

Chapter 19

Multinational Financial Management

Learning Objectives

After reading this chapter, students should be able to:

- ◆ Identify the primary reasons companies choose to go “global.”
- ◆ Explain how exchange rates work and interpret different exchange rate quotations.
- ◆ Discuss the intuition behind interest rate parity and purchasing power parity.
- ◆ Explain the different opportunities and risks that investors face when they invest overseas.
- ◆ Identify some specific challenges that a multinational corporation faces and discuss how they influence its capital budgeting, capital structure, and working capital policies.

Lecture Suggestions

This chapter presents an overview of multinational financial management, including exchange rates, interest rate and purchasing power parity, international capital markets, multinational capital budgeting, and international capital structures.

What we cover, and the way we cover it, can be seen by scanning the slides and Integrated Case solution for Chapter 19, which appears at the end of this chapter's solutions. For other suggestions about the lecture, please see the "Lecture Suggestions" in Chapter 2, where we describe how we conduct our classes.

DAYS ON CHAPTER: 3 OF 56 DAYS (50-minute periods)

Answers to End-of-Chapter Questions

- 19-1** Taking into account differential labor costs abroad, transportation, tax advantages, and so forth, Japanese corporations can maximize long-run profits. There are also nonprofit behavioral and strategic considerations, such as maximizing market share and enhancing the prestige of corporate officers.
- 19-2** A dollar will buy more yen.
- 19-3** There will be an excess supply of yen in the foreign exchange markets, and thus, this will tend to drive down the value of the yen. Foreign investments in Japan will increase.
- 19-4** The foreign project's cash flows have to be converted to U.S. dollars, since the shareholders of the U.S. corporation (assuming they are mainly U.S. residents) are interested in dollar returns. This subjects them to exchange rate risk, and therefore requires an additional risk premium. There is also a risk premium for political risk (mainly the risk of expropriation) that should be included.
- 19-5** No, interest rate parity implies that an investment in the U.S. with the same risk as a similar investment in a foreign country should have the same return. Interest rate parity is expressed as follows:

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

Interest rate parity shows why a particular currency might be at a forward premium or discount. 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.

- 19-6** Purchasing power parity (PPP) assumes there are neither transactions costs nor regulations that limit the ability to buy and sell goods across different 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.
- 19-7** A eurodollar is a dollar deposit in a foreign bank, normally a European bank. The foreign bank need not be owned by foreigners—it only has to be located in a foreign country. For example, a Citibank subsidiary in Paris accepts eurodollar deposits. The Frenchman's deposit at Chase Manhattan Bank in New York is not a eurodollar deposit. However, if he transfers his deposit to a bank in London or Paris, it would be.
- The existence of the eurodollar market makes the Federal Reserve's job of controlling U.S. interest rates more difficult. Eurodollars are outside the direct control of the U.S. monetary authorities. Because of this, interest rates in the United States cannot be insulated from those in other parts of the world. Thus, any domestic policies the Federal Reserve might take toward interest rates would be affected by the eurodollar market.

Solutions to End-of-Chapter Problems

19-1 Dollars should sell for 1/0.00092, or 1087 Korean won per dollar.

19-2 \$1 = 3.50 Israeli shekels; \$1 = 93 Japanese yen; Cross-exchange rate, yen/shekel = ?

$$\text{Cross Rate: } \frac{\text{Dollars}}{\text{Shekel}} \times \frac{\text{Yen}}{\text{Dollar}} = \frac{\text{Yen}}{\text{Shekel}}.$$

Note that an indirect quotation is given for Israeli shekel; however, the cross rate formula requires a direct quotation. The indirect quotation is the reciprocal of the direct quotation. Since \$1 = 3.50 shekels, then 1 shekel = \$0.2857.

$$\begin{aligned}\text{Yen/Shekel} &= \$0.2857 \text{ per shekel} \times 93 \text{ yen per dollar} \\ &= 27 \text{ yen per shekel.}\end{aligned}$$

19-3 r_{NOM} , 6-month T-bills = 4%; r_{NOM} of similar default-free 6-month Japanese bonds = 2.5%; Spot exchange rate: 1 yen = \$0.013; 6-month forward exchange rate = ?

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

$$r_f = 2.5\%/2 = 1.25\%.$$

$$r_h = 4\%/2 = 2\%.$$

$$\text{Spot exchange rate} = \$0.013.$$

$$\frac{\text{Forward exchange rate}}{\$0.013} = \frac{1.02}{1.0125}$$

$$1.0125 \text{ Forward exchange rate} = \$0.0133$$

$$\text{Forward exchange rate} = \$0.013096.$$

The 6-month forward exchange rate is 1 yen = \$0.013096.

19-4 U.S. iPhone = \$500; Malaysian iPhone = 1,800 ringgit; Spot rate between ringgit and dollar = ?

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

$$\$500 = 1,800 \text{ ringgit}(\text{Spot rate})$$

$$500/1,800 = \text{Spot rate}$$

$$\$0.2778 = \text{Spot rate.}$$

$$1 \text{ ringgit} = \$0.2778 \text{ or } \$1 = 3.60 \text{ ringgit.}$$

19-5 From Table 19.1:

Currency	U.S. Dollars Required to Buy One Unit of		Purchase Price in Dollars
	Foreign Currency	$\times 1,000 =$	
British pound	\$1.6426	$\times 1,000 =$	\$1,642.60
Australian dollar	1.0756	$\times 1,000 =$	1,075.60
EMU euro	1.4323	$\times 1,000 =$	1,432.30
Japanese yen	0.01297774	$\times 1,000 =$	12.98
Brazilian real	0.6385	$\times 1,000 =$	638.50
Chinese renminbi	0.1553	$\times 1,000 =$	155.30

19-6 a. Again the answer to this problem depends on the date it is assigned. If the exchange rates taken from *The Wall Street Journal Online* on November 1, 2011 are used; then the following information is obtained:

Currency	U.S. Dollars Required to Buy One Unit of		Purchase Price in Dollars
	Foreign Currency	$\times 1,000 =$	
British pound	1.5948	$\times 1,000 =$	\$1,594.80
Australian dollar	1.0329	$\times 1,000 =$	1032.90
EMU euro	1.3700	$\times 1,000 =$	1,370.00
Japanese yen	0.01275917	$\times 1,000 =$	12.76
Brazilian real	0.5899	$\times 1,000 =$	589.90
Chinese renminbi	0.1574	$\times 1,000 =$	157.40

b. Pound = $(\$1,594.80 - \$1,642.60)/\$1,642.60 = -0.0291 = -2.91\%$.

Australian dollar = $(\$1032.90 - \$1,075.60)/\$1,075.60 = -0.0397 = -3.97\%$.

Euro = $(\$1,370.00 - \$1,432.30)/\$1,432.30 = -0.0435 = -4.35\%$.

Yen = $(\$12.76 - \$12.98)/\$12.98 = -0.0169 = -1.69\%$.

Real = $(\$589.90 - \$638.50)/\$638.50 = -0.0761 = -7.61\%$.

Renminbi = $(\$157.40 - \$155.30)/\$155.30 = 0.01352 = 1.352\%$.

19-7 The price of one Hong Kong dollar is \$0.1290 today. A 10% appreciation will make it worth \$0.1419 tomorrow. A dollar will buy $1/0.1419 = 7.05$ Hong Kong dollars.

19-8 Cross rate = ringgit/dollar \times dollar/100 baht = ringgit/baht
 $= 3.09 \times (3.35/100) = 0.1035$ ringgit per baht.

- 19-9** The answer to this question would depend upon the rates existing at the time the assignment is made. Using the rates quoted in the Foreign Exchange table of *The Wall Street Journal Online* on November 1, 2011:

	<u>U.S. \$ Equivalent</u>	<u>Currency per U.S. \$</u>
Thai baht	0.03239	30.878
Malaysian ringgit	0.3210	3.1157

$$\begin{aligned}\text{Cross rate} &= \text{ringgit/dollar} \times \text{dollars/baht} = \text{ringgit/baht} \\ &= 3.1157 \times 0.03239 = 0.10092 \text{ ringgit per baht.}\end{aligned}$$

- 19-10** Spot rate: 1 yen = \$0.013; Forward rate: 1 yen = \$0.013; r_{NOM} of 90-day Japanese risk-free securities = 2%; r_{NOM} of 90-day U.S. risk-free securities = ?

$$r_f = 2.0\%/4 = 0.50\%; r_h = ?$$

$$\begin{aligned}\frac{\text{Forward exchange rate}}{\text{Spot exchange rate}} &= \frac{1 + r_h}{1 + r_f} \\ \frac{\$0.013}{\$0.013} &= \frac{1 + r_h}{1.005} \\ 1 &= \frac{1 + r_h}{1.005} \\ 1 + r_h &= 1.005 \\ r_h &= 0.005.\end{aligned}$$

$$r_{\text{NOM}} = 0.50\% \times 4 = 2\%.$$

- 19-11** \$1 = S\$1.235; Blu-ray video disc = \$20.00 in the United States; Price of Blu-ray video disc in Singapore = ?

$$1 \text{ Singapore dollar} = 1/1.235 = \$0.8097.$$

$$\begin{aligned}P_h &= P_f(\text{Spot rate}) \\ \$20 &= P_f(\$0.8097) \\ \frac{\$20}{\$0.8097} &= P_f \\ P_f &= \text{S\$24.70.}\end{aligned}$$

$$\text{Check: Spot rate} = \$20/\text{S\$24.70} = \$0.8097 \text{ for S\$1.}$$

- 19-12 a.** r_{NOM} of 90-day U.S. risk-free securities = 3%; r_{NOM} of 90-day Indonesian risk-free securities = 3.5%; Spot rate: 10,000 rupiah = \$1.04; forward rate selling at premium or discount = ?

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

$$r_h = 3\%/4 = 0.75\%; r_f = 3.5\%/4 = 0.875\%; \text{Spot rate} = \$1.04.$$

$$\frac{\text{Forward exchange rate}}{\$1.04} = \frac{1.0075}{1.00875}$$

$$\frac{\text{Forward exchange rate}}{\$1.04} = 0.99876$$

$$\text{Forward exchange rate} = \$1.03871.$$

- b. The forward rate is selling at a discount, since 10,000 rupiah buys fewer dollars in the forward market than it does in the spot. In other words, in the spot market \$1 would buy 9,615 Indonesian rupiah, but at the forward rate \$1 would buy 9,627 Indonesian rupiah; therefore, the forward currency is said to be selling at a discount.

19-13 a. $A\$4,000,000/A\$0.9297 = \$4,302,463.16 \approx \$4,302,463$, or

$$A\$4,000,000 \times \$1.0756 = \$4,302,400. \text{ (Difference is due to rounding.)}$$

b. $A\$4,000,000/A\$0.9400 = \$4,255,319.15 \approx \$4,255,319$, or

$$A\$4,000,000 \times \$1.0633581 = \$4,255,432.40 \approx \$4,255,432.$$

c. If the exchange rate is A\$0.90 to \$1 when payment is due in 3 months, the A\$4,000,000 will cost:

$$A\$4,000,000/A\$0.90 = \$4,444,444.44 \approx \$4,444,444,$$

which is \$141,981 more than the spot price today and \$189,125 more than purchasing a forward contract for 90 days.

19-14 The U.S. dollar liability of the corporation falls from $\$0.16(50,000,000) = \$8,000,000$ to $\$0.10(50,000,000) = \$5,000,000$, corresponding to a gain of 3,000,000 U.S. dollars for the corporation. However, the real economic situation might be somewhat different. For example, the loan is presumably a long-term loan. The exchange rate will surely change again before the loan is paid. What really matters, in an economic sense, is the expected present value of future interest and principal payments denominated in U.S. dollars. There are also possible gains and losses on inventory and other assets of the firm. A discussion of these issues quickly takes us outside the scope of this introductory textbook.

19-15 a. The automobile's value has increased because the dollar has declined in value relative to the yen.

b. $245/77 = 3.1818$, so $\$9,000 \times 3.1818 = \$28,636$.

Note that this represents a 4.2203% compound annual increase over 28 years.

19-16 $D_1 = 3$ Singapore dollars; Exchange rate = \$1.29/S\$1.00; Singapore dollar depreciates 5% against \$. Dividend grows at 10% and $r_s = 13\%$. 10 million shares outstanding.

$$g = \frac{1.10}{1.05} - 1 = 4.7619\%.$$

$$\begin{aligned}
 P_0 &= \frac{D_1}{r_s - g} \\
 &= \frac{3 \times \$1.29}{(0.13 - 0.047619)} \\
 &= \frac{\$3.87}{0.082381} \\
 &= \$46.97685145.
 \end{aligned}$$

$$\begin{aligned}
 \text{Total equity} &= \$46.97685145 \times 10 \text{ million shares} \\
 &= \$469,768,514.
 \end{aligned}$$

- 19-17 a.** If a U.S. based company undertakes the project, the rate of return for the project is a simple calculation, as is the net present value.

$$\text{NPV} = -\$1,000 + \$1,200/1.12 = \$71.43.$$

$$\text{Rate of return} = \$1,200/\$1,000 - 1 = 20\%.$$

- b.** According to interest rate parity, the following condition holds:

$$\begin{aligned}
 \frac{\text{Forward exchange rate}}{\text{Spot exchange rate}} &= \frac{1 + r_{\text{Malaysia}}}{1 + r_{\text{US}}} \\
 \frac{\text{Forward exchange rate}}{3.10} &= \frac{1.0325}{1.05} \\
 \frac{\text{Forward exchange rate}}{3.10} &= 0.98333 \\
 \text{Forward exchange rate} &= 3.0483 \text{ Malaysian ringgit per U.S. \$}.
 \end{aligned}$$

- c.** First, we must adjust the cash flows to reflect YTL's home currency.

Year	CF (\$)	CF (M'sian ringgit)
0	-1,000	-3,100 (-1,000 × 3.10)
1	1,200	3,657.96 (1,200 × 3.0483)

Using the Malaysian ringgit-denominated cash flows, the appropriate NPV and rate of return can be found.

$$\text{NPV} = -3100 + 3657.96/1.12 = 166.03 \text{ Malaysian ringgit}.$$

$$\text{Rate of return} = 3657.96 \text{ MYR}/3100 \text{ MYR} - 1 = 18\%.$$

Note that the rate of return in Malaysian ringgit is 18% vs. 20% in U.S. dollars because the Malaysian ringgit in the forward market is expected to sell at a premium to the U.S. dollar. Thus, the U.S. dollar return is reduced by the appreciation of the Malaysian ringgit to the U.S. dollar.

Comprehensive/Spreadsheet Problem

Note to Instructors:

The solution to this problem is not provided to students at the back of their text. Instructors can access the *Excel* file on the textbook's website.

19-18 a. Input Data

Cost of component X (in Sfrancs)	SFr. 165
Cost of component Y (in euros)	20 €
Cost of component Z (in pounds)	£105
Sale price of the SY-20 (in yen)	¥42,000

We will convert the cost of each component to dollars, and find the total cost of the SY-20. We will do the same to find the dollar sale price.

Component X

Cost of X in \$	=	Cost in Sfrancs	×	Direct spot exchange rate
Cost of X in \$	=	165.00	×	1.2983
Cost of X in \$	=	\$214.22		

Component Y

Cost of Y in \$	=	Cost in euros	×	Direct spot exchange rate
Cost of Y in \$	=	20.00	×	1.4323
Cost of Y in \$	=	\$28.65		

Component Z

Cost of Z in \$	=	Cost in pounds	×	Direct spot exchange rate
Cost of Z in \$	=	105.00	×	1.6426
Cost of Z in \$	=	\$172.47		

TOTAL COST OF THE SY-20 (in dollars) = \$415.34

Revenue from sale of the SY-20

Sale price (in yen)	=	Price in yen	×	Direct spot exchange rate
Sale price (in yen)	=	42,000	×	0.01297774
Sale price (in yen)	=	\$545.07		

SY-20 SALES PRICE (in dollars) = \$545.07

b. The dollar profit from the sale of the SY-20 is simply the sales revenue minus the total cost.

Dollar profit =	Sales price	–	Total cost
Dollar profit =	\$545.07	–	\$415.34
Dollar profit =	\$129.73		

The percentage profit is determined as the dollar profit divided by the total cost.

% profit =	\$ profit	/	Total cost
% profit =	\$129.73	/	\$415.34
% profit =	31.23%		

- c. If the dollar were to weaken by 10% against all currencies, that could be expressed by multiplying the direct quotations of foreign exchange rates by $(1 - \% \text{ change})$, to reflect a 10% decrease in purchasing strength. Since there is a weakening of the dollar, the % is negative.

Change in dollar strength against all currencies **-10%**

We will reproduce the table from the top of the spreadsheet, but we will add a column for the new exchange rates.

	Direct Quotations	Indirect Quotations	New Direct Quotations
British pound	1.6426	0.6088	1.8069
Euro	1.4323	0.6982	1.5755
Japanese yen	0.01297774	77.06	0.01427551
Swiss franc	1.2983	0.7702	1.4281

Now, we will recompute the component costs and sales price of the SY-20.

Component X

Cost of X in \$	=	Cost in Sfrancs	×	Direct spot exchange rate
Cost of X in \$	=	165.00	×	1.4281
New cost of X in \$ = \$235.64				

Component Y

Cost of Y in \$	=	Cost in euros	×	Direct spot exchange rate
Cost of Y in \$	=	20.00	×	1.5755
New cost of Y in \$ = \$31.51				

Component Z

Cost of Z in \$	=	Cost in pounds	×	Direct spot exchange rate
Cost of Z in \$	=	105.00	×	1.8069
New cost of Z in \$ = \$189.72				

TOTAL COST OF THE SY-20 (in dollars) = \$456.87

Revenue from sale of the SY-20

Sale price (in yen)	=	Price in yen	×	Direct spot exchange rate
Sale price (in yen)	=	42,000	×	0.01427551
Sale price (in yen)	=	\$599.57		

SY-20 SALES PRICE (in dollars) = \$599.57

The dollar profit from the sale of the SY-20 is simply the sales revenue minus the total cost.

Dollar profit =	Sales price	–	Total cost
Dollar profit =	\$599.57	–	\$456.87
Dollar profit = \$142.70			

The percentage profit is determined as the dollar profit divided by the total cost.

% profit =	\$ profit	/	Total cost
% profit =	\$142.70	/	\$456.87
% profit =	31.23%		

From this exercise, we see that since all costs and revenues are generated overseas, an across the board weakening of the dollar does not result in any decreased profitability for Yohe's SY-20. The lack of decreased profitability may seem surprising because of the significant increase in cost of the SY-20, but remember that the same increase was observed in the sales price of the SY-20.

- d. Once again, we must reconstruct the currency table from the top of the worksheet. This time, however, we will only be changing the exchange rate for the yen. Again, we will be multiplying the old rate by (1 - % change). Since there is a weakening of the dollar, that % is a negative number.

Change in dollar strength against Japanese yen -10%

	Direct Quotations	Indirect Quotations	New Direct Quotations
British pound	1.6426	0.6088	1.6426
Euro	1.4323	0.6982	1.4323
Japanese yen	0.01297774	77.06	0.01427551
Swiss franc	1.2983	0.7702	1.2983

Now, we will recompute the component costs and sales price of the SY-20.

Component X

Cost of X in \$	=	Cost in Sfrancs	×	Direct spot exchange rate
Cost of X in \$	=	165.00	×	1.2983
New cost of X in \$	=	\$214.22		

Component Y

Cost of Y in \$	=	Cost in euros	×	Direct spot exchange rate
Cost of Y in \$	=	20.00	×	1.4323
New cost of Y in \$	=	\$28.65		

Component Z

Cost of Z in \$	=	Cost in pounds	×	Direct spot exchange rate
Cost of Z in \$	=	105.00	×	1.6426
New cost of Z in \$	=	\$172.47		

TOTAL COST OF THE SY-20 (in dollars) =	\$415.34
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Revenue from sale of the SY-20

Sale price (in yen)	=	Price in yen	×	Direct spot exchange rate
Sale price (in yen)	=	42,000	×	0.01427551
Sale price (in yen)	=	\$599.57		

SY-20 SALES PRICE (in dollars) =	\$599.57
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The dollar profit from the sale of the SY-20 is simply the sales revenue minus the total cost.

Dollar profit =	Sales price	-	Total cost
Dollar profit =	\$599.57	-	\$415.34
Dollar profit =	\$184.23		

The percentage profit is determined as the dollar profit divided by the total cost.

% profit =	\$ profit	/	Total cost
% profit =	\$184.23	/	\$415.34
% profit =	44.36%		

In this instance, we observe that a weakening of the dollar against the yen (all else equal) will result in increased profitability for Yohe. The reason is that the sales price is denominated in yen and the yen is now 10% more valuable than the dollar.

- e. Applying interest rate parity, we can determine the return on 1-year securities in Switzerland.

TABLE 19.3 (abridged)
Forward exchange rates for the Swiss franc^c

	Spot Rate	Forward Rates		
		30 days	90 days	180 days
Swiss franc	0.7702	0.7697	0.7687	0.7682

^c *The Wall Street Journal* (online.wsj.com), August 4, 2011.

Using our knowledge of interest rate parity, the following problem is set up.
Note that the U.S. nominal rate is on an annual basis.

Spot direct exchange rate	1.2983
Forward direct exchange rate (180 days)	1.3017
Home nominal annual interest rate	4.9%
Time to maturity on securities (in years)	0.5

f_t / e_0	=	$(1 + r_h/2) / (1 + r_f/2)$	
1.00265	=	1.02450	/ $1 + r_f/2$
1.02179	=	$1 + r_f/2$	
2.179%	=	$r_f/2$	
4.36%	=	r_f	

- f. Purchasing power parity allows us to establish the following problem.

Price in yen	=	42,000	
Yen/pound exchange rate	=	126.57	
P_h	=	(P_f)	$\times (e_0)$
42,000	=	(P_f)	$\times 126.57$
(in pounds)	$\boxed{\pounds 332}$	=	(P_f)

Integrated Case

19-19

Sedap Tropical Fruit Juice Company ***Multinational Financial Management***

Sedap Tropical Fruit Juice Company is a medium-sized producer of tropical fruit juice drinks with plantations in Peninsular Malaysia. Until now, the company has confined its operations and sales to Malaysia; but its CEO, Abu Hassan, wants to expand into the Pacific Rim. The first step is 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, Kamal Kapoor, 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, Kamal has given you the following list of questions.

A.	What is a multinational corporation? Why do firms expand into other countries?
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Answer: [Show S19-1 through S19-3 here.] Use the examples given here when discussing why firms "go international."

1. **To seek production efficiency.** Companies in high-cost countries are shifting production to low-cost regions. The ability to shift production from country to country has important implications for labor costs in all countries.

2. To avoid political and regulatory hurdles. The most prominent example here is the move by Toyota, Honda, Mazda, and Mitsubishi to produce cars and trucks in the United States to avoid import quotas.
3. To broaden markets. Coca-Cola and McDonald's have expanded around the world to seek new markets. Likewise, Sony, Toshiba, and other Japanese consumer electronics manufacturers have aggressively pushed into the United States.
4. To seek raw materials and new technology. U.S. oil companies have searched around the world for years for new sources of oil. It is not surprising that a large company like Chevron has oil production facilities not only in the continental United States and Alaska, but also in the North Sea, Nigeria, Angola, and Australia. Currently, the company is trying to get a foothold in the Soviet Union.

No one country has the lead in all technologies, so many companies are going global to ensure access to new technologies. For example, in the last several years, there have been several joint ventures between Japanese and American chip manufacturers for the sole purpose of exchanging technology.

5. To protect the secrecy of their processes and products. 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.
6. To diversify. By establishing worldwide production facilities and markets, firms can cushion the impact of adverse economic trends in any single country.

7. To retain customers. 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.

B.	What are the five major factors that distinguish multinational financial management from financial management as practiced by a purely domestic firm?
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Answer: [Show S19-4 here.]

1. Different currency denominations. Cash flows in various parts of multinational corporate systems will be denominated in different currencies. Hence, an analysis of exchange rates, and the effect of fluctuating currency values, must be included in all financial analyses.
2. Political risk. Nations exercise sovereign rights over their people and property. Thus, a government can seize the assets of a multinational corporation, or restrict the repatriation of earnings from the country, and the affected company has no recourse for recovery.
3. Economic and legal ramifications. Each country in which a firm operates will have its own unique political and economic institutions, and institutional differences can cause significant problems when the corporation tries to coordinate and control worldwide operations. For example, tax laws vary from country to country, and what makes sense in one country regarding taxes may not in another. Similarly, differences in

legal systems, such as the common law of Great Britain versus French civil law, complicate legal matters.

4. **Role of governments.** Except for certain industries, the role of government in the United States is to create an environment that promotes free enterprise and competition. However, in many countries, the government takes a much more active role in business affairs, and in some countries, a multinational firm must deal directly with the government to conduct business.
5. **Language and cultural differences.** The ability to communicate is critical in all business matters, and U.S. business men and women have been notoriously poor in learning other languages. In effect, it is easier for foreign firms to invade our markets than for us to invade theirs. It is interesting to note, though, that English has become the international business language. Many business school programs in Europe, for example, Nijenrode in the Netherlands, are conducted in English rather than in the host country language. Also, some multinational companies, such as ABB, a large Swedish firm headquartered in Zurich, have adopted English as the language of corporate communication. Although English is now spoken by most international business people, knowledge of other languages remains critical to the success of multinational firms.

Different countries, and even different regions in a single country, have unique cultural heritages that shape values and influence the role of business in the society. Such differences affect consumption patterns, defining the appropriate firm goals, attitudes toward risk taking, dealings with employees, and so on. For example, most Japanese workers view their jobs as a lifetime commitment, while many American workers view theirs as

temporary until something better comes along. To give another illustration, consider Pepsico's move into the Japanese market by its Frito-Lay subsidiary. At first, Frito-Lay marketed popular American products such as Ruffles potato chips and Doritos corn chips. These products did poorly, and the Japanese venture almost failed, but it was saved when the company began producing a chip with soy sauce and seaweed flavoring.

C. Consider the following illustrative exchange rates:

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

(1) Are these currency prices direct quotations or indirect quotations?

Answer: [Show S19-5 here.] Since they are the prices of foreign currencies expressed in dollars, they are direct quotations.

C. (2) Calculate the indirect quotations for yen and Australian dollars.

Answer: [Show S19-6 here.] Indirect quotations, which are the number of units of foreign currency that can be purchased with one U.S. dollar, are merely the reciprocal of the direct quotation. Here, the table is repeated with the indirect quotations added:

	<u>Direct Quotation: U.S. Dollars Required to Buy One Unit of Foreign Currency</u>	<u>Indirect Quotation: Number of Units of Foreign Currency per U.S. Dollar</u>
Japanese yen	0.009	111.1111
Australian dollar	0.650	1.5385

C. (3) What is a cross rate? Calculate the two cross rates between yen and Australian dollars.

Answer: [Show S19-7 here.] The exchange rate between any two currencies that does not involve U.S. dollars is a cross rate. Here are the two cross rates between yen and Australian dollars:

$$\begin{aligned}\text{Cross rate} &= \frac{\text{Yen}}{\text{U.S. dollar}} \times \frac{\text{U.S. dollar}}{\text{Australian dollar}} \\ &= 111.1111 \times 0.650 = 72.2222 \text{ yen per Australian dollar.}\end{aligned}$$

And,

$$\begin{aligned}\text{Cross rate} &= \frac{\text{Australian dollars}}{\text{U.S. dollar}} \times \frac{\text{U.S. dollars}}{\text{Yen}} \\ &= 1.5385 \times 0.009 = 0.0138 \text{ Australian dollars per yen.}\end{aligned}$$

Note that the two cross rates are reciprocals of one another. Also, note that the cross rates can be calculated by dividing either the direct or indirect quotations. Thus, there are numerous ways of calculating cross rates.

C. (4) Assume that Sedap Tropical Fruit Juice can produce a liter of pineapple juice and ship it to Japan for \$1.75. If the firm wants a 50% markup on the product, what should the pineapple juice sell for in Japan?

Answer: [Show S19-8 here.] There are 111.1111 yen to the U.S. dollar, so the juice must sell for $(1.75)(1.50)(111.1111) = 291.6666$ yen.

C. (5) Now assume that Sedap Tropical Fruit Juice begins producing the same liter of pineapple 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?

Answer: [Show S19-9 here.] 250 yen are equal to $250(0.0138) = 3.45$ Australian dollars, so the profit on the sale in Australia is $6 - 3.45 = 2.55$ Australian dollars. Now, there are 1.5385 Australian dollars to

the U.S. dollar, so the U.S. dollar profit is $2.55/1.5385 = \$1.6575 \approx \1.66 .

C. (6) What is exchange rate risk?

Answer: [Show S19-10 here.] The volatility inherent in a floating exchange rate system increases the uncertainty of cash flows that must be translated from one currency into another. This increase in uncertainty is exchange rate risk. For example, if the U.S. dollar strengthens against the Australian dollar, say from 1.5385 Australian dollars to the U.S. dollar to 2 Australian dollars per U.S. dollar, then the 2.55 Australian dollar profit in Part C. (5) above is reduced to $2.55/2 = \$1.275 \approx \1.28 , down from \$1.66.

D. Briefly describe the current international monetary system. What are the different types of exchange rate systems?

Answer: [Show S19-11 through S19-14 here.] Every nation has a monetary system and a monetary authority. 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.

The two main currency exchange rate systems are floating and fixed. The subgroups of these two systems are as follows:

Floating Exchange Rate System:

1. **Freely Floating.** Occurs when the exchange rate is determined by supply and demand for the currency.
2. **Managed Floating.** Occurs when there is significant government intervention to control the exchange rate via manipulation of the currency's supply and demand.

Fixed Exchange Rate System:

1. **No local currency.** The most extreme position is for the country to have no local currency of its own. The country uses another country's currency as its legal tender or else belongs to a group of countries that share a common currency.
2. **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.
3. **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 $\pm 1\%$ of the target rate.

**E. What is the difference between spot rates and forward rates?
When is the forward rate at a premium to the spot rate? When is it
at a discount?**

Answer: [Show S19-15 and S19-16 here.] Spot rates are the rates paid to buy currency for immediate delivery (actually, two days after the date of the trade). Forward rates are the rates paid to buy currency for delivery at some agreed-upon date in the future (say, 90 days).

If the forward currency is less valuable than the spot currency, the forward rate is said to be at a discount to the spot rate. Conversely, if the forward currency is more valuable than the spot currency, the forward currency is said to sell at a premium.

Firms use currency forward markets to hedge against adverse exchange rate fluctuations that might occur before a transaction is completed. To illustrate, suppose a U.S. importer buys Japanese electronics for sale in the United States. The terms are net 90, so the importer must pay in Japanese yen in 90 days. The dollar could weaken against the yen over the period, and hence force the importer to use more dollars to buy the merchandise. To guard against this possibility, the importer could buy yen for delivery in 90 days, thus locking in the current forward rate.

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% in both Japan and the United States. Does interest rate parity hold? If not, which securities offer the highest expected return?

Answer: [Show S19-17 through S19-20 here.] Interest rate parity holds that investors should expect to earn the same return in all countries after adjusting for risk.

Forward exchange rate = 1 yen = \$0.0095; $r_h = 4\%/12 = 0.333\%$; $r_f = 4\%/12 = 0.333\%$.

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

$$\frac{\$0.0095}{\text{Spot exchange rate}} = \frac{1.0033}{1.0033}$$

$$\frac{\$0.0095}{\text{Spot exchange rate}} = 1$$

$$\text{Spot exchange rate} = \$0.0095.$$

If interest rate parity held, then the spot exchange rate = \$0.0095; however, the spot exchange rate = \$0.0090. (See table given in Part C.)

The Japanese securities offer the highest return as calculated below:

1. Assume you convert \$1,000 to yen in the spot market. In the spot market, spot exchange rate = 1/\$0.0090 or 111.1111 yen = \$1.00. Convert \$1,000 × 111.1111 yen = 111,111 yen.
2. Invest 111,111 yen in a 30-day Japanese security that offers a monthly return of 4%/12 = 0.3333%. So, in 30 days you will receive 111,111 yen × 1.00333 = 111,481 yen.
3. Agree today to exchange the 111,481 yen 30 days from now at a 30-day forward exchange rate of 1/\$0.0095 = 105.2632 yen = \$1. Your dollar return after 30 days = 111,481/105.2632 = \$1,059.07.
4. The investment's expected 30-day return = \$59.07/\$1,000 = 0.05907 = 5.907%, or a nominal return of 12 × 5.907% = 70.88%.

If you assumed that you started with yen you would calculate the following return:

1. Assume you convert 111,111 yen to dollars in the spot market.
In the spot market, 1 yen = \$0.0090. $111,111 \text{ yen} \times \$0.0090 = \$1,000$.
2. Invest \$1,000 in a 30-day U.S. security that offers a monthly return of $4\%/12 = 0.3333\%$. So in 30 days you'll receive $\$1,000 \times 1.00333 = \$1,003.33$.
3. Agree today to exchange the \$1,003.33 30 days from now at a 30-day forward rate of \$0.0095. Your yen return after 30 days = $\$1,003.33 / \$0.0095 = 105,614 \text{ yen}$.
4. The investment's expected 30-day return = $(105,614 - 111,111) / 111,111 = -0.0495 = -4.95\%$, or a nominal return of $12 \times -4.95\% = -59.37\%$.

G. What is purchasing power parity (PPP)? If papaya juice costs \$2.00 a liter in the United States and purchasing power parity holds, what should be the price of papaya juice in Australia?

Answer: [Show S19-21 and S19-22 here.] Purchasing power parity, sometimes referred to as the law of one price (LOP), implies that the level of exchange rates adjusts so that identical goods cost the same amount in different countries taking into account the exchange rate.

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

Spot rate = P_h / P_f

$\$0.6500 = \$2.00 / P_f$

$P_f = \$2.00 / \$0.6500 = 3.0769 \text{ Australian dollars}$.

H. What effect does relative inflation have on interest rates and exchange rates?

Answer: [Show S19-23 here.] To illustrate, consider the situation between Japan and the United States. Japan has generally had a lower inflation rate than the United States, so Japanese interest rates have been lower than U.S. interest rates. This might tempt treasurers of U.S. multinational firms to borrow in Japan rather than in the United States. However, 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. Thus, the U.S. dollar has generally weakened against the yen over time, so it would take more and more U.S. dollars to pay back interest denominated in yen.

I. (1) Briefly explain the three major types of international credit markets.
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Answer: [Show S19-24 and S19-25 here.] Individuals buy securities issued by foreign governments and firms, and U.S. firms issue securities abroad. These transactions take place in the international capital markets. Here is a brief description of the major international capital markets.

There are three major types of credit markets in the international marketplace that mirror equivalent U.S. markets in many ways: (1) short term, (2) medium term, and (3) long term.

Eurocredits are floating-rate bank loans, available in most major trading currencies that are tied to the London Inter Bank Offer Rate (LIBOR), which is the rate of interest offered by the largest and strongest London-based banks on large deposits. Eurocredits tend to be issued for a fixed term with no early repayment. The oldest example of a eurocredit is a Eurodollar deposit.

A eurodollar is a U.S. dollar deposited in a bank outside the United States. The major difference between a “regular” dollar and a eurodollar is its location. This places eurodollars outside the

direct control of U.S. monetary authorities, so regulations such as fractional reserves and FDIC insurance premiums do not apply. Eurodollars are borrowed by U.S. and foreign individuals, corporations, and governments that need dollars for various purposes. Since the borrower must pay back the lender in dollars, eurodollar transactions are not used to convert currencies, but rather represent another source of dollar borrowing. The eurodollar market deals mostly with short maturities, generally less than one year, although loans of up to 5 years have occurred.

The eurobond market is the medium- to long-term international market for both fixed- and floating-rate debt. Eurobonds are international bonds underwritten by an international bank syndicate and sold to investors in countries other than the one in whose currency the bond is denominated. For example, when a German company sells bonds denominated in euros in Switzerland, these bonds are eurobonds. Most eurobonds are issued in bearer form, so buyers have anonymity, both for tax and other purposes. Eurobonds can be issued with either a fixed-rate coupon or a floating-rate coupon 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 it is underwritten by investment banks from the same country. The only thing foreign about a foreign bond is the borrower's nationality. Foreign bonds can be either fixed or floating and have the same maturity as the purely domestic bonds with which they must compete for funding.

I. (2) Briefly explain how ADRs work.

Answer: [Show S19-26 here.] U.S. investors can invest in foreign companies through American Depositary Receipts (ADRs). ADRs 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 OTC market. However, more and more ADRs are being listed on the NYSE, including England's British Airways, Japan's Honda Motors, and Italy's FIAT Group.

J.	What is the effect of multinational operations on capital budgeting decisions?
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Answer: [Show S19-27 here.] The same general principles that apply to domestic capital budgeting also apply to foreign capital budgeting. However, foreign capital budgeting is complicated by the following three primary factors:

1. **Tax law differences.** Foreign operations are usually taxed at the local level, and then funds repatriated, or returned, to the parent corporation may be subject to additional U.S. taxes.
2. **Political risk.** Foreign governments have the right to restrict the amount of funds that can be repatriated. In extreme cases, foreign governments can even expropriate the assets owned by U.S. companies without offering any compensation.
3. **Exchange rate risk.** Funds repatriated from foreign operations have to be converted into dollars, so foreign capital projects are subject to exchange rate risk.

K.	To what extent do average capital structures vary across different countries?
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Answer: [Show S19-28 here.] There is some evidence that average capital structures vary among the large industrial countries. One problem, however, when interpreting these numbers is that different countries often use very different accounting conventions, which makes it difficult to compare capital structures.

A recent study attempts to control for differences in accounting practices. This study suggests that differences in accounting practices can explain much of the cross-country variation in capital structures. After adjusting for these accounting differences, capital structures are more similar across different countries than a previous study had suggested.