

CHAPTER 19

MULTINATIONAL FINANCIAL MANAGEMENT¹

U.S. Firms Look Overseas to Enhance Shareholder Value

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, Merrill Lynch, McDonald's, and AFLAC all receive more than 20 percent of their revenues from foreign sales.

The trend is even more pronounced in profits. In recent years, Coca-Cola and many other companies have made more money in the Pacific Rim and western Europe than in the United States. All told, Coke now reports that more than 75 percent of its operating profits come from outside of North America. As a result, economic events around the globe and changing exchange rates now have a profound effect on Coke's bottom line.

Successful global companies such as Coca-Cola 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 help 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's Philips, France's Thomson, and Japan's Fujitsu and Honda are all waging campaigns to be

¹ This chapter was coauthored with Professor Roy Crum of the University of Florida.

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 where total production 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? And if a U.S. firm such as Xerox produces copiers in Japan and then ships them to the United States, should they be reflected in the trade deficit in the same way as Toshiba copiers imported from Japan? 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.

Putting Things In Perspective

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 impact these differences have on the financial management of multinational businesses.

19.1 MULTINATIONAL OR GLOBAL CORPORATIONS

Multinational, or Global, Corporation

A firm that operates in an integrated fashion in a number of countries.

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 seven primary reasons:

1. *To seek production efficiency.* As competition increases in their domestic marketplace, and as demand increases in other markets, companies often reassess where it is best to produce their products. Depending on the nature of the

production process, the availability of labor with the requisite skills, and the adequacy of transportation infrastructure, companies that operate in high-cost countries have strong incentives to shift production to lower-cost regions. For example, GE has production and assembly plants in Mexico, South Korea, and Singapore, and even Japanese manufacturers have started to shift some of their production to lower-cost countries in the Pacific Rim and the Americas. BMW, in response to high production costs in Germany, built assembly plants in the United States, among other countries. These examples illustrate how companies strive to remain competitive by locating manufacturing facilities wherever in the world they can produce and transport their products to meet the demand in their major markets at the lowest total unit landed costs.

2. *To avoid political, trade, and regulatory hurdles.* Governments sometimes impose tariffs, quotas, and other restrictions on imported goods and services. They often do so to raise revenue, protect domestic industries, and pursue various political and economic policy objectives. To circumvent these government hurdles, firms often develop production facilities abroad. For instance, 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. This was also the situation with India in the 1970s when it was following a development strategy to compete domestically with imported products. 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. GlaxoSmithKline (the result of a 2000 merger between Glaxo Wellcome and SmithKline Beecham) now identifies itself as an inside player in both Europe and the United States.
3. *To broaden their markets.* After a company's home market matures and competition becomes more intense, growth opportunities are often better in foreign markets. According to Vernon's product life-cycle theory, a firm first produces in its home market, where it can better develop its product and satisfy local customers.² This attracts competitors, but when the home market is expanding rapidly, new customers provide the sales growth desired. However, as the home market matures, and the growth of total demand slows, competition becomes more intense. At the same time, demand for the product develops abroad, and this creates conditions favoring production in foreign countries both to satisfy foreign demand and to cut production and transportation costs so that the company can remain competitive. Thus, such homegrown firms as IBM, 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.
4. *To seek raw materials and new technology.* Supplies of many raw materials that are important for industrial societies are geographically dispersed, so companies must go where the materials are found, no matter how challenging it may be to operate in some of the locations. For example, major deposits of oil are located on the northern coast of Alaska, in Siberia, and in the deserts of the Middle East, all of which present unique challenges. This is why many U.S. oil companies, such as ExxonMobil, have major production facilities around the world to ensure access to the basic input resources needed to sustain the companies' primary business line. Because ExxonMobil has refineries,

² Raymond Vernon, "International Investment and International Trade in the Product Cycle," *Quarterly Journal of Economics* Vol. 80 (1966), pp. 190–207.

Vertically Integrated Investment

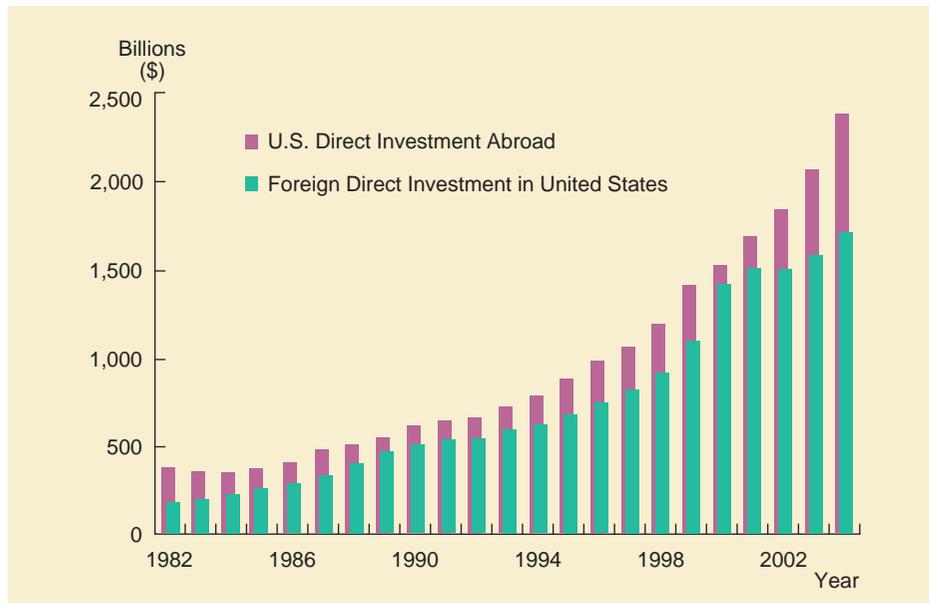
Occurs when a firm undertakes an investment to secure its input supply at stable prices.

distribution facilities, and oil production fields, this type of investment is referred to as a **vertically integrated investment**, whereby the firm undertakes an investment to secure its supply of inputs at stable prices.

5. *To protect the secrecy of their processes and products.* Firms often possess special intangible assets such as brand names, technological and marketing know-how, managerial expertise, and superior research and development (R&D) capabilities among others. Unfortunately, property rights in intangible assets are often difficult to protect, particularly in foreign markets. Firms sometimes invest abroad rather than license local foreign firms in order to protect the secrecy of their production process, distribution system, or the product itself. Once a firm's formula or production process is revealed to other local firms, they may then more easily develop similar products or processes, which will hurt firm sales. For example, to protect their formula, Coke builds bottling plants and distribution networks in foreign markets but imports the concentrate or syrup required to make the product from the United States. In the 1960s, Coke faced strong pressure from the Indian government to reveal its formula in order to continue its operations in India. Rather than reveal its formula, Coke withdrew its operations from India until the foreign investment climate improved.
6. *To diversify.* By establishing worldwide production facilities and markets, firms can cushion the effect 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. Also, oil companies were able to weather the recent disruption in Venezuelan oil production by increasing production in Mexico and elsewhere in the world. In general, geographic diversification of inputs and outputs works because the economic fluctuations or political vagaries of different countries are not perfectly correlated. Therefore, companies investing overseas can benefit from diversification in the same way that individuals benefit from investing in a broad portfolio of stocks. However, because individual shareholders can diversify their investments internationally on their own, it makes less sense for firms to undertake foreign investments solely for diversification purposes. Note, though, that in countries that place constraints on foreign stock ownership or that do not have internationally traded companies, corporate diversification might make sense because then companies can do something that shareholders cannot duplicate easily in their individual portfolios.
7. *To retain customers.* If a company goes abroad and establishes production or distribution operations, it will need inputs and services at these new locations. If it can obtain what it needs from a single supplier that also operates in the same set of countries, then managing the relationship is much easier, and it is likely that economies of scale and other synergies will be obtained. Therefore, from the perspective of the supplier of inputs or services, it makes good business sense to follow customers abroad to retain the business. Large U.S. banks, such as Citibank and Chase, initially expanded abroad to supply banking services to their long-time customers, although they quickly capitalized on their global network to develop new customer relationships. The same history is also true for accounting, law, and advertising firms and other similar service providers.

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 shown in Figure 19-1, and it 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

FIGURE 19-1 *Direct Investment Positions on a Current-Cost Basis, 1982–2004*



Sources: Elena L. Nguyen, "The International Investment Position of the United States at Yearend 2002," *Survey of Current Business*, July 2003, pp. 12–21; Patricia E. Abaroa, "The International Investment Position of the United States at Yearend 2003," *Survey of Current Business*, July 2004, pp. 30–39; and Bureau of Economic Analysis, "U.S. Net International Investment Position at Yearend 2004," *BEA News*, June 30, 2005.

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.



What is a multinational corporation?

Why do companies "go global"?

19.2 MULTINATIONAL VERSUS DOMESTIC FINANCIAL MANAGEMENT

In theory, the concepts and procedures discussed in the first 18 chapters are valid for both domestic and multinational operations. However, some additional factors need to be considered when firms operate globally. Five of these factors are listed here:

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. *Political risk.* Nations are free to place constraints on the transfer or use of corporate resources, and they can change regulations and tax rules at any

time. At one extreme, they can even expropriate assets within their boundaries. Therefore, political risk can take on many subtle to more extreme forms. Of course, political risk is also present for companies operating in a single country, but the important reality for a multinational enterprise is that political risk not only exists but also varies from country to country, and it must be addressed explicitly in any financial analysis.

3. *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 make procedures that are required in one part of the company illegal in others. These differences also make it difficult for executives trained in one country to move easily to another.
4. *Role of governments.* Most financial models developed in the United States assume the existence of a competitive marketplace in which the participants determine the terms of trade. The government, through its power to establish basic ground rules, is involved in the process, but other than taxes, 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 the rest of the world. Although market imperfections can complicate the decision process, they can also be valuable to the extent that they can be overcome by one firm but still serve as barriers to entry by competitors. 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 enterprises. This 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. The ultimate outcome of such negotiations can provide access to additional profitable opportunities for the firm.
5. *Language and cultural differences.* The ability to communicate is critical in all business transactions. In this regard, U.S. citizens are often at a disadvantage because they are generally fluent only in English, while European and Japanese businesspeople are usually fluent in several languages, including English, hence they can operate in U.S. markets more easily than Americans can operate in their countries. At the same time, even within geographic regions that are considered relatively homogenous, 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, decision processes, performance evaluation and compensation system design, interactions with employees, and the ability to curtail unprofitable operations vary dramatically from one country to the next.

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



Identify and briefly discuss five major factors that complicate financial management in multinational firms.

19.3 THE INTERNATIONAL MONETARY SYSTEM

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. Because exchange rates are a function of the supply and demand for various national currencies, the international monetary system is also the blueprint for international trade and capital flows. Thus, the international monetary system ties together global currency, money, capital, real estate, commodity, and real asset markets into a network of institutions and instruments, regulated by intergovernmental agreements, and driven by each country's unique political and economic objectives.³

International Monetary System

The framework within which exchange rates are determined. It is the blueprint for international trade and capital flows.

International Monetary Terminology

When discussing the international monetary system, it is useful to introduce some important concepts and terminology:

1. An **exchange rate** is the price of one country's currency in terms of another currency. For example, on Monday, July 25, 2005, one U.S. dollar would buy 0.5724 British pound, 0.8286 euro, 1.2186 Canadian dollars, or 8.1097 Chinese yuan.
2. A *spot exchange rate* is the quoted price for a unit of foreign currency to be delivered "on the spot," or within a very short period of time. The rate quoted above, £0.5724/\$, is a spot rate as of the close of business on July 25, 2005.
3. A *forward exchange rate* is the quoted price for a unit of foreign currency to be delivered at a specified date in the future. If today were July 25, 2005, and we wanted to know how many pounds we could expect to receive for our dollars on January 25, 2006, we would look at the six-month forward rate, which was £0.5740/\$. Note that a *forward exchange contract* on July 25 would lock in this exchange rate, but no currency would change hands until January 25, 2006. The spot rate on January 25 might be quite different from £0.5740, in which case we would have a profit or a loss on the forward purchase.
4. A *fixed exchange rate* for a currency is set by the government and allowed to fluctuate only slightly (if at all) around the desired rate, called the *par value*. For example, Belize has fixed the exchange rate for the Belizean dollar at BZD 2.00/\$1, and it has maintained this fixed rate for the past few years.

Exchange Rate

The number of units of a given currency that can be purchased for one unit of another currency.



For a listing of world currencies, currency symbols, and their regimes, go to the University of British Columbia Sauder School of Business Pacific Exchange Rate Service Web site, http://fx.sauder.ubc.ca/currency_table.html.

³ 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: Thomson/South-Western, 2004); Mordechai Kreinin, *International Economics: A Policy Approach*, 9th edition (Mason, OH: Thomson/South-Western, 2002); and Joseph P. Daniels and David D. Van Hoose, *International Monetary and Financial Economics*, 2nd edition (Mason, OH: Thomson/South-Western, 2002).

5. A *floating or flexible exchange rate* is one that is not regulated by the government, so supply and demand in the market determine the currency's value. The U.S. dollar and the euro are examples of free-floating currencies. Note, though, that central banks do from time to time intervene in the market to nudge exchange rates up or down, even though they basically float.
6. *Devaluation or revaluation of a currency* is the technical term referring to the decrease or increase in the par value of a currency whose value is fixed. This decision is made by the government, usually without warning. For example, on July 21, 2005, the Chinese government suddenly announced that it was revaluing the yuan to make it 2.1 percent stronger against the U.S. dollar. Even though it was widely believed that the yuan was significantly undervalued, this revaluation caught many by surprise since the exchange rate had been pegged at a fixed rate of CNY 8.2781/\$ for nearly a decade.
7. *Depreciation or appreciation of a currency* refers to a decrease or increase in the foreign exchange value of a floating currency. These changes are caused by market forces rather than by governments.
8. A *soft or weak currency* is one that is expected to depreciate against most other currencies or else is being artificially maintained at an unrealistically high fixed rate by the government through open market purchases. A *hard or strong currency* is expected to appreciate against most other currencies or else is being artificially maintained by the government at an unrealistically low fixed rate. The revaluation of the Chinese yuan suggests that it is a strong currency.

Current Monetary Arrangements

At the most basic level, we can divide currency regimes into two broad groups: floating rates and fixed rates. Within the two regimes, there are graduations among subregimes in terms of how rigidly they adhere to the basic positions. Looking first at the floating-rate category, the two main subgroups are as follows:

1. *Freely floating.* Here the exchange rate is determined by the supply and demand for the currency. Under a **freely-floating regime**, governments may occasionally intervene in the market to buy or sell their currency to stabilize fluctuations, but they do not attempt to alter the absolute level of the rate. This policy exists at one end of the continuum of exchange rate regimes. For example, the currencies of Australia, Brazil, and the Philippines are allowed to float.
2. *Managed floating.* Here 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. For example, the governments of Colombia, Israel, and Poland manage their respective currency's float.

Most developed countries follow either a freely-floating or a managed-float regime. A few developing countries do as well, often reluctantly and as a result of a market that forces them to abandon a fixed-rate regime.

Types of fixed-exchange-rate regimes include the following:

1. *No local currency.* The most extreme position is for the country to have no local currency of its own. The country either uses another country's currency as its legal tender (such as the U.S. dollar in the Panama Canal Zone, Ecuador, and the Turks and Caicos Islands) or else belongs to a group of

Freely-Floating Regime

Occurs when the exchange rate is determined by supply and demand for the currency.

Managed-Float Regime

Occurs when there is significant government intervention to control the exchange rate via manipulation of the currency's supply and demand.

- countries that share a common currency (such as the euro). With this arrangement, the local government surrenders economic regulation.
2. *Currency board arrangement.* Under a variation of the first subregime, 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. This is called a **currency board arrangement**. Argentina had a currency board arrangement before its crisis of January 2002, when it was forced to devalue the peso and default on its debt.
 3. *Fixed peg arrangement.* In a **fixed peg arrangement** the country locks, or “pegs,” its currency to another currency or basket of currencies at a fixed exchange rate. It allows the currency to vary only slightly from its desired rate, and if the currency moves outside the specified limits (often set at ± 1 percent of the target rate), it intervenes to force the currency back within the limits. An example is China, where the yuan is no longer just pegged to the U.S. dollar but rather to a basket of currencies. The Chinese government is keeping the currencies making up the basket secret, but the U.S. dollar will likely remain the most important. For right now (July 2005), China will limit the yuan’s move each day to ± 0.3 percent against the dollar. It’s unclear whether it will move every day or how much it will move over time. Additional examples 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.

Other variations have been used, and new ones are developed from time to time. A majority of the world’s countries employ some sort of fixed-exchange-rate arrangement. So, while the most important currencies (as measured by volume of transactions) are allowed to float, and the international monetary system is often called a floating regime, most currencies are actually fixed in some manner.

Currency Board Arrangement

Occurs when a country has its own currency but commits to exchange it for a specified foreign money unit at a fixed exchange rate and legislates domestic currency restrictions, unless it has the foreign currency reserves to cover requested exchanges.

Fixed Peg Arrangement

Occurs when a country locks its currency to a specific currency or basket of currencies at a fixed exchange rate. The exchange rate is allowed to vary only within ± 1 percent of the target rate.



- What is an international monetary system?
- What is the difference between spot and forward exchange rates?
- What is the difference between floating- and fixed-exchange rates?
- Differentiate between devaluation/revaluation of a currency and depreciation/appreciation of a currency.
- What is meant by a soft or weak currency? A hard or strong currency?
- What are the two broad categories of the various currency regimes?
- What are the subgroups of these two broad categories?

19.4 FOREIGN EXCHANGE RATE QUOTATIONS

Foreign exchange rate quotations can be found in *The Wall Street Journal* and other leading print publications and Web sites. Exchange rates are given in two different ways. As shown in Table 19-1, which is an excerpt from *The Wall Street Journal*, in Column 1, they are quoted as “USD equivalent” and in Column 2 as “Currency per USD.” For example, one Canadian dollar is worth (or can be exchanged for) 0.8206 U.S. dollar, or one U.S. dollar could buy 1.2186 Canadian dollars.



For up-to-date currency quotations on the Web, visit two popular sites: www.bloomberg.com/markets/currencies/fxc.html or finance.yahoo.com/currency.

TABLE 19-1 Sample Exchange Rates: Monday, July 25, 2005

	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)
Brazilian real	\$0.4025	2.4845
British pound	1.7471	0.5724
Canadian dollar	0.8206	1.2186
Denmark krone	0.1618	6.1805
Euro	1.2069	0.8286
Hungarian forint	0.004918	203.33
Israeli shekel	0.2207	4.5310
Japanese yen	0.008974	111.43
Mexican peso	0.0931	10.7400
South African rand	0.1507	6.6357
Swedish krona	0.1281	7.8064
Swiss franc	0.7725	1.2945
Venezuelan bolivar	0.000466	2145.92

Note: Column 2 equals 1.0 divided by Column 1. However, rounding differences do occur.

Source: Adapted from *The Wall Street Journal*, July 26, 2005, p. C12.

Note that if the foreign exchange markets are in equilibrium, which is usually the case for the major traded currencies, then the two quotations must be reciprocals of one another as shown below for the Canadian dollar.

$$\begin{aligned}\text{Canadian dollar: } 1/1.2186 &= 0.8206 \\ 1/0.8206 &= 1.2186\end{aligned}$$

Cross Rates

All of the exchange rates given in Table 19-1 are relative to the U.S. dollar. Suppose, though, that a German executive is flying to Tokyo on business. The exchange rate of interest is not euros or yen per dollar—rather, he or she wants to know how many yen can be purchased with euros. This is called a **cross rate**, and it can be calculated from the following data in Column 2 of Table 19-1:

	Spot Rate
Euro	€0.8286/\$1
Yen	¥111.43/\$1

Because the quotations have the same denominator—one U.S. dollar—we can calculate the cross rate between these (and other) currencies by using the Column 2 quotations. For our German national, the cross rates are found as

$$\text{Euro/yen exchange rate} = \frac{\text{Euro}/\$}{\text{Yen}/\$}$$

and when we cancel the dollar signs, we are left with the number of euros 1 yen would cost.

$$€0.8286/¥111.43 = €0.007436/¥$$

Cross Rate

The exchange rate between any two currencies.

TABLE 19-2 Key Currency Cross Rates

	Dollar	Euro	Pound	SFranc	Peso	Yen	CdnDlr
Canada	1.2186	1.4708	2.1291	0.9414	0.11347	0.01094	—
Japan	111.43	134.49	194.68	86.082	10.376	—	91.442
Mexico	10.7400	12.9621	18.764	8.2966	—	0.09638	8.8132
Switzerland	1.2945	1.5623	2.2616	—	0.12053	0.01162	1.0623
United Kingdom	0.57240	0.6908	—	0.4422	0.05329	0.00514	0.46969
Euro	0.82860	—	1.4476	0.64007	0.07715	0.00744	0.67992
United States	—	1.2069	1.7471	0.77250	0.09311	0.00897	0.82060

Source: Adapted from “Key Currency Cross Rates,” *The Wall Street Journal*, July 26, 2005, p. C12.

Alternatively, we could find the number of yen 1 euro would buy:

$$\text{Yen/euro exchange rate} = \frac{\text{Yen}/\$}{\text{Euro}/\$}$$

$$¥111.43/€0.8286 = ¥134.48/€$$

Note that these two cross rates are reciprocals of one another.

Financial publications such as *The Wall Street Journal* and Web sites such as the Bloomberg and Yahoo sites provide tables of key currency cross rates. Table 19-2 gives the one published in *The Wall Street Journal* on July 26, 2005. Notice that there may be slight rounding differences when you calculate cross rates due to the rounding of individual quotations. Currency traders carry quotations out to 12 decimal places.

To facilitate worldwide currency trading through electronic media, the interbank foreign exchange market has adopted a system under which all quotations are given in European (Column 2) terms with a few exceptions. The exceptions—the euro, British pound, Australian dollar, and New Zealand dollar—are quoted in American terms (Column 1). Because of this convention, traders throughout the world see similar quotations on their computer screens, making it easy for them (and their computers) to compare rates quoted in different markets and to earn arbitrage profits if differences exist.

Interbank Foreign Currency Quotations

The quotations from *The Wall Street Journal* given in Tables 19-1 and 19-2 are sufficient for many purposes. For other purposes, however, additional terminology and conventions are useful. There are two ways to state the exchange rate between two currencies, either in **American** or **European terms**. Accordingly, we need to designate one of the currencies as the “home” currency and the other as the “foreign” currency. This designation is arbitrary. The *home* currency price of one unit of the *foreign* currency is called a **direct quotation**. Thus, to a person who considers the United States to be “home,” American terms represent a direct quotation. On the other hand, the *foreign* currency price of one unit of the *home* currency is called an **indirect quotation**. European terms represent indirect quotations to people in the United States. Note that if the perspective changes and the “home” currency is no longer the U.S. dollar, then the designations of direct and indirect change. For the remainder of this chapter, we will assume that the United States is the “home” country, unless specifically stated otherwise.

American Terms

The foreign exchange rate quotation that represents the number of American dollars that can be bought with one unit of local currency.

European Terms

The foreign exchange rate quotation that represents the units of local currency that can be bought with one U.S. dollar. “European” is intended as a generic term that applies globally.

Direct Quotation

The home currency price of one unit of the foreign currency.

Indirect Quotation

The foreign currency price of one unit of the home currency.



Explain the difference between direct and indirect quotations.

What is a cross rate?

Assume that today 1 Canadian dollar is worth 0.75 U.S. dollar. How many Canadian dollars would you receive for 1 U.S. dollar? (1.333)

Assume that 1 U.S. dollar can either be exchanged for 105 Japanese yen or for 0.80 euro. What is the Euro/yen exchange rate? (€0.007619/¥)



Updated currency spot and forward rates (from 1 to 12 months) are provided by the Bank of Montreal Financial Group's Economic Research and Analysis at <http://www.bmo.com/economic/regular/fxrates.html>.

19.5 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.⁴

Spot Rates and Forward Rates

The exchange rates shown earlier in Tables 19-1 and 19-2 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 111.43 yen per dollar. Unless spot rates change, the U.S. firm will pay the Japanese firm the equivalent of \$4.487 million (500 million yen divided by 111.43 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 111.09 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 111.09 yen per dollar. Therefore, the treasurer of the U.S. firm is able to lock in a payment equivalent to \$4.501 million, no matter what happens to spot rates. This technique, which is called “hedging,” was discussed in Chapter 18.

Spot Rate

The effective exchange rate of a foreign currency for delivery on (approximately) the current day.

Forward Exchange Rate

An agreed-upon price at which two currencies will be exchanged at some future date.

⁴ For a more detailed explanation of exchange rate determination and operations of the foreign exchange market, see Roy L. Crum, Eugene F. Brigham, and Joel F. Houston, *Fundamentals of International Finance* (Mason, OH: Thomson/South-Western, 2005).

TABLE 19-3 Selected Spot and Forward Exchange Rates (Number of Units of Foreign Currency per U.S. Dollar)

	Spot Rate	FORWARD RATES			Forward Rate at a Premium or Discount
		30 Days	90 Days	180 Days	
British pound	0.5724	0.5730	0.5737	0.5740	Discount
Canadian dollar	1.2186	1.2177	1.2158	1.2120	Premium
Japanese yen	111.43	111.09	110.41	109.28	Premium
Swiss franc	1.2945	1.2913	1.2850	1.2740	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. Likewise, when it takes less units of a foreign currency to buy one dollar in the future, the value of the foreign currency is more in the forward market than in the spot market, hence the forward rate is at a premium to the spot rate.

Source: Adapted from *The Wall Street Journal*, July 26, 2005, p. C12.

Forward rates for 30-, 90-, and 180-day delivery, along with the current spot rates for some commonly traded currencies, are given in Table 19-3. If we 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**. Conversely, if we can obtain less of the foreign currency for a dollar in the forward than in the spot market, the forward currency is more valuable than the spot currency, and the forward currency is said to be selling at a **premium**. Thus, because a dollar would buy *fewer* Canadian dollars, yen, and Swiss francs in the forward than in the spot market, the forward Canadian dollars, yen, and Swiss francs are selling at a premium. On the other hand, a dollar would buy more pounds in the forward than in the spot market, so the forward pounds are selling at a discount.



Explain what it means for a forward currency to sell at a discount and at a premium.

Suppose a U.S. firm must pay 200 million Swiss francs to a Swiss firm in 90 days. Briefly explain how the firm would use forward exchange rates to “lock in” the price of the payable due in 90 days.

19.6 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 holds that investors should 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

Discount on Forward Rate

The situation when the spot rate is less than the forward rate.

Premium on Forward Rate

The situation when the spot rate is greater than the forward rate.

Interest Rate Parity

Specifies that investors should expect to earn the same return in all countries after adjusting for risk.

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.

The relationship between spot and forward exchange rates and interest rates, which is known as interest rate parity, is expressed in the following equation:

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

Here both the forward and spot rates are expressed in terms of the amount of home currency received per unit of foreign currency, and r_h and r_f are the periodic interest rates in the home country and the foreign country, respectively. If this relationship does not hold, then currency traders will buy and sell currencies—that is, engage in *arbitrage*—until it does hold.

To illustrate interest rate parity, consider the case of a U.S. investor who can buy default-free 90-day Japanese bonds that promise a 4 percent nominal return. The 90-day interest rate, r_f , is $4\%/4 = 1\%$ because 90 days is one-fourth of a 360-day year. Assume also that the spot exchange rate is \$0.008974, which means that you can exchange 0.008974 dollar for 1 yen, or 111.43 yen per dollar. Finally, assume that the 90-day forward exchange rate is \$0.009057, which means that you can exchange 1 yen for 0.009057 dollar, or receive 110.41 yen per dollar exchanged, 90 days from now.

The U.S. investor can receive a 4 percent annualized return denominated in yen, but if he or she ultimately wants to consume goods in the United States, those yen must be converted to dollars. The dollar return on the investment depends, therefore, on what happens to exchange rates over the next three 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

- Convert \$1,000 to 111,430 yen in the spot market.
- Invest the 111,430 yen in 90-day Japanese bonds that have a 4 percent annualized return or a 1 percent quarterly return, hence will pay $(111,430)(1.01) = 112,544.30$ yen in 90 days.
- Agree today to exchange these 112,544.30 yen 90 days from now at the 90-day forward exchange rate of 110.41 yen per dollar, or for a total of \$1,019.33.

This investment, therefore, has an expected 90-day return of $\$19.33/\$1,000 = 1.933\%$, which translates into a nominal return of $4(1.933\%) = 7.73\%$. In this case, 4 percent of the expected 7.73 percent return is coming from the bond itself, and 3.73 percent arises because the market believes the yen will strengthen relative to the dollar. Note that by locking in the forward rate today, the investor has eliminated any exchange rate risk. And, because the Japanese bond is assumed to be default-free, the investor is assured of earning a 7.73 percent dollar return.

Interest rate parity implies that an investment in the United States with the same risk as a Japanese bond should have an annual return of 7.73 percent. Solving for r_h in the parity equation, we indeed find that the predicted annual interest rate in the United States is 7.73 percent.

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 back to parity.



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? When a currency trades at a forward discount?

Assume that 90-day U.S. securities have a 3.5 percent annualized interest rate, whereas 90-day Canadian securities have a 4 percent annualized interest rate. In the spot market, 1 U.S. dollar can be exchanged for 1.4 Canadian dollars. If interest rate parity holds, what is the 90-day forward exchange rate between U.S. and Canadian dollars? (\$0.7134/C\$ or C\$1.40173/\$)

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

19.7 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 level of exchange rates adjusts 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 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 transactions or transportation costs. The equation for purchasing power parity is shown here:

$$P_h = (P_f)(\text{Spot rate})$$

or

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

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).

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.

Purchasing Power Parity (PPP)

The relationship in which the same products cost roughly the same amount in different countries after taking into account the exchange rate.

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 transactions costs, or 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 complication, when empirically testing to see whether PPP holds, 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.



What is purchasing power parity?

A television set sells for \$1,000 U.S. dollars. In the spot market, $\$1 = 110$ Japanese yen. If purchasing power parity holds, what should be the price (in yen) of the same television set in Japan? (¥110,000)

Price differences in “similar” products in different countries often exist. What can explain these differences?

19.8 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 the methods chosen by multinational corporations for financing their foreign investments, and both have an important effect on the profitability of foreign investments.

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 Canada, Switzerland, and Japan, which have had less inflation than the United States, have *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 our own.*

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 inflation rates 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 relatively inexpensive.



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?

19.9 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.

International Credit Markets

There are three major types of credit markets in the international marketplace that mirror equivalent U.S. markets in many ways. Floating-rate bank loans, called **eurocredits**, are tied to a standard rate known by the acronym LIBOR, which stands for *London Inter Bank Offer Rate*. LIBOR is the interest rate offered by the largest and strongest London-based banks on large deposits. In July 2005, the three-month LIBOR rate was 3.6 percent. Eurocredits tend to be issued for a fixed term with no early repayment. The oldest example of a eurocredit is a **eurodollar** deposit, which is U.S. dollars deposited in a bank outside the United States. Today, eurocredits exist for most major trading currencies.

The eurobond market is the medium- to long-term international market for both fixed- and floating-rate debt. It is almost as old as the eurodollar market and is a natural extension of it. A **eurobond** is an international bond underwritten by an international bank syndicate and sold to investors in countries other than the one in whose money unit the bond is denominated. Thus, U.S. dollar-denominated eurobonds cannot be sold in the United States, sterling eurobonds cannot be sold in the United Kingdom, and yen eurobonds cannot be sold in Japan. This is a true international debt instrument and is usually issued in bearer form, which means that the owner's identity is not registered and known; to receive the interest payments the owner must clip a coupon and present it for payment at one of the designated payor banks. Most eurobonds are

Eurocredits

Floating-rate bank loans, available in most major trading currencies, that are tied to LIBOR.

Eurodollar

A U.S. dollar deposited in a bank outside the United States.

Eurobond

An international bond underwritten by an international syndicate of banks and sold to investors in countries other than the one in whose money unit the bond is denominated.

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 118 different countries: the McDonald's Big Mac hamburger.

The tables shown in Panels A and B on the next page provide information collected during 2005. The Panel A table gives the price of a Big Mac in each country's local currency and the actual dollar exchange rate when these data were collected. In Panel B, the first numeric column calculates the price of the Big Mac in terms of the U.S. dollar—this is obtained by dividing the local price by the actual exchange rate at that time. For example, a Big Mac costs 6.30 Swiss francs in Zurich, which is shown in Panel A. Given an exchange rate of 1.25 Swiss francs per dollar (as shown in Panel A), this implies that the dollar price of a Big Mac is 6.30 Swiss francs/1.25 Swiss francs per dollar \approx \$5.05, shown in Panel B.

The second numeric column in Panel B backs out the implied exchange rate that would hold under PPP. This is obtained by dividing the price of the Big Mac in each local currency by its U.S. price. For example, as shown in Panel A, a Big Mac costs 41.92 rubles in Russia and \$3.06 in the United States. If PPP holds, the exchange rate should be 13.7 rubles per dollar (41.92 rubles/\$3.06), which is shown in Panel B.

Comparing the implied exchange rate (shown in Panel B) to the actual exchange rate (shown in Panel A), we see the extent to which the local currency is under- or overvalued relative to the dollar. Given that

the actual exchange rate at the time was 28.33 rubles per dollar, this implies that the ruble was 52 percent undervalued, which is shown in the last column of Panel B.

The evidence suggests that strict PPP does not hold, but recent research suggests that the Big Mac test may shed some insights about where exchange rates are headed. The average price of a Big Mac within the European Monetary Union (EMU) is 2.91 euros. This implies that the euro's PPP is \$1.05, so at its current rate of \$1.23 the euro is overvalued by 17 percent.

England, Sweden, Switzerland, and Denmark—four European countries that are not part of the EMU—have currencies that are significantly overvalued against the dollar. The British pound is overvalued by 12 percent, the Swedish krona is overvalued by 36 percent, the Swiss franc is overvalued by 65 percent, and the Danish krone is overvalued by 50 percent. In contrast, the Japanese yen is the most undervalued rich-world currency—by 23 percent.

According to the Big Mac Index, the U.S. dollar is no longer overvalued against the euro. However, the dollar may decline in value because of the increasing difficulty in financing the U.S. government's huge current account deficit. In addition, the index indicates that the Japanese yen is likely to see a large gain and the British pound will continue to fall against the euro. Moreover, this index suggests that the Chinese yuan was significantly undervalued relative to the U.S. dollar. Indeed, a month after this index was published, the Chinese government did announce a 2.1 percent revaluation of the yuan.

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. In other words, the Chinese yuan is the most undervalued currency and the Swiss franc is the most overvalued.

Sources: Adapted from "Fast Food and Strong Currencies," *The Economist*, Vol. 375 (June 11, 2005), pp. 70–72; and Li Lian Ong, "Burgernomics: The Economics of the Big Mac Standard," *Journal of International Money and Finance*, Vol. 16, no. 6 (1997), pp. 867–878.

PANEL A

	Big Mac Prices in Local Currency ^b	Actual Dollar Exchange Rate, 4/05 ^b
United States ^a	\$3.06	—
Argentina	Peso4.74	2.89
Australia	A\$3.24	1.30
Brazil	Real5.91	2.47
Britain	£1.88	1.83 ^e
Canada	C\$3.27	1.24
Chile	Peso1,499.40	592.65
China	Yuan10.50	8.26
Czech Republic	Koruna56.30	24.48
Denmark	DKr27.75	6.06
Egypt	Pound9.00	5.80
Euro area	€2.91	1.23 ^g
Hong Kong	HK\$12.00	7.79
Hungary	Forint529.38	203.61
Indonesia	Rupiah14,599.26	9,542.00
Japan	¥250.00	106.84
Malaysia	M\$5.26	3.81
Mexico	Peso28.00	10.85
New Zealand	NZ4.44	1.40
Peru	NewSol9.00	3.26
Philippines	Peso79.87	54.33
Poland	Zloty6.49	3.31
Russia	Rouble41.92	28.33
Singapore	S\$3.61	1.66
South Africa	Rand13.95	6.64
South Korea	Won2,500.02	1,004.02
Sweden	SKr30.91	7.41
Switzerland	SFr6.30	1.25
Taiwan	NT\$74.97	31.11
Thailand	Baht59.98	40.52
Turkey	Lira4.01	1.37
Venezuela	Bolivar5,599.80	2,629.01

PANEL B

	Big Mac Prices in Dollars ^c	Implied PPP of the Dollar ^d	Under (-) Over (+) Valuation against the Dollar, %
United States ^a	\$3.06	—	—
Argentina	1.64	1.55	-46
Australia	2.50	1.06	-18
Brazil	2.39	1.93	-22
Britain	3.44	1.63 ^e	12
Canada	2.63	1.07	-14
Chile	2.53	490	-17
China	1.27	3.43	-59
Czech Republic	2.30	18.4	-25
Denmark	4.58	9.07	50
Egypt	1.55	2.94	-49
Euro area	3.58 ^f	1.05 ^g	17
Hong Kong	1.54	3.92	-50
Hungary	2.60	173	-15
Indonesia	1.53	4,771	-50
Japan	2.34	81.7	-23
Malaysia	1.38	1.72	-55
Mexico	2.58	9.15	-16
New Zealand	3.17	1.45	4
Peru	2.76	2.94	-10
Philippines	1.47	26.1	-52
Poland	1.96	2.12	-36
Russia	1.48	13.7	-52
Singapore	2.17	1.18	-29
South Africa	2.10	4.56	-31
South Korea	2.49	817	-19
Sweden	4.17	10.1	36
Switzerland	5.05	2.06	65
Taiwan	2.41	24.5	-21
Thailand	1.48	19.6	-52
Turkey	2.92	1.31	-5
Venezuela	2.13	1,830	-30

Notes:

^a Average of New York, Chicago, San Francisco, and Atlanta.

^b Calculated from data provided in article.

^c At current exchange rate.

^d Purchasing power parity: Local price divided by price in the United States.

^e Dollars per pound.

^f Weighted average of member countries.

^g Dollars per euro.

Sources: McDonald's; and "Fast Food and Strong Currencies," *The Economist*, Vol. 375 (June 11, 2005), pp. 70–72.

Stock Market Indices Around the World

In Chapter 5, we described the major U.S. stock market indices. As discussed herein, similar market indices also exist for each major world financial center. The accompanying figure compares four of these indices against the U.S. indices.

Hong Kong

In Hong Kong, the primary stock index is the Hang Seng. Created by HSI Services Limited, the Hang Seng index reflects the performance of the Hong Kong stock market. It is composed of 33 domestic stocks (accounting for about 70 percent of the market's capitalization), which are divided into four subindices: Commerce and Industry, Finance, Utilities, and Properties.

Germany

The major indicator of the German stock market, the XETRA DAX, is comprised of 30 German blue chip stocks. These stocks are all listed on the Frankfurt exchange, and they are representative of the industrial structure of the German economy.

Great Britain

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 whose value is calculated every minute of trading.

Japan

In Japan, the principal barometer of stock performance is the Nikkei 225 Index. The index's value,

which is calculated every minute throughout daily trading, consists of a collection of highly liquid equity issues thought to be representative of the Japanese economy.

Chile

The Santiago Stock Exchange has three main share indices: the General Stock Price Index (IGPA), the Selective Stock Price Index (IPSA), and the INTER-10 Index. The IPSA, which reflects the price variations of the most active stocks, is composed of 40 of the most actively traded stocks on the exchange.

India

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.

Spain

In Spain, the IBEX 35 is the official index for measuring equity market performance for continuously traded stocks. This index is composed of the 35 most actively traded securities on the Joint Stock Exchange System (comprising the four Spanish stock exchanges).

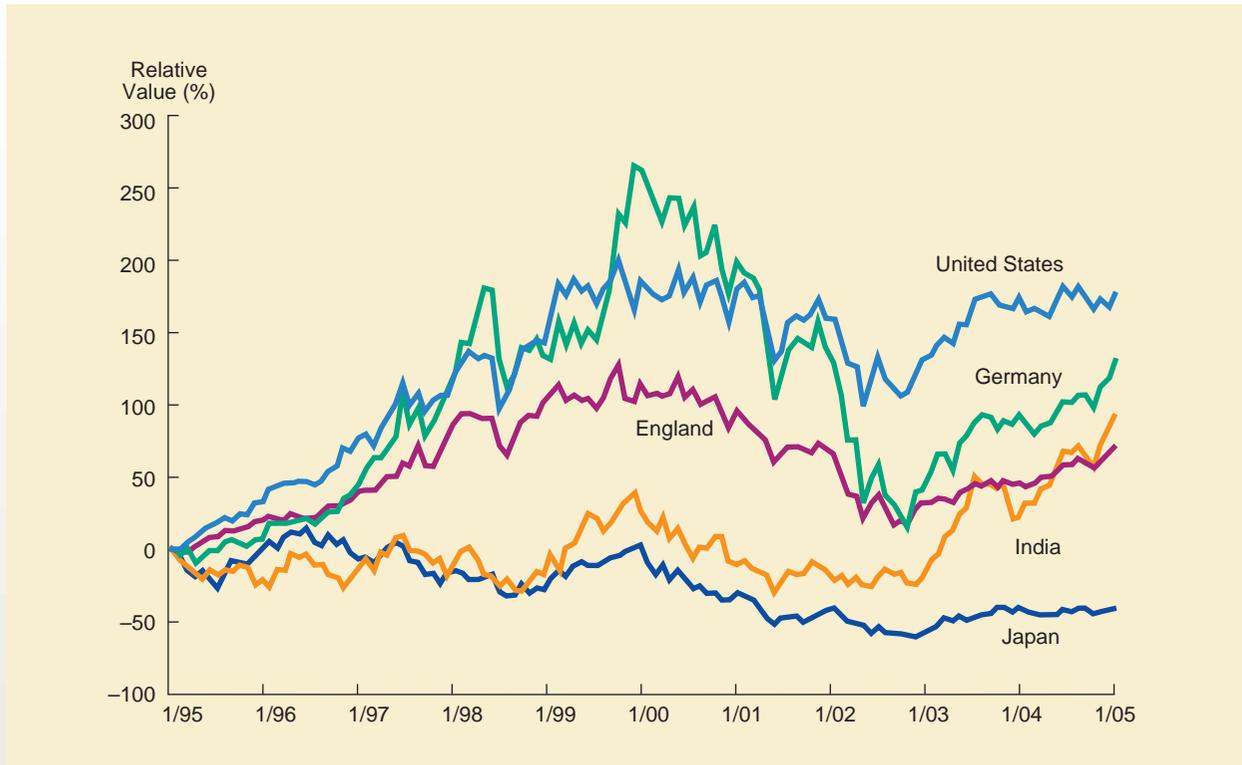
not rated by one of the rating agencies such as S&P or Moody's, although an increasing number of them are starting to be rated. Eurobonds can be issued with either a fixed coupon rate or a floating rate depending on the preferences of the issuer, and they have medium- or long-term maturities.

Another type of international bond is a **foreign bond**. A foreign bond is issued in the domestic capital market of the country in whose currency the bond is denominated and is underwritten by investment banks from the same country. The only thing foreign about a foreign bond is the nationality of the borrower. For instance, Canadian companies often issue U.S. dollar-denominated foreign bonds in New York to fund their U.S. operations. Foreign bonds issued in the United States are sometimes called "Yankee bonds." Similarly, "bulldogs" are foreign bonds issued in London, and "samurai bonds" are foreign bonds issued in Tokyo. Foreign bonds can be either fixed or floating and have the same maturities as the purely domestic bonds with which they must compete for funding.

Foreign Bond

A type of international bond issued in the domestic capital market of the country in whose currency the bond is denominated, and underwritten by investment banks from the same country.

Selected International Stock Indices—Compound Returns Since January 1995



Source: Adapted from Yahoo Finance historical quotes obtained from the Web site at <http://finance.yahoo.com>.

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

American Depository Receipts (ADRs)

Certificates representing ownership of foreign stock held in trust.

States, four stock exchanges in Switzerland, and the Frankfurt stock exchange in Germany. Some 500 foreign stocks are listed in the United States—one example 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.



What are the three major types of international credit markets?

What is LIBOR?

What are ADRs?

19.10 INTERNATIONAL CAPITAL BUDGETING

Up to now, we have discussed the general environment in which multinational firms operate. In the remainder of the chapter, we will see how international factors affect key corporate decisions. We begin with capital budgeting. Although the same basic principles of capital budgeting analysis apply to both foreign and domestic operations, there are some key differences. First, cash flow estimation is more complex for overseas 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. Second, these cash flows must be converted into the parent company's currency, hence they are subject to exchange rate risk. For example, General Motors' German subsidiary may make a profit of 100 million euros in 2005, but the value of this profit to GM will depend on the dollar/euro exchange rate: How many *dollars* will 100 million euros buy?

Dividends and royalties are normally taxed by both foreign and home-country governments. 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.

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*. The present value of those cash flows is found by applying an appropriate discount rate, and this present value is then compared with the parent's required investment to determine the project's NPV.

In addition to the complexities of the cash flow analysis, *the cost of capital may be different for a foreign project than for an equivalent domestic project, because foreign projects may be more or less risky*. A higher risk could arise from two primary sources—(1) exchange rate risk and (2) political risk. A lower risk might result from international diversification.

Repatriation of Earnings

The process of sending cash flows from a foreign subsidiary back to the parent company.

Exchange rate risk relates to the value of the basic cash flows in the parent company's home currency. The foreign currency cash flows to be turned over to the parent must be converted into U.S. dollars by translating them at expected future exchange rates. An analysis should be conducted to ascertain the effects of exchange rate variations, and, on the basis of this analysis, an exchange rate risk premium should be added to the domestic cost of capital to reflect this risk. It is sometimes possible to hedge against exchange rate fluctuations, 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 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 the expropriation without compensation of the subsidiary's assets, but it also includes less drastic actions that reduce the value of the parent firm's investment in the foreign subsidiary, including 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, and the assets of many companies in Iraq, Iran, and Cuba.

Note that companies can take several steps to reduce the potential loss from expropriation: (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, and (3) obtain insurance against economic losses due to expropriation from a source such as the Overseas Private Investment Corporation (OPIC). In the latter case, insurance premiums would have to be added to the project's cost.

Several organizations rate the country risk, or the risk associated with investing in a particular country. These ratings are based on the country's social, political, and economic environment, or its **business climate**.

Perhaps surprisingly, many of these types of studies suggest that the United States does not have the lowest level of country risk. This is particularly significant because even though people in the United States often assume that our bonds have no country risk, others do not agree. Foreign investors are concerned about how changes in U.S. policies (say, tax and Federal Reserve policies) might affect their investments. To the extent that these perceptions about U.S. country risk influence investors' willingness to hold U.S. securities, they will have an effect on U.S. interest rates.

Exchange Rate Risk

The risk that relates to what the basic cash flows will be worth in the parent company's home currency.

Political Risk

Potential actions by a host government that would reduce the value of a company's investment.

Business Climate

Refers to a country's social, political, and economic environment.



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 flows 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, political risk, and country risk?

19.11 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 percent debt to total assets (in book value terms), German firms use 64 percent, and U.S. firms use 55 percent. 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 attempts to control for differences in accounting practices. In their study, Rajan and Zingales used a database that covers fewer firms than the OECD but that provides 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 19-4. 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 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 percent (\$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 percent (\$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 TIE 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,

TABLE 19-4 Median Capital Structures among Large Industrialized Countries
(Measured in Terms of Book Value)

Country	Total Liabilities to Total Assets (Unadjusted for Accounting Differences) (1)	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*, Vol. 50, no. 5 (December 1995), pp.1421–1460. Used with permission.

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.



Do international differences in financial leverage exist? Explain.

19.12 MULTINATIONAL WORKING CAPITAL MANAGEMENT

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 are denominated in pesos (Argentina's equivalent of the dollar), so the pesos 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 to purchase 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, know of and are able to take advantage of the best rates available anywhere in the world.

Credit Management

Like most other aspects of finance, credit management in the multinational corporation is similar to but more complex than that in a purely domestic business. First, granting credit is more risky in an international context because, in addition to the normal risks of default, the multinational corporation must also worry about exchange rate fluctuations between the time a sale is made and the time a 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 receive $90,000,000/90 = \$1,000,000$ 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 one 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 can reduce this type of risk, but at a cost.

Offering credit is generally more important for multinational corporations than for purely domestic firms for two reasons. First, much U.S. trade is with poorer, less-developed nations, where granting credit is generally a necessary condition for doing business. Second, and in large part as a result of the first point, developed nations whose economic health depends on exports often help their manufacturing firms compete internationally by granting credit to foreign countries. In Japan, for example, the major manufacturing firms have direct ownership ties with large "trading companies" engaged in international trade, as well as with giant commercial banks. In addition, a government agency, the Ministry of International Trade and Industry (MITI), helps Japanese firms identify potential export markets and also helps potential customers arrange credit for purchases from Japanese firms. In effect, the huge Japanese trade surpluses are used to finance Japanese exports, thus helping to perpetuate their favorable

trade balance. The United States has attempted to counter with the Export-Import Bank, which is funded by Congress, but the fact that the United States has a large balance of payments deficit is clear evidence that we have been less successful than others in world markets in recent years.

The huge debt that countries such as Korea and Thailand owe U.S. and other international banks is well known, and this situation illustrates how credit policy (by banks in this case) can go astray. The banks face a particularly sticky problem with these loans, because if a sovereign nation defaults, the banks cannot lay claim to the assets of the country as they could if a corporate customer defaulted. Note too that although the banks' loans to foreign governments often get most of the headlines, many U.S. multinational corporations are also in trouble as a result of granting credit to business customers in the same countries where bank loans to governments are on shaky ground.

By pointing out the risks in granting credit internationally, we are not suggesting that such credit is bad. Quite the contrary, for the potential gains from international operations far outweigh the risks, at least for companies (and banks) that have the necessary expertise.

Inventory Management

As with most other aspects of finance, inventory management 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 and the subsequent trade embargo, which brought with it the potential for a shutdown of production of about 25 percent 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.⁵ That led Apple to increase

⁵The 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 them for \$35.50. If the Japanese firm sells at \$35, it will cover variable cost 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.

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. 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.



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?

Tying It All Together

Over the past two decades, the global economy has become increasingly integrated, and more and more companies generate more and more of their profits from overseas operations. In many respects, the concepts developed in the first 18 chapters still apply to multinational firms. However, multinational companies have more opportunities but also face different risks than

do companies that operate only in their home market. The 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.

SELF-TEST QUESTIONS AND PROBLEMS (Solutions Appear in Appendix A)

- ST-1 Key terms** Define each of the following terms:
- Multinational corporation
 - Vertically integrated investment
 - International monetary system
 - Exchange rate
 - Freely-floating regime; managed-float regime
 - Currency board arrangement
 - Fixed peg arrangement
 - Cross rate
 - American terms; European terms
 - Direct quotation; indirect quotation
 - Spot rate; forward exchange rate
 - Discount on forward rate; premium on forward rate
 - Interest rate parity; purchasing power parity
 - Eurocredits; eurodollar
 - Eurobond; foreign bond
 - American Depository Receipts (ADRs)
 - Repatriation of earnings; exchange rate risk; political risk; business climate
- ST-2 Cross rates** Suppose the exchange rate between U.S. dollars and EMU euros is €1.1215 = \$1.00, and the exchange rate between the U.S. dollar and the Canadian dollar is \$1.00 = C\$1.5291. What is the cross rate of euros to Canadian dollars?

QUESTIONS

- 19-1** Why do U.S. corporations build manufacturing plants abroad when they could build them at home?
- 19-2** If the euro depreciates against the U.S. dollar, can a dollar buy more or fewer euros as a result?
- 19-3** 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?
- 19-4** Should firms require higher rates of return on foreign projects than on identical projects located at home? Explain.
- 19-5** Does interest rate parity imply that interest rates are the same in all countries?
- 19-6** Why might purchasing power parity fail to hold?
- 19-7** 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.

PROBLEMS

Easy
Problems 1–4

- 19-1 Exchange rate** If British pounds sell for \$1.50 (U.S.) per pound, what should dollars sell for in pounds per dollar?
- 19-2 Cross rates** A currency trader observes that in the spot exchange market, 1 U.S. dollar can be exchanged for 4.0828 Israeli shekels or for 111.23 Japanese yen. What is the cross-exchange rate between the yen and the shekel; that is, how many yen would you receive for every shekel exchanged?
- 19-3 Interest rate parity** Six-month T-bills have a nominal rate of 7 percent, while default-free Japanese bonds that mature in 6 months have a nominal rate of 5.5 percent. In the spot exchange market, 1 yen equals \$0.009. If interest rate parity holds, what is the 6-month forward exchange rate?
- 19-4 Purchasing power parity** A television set costs \$500 in the United States. The same set costs 725 euros. If purchasing power parity holds, what is the spot exchange rate between the euro and the dollar?

Intermediate
Problems 5–11

- 19-5 Exchange rates** Table 19-1 lists foreign exchange rates for July 25, 2005. On that day, how many dollars would be required to purchase 1,000 units of each of the following: British pounds, Canadian dollars, EMU euros, Japanese yen, Mexican pesos, and Swedish kronas?
- 19-6 Exchange rates** Look up the 6 currencies in Problem 19-5 in the foreign exchange section of a current issue of *The Wall Street Journal*.
- What is the current exchange rate for changing dollars into 1,000 units of pounds, Canadian dollars, euros, yen, Mexican pesos, and Swedish kronas?
 - What is the percentage gain or loss between the July 25, 2005, exchange rate and the current exchange rate for each of the currencies in part a?
- 19-7 Currency appreciation** Suppose that 1 Danish krone could be purchased in the foreign exchange market for 14 U.S. cents today. If the krone appreciated 10 percent tomorrow against the dollar, how many kronas would a dollar buy tomorrow?
- 19-8 Cross rates** Suppose the exchange rate between the U.S. dollar and the Swedish krona was 10 krona = \$1.00, and the exchange rate between the dollar and the British pound was £1 = \$1.50. What was the exchange rate between Swedish kronas and pounds?
- 19-9 Cross rates** Look up the 3 currencies in Problem 19-8 in the foreign exchange section of a current issue of *The Wall Street Journal*. What is the current exchange rate between Swedish kronas and pounds?
- 19-10 Interest rate parity** Assume that interest rate parity holds. In both the spot market and the 90-day forward market 1 Japanese yen = 0.0086 dollar. And 90-day risk-free securities yield 4.6 percent in Japan. What is the yield on 90-day risk-free securities in the United States?
- 19-11 Purchasing power parity** In the spot market 7.8 Mexican pesos can be exchanged for 1 U.S. dollar. A compact disc costs \$15 in the United States. If purchasing power parity (PPP) holds, what should be the price of the same disc in Mexico?

Challenging
Problems 12–17

- 19-12 Interest rate parity** Assume that interest rate parity holds and that 90-day risk-free securities yield 5 percent in the United States and 5.3 percent in Britain. In the spot market 1 pound = 1.65 dollars.
- Is the 90-day forward rate trading at a premium or discount relative to the spot rate?
 - What is the 90-day forward rate?
- 19-13 Spot and forward rates** Chamberlain Canadian Imports has agreed to purchase 15,000 cases of Canadian beer for 4 million Canadian dollars at today's spot rate. The firm's financial manager, James Churchill, has noted the following current spot and forward rates:

	U.S. Dollar/Canadian Dollar	Canadian Dollar/U.S. Dollar
Spot	0.6930	1.4430
30-day forward	0.6935	1.4420
90-day forward	0.6944	1.4401
180-day forward	0.6957	1.4374

On the same day, Churchill agrees to purchase 15,000 more cases of beer in 3 months at the same price of 4 million Canadian dollars.

- What is the price of the beer, in U.S. dollars, if it is purchased at today's spot rate?
- What is the cost, in U.S. dollars, of the second 15,000 cases if payment is made in 90 days and the spot rate at that time equals today's 90-day forward rate?
- If the exchange rate for the Canadian dollar is 1.20 to \$1 in 90 days, how much will Churchill have to pay for the beer (in U.S. dollars)?

19-14 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?

19-15 Results of exchange rate changes Early in September 1983, it took 245 Japanese yen to equal \$1. Nearly 22 years later, in July 2005 that exchange rate had fallen to 111 yen to \$1. Assume the price of a Japanese-manufactured automobile was \$9,000 in September 1983 and that its price changes were in direct relation to exchange rates.

- Has the price, in dollars, of the automobile increased or decreased during the 22-year period because of changes in the exchange rate?
- What would the dollar price of the automobile be in July 2005, again assuming that the car's price changes only with exchange rates?

19-16 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 percent against the dollar each year for an indefinite period. The dividend (in pounds) is expected to grow at 10 percent 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 percent for the subsidiary.

19-17 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 percent. 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 percent, while similar securities in Switzerland are yielding 4.5 percent.

- 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?
- What is the expected forward exchange rate 1 year from now?
- If Solitaire undertakes the project, what is the net present value and rate of return of the project for Solitaire?

COMPREHENSIVE/SPREADSHEET PROBLEM

19-18 Multinational financial management 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 Switzerland, France, and England, respectively. Specifically, Component X costs 165 Swiss francs, Component Y

costs 20 euros, 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 19-1, 19-2, and 19-3 useful for this problem.

- How much, in dollars, does it cost for Yohe to produce the SY-20? What is the dollar sale price of the SY-20?
- What is the dollar profit that Yohe makes on the sale of the SY-20? What is the percentage profit?
- If the U.S. dollar were to weaken by 10 percent against all foreign currencies, what would be the dollar profit for the SY-20?
- If the U.S. dollar were to weaken by 10 percent only against the Japanese yen and remained constant relative to all other foreign currencies, what would be the dollar and percentage profits for the SY-20?
- Using the 180-day forward exchange information from Table 19-3, calculate the return on 1-year securities in Switzerland, if the rate of return on 1-year securities in the U.S. is 4.9 percent.
- 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 Japan?

Integrated Case

Citrus Products Inc.

19-19 Multinational financial management 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 the Pacific Rim. The first step would be to set up sales subsidiaries in Japan and Australia, then to set up a production plant in Japan, and, finally, to distribute the product throughout the Pacific Rim. 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.

- What is a multinational corporation? Why do firms expand into other countries?
- What are the 5 major factors that distinguish multinational financial management from financial management as practiced by a purely domestic firm?
- Consider the following illustrative exchange rates:

	U.S. Dollars Required to Buy One Unit of Foreign Currency
Japanese yen	0.009
Australian dollar	0.650

- Are these currency prices direct quotations or indirect quotations?
- Calculate the indirect quotations for yen and Australian dollars.
- What is a cross rate? Calculate the two cross rates between yen and Australian dollars.
- Assume Citrus Products can produce a liter of orange juice and ship it to Japan for \$1.75. If the firm wants a 50 percent markup on the product, what should the orange juice sell for in Japan?
- Now, assume Citrus Products begins producing the same liter of orange juice in Japan. The product costs 250 yen to produce and ship to Australia, where it can be sold for 6 Australian dollars. What is the U.S. dollar profit on the sale?
- What is exchange rate risk?

- d. Briefly describe the current international monetary system. What are the different types of exchange rate systems?
- e. 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?
- f. What is interest rate parity? Currently, you can exchange 1 yen for 0.0095 U.S. dollar in the 30-day forward market, and the risk-free rate on 30-day securities is 4 percent in both Japan and the United States. Does interest rate parity hold? If not, which securities offer the highest expected return?
- g. What is purchasing power parity (PPP)? 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 Australia?
- h. What effect does relative inflation have on interest rates and exchange rates?
- i. (1) Briefly explain the three major types of international credit markets.
(2) Briefly explain how ADRs work.
- j. To what extent do average capital structures vary across different countries?
- k. What is the effect of multinational operations on each of the following financial management topics?
 - (1) Cash management.
 - (2) Capital budgeting decisions.
 - (3) Credit management.
 - (4) Inventory management.



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