

# Chapter 21

## International Corporate Finance

### Chapter Organization

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## T21.2 Domestic Financial Management and International Financial Management

- Domestic financial management and international financial management differ in several important ways:
  - ◆ Whenever transactions involve more than one currency, one must be concerned with the levels of, and possible changes in, *exchange rates*.
  - ◆ Another risk that must be considered is the risk of loss associated with actions taken by foreign governments. This *political risk* can be difficult to assess, and difficult to hedge against;
  - ◆ Financing opportunities encompass *international capital markets and instruments*, which can reduce the firm's cost of capital.

## T21.3 International Finance Terminology

- **Belgian dentist:** *Stereotypical investor in Eurobonds interested in bonds denominated in foreign currencies that are unregistered (untraceable) and thus essentially tax-free.*
- **Cross-Rate:** *The implicit exchange rate between two currencies (usually non-U.S.) quoted in some third currency (usually the U.S. dollar).*
- **Eurobonds:** *International bonds issued in multiple countries but denominated in a single currency (usually the issuer's currency).*
- **Eurocurrency:** *Money deposited in a financial center outside of the country whose currency is involved.*

## T21.3 International Finance Terminology (concluded)

- **Foreign Bonds:** *International bonds issued in a single country, usually denominated in that country's currency.*
- **Foreign Exchange Market:** *The market in which one country's currency is traded for another.*
- **Gilts:** *British and Irish government securities.*
- **London Interbank Offer Rate (LIBOR):** *The rate most international banks charge one another for overnight Eurodollar loans.*
- **Swaps:** *Agreements to exchange two securities or similar currencies.*
- **Export Development Corporation (EDC):** *a federal Crown corporation with a mandate to promote Canadian exports. It does this in several ways, some examples of which are:*
  - ◆ *providing financing for foreign companies that purchase Canadian exports,*
  - ◆ *insuring exporter receivables and*
  - ◆ *providing coverage against loss of assets due to political risks abroad.*

## T21.4 Global Capital Markets - Representative Listing

### Asia/Pacific Region

Australian Stock Exchange  
Sydney Futures Exchange  
New Zealand Stock Exchange

Hong Kong Stock Exchange  
Hong Kong Futures Exchange

Shanghai Securities Exchange  
Shenzen Stock Exchange

Osaka Stock Exchange  
Tokyo Stock Exchange  
Tokyo Int'l Financial Futures  
Exchange

Singapore Stock Exchange

Kuala Lumpur Stock  
Exchange

### Americas

New York Stock Exchange  
American Stock Exchange  
Boston Stock Exchange  
Cincinnati Stock Exchange  
Chicago Stock Exchange  
Pacific Stock Exchange  
Philadelphia Stock Exchange  
Chicago Board of Trade  
Kansas City Board of Trade

Toronto Stock Exchange

### Europe and the U.K.

Frankfurt Stock Exchange  
London Stock Exchange  
Paris Bourse  
Swiss Stock Exchange  
Easdaq

## T21.5 International Currency Symbols (Table 21.1)

Country	Currency	Symbol
Australia	Dollar	A\$
Austria	Schilling	Sch
Belgium	Franc	BF
Canada	Dollar	C\$
Denmark	Krone	DKr
Europe	Euro	€
Finland	Markka	FM
France	Franc	FF
Germany	Deutsche mark	DM
Greece	Drachma	Dr
India	Rupee	Rs
Iran	Rial	RI
Italy	Lira	Lit
Japan	Yen	¥
Kuwait	Dinar	KD
Mexico	Peso	Ps

## T21.5 International Currency Symbols (Table 21.1) (concluded)

Country	Currency	Symbol
Netherlands	Guilder	FL
Norway	Krone	NKr
Saudi Arabia	Riyal	SR
Singapore	Dollar	S\$
South Africa	Rand	R
Spain	Peseta	Pta
Sweden	Kronar	Skr
Switzerland	Franc	SF
United Kingdom	Pound	£
United States	Dollar	\$

## T21.6 Exchange Rate Quotations (Derived from Figure 21.1)

**Figure 21.1**

Symbol	C\$	\$	£	DM	¥	SF	FF	€	
Canada dollar	C\$	<b>1.49076</b>	<b>2.25378</b>	<b>0.72770</b>	<b>0.01394</b>	<b>0.91920</b>	<b>0.21700</b>	<b>1.42328</b>	
U.S. dollar	\$	0.6708	<b>1.5119</b>						
British pound	£	0.4437	0.6614						
German mark	DM	1.3742	2.0485	3.0972					
Japanese yen	¥	71.74	106.94	161.68	52.2				
Swiss franc	SF	1.0879	1.6217	2.4519	0.7917	0.015165			
French franc	FF	4.6083	6.8696	10.3862	3.3535	0.06424	4.2359		
Euro	€	0.7026	1.0474	1.5836	0.5113	0.009795	0.6459	0.1525	
Italian lira	Lit	1360.54	2028.16	3066.39	990.07	18.965986	1250.61	295.24	1936.33

- The upper triangular half of the table is easily calculated as the inverse of its exchange rate on the lower half of the table.
- For example, Canadian dollars exchange for U.S. dollars at a rate of 0.6708. The exchange of U.S. dollars for Canadian dollars must be at the inverse rate, or  $1/0.6708 = 1.49076$ . The results are calculated for the Canadian against the listed currencies.
- There may be slight timing differences where this relationship is not exact, but these can only exist momentarily or there would be arbitrage opportunities. Also, the table shows limited precision, so inverses are not exact.

## T21.6 Exchange Rate Quotations (concluded)

Use the exchange rate quotations in Figure 21.1 to answer the questions below.

**Question:** If you wish to exchange C\$100 for British pounds, how many pounds will you receive?

**Answer:**  $\$100(0.4437) = \pounds 44.37$

**Question:** You just finished a can of soda outside of the cathedral of Notre Dame. You paid a street vendor 16 French francs for the soda. How much did it cost in Canadian dollars?

**Answer:**  $FF\ 16(0.2170) = \$3.4720$

**Question:** If you wish to exchange  $\pounds 100$  for French francs, how many francs will you receive?

**Answer:**  $\pounds 100 = C\$225.38 \Rightarrow C\$225.38/.217 = FF\ 1038.60$

## T21.7 Triangle Arbitrage

- Suppose we observe the following exchange rates for French francs, German marks, and U.S. dollars. Does an arbitrage opportunity exist?

FF per \$1 = 10.00

DM per \$ = 2.00

FF per DM = 4.00

Step 1.

Buy 1,000 francs for 100 U.S. dollars

Step 3.

Exchange DM 250 for \$125 U.S.

Step 2.

Buy DM 250 for 1,000 francs



You've just made \$25! If this is so easy, what stops everyone from becoming instant millionaires?

## T21.8 Types of Transactions

- Spot trade

*An agreement to trade currencies based on the exchange rate today for settlement within two business days*

- Spot exchange rate

*The exchange rate on a spot trade*

- Forward trade

*An agreement to exchange currency at some time in the future*

- Forward exchange rate

*The agreed-upon exchange rate to be used in a forward trade*

## T21.9 Purchasing Power Parity

- Purchasing power parity (PPP)

*The idea that the exchange rate adjusts to keep purchasing power constant among currencies.*

- Absolute PPP

*Under absolute PPP, a commodity costs the same regardless of what currency is used to purchase it or where it is selling. For example., under absolute PPP, a beer will cost you the same price regardless of what country it is purchased in.*

- For absolute PPP to hold

*Transactions costs must be zero*

*No barriers to trade (tariffs, taxes, duties, etc.)*

*Item purchased must be identical in all locations*

## T21.10 Relative Purchasing Power Parity

- Relative purchasing power parity

*The idea that the change in the exchange rate between two countries is determined by the difference in the inflation rates of the two countries. Relative PPP, therefore, explains the changes in exchange rates over time, rather than the absolute levels of exchange rates.*

- The general equation

$$E(S_t) = S_0 \times [1 + (h_{FC} - h_{CDN})]^t$$

*where:*

*$E(S_t)$  = the expected exchange rate at some time in the future*

*$S_0$  = current spot exchange rate (foreign currency per dollar)*

*$h_{CDN}$  = inflation rate in Canada*

*$h_{FC}$  = foreign country inflation rate*

## T21.11 Interest Rate Parity

- Interest rate parity

*The condition stating that the interest rate differential between two countries is equal to the percentage difference between the forward exchange rate and the spot exchange rate.*

- The general equation

$$F_t = S_0 \times [1 + (R_{FC} - R_{CDN})]^t$$

*where:*

*$F_t$  = the forward exchange rate for settlement at time  $t$*

*$S_0$  = current spot exchange rate (foreign currency per dollar)*

*$R_{CDN}$  = the nominal risk-free rate in Canada*

*$R_{FC}$  = the nominal risk-free rate in the foreign country*

## T21.12 Alternative Approaches to Overseas Production

- Implementing production overseas can occur several ways. Firms wishing to do so must weigh such factors as the amount of capital they wish to supply, the nature and length of the commitment they are willing to make, and the amount of control they wish to retain in the operation.
- Alternative approaches include:
  - ◆ Subcontracting/Licensing agreements
  - ◆ Joint venture
  - ◆ Acquisition of existing facility or firm
  - ◆ Construction of new facility

## T21.13 Example: International Capital Budgeting

- Mac's is considering opening a store in Mexico. The store would cost C\$500,000 or, at 6.000 pesos per Canadian dollar, 3,000,000 pesos to open. They hope to operate the store for 2 years and then sell it to a local franchisee.
- Assume that the expected cash flows are 250,000 pesos the first year and 5 million pesos the second year, including the selling price of the store and fixtures. The Canadian risk-free rate is 7%, and the Mexican risk-free rate is 10%. The required return is 12% (Canadian) (Ignore taxes in your computations.)

## T21.13 Example: International Capital Budgeting (continued)

### ■ 1. The home currency approach

Using the uncovered interest parity relation

Year	Cash flow (pesos)	Expected exchange rate	Cash flow (dollars)
0	-3,000,000	6.0000	- 500,000
1	250,000	6.1800	40,453
2	5,000,000	6.3654	785,497

$$\text{NPV} = -\$500,000 + 40,453/1.12 + 785,497/1.12^2 = \$162,312$$

## T21.13 Example: International Capital Budgeting (concluded)

### ■ 2. The foreign currency approach

Using a 3% inflation premium,  $(1.12 \times 1.03) - 1 = 15.36\%$

NPV (pesos) =  $-3,000,000 + 250,000/1.1536$

$+ 5,000,000/1.1536^2 = 973,871$  pesos

NPV (dollars) =  $973,871/6.0000 = \$162,312$

## T21.14 Financing International Projects

- Cost of capital for International Firms
  - ◆ How should the firm compare foreign and domestic projects?
  - ◆ If shareholders have limitations on foreign investments, firms may be a more efficient vehicle for international diversification.
  
- International diversification
  - ◆ Investors can hold foreign securities, but there are limitations on foreign content for certain Canadian investments (e.g. RRSPs).

Note: In 2001, the maximum allowable foreign content for pension funds and RRSPs was increased to 30%.
  - ◆ Because holding foreign securities may involve higher tax, trading and information costs, it may be more efficient for firms to provide investors with international diversification.

## T21.15 Exchange Rate Risk

- *Exchange rate risk* (the risk related to having international operations in a world where currency values vary).
- Types of exchange rate risk

Short-run exposure

*Uncertainty arising from day-to-day fluctuations in exchange rates*

Long-run exposure

*Potential losses due to long-run, unanticipated changes in relative economic conditions in two or more countries*

Translation exposure

*Uncertainty arising from the need to translate the results from foreign operations into U.S. dollars for accounting purposes*

- (1) *What is the appropriate exchange rate to use for translating each balance sheet account?*
- (2) *How should balance sheet accounting gains and losses from foreign currency translation be handled?*

## T21.16 Types of Political Risk

Risk	Nature of Loss
Currency devaluation	Loss in value of cash flows in terms of home currency
Increased taxation	Reduction in total cash flows repatriated
Funds blockage	Reduction or elimination of cash flows repatriated
Expropriation of assets	Loss of firm property and future cash flows
Terrorism/sabotage	Danger to employees and/or loss of future cash flows

## T21.17 The Riskiest Countries in Which to do Business

1. Peru
2. El Salvador
3. India
4. Turkey
5. Colombia
6. The Philippines
7. Sri Lanka
8. Northern Ireland
9. Spain
10. Nicaragua

Source: Business Risks International

## T21.18 Chapter 21 Quick Quiz

1. What is a “cross-rate”?

*The implicit exchange rate between two currencies quoted in a third currency.*

2. Name three types of participants in the foreign exchange market.

*Importers, exporters, portfolio managers*

3. What is triangle arbitrage?

*The attempt to profit from simultaneous discrepancies in cross-rates using three currencies*

4. What does the interest rate parity condition suggest about the relationship between interest rates and exchange rates in two countries?

*IRP suggests that the interest rate differential between two countries equals the difference between the forward and spot exchange rates*

## T21.19 Solution to Problem 21.7

- The treasurer of a major Canadian firm has \$30 million to invest for three months. The annual interest rate in Canada is 0.50 percent per month. The interest rate in Great Britain is .75 percent per month. The spot exchange rate is £0.59, and the three-month forward rate is £0.61. Ignoring transactions costs, in which country would the treasurer want to invest the company's funds? Why?
- *If invested domestically, the \$30 million will grow to:*

$$\$30,452,254 = \$30M(1.0050)^3.$$

*If invested in Great Britain, the \$30 million will grow to:*

$$\$29,674,171 = [(\$30M)(£0.59)(1.0075)^3]/(£0.61).$$

*Thus, the treasurer will be \$778,083 = (\$30,452,254 - \$29,674,171) ahead if the funds are invested in Canada.*

## T21.20 Solution to Problem 21.9

- Suppose your company imports computer mother boards from Singapore. The exchange rate is given in Fig. 21.1. You have just placed an order for 30,000 mother boards at a cost of 167.904 Singapore dollars each. You will pay for the shipment in 90 days. You can sell the motherboards for \$150 each. Calculate your profit if the exchange rate goes up or down by 10 percent over the next 90 days.

What is the break-even exchange rate? What percentage rise or fall does this represent in terms of the Singapore dollar versus the Canadian dollar?

## T21.20 Solution to Problem 21.9 (concluded)

- First, note that our profit equals:

(number of units)[dollar price per unit - dollar cost per unit].

- With *no change* in the C\$/S\$ exchange rate, profit equals

$$30,000\{\$150 - [(S\$ 167.904)*(C\$ 0.8581/S\$1)]\} = \$177,647$$

- If the exchange rate *rises* by 10%, profit equals

$$30,000\{\$150 - [(S\$ 167.904)*(C\$ 0.8581/S\$1.1)]\} = \$570,588$$

- If the exchange rate *falls* by 10%, profit equals

$$30,000\{\$150 - [(S\$ 167.904)*(C\$ 0.8581/S\$0.9)]\} = (\$302,614)$$

- The *break-even* exchange rate is found as follows:

$$\text{Let } C\$150 = S\$167.904; \text{ then Break-even} = S\$1.11936/C\$1.$$