chapter 26

Multinational Financial Management*

From the end of World War II until the 1970s, the United States dominated the world economy. However, that situation no longer exists. Raw materials, finished goods, services, and money flow freely across most national boundaries, as do innovative ideas and new technologies. World-class U.S. companies are making breakthroughs in foreign labs, obtaining capital from foreign investors, and putting foreign employees on the fast track to the top. Dozens of top U.S. manufacturers, including Dow Chemical, Colgate-Palmolive, Hewlett-Packard, and Xerox, sell more of their products outside the United States than they do at home. Service firms are not far behind, as Citigroup, Disney, McDonald's, and Time Warner all receive more than 20% of their revenues from foreign sales.

Successful global companies must conduct business in different economies, and they must be sensitive to the many subtleties of different cultures and political systems. Accordingly, they find it useful to blend into the foreign landscape to win product acceptance and avoid political problems.

At the same time, foreign-based multinationals are arriving on American shores in ever greater numbers. Sweden's ABB, the Netherlands' Philips, France's Thomson, and Japan's Toyota and Honda are all waging campaigns to be identified as American companies that employ Americans, transfer technology to America, and help the U.S. trade balance. Few Americans know or care that Thomson owns the RCA and General Electric names in consumer electronics, or that Philips owns Magnavox.

The emergence of "world companies" raises a host of questions for governments. For example, should domestic firms be favored, or does it make no difference what a company's nationality is as long as it provides domestic jobs? Should a company make an effort to keep jobs in its home country, or should it produce goods and services where costs are lowest? What nation controls the technology developed by a multinational corporation, particularly if the technology can be used in military applications? Must a multinational company adhere to rules imposed in its home country with respect to its operations outside the home country? Keep these questions in mind as you read this chapter. When you finish it, you should have a better appreciation of both the problems facing governments and the difficult but profitable opportunities facing managers of multinational companies.

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e-resource

The textbook's Web site contains an *Excel* file that will guide you through the chapter's calculations. The file for this chapter is ***FM12 Ch 26 Tool Kit.xls,*** and we encourage you to open the file and follow along as you read the chapter.

Managers of multinational companies must deal with a wide range of issues that are not present when a company operates in a single country. In this chapter, we highlight the key differences between multinational and domestic corporations, and we discuss the effects these differences have on the financial management of multinational businesses.

26.1 Multinational, or Global, Corporations

The term **multinational,** or **global, corporation** is used to describe a firm that operates in an integrated fashion in a number of countries. During the past 20 years, a new and fundamentally different form of international commercial activity has developed, and this has greatly increased worldwide economic and political interdependence. Rather than merely buying resources from and selling goods to foreign nations, multinational firms now make direct investments in fully integrated operations, from extraction of raw materials, through the manufacturing process, to distribution to consumers throughout the world. Today, multinational corporate networks control a large and growing share of the world's technological, marketing, and productive resources.

Companies, both U.S. and foreign, "go global" for six primary reasons:

1. *To broaden their markets*. After a company has saturated its home market, growth opportunities are often better in foreign markets. Thus, such home-grown firms as Coca-Cola and McDonald's are aggressively expanding into overseas markets, and foreign firms such as Sony and Toshiba now dominate the U.S. consumer electronics market. Also, as products become more complex, and development becomes more expensive, it is necessary to sell more units to cover overhead costs, so larger markets are critical. Thus, movie companies have "gone global" to get the volume necessary to support pictures such as *Lord of the Rings*.
2. *To seek raw materials*. Many U.S. oil companies, such as ExxonMobil, have major subsidiaries around the world to ensure access to the basic resources needed to sustain the companies' primary business lines.
3. *To seek new technology*. No single nation holds a commanding advantage in all technologies, so companies are scouring the globe for leading scientific and design ideas. For example, Xerox has introduced more than 80 different office copiers in the United States that were engineered and built by its Japanese joint venture, Fuji Xerox. Similarly, versions of the superconcentrated detergent that Procter & Gamble first formulated in Japan in response to a rival's product are now being marketed in Europe and the United States.
4. *To seek production efficiency*. Companies in high-cost countries are shifting production to low-cost regions. For example, GE has production and assembly plants in Mexico, South Korea, and Singapore, and Japanese manufacturers are shifting some of their production to lower-cost countries in the Pacific Rim. BMW, in response to high production costs in Germany, has built assembly plants in the United States. The ability to shift production from country to country has important implications for labor costs in all countries. For example, when Xerox threatened to move its copier rebuilding work to Mexico, its union in Rochester agreed to work rule changes and productivity improvements that kept the operation in the United States. Some multinational companies make decisions almost daily on where to shift production. When Dow Chemical saw European demand for a certain solvent declining, the company scaled

back production at a German plant and shifted its production to another chemical that had previously been imported from the United States. Relying on complex computer models for making such decisions, Dow runs its plants at peak capacity and thus keeps capital costs down.

5. *To avoid political and regulatory hurdles*. The primary reason Japanese auto companies moved production to the United States was to get around U.S. import quotas. Now Honda, Nissan, Toyota, Mazda, and Mitsubishi are all assembling vehicles in the United States. One of the factors that prompted U.S. pharmaceutical maker SmithKline and Britain's Beecham to merge was that they wanted to avoid licensing and regulatory delays in their largest markets, Western Europe and the United States. Now SmithKline Beecham can identify itself as an inside player in both Europe and the United States. Similarly, when Germany's BASF launched biotechnology research at home, it confronted legal and political challenges from the environmentally conscious Green movement. In response, BASF shifted its cancer and immune system research to two laboratories in the Boston suburbs. This location is attractive not only because of its large number of engineers and scientists but also because the Boston area has resolved controversies involving safety, animal rights, and the environment. "We decided it would be better to have the laboratories located where we have fewer insecurities about what will happen in the future," said Rolf-Dieter Acker, BASF's director of biotechnology research.
6. *To diversify*. By establishing worldwide production facilities and markets, firms can cushion the impact of adverse economic trends in any single country. For example, General Motors softened the blow of poor sales in the United States during a recent recession with strong sales by its European subsidiaries. In general, geographic diversification works because the economic ups and downs of different countries are not perfectly correlated. Therefore, companies investing overseas benefit from diversification in the same way that individuals benefit from investing in a broad portfolio of stocks.

Interesting reports about the effect of trade on the U.S. economy can be found on the United States Trade Representative's home page at **http://www.ustr.gov.**

Over the past 10 to 15 years, there has been an increasing amount of investment in the United States by foreign corporations and in foreign nations by U.S. corporations. This trend is important because of its implications for eroding the traditional doctrine of independence and self-reliance that has been a hallmark of U.S. policy. Just as U.S. corporations with extensive overseas operations are said to use their economic power to exert substantial economic and political influence over host governments in many parts of the world, it is feared that foreign corporations are gaining similar sway over U.S. policy. These developments suggest an increasing degree of mutual influence and interdependence among business enterprises and nations, to which the United States is not immune.

SELF-TEST

What is a multinational corporation?
Why do companies "go global"?

26.2 Multinational versus Domestic Financial Management

In theory, the concepts and procedures discussed in earlier chapters are valid for both domestic and multinational operations. However, six major factors distinguish

financial management in firms operating entirely within a single country from that of firms operating globally:

1. *Different currency denominations*. Cash flows in various parts of a multinational corporate system will be denominated in different currencies. Hence, an analysis of exchange rates must be included in all financial analyses.
2. *Economic and legal ramifications*. Each country has its own unique economic and legal systems, and these differences can cause significant problems when a corporation tries to coordinate and control its worldwide operations. For example, differences in tax laws among countries can cause a given economic transaction to have strikingly different after-tax consequences, depending on where the transaction occurs. Similarly, differences in legal systems of host nations, such as the Common Law of Great Britain versus the French Civil Law, complicate matters ranging from the simple recording of business transactions to the role played by the judiciary in resolving conflicts. Such differences can restrict multinational corporations' flexibility in deploying resources and can even make procedures that are required in one part of the company illegal in another part. These differences also make it difficult for executives trained in one country to move easily to another.
3. *Language differences*. The ability to communicate is critical in all business transactions, and here U.S. citizens are often at a disadvantage because we are generally fluent only in English, while European and Japanese businesspeople are usually fluent in several languages, including English. Thus, they can penetrate our markets more easily than we can penetrate theirs.
4. *Cultural differences*. Even within geographic regions that are considered relatively homogeneous, different countries have unique cultural heritages that shape values and influence the conduct of business. Multinational corporations find that matters such as defining the appropriate goals of the firm, attitudes toward risk, dealings with employees, and the ability to curtail unprofitable operations vary dramatically from one country to the next.
5. *Role of governments*. Most financial models assume the existence of a competitive marketplace in which the terms of trade are determined by the participants. The government, through its power to establish basic ground rules, is involved in the process, but its role is minimal. Thus, the market provides the primary barometer of success, and it gives the best clues about what must be done to remain competitive. This view of the process is reasonably correct for the United States and Western Europe, but it does not accurately describe the situation in most of the world. Frequently, the terms under which companies compete, the actions that must be taken or avoided, and the terms of trade on various transactions are determined not in the marketplace but by direct negotiation between host governments and multinational corporations. Such negotiation is essentially a political process, and it must be treated as such. Thus, our traditional financial models have to be recast to include political and other noneconomic aspects of the decision process.
6. *Political risk*. A nation is free to place constraints on the transfer of corporate resources and even to expropriate, without compensation, assets within its boundaries. This is political risk, and it tends to be largely a given rather than a variable that can be changed by negotiation. Political risk varies from country to country, and it must be addressed explicitly in any financial analysis. Another aspect of political risk is terrorism against U.S. firms or executives. For example, U.S. and Japanese executives have been kidnapped and held for ransom—with some killed to prove that the kidnappers were serious—in several South American countries.

These six factors complicate financial management, and they increase the risks faced by multinational firms. However, the prospects for high returns, diversification benefits, and other factors make it worthwhile for firms to accept these risks and learn how to manage them.

SELF-TEST Identify and briefly discuss six major factors that complicate financial management in multinational firms.

26.3 Exchange Rates

An **exchange rate** specifies the number of units of a given currency that can be purchased with one unit of another currency. Exchange rates appear daily in the financial sections of newspapers, such as *The Wall Street Journal*, and at financial Web sites, such as **http://www.bloomberg.com.** The values shown in Column 1 of Table 26-1 are the number of U.S. dollars required to purchase one unit of a foreign currency; this is called a **direct quotation.** Direct quotations have a dollar sign in their quotation and state the number of dollars per foreign currency unit, such as dollars per euro. Thus, the direct U.S. dollar quotation for the euro is $1.2841, because 1 euro could be bought for 1.2841 dollars.

The exchange rates given in Column 2 represent the number of units of a foreign currency that can be purchased for one U.S. dollar; these are called **indirect quotations.** Indirect quotations often begin with the foreign currency's equivalent to the dollar sign and express the foreign currency per dollar, such as euros per dollar. Thus, the indirect quotation for the euro is €0.7788. (The "€" stands for *euro*, and it is analogous to the symbol "$.")

Normal practice in currency trading centers is to use the indirect quotations (Column 2) for all currencies other than British pounds and euros, for which the direct quotations are given. Thus we speak of the pound as "selling at 1.9069 dollars, or at $1.9069," and the euro as "selling at $1.2841." For all other currencies,

Table 26-1 Selected Exchange Rates

	Direct Quotation: U.S. Dollars Required to Buy One Unit of Foreign Currency (1)	Indirect Quotation: Number of Units of Foreign Currency per U.S. Dollar (2)
Canadian dollar	0.8930	1.1198
Japanese yen	0.0087	115.1145
Mexican peso	0.0919	10.8778
Swiss franc	0.8157	1.2259
U.K. (British) pound	1.9069	0.5244
Euro	1.2841	0.7788

Note: The financial press usually quotes British pounds and euros as direct quotations, so Column 2 equals 1.0 divided by Column 1 for these currencies. The financial press usually quotes all other currencies as indirect quotations, so Column 1 equals 1.0 divided by Column 2 for these currencies.

Source: The Wall Street Journal, **http://online.wsj.com;** quotes for August 7, 2006.

The Bloomberg World Currency Values site provides up-to-the-minute foreign currency values versus the U.S. dollar, as well as a cross-currency table similar to that found in *The Wall Street Journal* for the world's major currencies. The site can be accessed at **http://www.bloomberg.com/markets/currencies/fxc.html.**

the normal convention is to use indirect quotations. For example, for the Japanese yen, we would quote the dollars as "being at ¥115.1145," where the "¥" stands for *yen* and is analogous to the symbol "$." This convention eliminates confusion when comparing quotations from one trading center—say, New York—with those from another—say, London or Zurich.

We can use the data in Table 26-1 to show how to work with exchange rates. Suppose a tourist flies from New York to London, then to Paris, and then on to Geneva. She then flies to Montreal, and finally back to New York. Her tour includes lodging, food, and transportation, but she must pay for any other expenses. When she arrives at London's Heathrow Airport, she goes to the bank to check the foreign exchange listings. The rate she observes for U.S. dollars is $1.9069; this means that £1 will cost $1.9069. Assume that she exchanges $3,000:

$$\$3{,}000 = \frac{\$3000}{\$1.9069 \text{ per pound}} = £1{,}573.23.$$

She then enjoys a week's vacation in London, ending with £1,000.

After taking a train under the Channel to France, she realizes that she needs to exchange her 1,000 remaining pounds for euros. However, what she sees on the board is the direct quotation for dollars per pound and the direct quotation for dollars per euro. The exchange rate between any two currencies other than dollars is called a **cross rate.** Cross rates are actually calculated on the basis of various currencies relative to the U.S. dollar. For example, the cross rate between British pounds and euros is computed as follows:

$$\text{Cross rate of euros per pound} = \frac{\$1.9069 \text{ per pound}}{\$1.2841 \text{ per euro}} = 1.4850 \text{ euros per pound.}$$

Therefore, for every British pound she would receive 1.4850 euros, so she would receive 1.4850(1,000) = 1,485.00 euros.

She has 800 euros remaining when she finishes touring in France and arrives in Geneva. She again needs to determine a cross rate, this time between euros and Swiss francs. The quotes she sees, as shown in Table 26-1, are a direct quote for euros ($1.2841 per euro) and an indirect quote for Swiss francs (SFr 1.2259 per dollar). To find the cross rate for Swiss francs per euro, she makes the following calculation:

$$\begin{aligned}\text{Cross rate of Swiss francs per euro} &= \left(\frac{\text{Swiss francs}}{\text{Dollar}}\right)\left(\frac{\text{Dollars}}{\text{Euro}}\right)\\ &= (\text{SFr } 1.2259 \text{ per dollar})(\$1.2841 \text{ per euro})\\ &= 1.5742 \text{ Swiss francs per euro.}\end{aligned}$$

For a nice currency calculator to determine the exchange rate between any two currencies, see **http://finance.yahoo.com/currency.**

Therefore, for every euro she would receive 1.5742 Swiss francs, so she would receive 1.5742(800) = 1,259.36 Swiss francs.

She has 500 Swiss francs remaining when she leaves Geneva and arrives in Montreal. She again needs to determine a cross rate, this time between Swiss francs and Canadian dollars. The quotes she sees, as shown in Table 26-1, are an

indirect quote for Swiss francs (SFr 1.2259 per dollar) and an indirect quote for Canadian dollars (1.1198 Canadian dollars per U.S. dollar). To find the cross rate for Canadian dollars per Swiss franc, she makes the following calculation:

$$\begin{aligned}\text{Cross rate of Canadian dollars per Swiss franc} &= \frac{\left(\dfrac{\text{Canadian dollars}}{\text{U.S. dollar}}\right)}{\left(\dfrac{\text{Swiss francs}}{\text{U.S. dollar}}\right)} \\ &= \frac{(1.1198 \text{ Canadian dollars per U.S. dollar})}{(\text{SFr } 1.2259 \text{ per U.S. dollar})} \\ &= 0.9135 \text{ Canadian dollars per Swiss franc.}\end{aligned}$$

Therefore, she would receive 0.9135(500) = 456.75 Canadian dollars.

After leaving Montreal and arriving at New York, she has 100 Canadian dollars remaining. She sees the indirect quote for Canadian dollars and converts the 100 Canadian dollars to U.S. dollars as follows:

$$100 \text{ Canadian dollars} = \frac{100 \text{ Canadian dollars}}{1.1198 \text{ Canadian dollars per U.S. dollar}} = \$89.30.$$

In this example, we made three assumptions. First, we assumed that our traveler had to calculate all of the cross rates. For retail transactions, it is customary to display the cross rates directly instead of a series of dollar rates. Second, we assumed that exchange rates remain constant over time. Actually, exchange rates vary every day, often dramatically. We will have more to say about exchange rate fluctuations in the next section. Finally, we assumed that there were no transactions costs involved in exchanging currencies. In reality, small retail exchange transactions such as those in our example usually involve fixed and/or sliding scale fees that can easily consume 5% or more of the transaction amount. However, credit card purchases minimize these fees.

Major business publications, such as *The Wall Street Journal*, and Web sites, such as **http://www.bloomberg.com,** regularly report cross rates among key currencies. A set of cross rates is given in Table 26-2. When examining the table, note the following points:

1. Column 1 gives indirect quotes for dollars, that is, units of a foreign currency that can be bought with one U.S. dollar. Examples: $1 will buy 0.7788 euro or 1.2259 Swiss francs. Note the consistency with Table 26-1, Column 2.
2. Other columns show number of units of other currencies that can be bought with 1 pound, 1 Swiss franc, etc. For example, the euro column shows that 1 euro will buy 1.4379 Canadian dollars, 147.8185 Japanese yen, or 1.2841 U.S. dollars.
3. The rows show direct quotes, that is, number of units of the currency of the country listed in the left column required to buy one unit of the currency listed in the top row. The bottom row is particularly important for U.S. companies, as it shows the direct quotes for the U.S. dollar. This row is consistent with Column 1 of Table 26-1.
4. Note that the values on the bottom row of Table 26-2 are reciprocals of the corresponding values in the first column. For example, the U.K. row in the first

Table 26-2 Key Currency Cross Rates

	Dollar	Euro	Pound	SFranc	Peso	Yen	CdnDlr
Canada	1.1198	1.4379	2.1353	0.9135	0.1029	0.0097	—
Japan	115.1145	147.8185	219.5118	93.9020	10.5825	—	102.7992
Mexico	10.8778	13.9682	20.7429	8.8733	—	0.0945	9.7141
Switzerland	1.2259	1.5742	2.3377	—	0.1127	0.0106	1.0947
United Kingdom	0.5244	0.6734	—	0.4278	0.0482	0.0046	0.4683
Euro	0.7788	—	1.4850	0.6353	0.0716	0.0068	0.6954
United States	—	1.2841	1.9069	0.8157	0.0919	0.0087	0.8930

Source: Derived from Table 26-1; quotes for August 7, 2006.

column shows 0.5244 pound per dollar, and the pound column in the bottom row shows 1/0.5244 = 1.9069 dollars per pound.

5. Now notice, by reading down the euro column, that 1 euro is worth 1.5742 Swiss francs. This is the same cross rate that we calculated for the U.S. tourist in our example.

The tie-in with the dollar ensures that all currencies are related to one another in a consistent manner—if this consistency did not exist, currency traders could profit by buying undervalued and selling overvalued currencies. This process, known as *arbitrage*, works to bring about an equilibrium wherein the same relationship described earlier exists. Currency traders are constantly operating in the market, seeking small inconsistencies from which they can profit. The traders' existence enables the rest of us to assume that currency markets are in equilibrium and that, at any point in time, cross rates are all internally consistent.[1]

SELF-TEST

What is an exchange rate?

Explain the difference between direct and indirect quotations.

What is a cross rate?

Assume that the indirect quote is for 10.0 Mexican pesos per U.S. dollar. What is the direct quote for dollars per peso? (0.10 dollar/peso)

Assume that the indirect quote is for 100 Japanese yen per U.S. dollar and that the direct quote is for 1.25 U.S. dollars per euro. What is the yen per euro exchange rate? (143.75 yen per euro)

26.4 Exchange Rates and International Trade

Just as the demand for consumer goods such as Tommy Hilfiger clothing and Nike shoes changes over time, so does the demand for currency. One factor affecting currency demand is the balance of trade between two countries. For example,

[1]For more discussion of exchange rates, see Jongmoo Jay Choi and Anita Mehra Prasad, "Exchange Risk Sensitivity and Its Determinants: A Firm and Industry Analysis of U.S. Multinationals," *Financial Management,* Autumn 1995, pp. 77–88; Jerry A. Hammer, "Hedging Performance and Hedging Objectives: Tests of New Performance Measures in the Foreign Currency Market," *Journal of Financial Research,* Winter 1990, pp. 307–323; and William C. Hunter and Stephen G. Timme, "A Stochastic Dominance Approach to Evaluating Foreign Exchange Hedging Strategies," *Financial Management,* Autumn 1992, pp. 104–112.

U.S. importers must buy yen to pay for Japanese goods, whereas Japanese importers must buy U.S. dollars to pay for U.S. goods. If U.S. imports from Japan were to exceed U.S. exports to Japan, then the U.S. would have a **trade deficit** with Japan, and there would be a greater demand for yen than for dollars. Capital movements also affect currency demand. For example, suppose interest rates in the United States were higher than those in Japan. To take advantage of high U.S. interest rates, Japanese banks, corporations, and sophisticated individuals would buy dollars with yen and then use those dollars to purchase high-yielding U.S. securities. This would create greater demand for dollars than for yen.

Without any government intervention, the relative prices of yen and dollars would fluctuate in response to changes in supply and demand in much the same way that prices of consumer goods fluctuate. For example, if U.S. consumers were to increase their demand for Japanese electronic products, then the accompanying increase in demand for the yen would cause its value to increase relative to the dollar. In this situation, the strong yen would be due to fundamental economic forces.

However, governments can and do intervene. A country's central bank can artificially prop up its currency by using its reserves of gold or foreign currencies to purchase its own currency in the open market. This creates artificial demand for its own currency, thus causing its value to be artificially high. A central bank can also keep its currency at an artificially low value by selling its own currency in the open markets. This increases the currency's supply, which reduces its price.

Why might an artificially low currency be a problem? After all, a cheap currency makes it less expensive for other nations to purchase the country's goods, which creates jobs in the exporting country. However, an artificially low currency value raises the cost of imports, which increases inflation. In addition, high import prices allow competing domestic manufacturers to raise their prices as well, further boosting inflation. The government intervention that causes the artificially low value also contributes to inflation: When a government creates currency to sell in the open markets, this increases the money supply, and, all else held constant, an increasing money supply leads to still more inflation. Thus, artificially holding down the value of a currency stimulates exports but at the expense of potentially overheating and inflating the economy. Also, other countries—whose economies are being weakened because their manufacturers cannot compete against the artificially low prices—may retaliate and impose tariffs or other restrictions on the country that is holding its currency value down.

For example, China had for many years artificially held down the value of the yuan (also called the rinminbi). This helped make China the world's largest exporter and greatly stimulated its economy. However, by 2004 the Chinese economy was growing at an unsustainably high rate, and inflation was rising rapidly. The United States and other nations began urging the Chinese government to allow the yuan to rise, which would help their economies by slowing Chinese exports and stimulating their own exports to China. On July 21, 2005, the Chinese government suddenly announced that it was changing the exchange rate to allow the yuan's value to rise by 2.1%.

A currency that is artificially high has the opposite effects: Inflation will be held down, and citizens can purchase imported goods at low domestic prices, but exporting industries are hurt, as are domestic industries that compete with the cheap imports. Because there is relatively little external demand for the currency, the government will have to create demand by purchasing its own currency, paying with either gold or foreign currencies held by its central bank. Over time, supporting an inflated currency can deplete the gold and foreign currency reserves, making it impossible to continue propping up the currency.

The following sections describe ways that governments handle changes in currency demands.

SELF-TEST

What is the effect on a country's economy caused by an artificially low exchange rate? By an artificially high exchange rate?

26.5 The International Monetary System and Exchange Rate Policies

The International Monetary Fund reports a full listing of exchange rate arrangements. See **http://www.imf.org/external/np/mfd/er/index.asp.** The IMF also publishes a more detailed listing in its *Annual Report on Exchange Arrangements and Exchange Restrictions.* For another listing of world currencies, see **http://fx.sauder.ubc.ca/currency_table.html.**

Every nation has a monetary system and a monetary authority. In the United States, the Federal Reserve is our monetary authority, and its task is to hold down inflation while promoting economic growth and raising our national standard of living. Moreover, if countries are to trade with one another, we must have some sort of system designed to facilitate payments between nations. The international monetary system is the framework within which exchange rates are determined. As we describe below, there are several different policies used by various countries to determine exchange rates.[2]

A Short History Lesson: The Bretton Woods Fixed Exchange Rate System

From the end of World War II until August 1971, most of the industrialized world operated under the Bretton Woods **fixed exchange rate system** administered by the International Monetary Fund (IMF). Under this system, the U.S. dollar was linked to gold (at $35 per ounce), and other currencies were then tied to the dollar. The United States took actions to keep the price of gold at $35 per ounce, and central banks acted to keep exchange rates between other currencies and the dollar within narrow limits. For example, when the demand for pounds was falling, the Bank of England would step in and buy pounds to push up their price, offering gold or foreign currencies in exchange for pounds. Conversely, when the demand for pounds was too high, the Bank of England would sell pounds for dollars or gold. The Federal Reserve in the United States performed the same functions, and central banks of other countries operated similarly. These actions artificially matched supply and demand, keeping exchange rates stable, but they didn't address the underlying imbalance. For example, if the high demand for pounds occurred because British productivity was rising and British goods were improving in quality, then the underlying demand for pounds would continue in spite of central bank intervention. In such a situation the Bank of England would find it necessary to continually sell pounds indefinitely. If the central bank stopped selling pounds, their value would rise; that is, the pound would strengthen and exceed the agreed-upon limits.

Many countries found it difficult and economically painful to maintain the fixed exchange rates required by Bretton Woods. This system began to crumble in August 1971, and it was abandoned completely by the end of 1973. The following sections describe several modern exchange rate systems.

[2]For a comprehensive history of the international monetary system and details of how it has evolved, consult one of the many economics books on the subject, including Robert Carbaugh, *International Economics* (Mason, OH: South-Western, 2004); Mordechai Kreinin, *International Economics: A Policy Approach*, 9th edition (Mason, OH: South-Western, 2002); Jeff Madura, *International Financial Management* (Eagan, MN: Thomson/South-Western, 2006); and Joseph P. Daniels and David D. Van Hoose, *International Monetary and Financial Economics*, 2nd edition (Mason, OH: South-Western, 2002).

Freely, or Independently, Floating Rates

In the early 1970s, the U.S. dollar was cut loose from the gold standard and, in effect, allowed to "float" in response to supply and demand caused by international trade and international investing activities. According to the International Monetary Fund, about 42 countries currently operate under a system of **floating exchange rates,** whereby currency prices are allowed to seek their own levels, with only modest central bank intervention to smooth out extreme exchange rate fluctuations. According to the International Monetary Fund, about 31 currencies have freely, or independently, floating exchange rates, including the dollar, euro, pound, and yen.

Currency Appreciation and Depreciation Suppose the dollar cost of a pound is $1.9069 as shown in Table 26-1. If there were increased demand for pounds caused by a U.S. trade deficit with Great Britain, then the price of pounds might increase to $2. In this situation, the pound is said to be *appreciating*, because a pound would now buy more dollars. In other words, a pound would now be worth more than it was. This is called **currency appreciation.** Conversely, the dollar would be *depreciating*, because the dollar now buys fewer pounds (a dollar would previously buy 1/1.9069 = 0.5244 pound, but afterward it would buy only 1/2 = 0.5 pound). This is called **currency depreciation.** Notice that the more costly pound would make British imports more expensive to U.S. consumers, which would reduce imports—and, consequently, the demand for pounds—until the exchange rate reached equilibrium.

Exchange Rate Risk Exchange rate fluctuations can have a profound effect on profits. For example, in 1985 it cost Honda Motors 2,380,000 yen to build a particular model in Japan and ship it to the United States. The model carried a U.S. sticker price of $12,000. Because the $12,000 sales price was the equivalent of (238 yen per dollar)($12,000) = 2,856,000 yen, which was 20% above the 2,380,000 yen cost, the automaker had built a 20% markup into the U.S. sales price. However, three years later the dollar had depreciated to 128 yen. Now if the car still sold for $12,000, the yen return to Honda would be only (128 yen per dollar)($12,000) = 1,536,000 yen, and the automaker would be losing about 35% on each auto sold. Therefore, the depreciation of the dollar against the yen turned a healthy profit into a huge loss. In fact, for Honda to maintain its 20% markup, the model would have had to sell in the United States for 2,856,000 yen/(128 yen per dollar) = $22,312.50. This situation, which grew even worse, led Honda to build its most popular model, the Accord, in Marysville, Ohio.

The inherent volatility of exchange rates under a floating system increases the uncertainty of the cash flows for a multinational corporation. Because its cash flows are generated in many parts of the world, they are denominated in many different currencies. When exchange rates change, the dollar-equivalent value of the company's consolidated cash flows also fluctuates. For example, Toyota estimates that each 1 yen drop in the dollar reduces the company's annual net income by about 10 billion yen. This is known as **exchange rate risk,** and it is a major factor differentiating a global company from a purely domestic one.

Managed Floating Rates

In a **managed floating rate** system, there is significant government intervention to manage the exchange rate by manipulating the currency's supply and demand. The government rarely reveals its target exchange rate levels if it uses a managed-float

regime because this would make it too easy for currency speculators to profit. According to the IMF, about 53 countries have a managed floating rate system, including Colombia, India, Singapore, and Burundi.

Pegged Exchange Rates

In a **pegged exchange rates** system, a country locks, or "pegs," its currency's exchange rate to another currency or basket of currencies. It is common for a country with a pegged exchange rate to allow its currency to vary within specified limits or bands (often set at ±1% of the target rate) before the country intervenes to force the currency back within the limits. Examples in which a currency is pegged to another country's currency include Bhutan's ngultrum, which is pegged to the Indian rupee; the Falkland Islands' pound, which is pegged to the British pound; and Barbados's dollar, which is pegged to the U.S. dollar. An example of a currency being pegged to a basket is China, where the yuan is no longer just pegged to the U.S. dollar but rather to a basket of currencies. Interestingly, the Chinese government will not reveal the currencies that make up the basket, but the U.S. dollar is still likely an important component.

Currency Devaluation and Revaluation As indicated earlier, countries with pegged exchange rates establish a fixed exchange rate with some other major currency or basket of currencies. When a government lowers the target fixed exchange rate, this is called **devaluation,** and when it increases the rate it is called **revaluation.** For example, from 1991 through early 2002, Argentina had a fixed exchange rate of 1 peso per U.S. dollar. Imports were high, exports were low, and the Argentinean government had to purchase huge amounts of pesos to maintain that artificially high exchange rate. The government borrowed heavily to finance these purchases, and eventually it was unable to continue supporting the peso. (Indeed, the government defaulted on some of its obligations.) As a result, the government had to devalue the peso to 1.4 pesos per dollar in early 2002. Notice that this made the peso weaker: Before the devaluation, 1 peso would buy 1 dollar, but afterward 1 peso would buy only 71 cents (1.4 pesos per dollar = 1/1.4 = 0.71 dollar per peso). The devaluation lowered the prices of Argentine goods on the world market, which helped its exporters, but prices rose for imported goods, including oil. The initial shock to the Argentine economy was severe, as employment fell in those industries that were not exporters. The problem was exacerbated because many Argentine companies and individuals had borrowed using debt denominated in dollars, which instantly cost much more to service. However, the economy gradually improved, with increased exports, tourism, and employment rates. Still, the initial pain caused by devaluation helps explain why many countries with fixed exchange rates tend to postpone needed measures until economic pressures build to explosive proportions.

Due to the expense of maintaining an artificially high exchange rate and the pain of large devaluations, many countries that once had pegged exchange rates now allow their currencies to float. For example, Mexico had a pegged exchange rate prior to 1994, but it depleted its foreign reserves trying to support the peso and was forced to devalue the peso in 1994. Mexico's currency now floats, as does that of Argentina.

Convertible versus Nonconvertible Securities A pegged exchange rate per se isn't necessarily a deterrent to direct investment in the country by foreign corporations, as long as the local government's central bank supports the currency and devaluations

are unlikely. This was generally the case in the Bretton Woods era, and so those currencies were considered to be **convertible** because the nation that issued them allowed them to be traded in the currency markets and was willing to redeem them at market rates. This is true today for all floating-rate currencies, which are also called **hard currencies** because of their convertibility. Some pegged currencies are also at least partially convertible, because their central banks will redeem them at market rates under specified conditions.

However, some countries set the exchange rate but do not allow their currencies to be traded on world markets. For example, the Chinese yuan is allowed to float in a very narrow band against a basket of securities. However, the yuan can be legally used and exchanged only within China. Furthermore, the Chinese government imposes restrictions on both residents and nonresidents from freely converting their holdings of yuans into another currency. Thus, the yuan is a **nonconvertible currency,** also called a **soft currency.** When official exchange rates differ from "market rates" or when there are restrictions on convertibility, a black market will often arise. For example, in mid-2005 Venezuela's official exchange rate was about 2,150 bolivars per dollar, but black market prices were estimated to be around 2,700.

A nonconvertible currency creates problems for foreign companies looking to make direct investments. Consider the situation faced by Pizza Hut when it wanted to open a chain of restaurants in the former Soviet Union. The Russian ruble was not convertible, so Pizza Hut could not take the profits from its restaurants out of the Soviet Union in the form of dollars. There was no mechanism to exchange the rubles it earned in Russia for dollars; therefore an investment in the Soviet Union was essentially worthless to a U.S. company. However, Pizza Hut arranged to use the ruble profit from the restaurants to buy Russian vodka, which it then shipped to the United States and sold for dollars. Pizza Hut managed to find a solution, but lack of convertibility significantly inhibits the ability of a country to attract foreign investment.

No Local Currency

A few countries don't have their own separate legal tender, but instead use the currency of another nation. For example, Ecuador has used the U.S. dollar since September 2000. Other countries belong to a monetary union, such as the 12 European Monetary Union nations whose currency is the euro, which is allowed to float. In contrast, member nations of the Eastern Caribbean Currency Union, the West African Economic and Monetary Union (WAEMU), and the Central African Economic and Monetary Community (CAEMC) use their respective union's currency, which is itself pegged to some other currency. For example, the Eastern Caribbean dollar is pegged to the U.S. dollar, and the CFA franc (used by both the WAEMU and CAEMC) is pegged to the euro.[3]

SELF-TEST

What is the difference between a fixed exchange rate system and a floating rate system?
What are pegged exchange rates?
What does it mean to say that the dollar is depreciating with respect to the euro?
What is a convertible currency?

[3]A few countries, such as Bosnia and Herzegovina, have currency board arrangements. Under this system, a country technically has its own currency but commits to exchange it for a specified foreign money unit at a fixed exchange rate. This requires it to impose domestic currency restrictions unless it has the foreign currency reserves to cover requested exchanges.

26.6 Trading in Foreign Exchange

Importers, exporters, tourists, and governments buy and sell currencies in the foreign exchange market. For example, when a U.S. trader imports automobiles from Japan, payment will probably be made in Japanese yen. The importer buys yen (through its bank) in the foreign exchange market, much as one buys common stocks on the New York Stock Exchange or pork bellies on the Chicago Mercantile Exchange. However, whereas stock and commodity exchanges have organized trading floors, the foreign exchange market consists of a network of brokers and banks based in New York, London, Tokyo, and other financial centers. Most buy and sell orders are conducted by computer and telephone.

Spot Rates and Forward Rates

Currency futures prices are available from the Chicago Mercantile Exchange (CME) on their Web site at **http://www.cme.com.** Currency spot and forward rates are available from the Bank of Montreal Financial Group at **http://www4.bmo.com.**

The exchange rates shown earlier in Tables 26-1 and 26-2 are known as **spot rates,** which means the rate paid for delivery of the currency "on the spot" or, in reality, no more than two days after the day of the trade. For most of the world's major currencies, it is also possible to buy (or sell) currencies for delivery at some agreed-upon future date, usually 30, 90, or 180 days from the day the transaction is negotiated. This rate is known as the **forward exchange rate.**

For example, suppose a U.S. firm must pay 500 million yen to a Japanese firm in 30 days, and the current spot rate is 115.1145 yen per dollar. Unless spot rates change, the U.S. firm will pay the Japanese firm the equivalent of $4.344 million (500 million yen divided by 115.1145 yen per dollar) in 30 days. But if the spot rate falls to 100 yen per dollar, for example, the U.S. firm will have to pay the equivalent of $5 million. The treasurer of the U.S. firm can avoid this risk by entering into a 30-day forward exchange contract. This contract promises delivery of yen to the U.S. firm in 30 days at a guaranteed price of 115.1145 yen per dollar. No cash changes hands at the time the treasurer signs the forward contract, although the U.S. firm might have to put some collateral down as a guarantee against default. Because the firm can use an interest-bearing instrument for the collateral, though, this requirement is not costly. The counterparty to the forward contract must deliver the yen to the U.S. firm in 30 days, and the U.S. firm is obligated to purchase the 500 million yen at the previously agreed-upon rate of 115.1145 yen per dollar. Therefore, the treasurer of the U.S. firm is able to lock in a payment equivalent to $4.344 million, no matter what happens to spot rates. This technique is called "hedging."

Forward rates for 30-, 90-, and 180-day delivery, along with the current spot rates for some commonly traded currencies, are given in Table 26-3. If you can obtain *more* of the foreign currency for a dollar in the forward than in the spot market, the forward currency is less valuable than the spot currency, and the forward currency is said to be selling at a **discount.** In other words, if the foreign currency is expected to depreciate (based on the forward rates), then the spot rate is at a discount. Conversely, since a dollar would buy *fewer* yen and francs in the forward than in the spot market, the forward yen and francs are selling at a **premium.**

SELF-TEST

Differentiate between spot and forward exchange rates.
Explain what it means for a forward currency to sell at a discount and at a premium.

Table 26-3

Selected Spot and Forward Exchange Rates; Indirect Quotation: Number of Units of Foreign Currency per U.S. Dollar

		Forward Rates[a]			
	Spot Rate	30 days	90 days	180 days	Forward Rate at a Premium or Discount[b]
Britain (Pound)	0.5244	0.5242	0.5237	0.5231	Premium
Canada (Dollar)	1.1198	1.1188	1.1166	1.1135	Premium
Japan (Yen)	115.1145	114.5869	113.6493	112.2334	Premium
Switzerland (Franc)	1.2259	1.2214	1.2140	1.2029	Premium

Notes:
[a]These are representative quotes as provided by a sample of New York banks. Forward rates for other currencies and for other lengths of time can often be negotiated.
[b]When it takes more units of a foreign currency to buy one dollar in the future, the value of the foreign currency is less in the forward market than in the spot market; hence the forward rate is at a *discount* to the spot rate.

Source: The Wall Street Journal, **http://online.wsj.com;** quotes for August 7, 2006.

26.7 Interest Rate Parity

Market forces determine whether a currency sells at a forward premium or discount, and the general relationship between spot and forward exchange rates is specified by a concept called "interest rate parity."

Interest rate parity means that investors should expect to earn the same return on security investments in all countries after adjusting for risk. It recognizes that when you invest in a country other than your home country, you are affected by two forces—returns on the investment itself and changes in the exchange rate. It follows that your overall return will be higher than the investment's stated return if the currency in which your investment is denominated appreciates relative to your home currency. Likewise, your overall return will be lower if the foreign currency you receive declines in value.

To illustrate interest rate parity, consider the case of a U.S. investor who can buy default-free 180-day Swiss bonds that promise a 4% nominal annual return. The 180-day Swiss interest rate, r_f, is 4%/2 = 2% because 180 days is one-half of a 360-day year. Assume also that the indirect quotation for the spot exchange rate is 1.2259 Swiss francs per dollar, as shown in Table 26-3. Finally, assume that the 180-day forward exchange rate is 1.2029 Swiss francs per dollar, which means that in 180 days the investor can exchange 1 dollar for 1.2029 Swiss francs.

The U.S. investor could receive a 4% annualized return denominated in Swiss francs, but if he or she ultimately wants to consume goods in the United States, those Swiss francs must be converted to dollars. The dollar return on the investment depends, therefore, on what happens to exchange rates over the next 6 months. However, the investor can lock in the dollar return by selling

the foreign currency in the forward market. For example, the investor could simultaneously:

1. Convert $1,000 to 1,225.90 Swiss francs in the spot market: $1,000(1.2259 Swiss francs per dollar) = 1,225.90 Swiss francs.
2. Invest the Swiss francs in a 180-day Swiss bond that has a 4% annual return, or a 2% semiannual return. This investment will pay 1,225.90(1.02) = 1,250.42 Swiss francs in 180 days.
3. Agree today to exchange the Swiss francs in 180 days at the rate of 1.2029 Swiss francs per dollar, for a total of (1,250.42 Swiss francs)/(1.2029 Swiss francs per dollar) = $1,039.50.

This investment, therefore, has an expected 180-day return of $39.50/$1,000 = 3.950%, which translates into a nominal annual return of 2(3.950%) = 7.90%. In this case, 4% of the expected 7.90% is coming from the bond itself, and 3.90% arises because the market believes the Swiss franc will strengthen relative to the dollar. Note that by locking in the forward rate today, the investor has eliminated all exchange rate risk. And since the Swiss bond is assumed to be default-free, the investor is certain to earn a 7.90% annual dollar return.

Interest rate parity implies that an investment in the United States with the same risk as the Swiss bond should also have a return of 7.90%. We can express interest rate parity by the following equation:

$$\frac{\text{Forward exchange rate}}{\text{Spot exchange rate}} = \frac{(1 + r_h)}{(1 + r_f)}. \tag{26-1}$$

Here r_h is the periodic interest rate in the home country, r_f is the periodic interest rate in the foreign country, and the forward and exchange rates are expressed as direct quotations (that is, dollars per foreign currency).

Using Table 26-3, the direct spot quotation is 0.81573 dollar per Swiss franc = (1/1.2259 Swiss francs per dollar), and the direct 180-day forward quotation is 0.83132 = (1/1.2029). Using Equation 26-1, we can solve for the equivalent home rate, r_h:

$$\frac{\text{Forward exchange rate}}{\text{Spot exchange rate}} = \frac{(1 + r_h)}{(1 + r_f)} = \frac{(1 + r_h)}{(1 + 0.02)} = \frac{0.83132}{0.81573}$$

$$(1 + r_h) = \left(\frac{0.83132}{0.81573}\right)(1 + 0.02) = 1.03949395. \tag{26-1a}$$

The periodic home interest rate is 3.9494%, and the annualized home interest rate is (3.949%)(2) = 7.90%, the same value we found above.

After accounting for exchange rates, interest rate parity states that bonds in the home country and the foreign country must have the same effective rate of return. In this example, the U.S. bond must yield 7.90% to provide the same return as the 4% Swiss bond. If one bond provides a higher return, investors will sell their low-return bond and flock to the high-return bond. This activity will cause the price of the low-return bond to fall (which pushes up its yield) and the price of the high-return bond to increase (driving down its yield). This will continue until the two bonds again have the same returns after accounting for exchange rates.

In other words, interest rate parity implies that an investment in the United States with the same risk as a Swiss bond should have a dollar value return of 7.90%. Solving for r_h in Equation 26-1, we indeed find that the predicted interest rate in the United States is 7.90%.

Interest rate parity shows why a particular currency might be at a forward premium or discount. Note that a currency is at a forward premium whenever domestic interest rates are higher than foreign interest rates. Discounts prevail if domestic interest rates are lower than foreign interest rates. If these conditions do not hold, then arbitrage will soon force interest rates and exchange rates back to parity.

SELF-TEST

What is interest rate parity?

Assume interest rate parity holds. When a currency trades at a forward premium, what does that imply about domestic rates relative to foreign interest rates? What about when a currency trades at a forward discount?

Assume that 90-day U.S. securities have a 4.5% annualized interest rate, whereas 90-day Swiss securities have a 5% annualized interest rate. In the spot market, 1 U.S. dollar can be exchanged for 1.2 Swiss francs. If interest rate parity holds, what is the 90-day forward rate exchange between U.S. and Swiss francs? (0.8323 $/SFr; 1.2015 SFr/$)

On the basis of your answer to the previous question, is the Swiss franc selling at a premium or discount on the forward rate? (Discount)

26.8 Purchasing Power Parity

We have discussed exchange rates in some detail, and we have considered the relationship between spot and forward exchange rates. However, we have not yet addressed the fundamental question: What determines the spot level of exchange rates in each country? While exchange rates are influenced by a multitude of factors that are difficult to predict, particularly on a day-to-day basis, over the long run market forces work to ensure that similar goods sell for similar prices in different countries after taking exchange rates into account. This relationship is known as "purchasing power parity."

Purchasing power parity (PPP), sometimes referred to as the *law of one price*, implies that the levels of exchange rates and prices adjust so as to cause identical goods to cost the same amount in different countries. For example, if a pair of tennis shoes costs $150 in the United States and 100 pounds in Britain, PPP implies that the exchange rate must be $1.50 per pound. Consumers could purchase the shoes in Britain for 100 pounds, or they could exchange their 100 pounds for $150 and then purchase the same shoes in the United States at the same effective cost, assuming no transaction or transportation costs. Here is the equation for purchasing power parity:

$$P_h = (P_f)(\text{Spot rate}) \qquad (26\text{-}2)$$

or

$$\text{Spot rate} = \frac{P_h}{P_f}. \qquad (26\text{-}3)$$

Here

P_h = the price of the good in the home country ($150, assuming the United States is the home country).
P_f = the price of the good in the foreign country (100 pounds).

Hungry for a Big Mac? Go to China!

Purchasing power parity (PPP) implies that the same product will sell for the same price in every country after adjusting for current exchange rates. One problem when testing to see if PPP holds is that it assumes that goods consumed in different countries are of the same quality. For example, if you find that a product is more expensive in Switzerland than it is in Canada, one explanation is that PPP fails to hold, but another explanation is that the product sold in Switzerland is of a higher quality and therefore deserves a higher price.

One way to test for PPP is to find goods that have the same quality worldwide. With this in mind, *The Economist* magazine occasionally compares the prices of a well-known good whose quality is the same in nearly 120 different countries: the McDonald's Big Mac hamburger.

The accompanying table provides information collected during May 2006. The first column shows the price of a Big Mac in local currency. For example, a Big Mac costs 48 rubles in Russia. The second column shows the cost in dollars (based on the actual exchange rate in the fourth column), which is the amount you would pay in that country if you exchanged dollars for local currency and then purchased a Big Mac at the local price. For example, the exchange rate is 27.1 rubles per dollar, which means that a Big Mac in Russia costs \$1.77 = (48 rubles)/(27.1 rubles per dollar).

The third column backs out the implied exchange rate that would hold under PPP. For example, the 48 ruble price of a Big Mac in Russia compared to the \$3.10 price in the United States gives us the implied PPP exchange rate of (48 rubles per Big Mac)/(\$3.10 per Big Mac) = 15.5 rubles per dollar. The last column shows how much the local currency is over- or undervalued relative to the dollar. The ruble's implied PPP exchange rate of 15.5 rubles per dollar is 43% less than the actual exchange rate of 27.1 rubles per dollar, so the ruble is 43% undervalued relative to the dollar.

The evidence suggests that strict PPP does not hold, but the Big Mac test may shed some insights about where exchange rates are headed. Other than a few European countries, most currencies are undervalued against the dollar. The Big Mac 2006 test suggests that European currencies will fall over the next year or so, but that most others will rise.

One last benefit of the Big Mac test is that it tells us the cheapest places to find a Big Mac. According to the data, if you are looking for a Big Mac, head to China and avoid Switzerland.

Note that the spot market exchange rate is expressed as the number of units of home currency that can be exchanged for one unit of foreign currency (\$1.50 per pound).

PPP assumes that market forces will eliminate situations in which the same product sells at a different price overseas. For example, if the shoes cost \$140 in the United States, importers/exporters could purchase them in the United States for \$140, sell them for 100 pounds in Britain, exchange the 100 pounds for \$150 in the foreign exchange market, and earn a profit of \$10 on every pair of shoes. Ultimately, this trading activity would increase the demand for shoes in the United States and thus raise P_h, increase the supply of shoes in Britain and thus reduce P_f, and increase the demand for dollars in the foreign exchange market and thus reduce the spot rate. Each of these actions works to restore PPP.

Note that PPP assumes that there are no transportation or transaction costs and no import restrictions, all of which limit the ability to ship goods between countries. In many cases, these assumptions are incorrect, which explains why PPP is often violated. An additional problem for empirical tests of the PPP theorem is that products in different countries are rarely identical. Frequently, there are real or perceived differences in quality, which can lead to price differences in different countries.

Still, the concepts of interest rate and purchasing power parity are critically important to those engaged in international activities. Companies and investors must anticipate changes in interest rates, inflation, and exchange rates, and they often try to hedge the risks of adverse movements in these factors. The parity relationships are extremely useful when anticipating future conditions.

	In Local Currency (1)	In Dollars (2)	Implied Exchange Rate Based on PPP[a] (3)	Actual $ Exchange Rate (4)	Local Currency Under(−)/ Over(+) Valuation(%) (5)
United States[b]	$3.10	3.10	—	—	—
Argentina	Peso 7	2.29	2.26	3.06	−26
Australia	A$3.25	2.44	1.05	1.33	−21
Brazil	Real 6.4	2.78	2.06	2.30	−10
Britain	£1.94	3.65	1.60[c]	1.88[c]	18
Canada	C$3.52	3.14	1.14	1.12	1
Chile	Peso 1,560	2.94	503	530	−5
China	Yuan 10.5	1.31	3.39	8.03	−58
Czech Republic	Koruna 59.05	2.67	19.0	22.1	−14
Denmark	DKr27.75	4.77	8.95	5.82	54
Egypt	Pound 9.5	1.65	3.06	5.77	−47
Euro areas	€2.94[d]	3.77	1.05[e]	1.28[e]	22
Hong Kong	HK$12	1.55	3.87	7.75	−50
Hungary	Forint 560	2.71	181	206	−12
Indonesia	Rupiah 14,600	1.57	4710	9325	−49
Japan	¥250	2.23	80.6	112.0	−28
Malaysia	Ringgit 5.5	1.52	1.77	3.63	−51
Mexico	Peso 29	2.57	9.35	11.30	−17
New Zealand	NZ$4.45	2.75	1.44	1.62	−11
Peru	New Sol 9.5	2.91	3.06	3.26	−6
Philippines	Peso 85	1.62	27.4	52.6	−48
Poland	Zloty 6.5	2.10	2.10	3.10	−32
Russia	Ruble 48	1.77	15.5	27.1	−43
Singapore	S$3.60	2.27	1.16	1.59	−27
South Africa	Rand 13.95	2.11	4.50	6.60	−32
South Korea	Won 2,500	2.62	806	952	−15
Sweden	SKr33.00	4.53	10.6	7.28	46
Switzerland	SFr6.30	5.21	2.03	1.21	68
Taiwan	NT$75.00	2.33	24.2	32.1	−25
Thailand	Baht 60	1.56	19.4	38.4	−50
Turkey	Lire 4.2	2.72	1.35	1.54	−12
Venezuela	Bolivar 5,701	2.17	1839	2630	−30

[a]Purchasing power parity: local price divided by price in United States
[b]Average of New York, Chicago, Atlanta, and San Francisco
[c]Dollars per pound
[d]Weighted average of prices in euro area
[e]Dollars per euro
Sources: McDonald's; and "McCurrencies," *The Economist*, May 27, 2006, p. 74.

SELF-TEST

What is meant by purchasing power parity?

A computer sells for $1,500 U.S. dollars. In the spot market, $1 = 115 Japanese yen. If purchasing power parity holds, what should be the price (in yen) of the same computer in Japan? (¥172,500)

26.9 Inflation, Interest Rates, and Exchange Rates

Relative inflation rates, or the rates of inflation in foreign countries compared with that in the home country, have many implications for multinational financial decisions. Obviously, relative inflation rates will greatly influence future production costs at home and abroad. Equally important, inflation has a dominant influence on relative interest rates and exchange rates. Both of these factors influence decisions by multinational corporations for financing their foreign investments, and both have an important effect on the profitability of foreign investments.

For current international interest rates, go to **http://www.bloomberg.com** and select Market Data. Then select Rates and Bonds.

The currencies of countries with higher inflation rates than that of the United States by definition *depreciate* over time against the dollar. Countries where this has occurred include Mexico and all the South American nations. On the other hand, the currencies of Switzerland and Japan, which have had less inflation than the United States, have generally *appreciated* against the dollar. *In fact, a foreign currency will, on average, depreciate or appreciate at a percentage rate approximately equal to the amount by which its inflation rate exceeds or is less than the U.S. rate.*

Relative inflation rates also affect interest rates. The interest rate in any country is largely determined by its inflation rate. Therefore, countries currently experiencing higher rates of inflation than the United States also tend to have higher interest rates. The reverse is true for countries with lower inflation rates.

It is tempting for a multinational corporation to borrow in countries with the lowest interest rates. However, this is not always a good strategy. Suppose, for example, that interest rates in Switzerland are lower than those in the United States because of Switzerland's lower inflation rate. A U.S. multinational firm could therefore save interest by borrowing in Switzerland. However, because of relative inflation rates, the Swiss franc will probably appreciate in the future, causing the dollar cost of annual interest and principal payments on Swiss debt to rise over time. Thus, *the lower interest rate could be more than offset by losses from currency appreciation*. Similarly, multinational corporations should not necessarily avoid borrowing in a country such as Brazil, where interest rates have been very high, because future depreciation of the Brazilian real could make such borrowing end up being relatively inexpensive.

SELF-TEST

What effects do relative inflation rates have on relative interest rates?

What happens over time to the currencies of countries with higher inflation rates than that of the United States? To those with lower inflation rates?

Why might a multinational corporation decide to borrow in a country such as Brazil, where interest rates are high, rather than in a country like Switzerland, where interest rates are low?

26.10 International Money and Capital Markets

One way for U.S. citizens to invest in world markets is to buy the stocks of U.S. multinational corporations that invest directly in foreign countries. Another way is to purchase foreign securities—stocks, bonds, or money market instruments issued by foreign companies. Security investments are known as *portfolio investments*, and they are distinguished from *direct investments* in physical assets by U.S. corporations.

From World War II through the 1960s, the U.S. capital markets dominated world markets. Today, however, the value of U.S. securities represents less than one-fourth the value of all securities. Given this situation, it is important for both corporate managers and investors to have an understanding of international markets. Moreover, these markets often offer better opportunities for raising or investing capital than are available domestically.

Eurodollar Market

A **Eurodollar** is a U.S. dollar deposited in a bank outside the United States. (Although they are called Eurodollars because they originated in Europe, Eurodollars are really any dollars deposited in any part of the world other than the United States.) The bank in which the deposit is made may be a non-U.S. bank, such as Barclay's Bank in London; the foreign branch of a U.S. bank, such as Citibank's Paris branch; or even a foreign branch of a third-country bank, such as Barclay's Munich branch. Most Eurodollar deposits are for $500,000 or more, and they have maturities ranging from overnight to about one year.

The major difference between Eurodollar deposits and regular U.S. time deposits is their geographic locations. The two types of deposits do not involve different currencies—in both cases, dollars are on deposit. However, Eurodollars are outside the direct control of the U.S. monetary authorities, so U.S. banking regulations, including reserve requirements and FDIC insurance premiums, do not apply. The absence of these costs means that the interest rate paid on Eurodollar deposits can be higher than domestic U.S. rates on equivalent instruments.

Although the dollar is the leading international currency, British pounds, euros, Swiss francs, Japanese yen, and other currencies are also deposited outside their home countries; these *Eurocurrencies* are handled in exactly the same way as Eurodollars.

Eurodollars are borrowed by U.S. and foreign corporations for various purposes, but especially to pay for goods imported from the United States and to invest in U.S. security markets. Also, U.S. dollars are used as an international currency, or international medium of exchange, and many Eurodollars are used for this purpose. It is interesting to note that Eurodollars were actually "invented" by the Soviets in 1946. International merchants did not trust the Soviets or their rubles, so the Soviets bought some dollars (for gold), deposited them in a Paris bank, and then used these dollars to buy goods in the world markets. Others found it convenient to use dollars this same way, and soon the Eurodollar market was in full swing.

Eurodollars are usually held in interest-bearing accounts. The interest rate paid on these deposits depends (1) on the bank's lending rate, as the interest a bank earns on loans determines its willingness and ability to pay interest on deposits, and (2) on rates of return available on U.S. money market instruments.

If money market rates in the United States were above Eurodollar deposit rates, these dollars would be sent back and invested in the United States, whereas if Eurodollar deposit rates were significantly above U.S. rates, which is more often the case, more dollars would be sent out of the United States to become Eurodollars. Given the existence of the Eurodollar market and the electronic flow of dollars to and from the United States, it is easy to see why interest rates in the United States cannot be insulated from those in other parts of the world.

Interest rates on Eurodollar deposits (and loans) are tied to a standard rate known by the acronym **LIBOR,** which stands for **London Interbank Offer Rate.** LIBOR is the rate of interest offered by the largest and strongest London banks on dollar deposits of significant size. In August 2006, LIBOR rates were just a little above domestic U.S. bank rates on time deposits of the same maturity—5.36% for 3-month CDs versus 5.40% for LIBOR CDs. The Eurodollar market is essentially a short-term market; most loans and deposits are for less than 1 year.

International Bond Markets

Any bond sold outside the country of the borrower is called an *international bond*. However, there are two important types of international bonds: foreign bonds and Eurobonds. **Foreign bonds** are bonds sold by a foreign borrower but denominated in the currency of the country in which the issue is sold. For instance, Nortel Networks (a Canadian company) may need U.S. dollars to finance the operations of its subsidiaries in the United States. If it decides to raise the needed capital in the United States, the bond would be underwritten by a syndicate of U.S. investment bankers, denominated in U.S. dollars, and sold to U.S. investors in accordance with SEC and applicable state regulations. Except for the foreign origin of the borrower, this bond would be indistinguishable from those issued by equivalent U.S. corporations. Since Nortel is a foreign corporation, however, the bond would be a foreign bond. Furthermore, because it is denominated in dollars and sold in the United States under SEC regulations, it is also called a **Yankee bond.** In contrast, if Nortel issued bonds in Mexico denominated in pesos, it would be a foreign bond, but not a Yankee bond.

The term **Eurobond** is used to designate any bond issued in one country but denominated in the currency of some other country. Examples include a Ford Motor Company issue denominated in dollars and sold in Germany, or a British firm's sale of euro-denominated bonds in Switzerland. The institutional arrangements by which Eurobonds are marketed are different than those for most other bond issues, with the most important distinction being a far lower level of required disclosure than is usually found for bonds issued in domestic markets, particularly in the United States. Governments tend to be less strict when regulating securities denominated in foreign currencies, because the bonds' purchasers are generally more "sophisticated." The lower disclosure requirements result in lower total transaction costs for Eurobonds.

Eurobonds appeal to investors for several reasons. Generally, they are issued in bearer form rather than as registered bonds, so the names and nationalities of investors are not recorded. Individuals who desire anonymity, whether for privacy reasons or for tax avoidance, like Eurobonds. Similarly, most governments do not withhold taxes on interest payments associated with Eurobonds. If the investor requires an effective yield of 10%, a Eurobond that is exempt from tax withholding would need a coupon rate of 10%. Another type of bond—for instance, a domestic issue subject to a 30% withholding tax on interest paid to

Stock Market Indices around the World

In the United States the Dow Jones Industrial Average (^DJI) is the most well-known stock market index. Similar indices also exist for each major world financial center. As shown in the table below, India's market has had the strongest performance, while Japan's has had the weakest.

Hong Kong (^HSI)

In Hong Kong, the primary stock index is the Hang Seng. Created by HSI Services Limited, the Hang Seng index is composed of 33 large stocks.

Great Britain (^FTSE)

The FT-SE 100 Index (pronounced "footsie") is the most widely followed indicator of equity investments in Great Britain. It is a value-weighted index composed of the 100 largest companies on the London Stock Exchange.

Japan (^N225)

In Japan, the principal barometer of stock performance is the Nikkei 225 Index. The index consists of highly liquid equity issues thought to be representative of the Japanese economy.

Germany (^GDAXI)

The Deutscher Aktienindex, commonly called the DAX, is an index comprised of the 30 largest companies trading on the Frankfurt Stock Exchange.

India (^BSESN)

Of the 22 stock exchanges in India, the Bombay Stock Exchange (BSE) is the largest, with more than 6,000 listed stocks and approximately two-thirds of the country's total trading volume. Established in 1875, the exchange is also the oldest in Asia. Its yardstick is the BSE Sensex, an index of 30 publicly traded Indian stocks that account for one-fifth of the BSE's market capitalization.

Note: For easy access to world indices, see **http://finance.yahoo.com/m2** and use the ticker symbols shown in parentheses.

Relative Ten-Year Performance (Starting Values = 100)

	United States	Germany	Great Britain	Hong Kong	India	Japan
August 1996	100	100	100	100	100	100
August 2006	203	230	153	156	272	80

foreigners—would need a coupon rate of 14.3% to yield an after-withholding rate of 10%. Investors who desire secrecy would not want to file for a refund of the tax, so they would prefer to hold the Eurobond.

More than half of all Eurobonds are denominated in dollars. Bonds in Japanese yen, German marks, and Dutch guilders account for most of the rest. Although centered in Europe, Eurobonds are truly international. Their underwriting syndicates include investment bankers from all parts of the world, and the bonds are sold to investors not only in Europe but also in such faraway places as Bahrain and Singapore. Up to a few years ago, Eurobonds were issued solely by multinational firms, by international financial institutions, or by national governments. Today, however, the Eurobond market is also being tapped by purely domestic U.S. firms, because they often find that by borrowing overseas they can lower their debt costs.

International Stock Markets

New issues of stock are sold in international markets for a variety of reasons. For example, a non-U.S. firm might sell an equity issue in the United States because it can tap a much larger source of capital than in its home country. Also, a U.S. firm might tap a foreign market because it wants to create an equity market presence

to accompany its operations in that country. Large multinational companies also occasionally issue new stock simultaneously in multiple countries. For example, Alcan Aluminum, a Canadian company, recently issued new stock in Canada, Europe, and the United States simultaneously, using different underwriting syndicates in each market.

In addition to new issues, outstanding stocks of large multinational companies are increasingly being listed on multiple international exchanges. For example, Coca-Cola's stock is traded on six stock exchanges in the United States, four stock exchanges in Switzerland, and the Frankfurt stock exchange in Germany. Some 500 foreign stocks are listed in the United States—an example here is Royal Dutch Petroleum, which is listed on the NYSE. U.S. investors can also invest in foreign companies through American Depository Receipts (ADRs), which are certificates representing ownership of foreign stock held in trust. About 1,700 ADRs are now available in the United States, with most of them traded on the over-the-counter (OTC) market. However, more and more ADRs are being listed on the New York Stock Exchange, including England's British Airways, Japan's Honda Motors, and Italy's Fiat Group.

SELF-TEST

Differentiate between foreign portfolio investments and direct foreign investments.

What are Eurodollars?

Has the development of the Eurodollar market made it easier or more difficult for the Federal Reserve to control U.S. interest rates?

Differentiate between foreign bonds and Eurobonds.

Why do Eurobonds appeal to investors?

26.11 Multinational Capital Budgeting

Up to now, we have discussed the general environment in which multinational firms operate. In the remainder of the chapter, we see how international factors affect key corporate decisions, beginning with capital budgeting. Although the same basic principles apply to capital budgeting for both foreign and domestic operations, there are some key differences, including types of risks the firm faces, cash flow estimation, and project analysis.[4]

Risk Exposure

Foreign projects may be more or less risky than equivalent domestic projects, and that can lead to differences in the cost of capital. Higher risk for foreign projects tends to result from two primary sources: (1) exchange rate risk and (2) political risk. However, international diversification might result in a lower risk.

Exchange rate risk relates to the value of the basic cash flows in the parent company's home currency. Foreign currency cash flows turned over to the parent must be converted into U.S. dollars, so projected cash flows must be translated to dollars

[4]Many domestic companies form joint ventures with foreign companies; see Insup Lee and Steve B. Wyatt, "The Effects of International Joint Ventures on Shareholder Wealth," *Financial Review*, November 1990, pp. 641–649. For a discussion of the Japanese cost of capital, see Jeffrey A. Frankel, "The Japanese Cost of Finance," *Financial Management*, Spring 1991, pp. 95–127. For a discussion of financial practices in the Pacific basin, see George W. Kester, Rosita P. Chang, and Kai-Chong Tsui, "Corporate Financial Policy in the Pacific Basin: Hong Kong and Singapore," *Financial Practice and Education*, Spring/Summer 1994, pp. 117–127.

at the expected future exchange rates. An analysis should be conducted to ascertain the effects of exchange rate variations on dollar cash flows, and, on the basis of this analysis, an exchange rate risk premium should be added to the domestic cost of capital. It is sometimes possible to hedge against exchange rate risk, but it may not be possible to hedge completely, especially on long-term projects. If hedging is used, the costs of doing so must be subtracted from the project's operating cash flows.

Political risk refers to potential actions by a host government that would reduce the value of a company's investment. It includes at one extreme expropriation of the subsidiary's assets without compensation, but it also includes less drastic actions that reduce the value of the parent firm's investment in the foreign subsidiary.[5] Included here are higher taxes, tighter repatriation or currency controls, and restrictions on prices charged. The risk of expropriation is small in traditionally friendly and stable countries such as Great Britain or Switzerland. However, in Latin America, Africa, the Far East, and Eastern Europe, the risk may be substantial. Past expropriations include those of ITT and Anaconda Copper in Chile, Gulf Oil in Bolivia, Occidental Petroleum in Libya, Enron Corporation in Peru, and the assets of many companies in Iraq, Iran, and Cuba.

Note that companies can take steps to reduce the potential loss from expropriation, including one or more of the following:

1. Finance the subsidiary with local capital.
2. Structure operations so that the subsidiary has value only as a part of the integrated corporate system.
3. Obtain insurance against economic losses from expropriation from a source such as the Overseas Private Investment Corporation (OPIC).

If OPIC insurance is purchased, the premiums paid must be added to the project's cost.

Several organizations rate countries according to different aspects of risk. For example, Transparency International (TI) ranks countries based on perceived corruption, which is an important part of political risk. Table 26-4 shows selected countries. TI rates Iceland as the most honest country, while Chad and Bangladesh are tied for the most dishonest. The United States is ranked seventeenth.

Cash Flow Estimation

Cash flow estimation is more complex for foreign than domestic investments. Most multinational firms set up separate subsidiaries in each foreign country in which they operate, and the relevant cash flows for the parent company are the dividends and royalties paid by the subsidiaries to the parent, translated into dollars. Dividends and royalties are normally taxed by both foreign and home country governments, although the home country may allow credits for some or all of the foreign taxes paid. Furthermore, a foreign government may restrict the amount of the cash that may be **repatriated** to the parent company. For example, some governments place a ceiling, stated as a percentage of the company's net worth, on the amount of cash dividends that a subsidiary can pay to its parent. Such restrictions are normally intended to force multinational firms to reinvest earnings in the foreign country, although restrictions are sometimes imposed to prevent large currency outflows, which might disrupt the exchange rate.

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[5]For an interesting article on expropriation, see Arvind Mahajan, "Pricing Expropriation Risk," *Financial Management*, Winter 1990, pp. 77–86.

Table 26-4

The 2005 Transparency International Corruption Perceptions Index (CPI)

Top-Ranked Countries			Bottom-Ranked Countries		
Rank	Country	2005 CPI Score	Rank	Country	2005 CPI Score
1	Iceland	9.7	117 (tie)	Afghanistan	2.5
2 (tie)	Finland	9.6		Bolivia	2.5
	New Zealand	9.6		Ecuador	2.5
4	Denmark	9.5		Guatemala	2.5
5	Singapore	9.4		Guyana	2.5
6	Sweden	9.2	126 (tie)	Albania	2.4
7	Switzerland	9.1		Niger	2.4
8	Norway	8.9		Russia	2.4
9	Australia	8.8		Sierra Leone	2.4
10	Austria	8.7	155 (tie)	Haiti	1.8
11 (tie)	Netherlands	8.6		Myanmar	1.8
	United Kingdom	8.6		Turkmenistan	1.8
13	Luxembourg	8.5	158 (tie)	Bangladesh	1.7
14	Canada	8.4		Chad	1.7

Source: **http://www.transparency.org.**

Whatever the host country's motivation for blocking repatriation of profits, the result is that the parent corporation cannot use cash flows blocked in the foreign country to pay dividends to its shareholders or to invest elsewhere in the business. Hence, from the perspective of the parent organization, the cash flows relevant for foreign investment analysis are the cash flows that the subsidiary is actually expected to send back to the parent. Note, though, that if returns on investments in the foreign country are attractive, and if blockages are expected to be lifted in the future, then current blockages may not be bad, but dealing with this situation does complicate the cash flow estimation process.

Some companies attempt to circumvent repatriation restrictions (and also lower taxes paid) through the use of transfer pricing. For example, a foreign subsidiary might obtain raw materials or other input components from the parent. The price the subsidiary pays the parent is called a **transfer price.** If the transfer price is very high, then the foreign subsidiary's costs will be very high, leaving little or no profit to repatriate. However, the parent's profit will be higher because it sold to the subsidiary at an inflated transfer price. The net result is that the parent receives cash flows from the subsidiary via transfer pricing rather than as repatriated dividends. Transfer pricing can also be used to shift profits from high-tax to low-tax jurisdictions. Of course, governments are well aware of these possibilities, so governmental auditors are on guard to prevent abusive transfer pricing.

Project Analysis

First, consider a domestic project that requires foreign raw materials, or one where the finished product will be sold in a foreign market. Because the operation is based

in the United States, any projected nondollar cash flows—costs in the first example and revenues in the second—should be converted into dollars. This conversion does not present much of a problem for cash flows to be paid or received in the short run, but there is a significant problem in estimating exchange rates for converting long-term foreign cash flows into dollars because forward exchange rates are usually not available for more than 180 days into the future. However, long-term expected forward exchange rates can be estimated using the interest rate parity relationship set forth in Equation 26-1. For example, if a foreign cash flow is expected to occur in 1 year, then the 1-year forward exchange rate can be estimated using domestic and foreign government bonds maturing in 1 year. Similarly, the 2-year exchange rate can be estimated using 2-year bonds. Thus, foreign cash flows can be converted into dollars and added to the project's other projected cash flows, and then the project's NPV can be calculated based on the project's cost of capital.

Now consider a project that will be based overseas, where most expected future cash flows will be denominated in a foreign currency. Two approaches can be used to estimate such a project's NPV. Both begin by forecasting the future cash flows denominated in the foreign currency and then determining the annual repatriations to the United States, denominated in the foreign currency. Under the first approach, we convert the expected future repatriations to dollars (as described earlier), and then find the NPV using the project's cost of capital. Under the second approach, we take the projected repatriations, denominated in the foreign currency, and discount them at the foreign cost of capital, which reflects foreign interest rates and relevant risk premiums. This produces an NPV denominated in the foreign currency, which can be converted into a dollar-denominated NPV using the spot exchange rate.

The following example illustrates the first approach. A U.S. company has the opportunity to lease a manufacturing facility in Great Britain for 3 years. The company must spend £20 million initially to refurbish the plant. The expected net cash flows from the plant for the next 3 years, in millions, are CF_1 = £7, CF_2 = £9, and CF_3 = £11. A similar project in the United States would have a risk-adjusted cost of capital of 10%. The first step is to estimate the expected exchange rates at the end of 1, 2, and 3 years using the interest rate parity equation:

$$\text{Expected forward exchange rate} = \text{Spot exchange rate}\left(\frac{1 + r_h}{1 + r_f}\right) \qquad \textbf{(26-1b)}$$

where the exchange rates are expressed in direct quotations. We are using the interest rate parity equation to calculate forward rates because market-based forward rates for maturities longer than a year are not generally available.

Suppose the spot exchange rate is 1.8000 dollars per pound. Interest rates on U.S. and U.K. government bonds are shown below, along with the expected forward rate implied by the interest rate parity relationship in Equation 26-1b:

Maturity (in Years)	r_h	r_f	Spot Rate ($/£)	Expected Forward Rate Based on Equation 26-1b ($/£)
1	2.0%	4.6%	1.8000	1.7553
2	2.8	5.0	1.8000	1.7623
3	3.5	5.2	1.8000	1.7709

Table 26-5 Net Present Value of International Investment (Cash Flows in Millions)

	Year			
	0	1	2	3
Cash flows in pounds	−£20	£7	£9	£11
Expected exchange rates	1.8000	1.7553	1.7623	1.7709
Cash flows in dollars	−$36.00	$12.29	$15.86	$19.48
Project cost of capital =	10%			
NPV =	$2.92			

The current dollar cost of the project is £20(1.8000 $/£) = $36 million. The Year 1 cash flow in dollars is £7(1.7553 $/£) = $12.29 million. Table 26-5 shows the complete time line and the net present value of $2.92 million.

SELF-TEST

List some key differences in capital budgeting as applied to foreign versus domestic operations.

What are the relevant cash flows for an international investment—the cash flow produced by the subsidiary in the country where it operates or the cash flows in dollars that it sends to its parent company?

Why might the cost of capital for a foreign project differ from that of an equivalent domestic project? Could it be lower?

What adjustments might be made to the domestic cost of capital for a foreign investment due to exchange rate risk and political risk?

26.12 International Capital Structures

Companies' capital structures vary among countries. For example, the Organization for Economic Cooperation and Development (OECD) recently reported that, on average, Japanese firms use 85% debt to total assets (in book value terms), German firms use 64%, and U.S. firms use 55%. One problem, however, when interpreting these numbers is that different countries often use very different accounting conventions with regard to (1) reporting assets on a historical- versus a replacement-cost basis, (2) the treatment of leased assets, (3) pension plan funding, and (4) capitalizing versus expensing R&D costs. These differences make it difficult to compare capital structures.

A study by Raghuram Rajan and Luigi Zingales of the University of Chicago attempted to account for differences in accounting practices. In their study, Rajan and Zingales used a database that covered fewer firms than the OECD but that provided a more complete breakdown of balance sheet data. They concluded that differences in accounting practices can explain much of the cross-country variation in capital structures.

Rajan and Zingales's results are summarized in Table 26-6. There are a number of different ways to measure capital structure. One measure is the average ratio of total liabilities to total assets—this is similar to the measure used by the OECD, and it is reported in Column 1. Based on this measure, German and Japanese firms appear to be more highly levered than U.S. firms. However, if you look at Column 2, where capital structure is measured by interest-bearing debt to total assets, it appears that German firms use less leverage than U.S. and Japanese firms. What explains this

Table 26-6

Median Capital Structures among Large Industrialized Countries (Measured in Terms of Book Value)

Country	Total Liabilities to Total Assets (Unadjusted for Accounting Differences) (1)	Interest-Bearing Debt to Total Assets (Unadjusted for Accounting Differences) (2)	Total Liabilities to Total Assets (Adjusted for Accounting Differences) (3)	Debt to Total Assets (Adjusted for Accounting Differences) (4)	Times-Interest-Earned (TIE) Ratio (5)
Canada	56%	32%	48%	32%	1.55×
France	71	25	69	18	2.64
Germany	73	16	50	11	3.20
Italy	70	27	68	21	1.81
Japan	69	35	62	21	2.46
United Kingdom	54	18	47	10	4.79
United States	58	27	52	25	2.41
Mean	64%	26%	57%	20%	2.69×
Standard deviation	8%	7%	10%	8%	1.07×

Source: Raghuram Rajan and Luigi Zingales, "What Do We Know about Capital Structure? Some Evidence from International Data," *Journal of Finance*, December 1995, pp. 1421–1460. Published by Blackwell Publishing.

difference? Rajan and Zingales argue that much of this difference is explained by the way German firms account for pension liabilities. German firms generally include all pension liabilities (and their offsetting assets) on the balance sheet, whereas firms in other countries (including the United States) generally "net out" pension assets and liabilities on their balance sheets. To see the importance of this difference, consider a firm with $10 million in liabilities (not including pension liabilities) and $20 million in assets (not including pension assets). Assume that the firm has $10 million in pension liabilities that are fully funded by $10 million in pension assets. Therefore, net pension liabilities are zero. If this firm were in the United States, it would report a ratio of total liabilities to total assets equal to 50% ($10 million/$20 million). By contrast, if this firm operated in Germany, both its pension assets and liabilities would be reported on the balance sheet. The firm would have $20 million in liabilities and $30 million in assets—or a 67% ($20 million/$30 million) ratio of total liabilities to total assets. Total debt is the sum of short-term debt and long-term debt and excludes other liabilities including pension liabilities. Therefore, the measure of total debt to total assets provides a more comparable measure of leverage across different countries.

Rajan and Zingales also make a variety of adjustments that attempt to control for other differences in accounting practices. The effects of these adjustments are reported in Columns 3 and 4. Overall, the evidence suggests that companies in Germany and the United Kingdom tend to have less leverage, whereas firms in Canada appear to have more leverage, relative to firms in the United States, France, Italy, and Japan. This conclusion is supported by data in the final column, which shows the average times-interest-earned ratio for firms in a number of different

countries. Recall from Chapter 4 that the times-interest-earned ratio is the ratio of operating income (EBIT) to interest expense. This measure indicates how much cash the firm has available to service its interest expense. In general, firms with more leverage have a lower times-interest-earned ratio. The data indicate that this ratio is highest in the United Kingdom and Germany and lowest in Canada.

SELF-TEST

Do international differences in financial leverage exist? Explain.

26.13 Multinational Working Capital Management

Working capital management in a multinational setting involves more complexity than purely domestic working capital management. We discuss some of the differences below.

Cash Management

The goals of cash management in a multinational corporation are similar to those in a purely domestic corporation: (1) to speed up collections, slow down disbursements, and thus maximize net float; (2) to shift cash as rapidly as possible from those parts of the business where it is not needed to those parts where it is needed; and (3) to maximize the risk-adjusted, after-tax rate of return on temporary cash balances. Multinational companies use the same general procedures for achieving these goals as domestic firms, but because of longer distances and more serious mail delays, such devices as lockbox systems and electronic funds transfers are especially important.

Although multinational and domestic corporations have the same objectives and use similar procedures, multinational corporations face a far more complex task. As noted earlier in our discussion of political risk, foreign governments often place restrictions on transfers of funds out of the country, so although IBM can transfer money from its Salt Lake City office to its New York concentration bank just by pressing a few buttons, a similar transfer from its Buenos Aires office is far more complex. Buenos Aires funds must be converted to dollars before the transfer. If there is a shortage of dollars in Argentina, or if the Argentinean government wants to conserve dollars so they will be available for the purchase of strategic materials, then conversion, hence the transfer, may be blocked. Even if no dollar shortage exists in Argentina, the government may still restrict funds outflows if those funds represent profits or depreciation rather than payments for purchased materials or equipment, because many countries, especially those that are less developed, want profits reinvested in the country in order to stimulate economic growth.

Once it has been determined what funds can be transferred, the next task is to get those funds to locations where they will earn the highest returns. Whereas domestic corporations tend to think in terms of domestic securities, multinationals are more likely to be aware of investment opportunities all around the world. Most multinational corporations use one or more global concentration banks, located in money centers such as London, New York, Tokyo, Zurich, or Singapore, and their staffs in those cities, working with international bankers, are able to take advantage of the best rates available anywhere in the world.

Credit Management

Consider the international cash conversion cycle for a foreign company importing from the United States: The order is placed, the goods are shipped, an account payable is created for the importer and an account receivable is created for the exporter, the goods arrive in the foreign country, the importer sells them, and the importer collects on the sales. At some point in this process the importer pays off the account payable, which is usually before the importer collects on its own sales. Notice that the importer must finance the transaction from the time it pays the account payable until it collects on its sales. In many poorer, less-developed nations, the capital markets are not adequate to enable the importer to finance the cash conversion cycle. Even when foreign capital markets are available, the additional shipping time might lengthen the cash conversion cycle to such an extent that the importer can't afford the financing costs. Thus, there is enormous pressure on the exporter to grant credit, often with very lengthy payment periods.

But now consider the situation from the exporter's point of view. First, it is much more difficult for the exporter to perform a credit analysis on a foreign customer. Second, the exporter must also worry about exchange-rate fluctuations between the time of the sale and the time the receivable is collected. For example, if IBM sold a computer to a Japanese customer for 90 million yen when the exchange rate was 90 yen to the dollar, IBM would obtain 90,000,000/90 = $1,000,000 for the computer. However, if it sold the computer on terms of net/6 months, and if the yen fell against the dollar so that 1 dollar would now buy 112.5 yen, IBM would end up realizing only 90,000,000/112.5 = $800,000 when it collected the receivable. Hedging with forward contracts can reduce this exchange rate risk, but what about the credit risk?

One possibility is for the importer to obtain a letter of credit from its bank, whereby the bank certifies that the importer will meet the terms of the account payable or else the bank will pay. However, the importer often must pay the bank a relatively large fee for the letter of credit, and letters of credit might not be available to companies in developing countries.

A second option is for the importer to essentially write a check to the exporter at the time of the purchase, but one that is postdated so that it cannot be cashed until the account payable's due date. If the importer's bank promises that it will "accept" the check even if there are insufficient funds in the importer's account, then the check becomes a financial instrument that is called a **banker's acceptance.** If the bank is strong, then this virtually eliminates the credit risk. In addition, the exporter can then sell this banker's acceptance in the secondary market if it needs funds immediately. Of course, it must sell the banker's acceptance at a discount to reflect the time value of money because the banker's acceptance is essentially a short-term financial security that pays no interest, similar to a T-bill. Financing an international transaction via a banker's acceptance has many benefits for the exporter, but the importer often must pay the bank a relatively large fee, and this service might not be available to companies in developing countries.

A third alternative is for the exporter to purchase export credit insurance, in which an insurer makes a commitment to pay the exporter even if the importer defaults. Sometimes the "insurer" is a government agency, such as the Japanese Ministry of International Trade and Industry (MITI) or the United States Export-Import Bank. But the last decade has seen a dramatic increase in the availability of export credit insurance from private insurance companies. These large insurance companies have developed expertise in international credit analysis and they can spread the risk over a large number of customers. These advantages allow

them to offer credit insurance at rates that often make it less costly than either letters of credit or banker's acceptances. In fact, export credit insurance has been so successful that it has virtually killed the market for bankers' acceptances and has become the primary method companies use to manage the credit risk of international sales.

Inventory Management

As with most other aspects of finance, inventory management for a firm in a multinational setting is similar to but more complex than for a purely domestic firm. First, there is the matter of the physical location of inventories. For example, where should ExxonMobil keep its stockpiles of crude oil and refined products? It has refineries and marketing centers located worldwide, and one alternative is to keep items concentrated in a few strategic spots from which they can then be shipped as needs arise. Such a strategy might minimize the total amount of inventories needed and thus might minimize the investment in inventories. Note, though, that consideration will have to be given to potential delays in getting goods from central storage locations to user locations all around the world. Both working stocks and safety stocks would have to be maintained at each user location, as well as at the strategic storage centers. Problems like the Iraqi occupation of Kuwait in 1990 and the subsequent trade embargo, which brought with it the potential for a shutdown of production of about 25% of the world's oil supply, complicate matters further.

Exchange rates also influence inventory policy. If a local currency, say, the Danish krone, were expected to rise in value against the dollar, a U.S. company operating in Denmark would want to increase stocks of local products before the rise in the krone, and vice versa if the krone were expected to fall.

Another factor that must be considered is the possibility of import or export quotas or tariffs. For example, Apple Computer Company was buying certain memory chips from Japanese suppliers at a bargain price. Then U.S. chipmakers accused the Japanese of dumping chips in the U.S. market at prices below cost, so they sought to force the Japanese to raise prices.[6] That led Apple to increase its chip inventory. Then computer sales slacked off, and Apple ended up with an oversupply of obsolete computer chips. As a result, Apple's profits were hurt and its stock price fell, demonstrating once more the importance of careful inventory management.

As mentioned earlier, another danger in certain countries is the threat of expropriation. If that threat is large, inventory holdings will be minimized, and goods will be brought in only as needed. Similarly, if the operation involves extraction of raw materials such as oil or bauxite, processing plants may be moved offshore rather than located close to the production site.

Taxes have two effects on multinational inventory management. First, countries often impose property taxes on assets, including inventories, and when this is done, the tax is based on holdings as of a specific date, say, January 1 or March 1.

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[6]The term "dumping" warrants explanation, because the practice is so potentially important in international markets. Suppose Japanese chipmakers have excess capacity. A particular chip has a variable cost of $25, and its "fully allocated cost," which is the $25 plus total fixed cost per unit of output, is $40. Now suppose the Japanese firm can sell chips in the United States at $35 per unit, but if it charges $40, it will not make any sales because U.S. chipmakers sell for $35.50. If the Japanese firm sells at $35, it will cover variable costs plus make a contribution to fixed overhead, so selling at $35 makes sense. Continuing, if the Japanese firm can sell in Japan at $40, but U.S. firms are excluded from Japanese markets by import duties or other barriers, the Japanese will have a huge advantage over U.S. manufacturers. This practice of selling goods at lower prices in foreign markets than at home is called "dumping." U.S. firms are required by antitrust laws to offer the same price to all customers and, therefore, cannot engage in dumping.

Such rules make it advantageous for a multinational firm (1) to schedule production so that inventories are low on the assessment date, and (2) if assessment dates vary among countries in a region, to hold safety stocks in different countries at different times during the year.

Finally, multinational firms may consider the possibility of at-sea storage. Oil, chemical, grain, and other companies that deal in a bulk commodity that must be stored in some type of tank can often buy tankers at a cost not much greater—or perhaps even less, considering land cost—than land-based facilities. Loaded tankers can then be kept at sea or at anchor in some strategic location. This eliminates the danger of expropriation, minimizes the property tax problem, and maximizes flexibility with regard to shipping to areas where needs are greatest or prices highest.

This discussion has only scratched the surface of inventory management in the multinational corporation—the task is much more complex than for a purely domestic firm. However, the greater the degree of complexity, the greater the rewards from superior performance, so if you want challenge along with potentially high rewards, look to the international arena.

SELF-TEST

What are some factors that make cash management especially complicated in a multinational corporation?
Why is granting credit especially risky in an international context?
Why is inventory management especially important for a multinational firm?

Summary

Multinational companies have more opportunities but also face different risks than do companies that operate only in their home market. This chapter discussed many of the key trends affecting the global markets today, and it described the most important differences between multinational and domestic financial management. The key concepts are listed below:

- **International operations** are becoming increasingly important to individual firms and to the national economy. A **multinational,** or **global, corporation** is a firm that operates in an integrated fashion in a number of countries.
- Companies "go global" for six primary reasons: (1) **to expand their markets,** (2) **to obtain raw materials,** (3) **to seek new technology,** (4) **to lower production costs,** (5) **to avoid trade barriers,** and (6) **to diversify.**
- Six major factors distinguish financial management as practiced by domestic firms from that practiced by multinational corporations: (1) **different currency denominations,** (2) **different economic and legal structures,** (3) **languages,** (4) **cultural differences,** (5) **role of governments,** and (6) **political risk.**
- When discussing **exchange rates,** the number of U.S. dollars required to purchase one unit of a foreign currency is called a **direct quotation,** while the number of units of foreign currency that can be purchased for one U.S. dollar is an **indirect quotation.**
- **Exchange rate fluctuations** make it difficult to estimate the dollars that overseas operations will produce.
- Prior to August 1971, the world was on a **fixed exchange rate system** whereby the U.S. dollar was linked to gold, and other currencies were then

tied to the dollar. After August 1971, the world monetary system changed to a **floating system** under which major world currency rates float with market forces, largely unrestricted by governmental intervention. The central bank of each country does operate in the foreign exchange market, buying and selling currencies to smooth out exchange rate fluctuations, but only to a limited extent.

- The consolidation of the European market has had a profound impact on European exchange rates. The exchange rates for the currencies of each of the participating countries were fixed relative to the **euro.** Consequently, the cross rates between the various participating currencies were also fixed. However, the value of the euro continues to fluctuate.
- **Pegged exchange rates** occur when a country establishes a fixed exchange rate with a major currency. Consequently, the values of pegged currencies move together over time.
- A **convertible currency** is one that may be readily exchanged for other currencies.
- **Spot rates** are the rates paid for delivery of currency "on the spot," while the **forward exchange rate** is the rate paid for delivery at some agreed-upon future date, usually 30, 90, or 180 days from the day the transaction is negotiated. The forward rate can be at either a **premium** or a **discount** to the spot rate.
- **Interest rate parity** holds that investors should expect to earn the same risk-free return in all countries after adjusting for exchange rates.
- **Purchasing power parity,** sometimes referred to as the *law of one price*, implies that the level of exchange rates adjusts so that identical goods cost the same in different countries.
- Granting credit is more risky in an international context because, in addition to the normal risks of default, the multinational firm must worry about **exchange rate changes** between the time a sale is made and the time a receivable is collected.
- Credit policy is important for a multinational firm for two reasons: (1) Much trade is with less-developed nations, and in such situations granting credit is a necessary condition for doing business. (2) The governments of nations such as Japan, whose economic health depends on exports, often help their firms compete by granting credit to foreign customers.
- Foreign investments are similar to domestic investments, but political risk and exchange rate risk must be considered. **Political risk** is the risk that the foreign government will take some action that will decrease the value of the investment, while **exchange rate risk** is the risk of losses due to fluctuations in the value of the dollar relative to the values of foreign currencies.
- Investments in **international capital projects** expose firms to exchange rate risk and political risk. The relevant cash flows in international capital budgeting are the dollars that can be **repatriated** to the parent company.
- **Eurodollars** are U.S. dollars deposited in banks outside the United States. Interest rates on Eurodollars are tied to **LIBOR,** the **London Interbank Offer Rate.**
- U.S. firms often find that they can raise long-term capital at a lower cost outside the United States by selling bonds in the **international capital markets.** International bonds may be either **foreign bonds,** which are exactly like regular domestic bonds except that the issuer is a foreign company, or **Eurobonds,** which are bonds sold in a foreign country but denominated in the currency of the issuing company's home country.

Questions

(26-1) Define each of the following terms:
a. Multinational corporation
b. Exchange rate; fixed exchange rate system; floating exchange rates
c. Trade deficit; devaluation; revaluation
d. Exchange rate risk; convertible currency; pegged exchange rates
e. Interest rate parity; purchasing power parity
f. Spot rate; forward exchange rate; discount on forward rate; premium on forward rate
g. Repatriation of earnings; political risk
h. Eurodollar; Eurobond; international bond; foreign bond
i. The euro

(26-2) Under the fixed exchange rate system, what was the currency against which all other currency values were defined? Why?

(26-3) Exchange rates fluctuate under both the fixed exchange rate and floating exchange rate systems. What, then, is the difference between the two systems?

(26-4) If the Swiss franc depreciates against the U.S. dollar, can a dollar buy more or fewer Swiss francs as a result?

(26-5) If the United States imports more goods from abroad than it exports, foreigners will tend to have a surplus of U.S. dollars. What will this do to the value of the dollar with respect to foreign currencies? What is the corresponding effect on foreign investments in the United States?

(26-6) Why do U.S. corporations build manufacturing plants abroad when they could build them at home?

(26-7) Should firms require higher rates of return on foreign projects than on identical projects located at home? Explain.

(26-8) What is a Eurodollar? If a French citizen deposits $10,000 in Chase Manhattan Bank in New York, have Eurodollars been created? What if the deposit is made in Barclay's Bank in London? Chase Manhattan's Paris branch? Does the existence of the Eurodollar market make the Federal Reserve's job of controlling U.S. interest rates easier or more difficult? Explain.

(26-9) Does interest rate parity imply that interest rates are the same in all countries?

(26-10) Why might purchasing power parity fail to hold?

Self-Test Problem Solution Appears in Appendix A

(ST-1) Cross Rates Suppose the exchange rate between U.S. dollars and EMU euros is €0.98 = $1.00, and the exchange rate between the U.S. dollar and the Canadian dollar is $1.00 = C$1.50. What is the cross rate of euros to Canadian dollars?

Problems Answers Appear in Appendix B

Easy Problems 1–4

(26-1) Cross Rates

A currency trader observes that in the spot exchange market, 1 U.S. dollar can be exchanged for 9 Mexican pesos or for 111.23 Japanese yen. What is the cross rate between the yen and the peso; that is, how many yen would you receive for every peso exchanged?

(26-2) Interest Rate Parity

Six-month T-bills have a nominal rate of 7%, while default-free Japanese bonds that mature in 6 months have a nominal rate of 5.5%. In the spot exchange market, 1 yen equals $0.009. If interest rate parity holds, what is the 6-month forward exchange rate?

(26-3) Purchasing Power Parity

A television set costs $500 in the United States. The same set costs 550 euros in France. If purchasing power parity holds, what is the spot exchange rate between the euro and the dollar?

(26-4) Exchange Rate

If British pounds sell for $1.50 (U.S.) per pound, what should dollars sell for in pounds per dollar?

Intermediate Problems 5–8

(26-5) Currency Appreciation

Suppose that 1 Swiss franc could be purchased in the foreign exchange market for 60 U.S. cents today. If the franc appreciated 10% tomorrow against the dollar, how many francs would a dollar buy tomorrow?

(26-6) Cross Rates

Suppose the exchange rate between U.S. dollars and the Swiss franc was SFr1.6 = $1, and the exchange rate between the dollar and the British pound was £1 = $1.50. What was the cross rate between francs and pounds?

(26-7) Interest Rate Parity

Assume that interest rate parity holds. In both the spot market and the 90-day forward market 1 Japanese yen equals 0.0086 dollar. The 90-day risk-free securities yield 4.6% in Japan. What is the yield on 90-day risk-free securities in the United States?

(26-8) Purchasing Power Parity

In the spot market 7.8 pesos can be exchanged for 1 U.S. dollar. A compact disk costs $15 in the United States. If purchasing power parity holds, what should be the price of the same disk in Mexico?

Challenging Problems 9–14

(26-9) Exchange Gains and Losses

You are the vice president of International InfoXchange, headquartered in Chicago, Illinois. All shareholders of the firm live in the United States. Earlier this month, you obtained a loan of 5 million Canadian dollars from a bank in Toronto to finance the construction of a new plant in Montreal. At the time the loan was received, the exchange rate was 75 U.S. cents to the Canadian dollar. By the end of the month, it has unexpectedly dropped to 70 cents. Has your company made a gain or loss as a result, and by how much?

(26-10) Results of Exchange Rate Changes

Early in September 1983, it took 245 Japanese yen to equal $1. More than 20 years later that exchange rate had fallen to 108 yen to $1. Assume the price of a Japanese-manufactured automobile was $8,000 in September 1983 and that its price changes were in direct relation to exchange rates.

a. Has the price, in dollars, of the automobile increased or decreased during the 20-year period because of changes in the exchange rate?
b. What would the dollar price of the car be, assuming the car's price changes only with exchange rates?

(26-11) Spot and Forward Rates

Boisjoly Watch Imports has agreed to purchase 15,000 Swiss watches for 1 million francs at today's spot rate. The firm's financial manager, James Desreumaux, has noted the following current spot and forward rates:

	U.S. Dollar/Franc	Franc/U.S. Dollar
Spot	1.6590	0.6028
30-day forward	1.6540	0.6046
90-day forward	1.6460	0.6075
180-day forward	1.6400	0.6098

On the same day, Desreumaux agrees to purchase 15,000 more watches in 3 months at the same price of 1 million francs.

a. What is the price of the watches, in U.S. dollars, if purchased at today's spot rate?
b. What is the cost, in dollars, of the second 15,000 batch if payment is made in 90 days and the spot rate at that time equals today's 90-day forward rate?
c. If the exchange rate for the Swiss franc is 0.50 to $1 in 90 days, how much will he have to pay for the watches (in dollars)?

(26-12) Interesst Rate Parity

Assume that interest rate parity holds and that 90-day risk-free securities yield 5% in the United States and 5.3% in Germany. In the spot market, 1 euro equals $0.80 dollar.

a. Is the 90-day forward rate trading at a premium or discount relative to the spot rate?
b. What is the 90-day forward rate?

(26-13) Foreign Investment Analysis

After all foreign and U.S. taxes, a U.S. corporation expects to receive 3 pounds of dividends per share from a British subsidiary this year. The exchange rate at the end of the year is expected to be $1.60 per pound, and the pound is expected to depreciate 5% against the dollar each year for an indefinite period. The dividend (in pounds) is expected to grow at 10% a year indefinitely. The parent U.S. corporation owns 10 million shares of the subsidiary. What is the present value in dollars of its equity ownership of the subsidiary? Assume a cost of equity capital of 15% for the subsidiary.

(26-14) Foreign Capital Budgeting

Solitaire Machinery is a Swiss multinational manufacturing company. Currently, Solitaire's financial planners are considering undertaking a 1-year project in the United States. The project's expected dollar-denominated cash flows consist of an initial investment of $1,000 and a cash inflow the following year of $1,200. Solitaire estimates that its risk-adjusted cost of capital is 14%. Currently, 1 U.S. dollar will buy 1.62 Swiss francs. In addition, 1-year risk-free securities in the United States are yielding 7.25%, while similar securities in Switzerland are yielding 4.5%.

a. If this project were instead undertaken by a similar U.S.-based company with the same risk-adjusted cost of capital, what would be the net present value and rate of return generated by this project?
b. What is the expected forward exchange rate 1 year from now?
c. If Solitaire undertakes the project, what is the net present value and rate of return of the project for Solitaire?

Spreadsheet Problem

(26-15) Build a Model: Multinational Financial Management

e-resource

Start with the partial model in the file ***FM12 Ch 26 P15 Build a Model.xls*** from the textbook's Web site. Yohe Telecommunications is a multinational corporation that produces and distributes telecommunications technology. Although its corporate headquarters are located in Maitland, Florida, Yohe usually must buy its raw materials in several different foreign countries using several different foreign currencies. The matter is further complicated because Yohe usually sells its products in other foreign countries. One product in particular, the SY-20 radio transmitter, draws its principal components, Component X, Component Y, and Component Z, from Germany, Mexico, and England, respectively. Specifically, Component X costs 84 euros, Component Y costs 650 Mexican pesos, and Component Z costs 105 British pounds. The largest market for the SY-20 is in Japan, where it sells for 38,000 Japanese yen. Naturally, Yohe is intimately concerned with economic conditions that could adversely affect dollar exchange rates. You will find Tables 26-1, 26-2, and 26-3 useful for this problem.

a. How much, in dollars, does it cost for Yohe to produce the SY-20? What is the dollar sale price of the SY-20?
b. What is the dollar profit that Yohe makes on the sale of the SY-20? What is the percentage profit?
c. If the U.S. dollar were to weaken by 10% against all foreign currencies, what would be the dollar profit for the SY-20?
d. If the U.S. dollar were to weaken by 10% only against the Japanese yen and remain constant relative to all other foreign currencies, what would be the dollar and percentage profits for the SY-20?
e. Using the forward exchange information from Table 26-3, calculate the return on 1-year securities in England, if the rate of return on 1-year securities in the United States is 4.9%.
f. Assuming that purchasing power parity (PPP) holds, what would be the sale price of the SY-20 if it were sold in England rather than in Japan?

Cyberproblem

e-resource

Please go to the textbook's Web site to access any Cyberproblems.

Mini Case

Citrus Products Inc. is a medium-sized producer of citrus juice drinks with groves in Indian River County, Florida. Until now, the company has confined its operations and sales to the United States, but its CEO, George Gaynor, wants to expand into Europe. The first step would be to set up sales subsidiaries in Spain and Sweden, then to set up a production plant in Spain, and, finally, to distribute the product throughout the European common market. The firm's financial manager, Ruth Schmidt, is enthusiastic about the plan, but she is worried about the implications of the foreign expansion on the firm's financial management process. She has asked you, the firm's most recently hired financial analyst, to develop a 1-hour tutorial package that explains the basics of multinational financial management. The tutorial will be presented at the next board of directors' meeting. To get you started, Schmidt has supplied you with the following list of questions.

a. What is a multinational corporation? Why do firms expand into other countries?
b. What are the six major factors that distinguish multinational financial management from financial management as practiced by a purely domestic firm?
c. Consider the following illustrative exchange rates.

	U.S. Dollars Required to Buy One Unit of Foreign Currency
Euro	0.8000
Swedish krona	0.1000

   (1) Are these currency prices direct quotations or indirect quotations?
   (2) Calculate the indirect quotations for euros and kronas.
   (3) What is a cross rate? Calculate the two cross rates between euros and kronas.
   (4) Assume Citrus Products can produce a liter of orange juice and ship it to Spain for $1.75. If the firm wants a 50% markup on the product, what should the orange juice sell for in Spain?
   (5) Now, assume Citrus Products begins producing the same liter of orange juice in Spain. The product costs 2.0 euros to produce and ship to Sweden, where it can be sold for 20 kronas. What is the dollar profit on the sale?
   (6) What is exchange rate risk?

d. Briefly describe the current international monetary system. How does the current system differ from the system that was in place prior to August 1971?
e. What is a convertible currency? What problems arise when a multinational company operates in a country whose currency is not convertible?
f. What is the difference between spot rates and forward rates? When is the forward rate at a premium to the spot rate? At a discount?
g. What is interest rate parity? Currently, you can exchange 1 euro for 0.8100 dollar in the 180-day forward market, and the risk-free rate on 180-day securities is 6% in the United States and 4% in Spain. Does interest rate parity hold? If not, which securities offer the highest expected return?
h. What is purchasing power parity? If grapefruit juice costs $2.00 a liter in the United States and purchasing power parity holds, what should be the price of grapefruit juice in Spain?

i. What effect does relative inflation have on interest rates and exchange rates?
j. Briefly discuss the international capital markets.
k. To what extent do average capital structures vary across different countries?
l. Briefly describe special problems that occur in multinational capital budgeting and describe the process for evaluating a foreign project. Now consider the following project: A U.S. company has the opportunity to lease a manufacturing facility in Japan for 2 years. The company must spend ¥1 billion initially to refurbish the plant. The expected net cash flows from the plant for the next 2 years, in millions, are CF_1 = ¥500 and CF_2 = ¥800. A similar project in the United States would have a risk-adjusted cost of capital of 10%. In the United States, a 1-year government bond pays 2% interest and a 2-year bond pays 2.8%. In Japan, a 1-year bond pays 0.05% and a 2-year bond pays 0.26%. What is the project's NPV?
m. Briefly discuss special factors associated with the following areas of multinational working capital management.
   (1) Cash management
   (2) Credit management
   (3) Inventory management

Selected Additional Case

The following case from Textchoice, *Thomson Learning's online library, covers many of the concepts discussed in this chapter and is available at* ***http://www.textchoice2.com.***

Klein-Brigham Series:
Case 18, "Alaska Oil Corporation."