currency stated in terms of another. For example, if the exchange rate of U.S. dollars for British pounds was 2 to 1, this means that it would take \$2.00 to purchase 1 pound.

exchange rate the price of one currency stated in terms of another.

Reading Exchange Rate Quotes Table 16-2 shows the exchange rates from June 14, 2012, which are available online at *The Wall Street Journal Online*, *reuters.com*, *xe.com*, and *The Financial Times Online*. In fact, *The Financial Times Online* even provides a Currencies Macromap that displays a map of the world with a color-coded view of the performance of the different world currencies relative to a currency of your choice.¹ The first column of Table 16-2 gives the number of dollars it takes to purchase one unit of foreign currency. Because the exchange rate is expressed in U.S. dollars, it is referred to as a **direct quote**. Given the figures in Table 16-2, we can see that it took \$1.5562 to buy 1 British pound (£1), \$1.0518 to buy 1 Swiss franc, and \$1.2633 to buy 1 euro. Conversely, an **indirect quote** indicates the number of foreign currency units it takes to purchase one American dollar. The second column shows the indirect exchange rate.

direct quote the exchange rate that indicates the number of units of the home currency required to buy one unit of a foreign currency.

indirect quote the exchange rate that expresses the number of units of foreign currency that can be bought for one unit of home currency.

We can further illustrate the use of direct and indirect quotes with a simple example. Suppose you want to compute the indirect quote from the direct quote for pounds given in column 1 of Table 16-2. The direct quote for the British pound is \$1.5562. The related indirect quotes are calculated as the reciprocal of the direct quote as follows:

$$\text{Indirect quote} = \frac{1}{\text{direct quote}} \quad (16-1)$$

Thus,

$$\frac{1}{1.5562} = £0.6426$$

Notice that the indirect quote is identical to that shown in the second column of Table 16-2.

EXAMPLE 16.1

Computing an exchange amount using a direct quote

An American business must pay 1,000 euros to a German firm on June 14, 2012. Using the information in Table 16-2, how many dollars will be required for this transaction?

STEP 1: FORMULATE A SOLUTION STRATEGY

The dollar amount required for this transaction can be computed using the following equation:

$$\text{Amount in dollars} = \frac{\text{dollar amount}}{\text{foreign currency}} \times €1,000$$

Note that after finding the direct quote you must then multiply the amount by the amount of foreign currency required for the transaction in order to obtain the required dollar amount.

STEP 2: CRUNCH THE NUMBERS

Substituting into the equation we compute the dollar amount required as follows:

$$\text{Amount in dollars} = \frac{\$1.2633}{€} \times €1,000 = \$1,263.30$$

STEP 3: ANALYZE YOUR RESULTS

For the American business to pay the German firm €1,000, it will require \$1,263.30 to complete the transaction.

¹To view the Currencies Macromap, go to <http://markets.ft.com/research/Markets/Currencies> and click on Currencies Macromap.

TABLE 16-2 Foreign Exchange Rates (June 14, 2012)

Country/currency	U.S.-Dollar Foreign Exchange Rates in Late New York Trading	
	U.S. \$ Equivalent	Trading and Currency Per U.S. \$
Americas		
Brazil real	0.4864	2.056
Canada dollar	0.9777	1.0228
Colombia peso	0.0005577	1793.08
Mexico peso	0.0719	13.9004
Venezuela b. fuerte	0.22988506	4.35
Asia-Pacific		
Australian dollar	1.0025	0.9975
1-mos forward	0.99965778	1
3-mos forward	0.99432028	1.01
6-mos forward	0.98759862	1.01
China yuan	0.1569	6.372
Hong Kong dollar	0.1289	7.7588
India rupee	0.01795	55.69495
Japan yen	0.01260199	79.35
1-mos forward	0.01260671	79.32
3-mos forward	0.01261797	79.25
6-mos forward	0.0126379	79.13
New Zealand dollar	0.7826	1.2778
Pakistan rupee	0.0106	94.355
South Korea won	0.0008587	1164.55
Europe		
Euro area euro	1.2633	0.7916
Norway krone	0.1683	5.942
Russia rubleá	0.03078	32.484
Sweden krona	0.1427	7.0092
Switzerland franc	1.0518	0.9508
1-mos forward	1.0524	0.9502
3-mos forward	1.0543	0.9485
6-mos forward	1.0574	0.9457
Turkey lira	0.5509	1.8152
UK pound	1.5562	0.6426
1-mos forward	1.556	0.6427
3-mos forward	1.5556	0.6429
6-mos forward	1.5551	0.643
Middle East/Africa		
Egypt pound	0.1653	6.0488
Israel shekel	0.2587	3.8655
Saudi Arabia riyal	0.2667	3.7502
South Africa rand	0.1194	8.3751
UAE dirham	0.2723	3.6724

Note: Slight rounding error explains the fact that the numbers in the "U.S. \$ Equivalent" column do not always equal the inverse of the numbers in the "Currency per U.S. \$" column.

Source: Data from Reuters and *Wall Street Journal Online*, June 14, 2012.

Exchange Rates and Arbitrage

The foreign exchange quotes in two different countries must be in line with each other. If the exchange rate quotations between the London and New York spot exchange markets were *out of line*, then an *enterprising trader could make a profit by buying in the market where the currency was cheaper and selling it in the other*. Such a buy-and-sell strategy would involve a zero net investment of funds and no risk bearing, yet it would provide a sure profit. A person executing this strategy is called an **arbitrageur**, and the process of buying and selling in more than one market to make a riskless profit is called **arbitrage**. Spot exchange markets are efficient in the sense that arbitrage opportunities do not persist for any length of time. That is, the exchange rates between two different markets are quickly brought *in line*, aided by the arbitrage process. **Arbitrage eliminates exchange rate differentials across the markets for a single currency**, as in the preceding example for the New York and London quotes.

Suppose that you could buy a UK pound for \$1.5400 in London rather than the \$1.5562 quoted in New York in Table 16-2. If you simultaneously bought a pound in London for \$1.54 and sold it in New York for \$1.5562, you would have (1) taken a zero net investment position because you bought £1 and sold £1, (2) locked in a sure profit of \$0.0162 on every pound you bought and sold *no matter which way* the pound subsequently moves, and (3) set in motion the forces that will eliminate the different quotes in New York and London. As others in the marketplace learn of your transaction, they will attempt to make the same transaction. The increased demand to buy pounds in London will lead to a higher quote there, and the increased supply of pounds will lead to a lower quote in New York. The workings of the market will produce a new spot rate that lies between \$1.54 and \$1.5562 and is the same in New York and in London.

arbitrageur an individual involved in the process of buying and selling in more than one market to make a riskless profit.

arbitrage trading to eliminate exchange rate differentials across the markets for a single currency.

Asked and Bid Rates

Two types of rates are quoted in the spot exchange market: the asked and the bid rates. The **asked rate** is the *rate the bank or the foreign exchange trader “asks” the customer to pay in home currency for foreign currency when the bank is selling and the customer is buying*. The asked rate is also known as the *selling rate* or the *offer rate*. The **bid rate** is the *rate at which the bank buys the foreign currency from the customer by paying in home currency*. The bid rate is also known as the *buying rate*. As you would expect, the asking price is greater than the bid price. Note that Table 16-2 contains only the selling, offer, or asked rates, not the buying rate.

The bank sells a unit of foreign currency for more than it pays for it. Therefore, the direct asked quote (\$/FC) is greater than the direct bid quote. *The difference between the asked quote and the bid quote* is known as the **bid-asked spread**. When there is a large volume of transactions and the trading is continuous, the spread is small and can be less than 1 percent (0.01) for the major currencies. The spread is much higher for infrequently traded currencies. The spread exists to compensate the banks for holding the risky foreign currency and for providing the service of converting currencies.

asked rate the rate the bank or the foreign exchange trader “asks” the customer to pay when the bank is selling and the customer is buying. The asked rate is also known as the selling rate or the offer rate.

bid rate the rate at which the bank buys the foreign currency from the customer. The bid rate is also known as the buying rate.

bid-asked spread the difference between the asked quote and the bid quote.

Cross Rates

A **cross rate** is the exchange rate between two foreign currencies, neither of which is the currency of the domestic country. Some cross rates are given in Table 16-3. The following example illustrates how two cross rates can be used to derive a third cross rate.

cross rate the exchange rate between two foreign currencies, neither of which is the currency of the domestic country.

CAN YOU DO IT?

USING THE SPOT RATE TO CALCULATE A FOREIGN CURRENCY PAYMENT

An American business must pay the equivalent of \$10,000 in United Arab Emirates (UAE) dirhams to a firm in Dubai on June 14, 2012. Using the information in Table 16-2, how many dirhams will the firm in Dubai receive? (The solution can be found on page 491.)

TABLE 16-3 Key Currency Cross Rates, Thursday, June 14, 2012

	Dollar	Euro	Pound	SFranc	Peso	Yen	CdnDlr
Canada	1.0228	1.2920	1.5916	1.0757	0.0736	0.0129	...
Japan	79.3526	100.2426	123.4896	83.4613	5.7086	...	77.5860
Mexico	13.9004	17.5598	21.6320	14.6202	...	0.1752	13.5910
Switzerland	0.9508	1.2011	1.4796	...	0.0684	0.0120	0.9296
U.K.	0.6426	0.8117	...	0.6759	0.0462	0.0081	0.6283
Euro	0.7916	...	1.2319	0.8326	0.0569	0.0100	0.7740
U.S.	...	1.2633	1.5562	1.0518	0.0719	0.0126	0.9777

Source: Data from Reuters and *Wall Street Journal Online*, June 14, 2012, wsj.com.

EXAMPLE 16.2**Calculating the Canadian dollar/Swiss franc exchange rate**

Calculate the Canadian dollar/Swiss franc and Swiss Franc/Canadian dollar exchange rates using the cross-rates listed in columns 2 and 4 of Table 16-3.

STEP 1: FORMULATE A SOLUTION STRATEGY

Columns 2 and 4 of Table 16-3 provide the Canadian dollar/euro and euro/Swiss Franc rates, which can be used to determine the Canadian dollar/Swiss franc and Swiss franc/Canadian dollar exchange rates as follows:

$$\frac{\text{Canadian \$}}{\text{€}} \times \frac{\text{€}}{\text{Swiss franc}} = \frac{\text{Canadian \$}}{\text{Swiss franc}}$$

Since the Swiss franc/Canadian dollar is reciprocal of this, it can then be calculated as the reciprocal of the direct quote.

STEP 2: CRUNCH THE NUMBERS

Substituting into the equation we compute the euro/pound exchange rate:

$$\frac{\text{Canadian \$}}{\text{€}} \times \frac{\text{€}}{\text{Swiss franc}} = 1.2920 \times 0.8326 = \frac{1.0757 \text{ Canadian \$}}{\text{Swiss franc}}$$

Thus, the Swiss Franc/Canadian dollar exchange rate is:

$$\frac{1}{1.0757} = \frac{0.9296 \text{ Swiss francs}}{\text{Canadian \$}}$$

STEP 3: ANALYZE YOUR RESULTS

The Canadian dollar/Swiss franc exchange rate is 1.0757 Canadian dollars per Swiss franc, and the Swiss franc/Canadian dollar exchange rate is 0.9296 Swiss francs per Canadian dollar. You'll notice that these rates are the same exchange rates as those given in Table 16-3 under Key Currency Cross Rates.

spot exchange rate an exchange rate for a transaction that calls for immediate delivery.

forward exchange rate an exchange rate for a transaction that calls for delivery in the future.

delivery date the date on which the actual payment of one currency in exchange for another takes place in a foreign exchange transaction.

Types of Foreign Exchange Transactions

Thus far, the exchange rates and transactions we have discussed are those meant for immediate delivery. This type of exchange rate is called a **spot exchange rate**. Another type of transaction carried out in the foreign exchange markets is known as a **forward exchange rate**, which is an exchange rate agreed upon today but which calls for delivery of currency at the agreed rate at some future date.

The actual payment of one currency in exchange for the other takes place on a future date called the **delivery date**, and the agreement that captures the terms of both the rate

DID YOU GET IT?

USING THE SPOT RATE TO CALCULATE A FOREIGN CURRENCY PAYMENT

On page 489 you were asked to determine how much an American firm had to pay a firm in Dubai in the United Arab Emirates to receive an equivalent of \$10,000 in dirhams.

$$3.6724 \text{ dirhams/\$} \times \$10,000 = 36,724 \text{ dirhams}$$

Any time money changes hands internationally, there is a transaction in the foreign currency markets. Interestingly, the dollar is the most frequently traded currency, accounting for over 42.5 percent of total trading volume, with the euro coming in second with a 19.6 percent share.

and delivery is called a futures contract or **forward exchange contract**.² For example, a forward contract agreed upon on March 1 would specify the exchange rate and might call for delivery on March 31. Note that the forward rate is not necessarily the same as the spot rate that will exist in the future—in fact, no one knows exactly what the exchange rate will be in the future. These contracts can be used to manage a firm's exchange rate risk (the risk that tomorrow's exchange rate will differ from today's rate) and are usually quoted for periods of between 30 days and 1 year. A contract for any intermediate date can be obtained, usually with the payment of a small premium.

Forward rates, like spot rates, are quoted in both direct and indirect form. The direct quotes are the dollar/foreign currency rate, and the indirect quotes are the foreign currency/dollar rate, similar to the spot exchange quotes. The direct quotes for the 30-day and 90-day forward contracts on pounds, yen, Australian dollars, and Swiss Francs are given in column 1 of Table 16-2. As with spot rates, the indirect quotes for forward contracts are reciprocals of the direct quotes. The indirect quotes are indicated in column 2 of Table 16-2.

In Table 16-2 the 1-month forward quote for pounds is \$1.556 per pound. This means that the bank is contractually bound to deliver £1 at this price, and the buyer of the contract is legally obligated to buy it at this price in 30 days. Therefore, this is the price the customer must pay regardless of the actual spot rate prevailing in 30 days. If the spot price of the pound is less than \$1.556, then the customer pays *more* than the spot price. If the spot price is greater than \$1.556, then the customer pays *less* than the spot price.

The forward rate is often quoted at a premium or a discount from the existing spot rate. For example, the 30-day forward rate for the pound may be quoted as a \$0.0002 discount (\$1.556 forward rate – \$1.5562 spot rate). If the forward rate for the British pound is greater than the spot rate, it is said to be selling at a premium relative to the dollar, and the dollar is said to be selling at a discount to the British pound. This premium or discount is also called the **forward-spot differential**.

Notationally, the relationship may be written

$$F - S = \text{premium } (F > S) \text{ or discount } (S > F)$$

where F = the forward rate, direct quote

S = the spot rate, direct quote

The premium or discount can also be expressed as an annual percentage rate, computed as follows:

$$\frac{F - S}{S} \times \frac{12}{n} \times 100 = \text{annualized percentage}$$

$$\text{premium } (F > S) \text{ or discount } (S > F) \quad (16-2)$$

where n = the number of months on the forward contract.

forward exchange contract an agreement between two parties to exchange one currency for another on a future date.

forward-spot differential the premium or discount between forward and spot currency exchange rates.

²These contracts are very similar, with one major difference being that futures contracts are exchange traded, while forward contracts are traded on the over-the-counter market.

EXAMPLE 16.3**Computing the percent-per-annum discount**

Using the information from Table 16-1, calculate the percent-per-annum discount on the 90-day or 3-month pound.

STEP 1: FORMULATE A SOLUTION STRATEGY

First, we have to identify F (the 3-month forward rate), S (the spot rate), and n (the number of months on the forward contract):

$$F = 1.5556, S = 1.5562, n = 3 \text{ months}$$

Next, because S is greater than F , we compute the annualized percentage discount using equation (16-2):

$$\frac{F - S}{S} \times \frac{12}{n} \times 100 = \text{annualized percentage} \quad (16-2)$$

STEP 2: CRUNCH THE NUMBERS

When we substitute into the equation, we get

$$\text{Annualized percentage} = \frac{1.5556 - 1.5562}{1.5562} \times \frac{12 \text{ months}}{3 \text{ months}} \times 100 = -0.1542\%$$

STEP 3: ANALYZE YOUR RESULTS

The percent-per-annum premium is negative on the 90-day pound at -0.1542% .

Exchange Rate Risk

The concept of exchange rate risk applies to all types of international business. The measurement of these risks, and the type of risk, differ among businesses. Let us see how exchange rate risk affects international trade contracts, international portfolio investments, and direct foreign investments.

Exchange Rate Risk in International Trade Contracts The idea of exchange rate risk in trade contracts is illustrated in the following situations.

Case I An American automobile distributor agrees to buy a car from the manufacturer in Detroit. The distributor agrees to pay \$25,000 on delivery of the car, which is expected to be 30 days from today. The car is delivered on the 30th day and the distributor pays \$25,000. Notice that from the day this contract was written until the day the car was delivered, the buyer knew the *exact dollar amount* of the liability. There was, in other words, *no uncertainty* about the value of the contract.

Case II An American automobile distributor enters into a contract with a British supplier to buy a car from Britain for £16,065. The amount is payable upon the delivery of the

CAN YOU DO IT?

COMPUTING A PERCENT-PER-ANNUM PREMIUM

Using the information in Table 16-2, compute the percent-per-annum premium on the 90-day (3 month) yen. (The solution can be found on page 493.)

car, 30 days from today. Unfortunately, the exchange rate between British pounds and U.S. dollars may change in the next 30 days. In effect, the American firm is not certain what its future dollar outflow will be 30 days hence. That is, the *dollar value of the contract is uncertain*.

These two examples help illustrate the idea of foreign exchange risk in international trade contracts. In the domestic trade contract (Case I), the exact dollar amount of the future dollar payment is known today with certainty. In the case of the international trade contract (Case II), in which the *contract is written in the foreign currency*, the exact dollar amount of the contract is not known. The variability of the exchange rate causes variability in the future cash flow of the firm.

Exchange rate risk exists when the contract is written in terms of the foreign currency, or *denominated* in foreign currency. There is no direct exchange rate risk if the international trade contract is written in terms of the domestic currency. That is, in Case II, if the contract were written in dollars, the American importer would face *no* direct exchange rate risk. With the contract written in dollars, the British exporter would bear *all* of the exchange rate risk because the British exporter's future pound receipts would be uncertain. That is, the British exporter would receive payment in dollars, which would have to be converted into pounds at an unknown (as of today) future pound/dollar exchange rate. In international trade contracts of this type, at least one of the two parties to the contract *always* bears the exchange rate risk.

Certain types of international trade contracts are denominated in a third currency that is different from either the importer's or the exporter's domestic currency. In Case II, the contract might have been denominated in, say, the Hong Kong dollar. With a Hong Kong dollar contract, both the importer and exporter would be subject to exchange rate risk.

Exchange rate risk is not limited to the two-party trade contracts; it exists also in foreign portfolio investments and direct foreign investments.

Exchange Rate Risk in Foreign Portfolio Investments Let us look at an example of exchange rate risk in the context of portfolio investments. An American investor buys a Hong Kong security. The exact return on the investment in the security is unknown. Thus, the security is a risky investment. The investment return in the holding period of, say, 3 months stated in HK\$ could be anything from -2 to +8 percent. In addition, the U.S. dollar/HK\$ exchange rate may depreciate by, say, 4 percent or appreciate by 6 percent during the 3-month period. The return to the American investor in U.S. dollars will, therefore, be in the range of -6 to +14 percent. Hence, the exchange rate fluctuations may increase the riskiness of the investments.

DID YOU GET IT?

COMPUTING A PERCENT-PER-ANNUM PREMIUM

Compute the percent-per-annum premium on the 90-day yen.

STEP 1 Identify F , S , and n .

$$F = \$0.01261797/\text{¥}, S = \$0.01260199/\text{¥}, \text{ and } n = 3 \text{ months}$$

STEP 2 Because F is greater than S , we compute the annualized percentage premium:

$$\frac{0.01261797 - 0.01260199}{0.01260199} \times \frac{12 \text{ months}}{3 \text{ months}} \times 100 = 0.5072\%$$

The percent-per-annum premium on the 90-day yen is 0.5072 percent.



REMEMBER YOUR PRINCIPLES

In international transactions, just as in domestic transactions, the key to value is the timing and amounts of cash flow spent and received. However, economic transactions across international borders add an element of risk because cash flows are often denominated in the currency of the country in which business is being transacted. Consequently, the dollar value of the cash flows will depend on the exchange rate that exists at the time the cash changes hands. The fact remains, however, that it's cash spent and received that matters. This is the point of **Cash Flow Is What Matters**.

Exchange Rate Risk in Direct Foreign Investment The exchange rate risk of a direct foreign investment (DFI) is more complicated. In a DFI, the parent company invests in assets denominated in a foreign currency. That is, the balance sheet and the income statement of the subsidiary are written in terms of the foreign currency. The parent company, if based in the United States, receives the repatriated (or converted) profit stream from the subsidiary in dollars. Thus, the exchange rate risk concept applies to fluctuations in the dollar value of the assets located abroad as well as to the fluctuations in the home currency-denominated profit stream. Moreover, exchange risk not only affects immediate profits but may also affect the future profit stream as well.

Although exchange rate risk can be a serious complication in international business activity, remember the principle of the risk–return trade-off: Traders and corporations find numerous reasons why the returns from international transactions outweigh the risks.

Concept Check

1. What is a spot transaction? What is a direct quote? An indirect quote?
2. Who is an arbitrageur? How does an arbitrageur make money?
3. What is a forward exchange rate?
4. Describe exchange rate risk in direct foreign investment.



Discuss the concept of interest rate parity.

interest rate parity (IRP) theory a theory that states that (except for the effects of small transaction costs) the forward premium or discount should be equal and opposite in size to the difference in the national interest rates for securities of the same maturity.

Interest Rate Parity

Interest rates can vary dramatically from country to country. For example, in mid-2012 the 1-year interest rate in the United States was approximately 0.87 percent, while in Turkey it was 7.98 percent. The concepts of interest rate parity and purchasing-power parity, which we will introduce shortly, provide the basis for understanding how prices and rates of interest across different countries are related to one another.

Interest rate parity (IRP) theory can be used to relate differences in the interest rates in two countries to the ratios of spot and forward exchange rates of the two countries' currencies. Specifically, the interest parity condition can be stated as follows:

Difference in interest rates = ratio of the forward and spot rates

$$\frac{\left(1 + \text{domestic rate of interest}\right)}{\left(1 + \text{foreign rate of interest}\right)} = \left(\frac{\text{forward exchange rate}}{\text{spot exchange rate}}\right) \quad (16-3)$$

This equation can be rearranged such that,

$$\left(1 + \text{domestic rate of interest}\right) = \left(\frac{\text{forward exchange rate}}{\text{spot exchange rate}}\right) \left(1 + \text{foreign rate of interest}\right) \quad (16-3a)$$

To illustrate how this equation is applied, consider the following situation. Suppose that the 6-month risk-free rate of interest in the United States was 2 percent. On that date the spot exchange rate between the U.S. dollar and the Japanese yen (\$/¥) was 0.010798 and the forward exchange rate for 6 months hence was 0.010803. According to interest rate

parity, what would you expect the 6-month risk-free rate of interest to be in Japan? Substituting into equation (16-3a) we calculate the following:

$$\begin{aligned} \left(1 + \frac{\text{U.S. 6-month risk-free rate of interest}}{\text{rate of interest}}\right) &= \left(\frac{\text{forward exchange rate}}{\text{spot exchange rate}}\right) \left(1 + \frac{\text{Japanese 6-month risk-free rate of interest}}{\text{rate of interest}}\right) \\ (1 + 0.02) &= \left(\frac{0.010803}{0.010798}\right) \left(1 + \frac{\text{Japanese 6-month risk-free rate of interest}}{\text{rate of interest}}\right) \\ (1 + 0.02) &= 1.000463 \left(1 + \frac{\text{Japanese 6-month risk-free rate of interest}}{\text{rate of interest}}\right) \end{aligned}$$

Thus, the Japanese 6-month risk-free rate of interest = 0.019528, or 1.9528 percent.

What this means is that you get the same total return whether you change your dollars to yen and invest in the risk-free rate in Japan and then convert them back to dollars or simply invest your dollars in the U.S. risk-free rate of interest. For example, if you started with \$100 and converted it to yen at the spot rate of 0.010798 \$/¥, you'd have 9,260.97 yen; if you invested those yen at 1.9528 percent, after 6 months you'd have ¥9,441.82. Converting this back to dollars at the forward rate you end up with \$102.00, the same as you would have if you had invested your dollars at the U.S. 6-month rate of 2 percent.

Concept Check

1. In simple terms, what does the interest rate parity theory mean?

Purchasing-Power Parity and the Law of One Price

According to the theory of **purchasing-power parity (PPP)**, exchange rates adjust so that identical goods cost the same amount regardless of where in the world they are purchased. For example, if an Apple iPad costs \$399 in the United States and €319.20 in France, according to the purchasing-power parity theory, the spot exchange rate should be \$1.25 per euro (\$399/€319.20). Thus, if you would like to buy a new iPad, you could either buy it for \$399 in the United States or trade in your \$399 for €319.20 and buy your iPad in France—either way it costs you the same amount. Stated formally,

$$\text{Spot exchange rate for euros (\$/€)} \times \text{French price of an iPad} = \text{U.S. price of an iPad}$$

More generally, the spot exchange rate for the foreign country (in this case the spot exchange rate for euros) should be equal to the ratio of the price of the good in the home country (P_h) to the price of the same good in the foreign country (P_f), that is,

$$\text{Spot exchange rate} = \frac{P_h}{P_f}$$

Thus, as we just showed, the spot exchange rate of \$/€ should be the following:

$$\text{Spot exchange rate} = \frac{P_h}{P_f} = \frac{\$399}{€319.20} = \$1.25/€$$

Therefore, PPP implies that if a new Callaway RAZR Fit golf club cost €320 in France, it should cost €320 × 1.25 = \$400 in the United States where the \$/€ exchange rate is 1.25.

Underlying the PPP relationship is a fundamental economic principle called the **law of one price**. Applied to international trade, this law states that the same goods should sell for the same price in different countries after making adjustment for the exchange rate between

4 Explain the purchasing-power parity theory and the law of one price.

purchasing-power parity (PPP) a theory that states that exchange rates adjust so that identical goods cost the same amount regardless of where in the world they are purchased.

law of one price an economic principle that states that a good or service cannot sell for different prices in the same market. Applied to international markets, this law states that the same goods should sell for the same price in different countries after making adjustment for the exchange rate between the two currencies.

the two currencies. The idea is that the worth of a good does not depend on where it is bought or sold. Thus, in the long run, exchange rates should adjust so that the purchasing power of each currency is the same. As a result, exchange rates should reflect the international differences in inflation rates with currencies with high rates of inflation experiencing declines in the value of their currency.

There are enough obvious exceptions to the concept of purchasing-power parity that it may, at first glance, seem difficult to accept. To illustrate differences in purchasing power across countries, the *Economist* publishes what it calls its Big Mac Index, which compares the price of a Big Mac in different countries. In 2012, a Big Mac cost \$4.20 in the United States; and, given the then-existing exchange rates, it cost an equivalent of \$2.11 in the Ukraine, \$2.12 in Hong Kong, \$2.44 in China, \$6.79 in Norway, and \$6.81 in Switzerland. Why aren't these prices the same? First, tax differences between countries can be one cause. In addition, labor costs and the rental cost of the McDonald's outlets may differ across countries.

So, does this mean that PPP does not hold? Well it clearly does not hold for what economists call nontraded goods, like restaurant meals and haircuts. As we all know, for these goods, purchasing-power parity does not hold even within the United States—indeed, a Big Mac does not sell for the same price in Des Moines as it does in Los Angeles. However, for goods that can be very cheaply shipped between countries, like expensive gold jewelry, we expect PPP to hold relatively closely.

Clearly, a dollar doesn't go very far in Switzerland and Norway, but you get a lot for a dollar in Asian countries like China, Thailand, and Malaysia. Why does this matter? When the world is going through economic problems, as it has recently, a strong exchange rate (that is, one whose domestic currency buys relatively more units of foreign currency) makes it difficult to sell goods abroad and makes foreign goods look less expensive. On the other hand, a country with a weak exchange rate (that is, one whose domestic currency buys relatively fewer units of foreign currency), like China, has an easier time selling goods abroad (because its goods are less expensive abroad). However, the weak exchange rate made it more difficult for Chinese consumers to buy pricey imports over cheaper Chinese-produced goods.

The International Fisher Effect

According to the domestic Fisher effect, nominal interest rates reflect the expected inflation rate, a real rate of interest and the product of the real rate of interest and the inflation rate. In other words,

$$\text{Nominal interest rate} = \text{expected inflation rate} + \text{real rate of interest} + \left(\text{expected inflation rate} \times \text{real rate of interest} \right) \quad (16-4)$$

Although there is mixed empirical support for the international Fisher effect, it is widely thought that, for the major industrial countries, the real rate of interest is about 3 percent when a long-term period is considered. Thus, if the expected inflation rate was 2 percent in Britain and 4 percent in Japan, the interest rates in Britain and Japan would be $0.02 + 0.03 + 0.0006$, or 5.06, percent and $0.04 + 0.03 + 0.0012$, or 7.12 percent, respectively.

In effect, the international Fisher effect states that the real interest rate should be the same all over the world, with the difference in nominal or stated interest rates simply resulting from the differences in expected inflation rates. As we look at interest rates around the world, this tells us that we should not necessarily send our money to a bank account in the country with the highest interest rates. That course of action might only result in sending our money to a bank in the country with the highest expected level of inflation.

Concept Check

1. What does the law of one price say?
2. What is the international Fisher effect?

Capital Budgeting for Direct Foreign Investment

Today, there is no ducking the global markets, and it is common for U.S. firms to open manufacturing and sales operations abroad. In fact, in 2011 Yum! Brands (the parent company of KFC, Pizza Hut, and Taco Bell) invested over half a billion dollars to purchase the Chinese hot pot chain Little Sheep. Direct foreign investment occurs when a company from one country makes a physical investment, perhaps building a factory in another country. Examples of such a direct foreign investment include Yum! Brands' store in Dubai and Dell Computer Corporation's (DELL) construction of offshore manufacturing facilities in China, India, and Mexico.

Many European and Japanese firms, like their American counterparts, have operations abroad as well. During the last decade, these firms have been increasing their sales and setting up production facilities abroad, especially in the United States. A major reason for direct foreign investment by U.S. companies is the prospect of higher rates of return from these investments. As you know from **Principle 3: Risk Requires a Reward**, while there may be higher expected rates of return with many foreign investments, many of them also come with increased risk.

The method used by multinational corporations to evaluate foreign investments is very similar to the method used to evaluate capital-budgeting decisions in a domestic context—but with some additional considerations. When corporations invest abroad they generally set up a subsidiary in the country in which they are investing. Funds then are transferred back, or repatriated, to the parent firm in its home country through dividends, royalties, and management fees, with both the dividends and royalties subject to taxation in both the foreign and home countries. Moreover, many countries restrict the flow of funds back to the home country. As a result, there is often a difference between the cash flows that a project produces and the cash flows that can be repatriated to its parent country. To evaluate these investment projects, firms discount *the cash flows that are expected to be repatriated to the parent firm*. As we know from **Principle 1: Cash Flow Is What Matters**, we are only interested in the cash flows that we expect the subsidiary to return to the parent company. In most cases, the timing is crucial. If your project generates cash flows in 2015 that cannot be repatriated until 2018, the cash flows must be discounted from the 2018 date when the cash will be actually received. Once the cash flows are estimated, they must be discounted back to present at the appropriate discount rate or required rate of return, with both the discount rate and the cash flows being measured in the same currency. Thus, if the discount rate is based on dollar-based interest rates, the cash flows must also be measured in dollars.



Discuss the risks that are unique to the capital-budgeting analysis of direct foreign investment.



Foreign Investment Risks

Risk in domestic capital budgeting arises from two sources: (1) business risk related to the specific attributes of the product or service being provided and the uncertainty associated with that market, and (2) financial risk, which is the risk imposed on the investment as a result of how the project is financed. The foreign direct investment opportunity includes both these sources of risk, plus political risk and exchange rate risk. Since business and finance risk have been discussed at some length in previous chapters, let us consider the risks that are unique to international investing.

Political Risk Political risk can arise if the foreign subsidiary conducts its business in a politically unstable country. A change in a country's political environment frequently brings a change in policies with respect to businesses—and especially with respect to foreign businesses. An extreme change in policy might involve nationalization or even outright expropriation (government seizure) of certain businesses. For example, in 2007 Venezuela nationalized the country's largest telecommunications company, several electrical companies, and four lucrative oil projects that were owned by ExxonMobil, Chevron,

and ConocoPhillips. These are the political risks of conducting business abroad. Some examples of political risk are as follows:

1. Expropriation of plants and equipment without compensation
2. Expropriation with minimal compensation that is below actual market value
3. Nonconvertibility of the subsidiary's foreign earnings into the parent's currency—the problem of blocked funds
4. Substantial changes in tax rates
5. Governmental controls in the foreign country regarding the sale price of certain products, wages and compensation paid to personnel, the hiring of personnel, transfer payments made to the parent, and local borrowing
6. Requirements regarding the local ownership of the business

All of these controls and governmental actions put the cash flows of the investment to the parent company at risk. Thus, these risks must be considered before making the foreign investment decision. For example, the MNC might decide against investing in countries with risks of types 1 and 2 as mentioned above, whereas other risks can be borne—provided that the returns from the foreign investments are high enough to compensate for them. It should be noted that although an MNC cannot protect itself against all foreign political risks, insurance against some types of political risks can be purchased from private insurance companies or from the U.S. government's Overseas Private Investment Corporation.

Exchange Rate Risk Exchange rate risk is the risk that the value of a firm's operations and investments will be adversely affected by changes in exchange rates. For example, if U.S. dollars must be converted into euros before making an investment in Germany, an adverse change in the value of the dollar with respect to the euro will affect the total gain or loss on the investment when the money is converted back to dollars.

Concept Check

1. Define the types of risk that are commonly referred to as political risk, and give some examples of them.
2. What is exchange rate risk? Why would a multinational firm be concerned about it?

Chapter Summaries



Discuss the internationalization of business. (pgs. 485–486)

SUMMARY: The growth of our global economy, the increasing number of multinational corporations, and the increase in foreign trade itself underscore the importance of the study of international finance. In addition, capital flows (portfolio investment) between countries has been increasing in order to obtain higher returns and reduce portfolio risk through international diversification.

KEY TERMS

Direct foreign investment (DFI), page 485 A company from one country making a physical investment such as building a factory in another country.

Multinational corporation (MNC), page 485 A corporation with holdings and/or operations in more than one country.

Eurodollars, page 485 U.S. dollars held by foreign (often European) banks and financial institutions outside the United States, and often as a result of payments to foreign companies for goods or services.

Explain why foreign exchange rates in two different countries must be in line with each other. (pgs. 486–494)



SUMMARY: The foreign exchange (FX) market is where one currency is traded for another. This is by far the largest financial market in the world, with a daily trading volume of more than \$4 trillion. Trading is dominated by a few key currencies, including the U.S. dollar, the British pound sterling, the Japanese yen, and the euro. The FX market is an over-the-counter market rather than a single exchange location like the New York Stock Exchange where buyers and sellers get together. This means that market participants (buyers and sellers) are located in major commercial and investment banks around the world.

KEY TERMS

Foreign exchange (FX) market, page 486 The market in which the currencies of various countries is traded.

Exchange rate, page 487 The price of one currency stated in terms of another.

Direct quote, page 487 The exchange rate that indicates the number of units of the home currency required to buy one unit of a foreign currency.

Indirect quote, page 487 The exchange rate that expresses the number of units of foreign currency that can be bought for one unit of home currency.

Arbitrageur, page 489 An individual involved in the process of buying and selling in more than one market to make a riskless profit.

Arbitrage, page 489 Trading to eliminate exchange rate differentials across the markets for a single currency.

Asked rate, page 489 The rate the bank or the foreign exchange trader “asks” the customer to pay when the bank is selling and the customer is buying. The asked rate is also known as the selling rate or the offer rate.

Bid rate, page 489 The rate at which the bank buys the foreign currency from the customer. The bid rate is also known as the buying rate.

Bid-asked spread, page 489 The difference between the asked quote and the bid quote.

Cross rate, page 489 The exchange rate between two foreign currencies, neither of which is the currency of the domestic country.

Spot exchange rate, page 490 An exchange rate for a transaction that calls for immediate delivery.

Forward exchange rate, page 490 An exchange rate for a transaction that calls for delivery in the future.

Delivery date, page 490 The date on which the actual payment of one currency in exchange for another takes place in a foreign exchange transaction.

Forward exchange contract, page 491 An agreement between two parties to exchange one currency for another on a future date.

Forward-spot differential, page 491 The premium or discount between forward and spot currency exchange rates.

KEY EQUATIONS

$$\text{Indirect quote} = \frac{1}{\text{direct quote}}$$

$$F - S = \begin{cases} \text{Premium if } F > S \\ \text{Discount if } F < S \end{cases}$$

$$\frac{F - S}{S} \times \frac{12}{n} \times 100 = \text{annualized percentage}$$

where n = the number of months of the forward contract

Discuss the concept of interest rate parity. (pgs. 494–495)



SUMMARY: The forward exchange market provides a valuable service by quoting rates for the delivery of foreign currencies in the future. The foreign currency is said to sell at a discount relative to the spot rate when the forward rate is lower than the spot rate. It is said to sell at a premium relative to the spot rate when the forward rate is higher than the spot rate. According to the interest rate parity theory, these premiums and discounts depend solely on the differences in the levels of the interest rates of countries.

KEY TERM**Interest rate parity (IRP) theory, page 494**

A theory that states that (except for the effects of small transaction costs) the forward premium or discount should be equal

and opposite in size to the difference in the national interest rates for securities of the same maturity.

KEY EQUATIONS

$$\left(1 + \frac{\text{domestic}}{\text{rate of interest}}\right) = \left(\frac{\text{forward exchange rate}}{\text{spot exchange rate}}\right) \left(1 + \frac{\text{foreign}}{\text{rate of interest}}\right)$$

$$\text{Nominal rate of interest} = \frac{\text{expected rate of inflation}}{\text{of interest}} + \frac{\text{real rate of interest}}{\text{of interest}} + \left(\frac{\text{expected rate of inflation}}{\text{of inflation}}\right) \left(\frac{\text{real rate of return}}{\text{of return}}\right)$$



Explain the purchasing-power parity theory and the law of one price. (pgs. 495–496)

SUMMARY: According to the purchasing-power parity (PPP) theory, in the long run, exchange rates adjust so that the purchasing power of each currency is the same. Thus, exchange rate changes tend to reflect international differences in inflation rates. As a result, countries with high rates of inflation tend to experience declines in the value of their currency. Underlying the PPP relationship is the law of one price. This law is actually a proposition that in competitive markets in which there are no transportation costs or barriers to trade, the same goods sold in different countries sell for the same price if all of the different prices are expressed in terms of the same currency.

KEY TERMS

Purchasing-power parity (PPP), page 495 A theory that states that exchange rates adjust so that identical goods cost the same amount regardless of where in the world they are purchased.

Law of one price, page 495 An economic principle that states that a good or service

cannot sell for different prices in the same market. Applied to international markets, this law states that the same goods should sell for the same price in different countries after making adjustment for the exchange rate between the two currencies.



Discuss the risks that are unique to the capital-budgeting analysis of direct foreign investment. (pgs. 497–498)

SUMMARY: The complexities encountered in the direct foreign investment decision include the usual sources of risk—business and financial—faced by domestic investments, plus additional risks associated with political considerations and fluctuating exchange rates. Political risk is caused by differences in political climates, institutions, and processes between the home country and abroad. Under these conditions, the estimation of future cash flows and the choice of the proper discount rates are more complicated than for the domestic investment situation.

Review Questions

All Review Questions are available in [MyFinanceLab](#).

16-1. What additional factors are encountered in international as compared with domestic financial management? Discuss each briefly.

16-2. What different types of businesses operate in the international environment? Why are the techniques and strategies available to these firms different?

16-3. What is meant by arbitrage profits?

16-4. What are the markets and mechanics involved in generating simple arbitrage profits?

16-5. How do purchasing-power parity, interest rate parity, and the Fisher effect explain the relationships among the current spot rate, the future spot rate, and the forward rate?

16-6. What is meant by (a) exchange risk and (b) political risk?

16-7. In the New York exchange market, the forward rate for the Indian currency, the rupee, is not quoted. If you were exposed to exchange risk in rupees, how could you hedge your position?

16-8. What risks are associated with direct foreign investment? How do these risks differ from those encountered in domestic investment?

16-9. Are the inputs more complicated to a direct foreign investment than those to the domestic investment problem? If so, why?

Study Problems

All Study Problems are available in [MyFinanceLab](#).

The data for Study Problems 16-1 through 16-5 are given in the following table:



COUNTRY	CONTRACT	\$/FOREIGN CURRENCY
Canada—dollar	Spot	0.8437
	30-day	0.8417
	90-day	0.8395
Japan—yen	Spot	0.004684
	30-day	0.004717
	90-day	0.004781
Switzerland—franc	Spot	0.5139
	30-day	0.5169
	90-day	0.5315

16-1. (*Spot exchange rates*) An American business needs to pay (a) 10,000 Canadian dollars, (b) 2 million yen, and (c) 50,000 Swiss francs to businesses abroad. What are the dollar payments to the respective countries?



16-2. (*Spot exchange rates*) An American business pays \$10,000, \$15,000, and \$20,000 to suppliers in, respectively, Japan, Switzerland, and Canada. How much, in local currencies, do the suppliers receive?

16-3. (*Indirect quotes*) Compute the indirect quote for the spot and forward Canadian dollar, yen, and Swiss franc contracts.

16-4. (*Exchange rate arbitrage*) You own \$10,000. The dollar rate in Tokyo is 216.6743. The yen rate in New York is given in the preceding table. Are arbitrage profits possible? Set up an arbitrage scheme with your capital. What is the gain (loss) in dollars?

16-5. (*Cross rates*) Compute the Canadian dollar/yen and the yen/Swiss franc spot rate from the data in the preceding table.

16-6. (*Spot exchange rate*) If one euro buys 1.32 U.S. dollars, how many euros can you purchase for 3 U.S. dollars?

16-7. (*Spot exchange rate*) Suppose the exchange rate between U.S. dollars and Japanese yen is \$1 US = ¥79.1 JPY, and the exchange rate between the U.S. dollar and the British pound is \$1 US = £0.64 GBP. What is the cross rate of Japanese yen to British pounds? (In other words, how many yen are needed to purchase 1 pound?)

16-8. (*Spot exchange rate*) Suppose 1 year ago, Miller Company had inventory in Britain valued at 1.5 million Swiss francs. The exchange rate for dollars to Swiss francs was 1 franc = 1.15 dollars. Today, the exchange rate is 1 Swiss franc = 1.06 U.S. dollars. The inventory in Switzerland is still valued at 1.5 million francs. What is the U.S. dollar gain or loss in inventory value as a result of the change in exchange rates?

16-9. (*Cross rates*) This morning, you noticed the following information in your financial newspaper:

1 British pound = 103.25 yen (JPY)

1 U.S. dollar = 81.23 yen

1 U.S. dollar = 0.77 euros

Given this information, how many euros did the newspaper likely state could be converted from 1 British pound?



16-10. (*Interest rate parity*) Suppose 90-day investments in Europe have a 5 percent annualized return and a 1.25 percent quarterly (90-day) return. In the United States, 90-day investments of similar risk have a 7 percent annualized return and a 1.75 percent quarterly return. In today's 90-day forward market, 1 euro equals \$1.32. If interest rate parity holds, what is the spot exchange rate (\$/€)?



16-11. (*Purchasing-power parity*) A McDonald's Big Mac costs 2.44 yuan in China, but costs \$4.20 in the United States. Assuming that purchasing-power parity (PPP) holds, how many Chinese yuan are required to purchase 1 U.S. dollar?

Mini Case

This Mini Case is available in [MyFinanceLab](#).

For your job as the business reporter for a local newspaper, you are asked to put together a series of articles on multinational finance and the international currency markets for your readers. Much recent local press coverage has been given to losses in the foreign exchange markets by JGAR, a local firm that is the subsidiary of Daedlufetarg, a large German manufacturing firm.

Your editor would like you to address several specific questions dealing with multinational finance. Prepare a response to the following memorandum from your editor:

To: Business Reporter

From: Perry White, Editor, *Daily Planet*

Re: Upcoming Series on Multinational Finance

In your upcoming series on multinational finance, I would like to make sure you cover several specific points. Before you begin this assignment, I want to make sure we are all reading from the same script because accuracy has always been the cornerstone of the *Daily Planet*. I'd like a response to the following questions before we proceed:

- What new problems and factors are encountered in international, as opposed to domestic, financial management?
- What does the term *arbitrage profits* mean?
- What can a firm do to reduce exchange risk?
- What are the differences among a forward contract, a futures contract, and options?

Use the following data in your responses to the remaining questions:

Selling Quotes for Foreign Currencies in New York

COUNTRY—CURRENCY	CONTRACT	\$/FOREIGN
Canada—dollar	Spot	0.8450
	30-day	0.8415
	90-day	0.8390
Japan—yen	Spot	0.004700
	30-day	0.004750
	90-day	0.004820
Switzerland—franc	Spot	0.5150
	30-day	0.5182
	90-day	0.5328

- e. An American business needs to pay (a) 15,000 Canadian dollars, (b) 1.5 million yen, and (c) 55,000 Swiss francs to businesses abroad. What are the dollar payments to the respective countries?
- f. An American business pays \$20,000, \$5,000, and \$15,000 to suppliers in, respectively, Japan, Switzerland, and Canada. How much, in local currencies, do the suppliers receive?
- g. Compute the indirect quote for the spot and forward Canadian dollar contract.
- h. You own \$10,000. The dollar rate in Tokyo is 216.6752. The yen rate in New York is given in the preceding table. Are arbitrage profits possible? Set up an arbitrage scheme with your capital. What is the gain (loss) in dollars?
- i. Compute the Canadian dollar/yen spot rate from the data in the preceding table.

