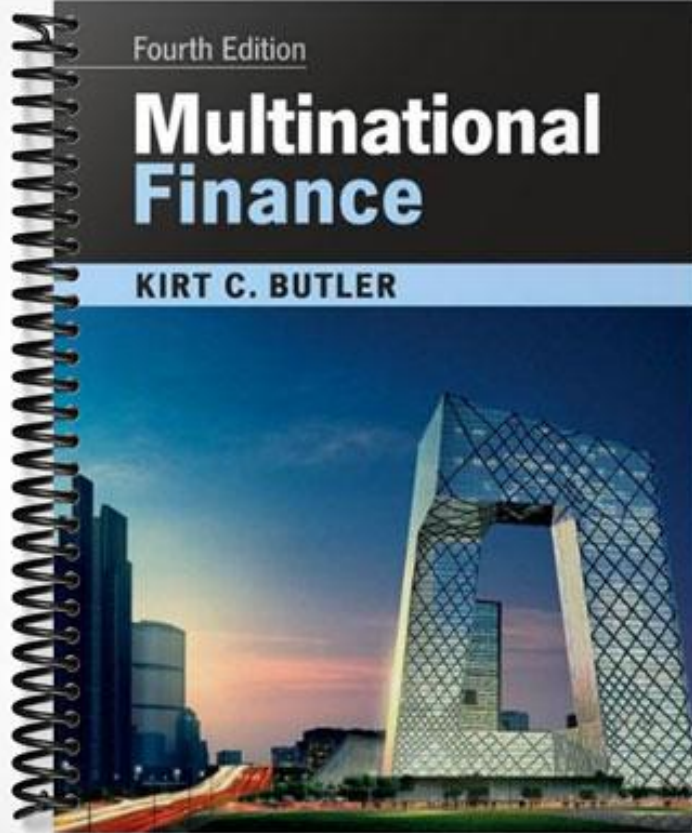


**SOLUTIONS MANUAL**

Fourth Edition

**Multinational  
Finance**

**KIRT C. BUTLER**



# **Solutions**

**End-of-Chapter  
Questions and Problems**

**to accompany**

***Multinational Finance***

**by Kirt C. Butler**

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## **PART I Overview and Background**

### **Chapter 1 An Introduction to Multinational Finance**

#### **Answers to Conceptual Questions**

- 1.1 List the MNC's key stakeholders. How does each have a stake in the MNC?  
Stakeholders narrowly defined include shareholders, debtholders, and management. More broadly defined, stakeholders also would include employees, suppliers, customers, host governments, and residents of host countries.
- 1.2 In what ways do cultural differences impact the conduct of international business?  
Because they define the rules of the game, national business and popular cultures impact each of the functional disciplines of business from research and development right through to marketing, production, and distribution.
- 1.3 What is country risk? Describe several types of country risk one might face when conducting business in another country.  
Country risks refer to the political and financial risks of conducting business in a particular foreign country. Country risks include foreign exchange risk, political risk, and cultural risk.
- 1.4 What is political risk?  
Political risk is the risk that a sovereign host government will unexpectedly change the rules of the game under which businesses operate.
- 1.5 What is foreign exchange risk?  
Foreign exchange risk is the risk of unexpected changes in foreign currency exchange rates.
- 1.6 What investment opportunities might MNCs enjoy that are not available to local firms?  
Operating cash flows can be increased by increasing revenues or decreasing operating expenses. The text mentions revenue enhancing opportunities such as global branding, advantages of size and scope, and flexibility in marketing and distribution; operating cost reductions through access to low-cost labor or raw materials, flexibility in sourcing or production, and economies of scale or vertical integration; and business strategies such as follow the customer, lead the customer, follow the leader, and building capacity directly in a foreign market (going local).
- 1.7 How can MNCs can reduce operating expenses relative to domestic firms.  
MNCs can enjoy several advantages over domestic firms including global brands, size, and flexibility in marketing and distribution. Strategies for enhancing revenues include follow the customer, lead the customer, follow the leader, and establishing local production. Operating costs can be reduced through access to low-cost raw materials and labor, flexibility in sourcing, production, or site selection, and economies of scale or vertical integration.
- 1.8 What are the perfect financial market assumptions? What is their implication for multinational financial management.  
In a perfect market, rational investors have equal access to prices and information in a frictionless market. If financial policy is to increase firm value, it must increase expected cash flows or decrease the discount rate in a way that cannot be replicated by investors. MNCs are in a better position than domestic firms to take advantage of financial market imperfections through financial market arbitrage, hedging policy, access to international sources of capital, and multinational tax strategy.
- 1.9 Describe the ways in which multinational financial management is different from domestic financial management.  
Multinational financial management is conducted in an environment that is influenced by more than one cultural, social, political, or economic environment.

## Chapter 2 World Trade and the International Monetary System

### Answers to Conceptual Questions

- 2.1 List one or more trade pacts in which your country is involved. Do these trade pacts affect all residents of your country in the same way? On balance, are these trade pacts good or bad for residents of your country?

Figure 2.1 lists the major international trade pacts. The World Trade Organization (WTO) is a supranational organization that oversees the General Agreement on Tariffs and Trade (GATT). Important regional trade pacts include the North American Free Trade Agreement (NAFTA includes the U.S., Canada, and Mexico), the European Union (EU), and the Asia-Pacific Economic Cooperation pact (APEC encompasses most countries around the Pacific Rim including Japan, China, and the United States). Trade pacts are designed to promote trade, but industries that have been protected by local governments can find that they are uncompetitive when forced to compete in global markets.

- 2.2 Do countries tend to export more or less of their gross national product today than in years past? What are the reasons for this trend?

Most countries export more of their gross national product today than in years past. Reasons include: a) the global trend toward free market economies, b) the rapid industrialization of some developing countries, c) the breakup of the former Soviet Union and the entry of China into international trade, d) the rise of regional trade pacts and the General Agreement on Tariffs and Trade, and e) advances in communication and in transportation.

- 2.3 How has globalization in the world's goods markets affected world trade? How has globalization in the world's financial markets affected world trade?

Some of the economic consequences of globalization in the world's goods markets include: a) an increase in cross-border investment in real assets (land, natural resource projects, and manufacturing facilities), b) an increasing interdependence between national economies leading to global business cycles that are shared by all nations, and c) changing political risk for multinational corporations as nations redefine their borders as well as their national identities. The demise of capital flow barriers in international financial markets has had several consequences including: a) an increase in cross-border financing as multinational corporations raise capital in whichever market and in whatever currency offers the most attractive rates, b) an increasing number of cross-border partnerships including many international mergers, acquisitions, and joint ventures, and c) increasingly interdependent national financial markets.

- 2.4 What distinguishes developed, less developed, and newly industrializing economies?

Developed economies have a well-developed manufacturing base. Less developed countries (LDCs) lack this industrial base. Countries that have seen recent growth in their industrial base are called newly industrializing countries (NICs).

- 2.5 Describe the International Monetary Fund's balance-of-payments accounting system.

The IMF publishes a monthly summary of cross-border transactions that tracks each country's cross-border flow of goods, services, and capital.

- 2.6 How would an economist categorize systems for trading foreign exchange? How would the IMF make this classification? In what ways are these the same? How are they different?

Economists have traditionally classified exchange rate systems as either fixed rate or floating rate systems. The IMF has adapted this system to the plethora of systems in practice today. The IMF's classification scheme includes "more flexible," "limited flexibility," and "pegged" exchange rate systems.

- 2.7 Describe the Bretton Woods agreement. How long did the agreement last? What forced its collapse?  
After World War II, representatives of the Allied nations convened at Bretton Woods, New Hampshire to stabilize financial markets and promote world trade. Under Bretton Woods' "gold exchange standard," currencies were pegged to the price of gold (or to the U.S. dollar). Bretton Woods also created the International Monetary Fund and the International Bank for Reconstruction and Development (the World Bank). The Bretton Woods fixed exchange rate system lasted until 1970, when high U.S. inflation relative to gold prices and to other currencies forced the dollar off the gold exchange standard.
- 2.8 What factors contributed to the Mexican peso crisis of 1995 and to the Asian crises of 1997?  
In each instance, the government tried to maintain the value of the local currency at artificially high levels. This depleted foreign currency reserves. Local businesses and governments were also borrowing in non-local currencies (primarily the dollar), which heavily exposed them to a drop in the value of the local currency.
- 2.9 What is moral hazard and how does it relate to IMF rescue packages?  
Moral hazard occurs when the existence of a contract changes the behaviors of parties to the contract. When the IMF assists countries in defending their currencies, it changes the expectations and hence the behaviors of lenders, borrowers, and governments. For example, lenders might underestimate the risks of lending to struggling economies if there is an expectation that the IMF will intervene during difficult times.

### **Problem Solutions**

- 2.1 This open-ended question is intended to engage the student and bring their knowledge up-to-date. Useful websites are listed on the inside-front cover of the text, and include:

Bank for International Settlements	<a href="http://www.bis.org">www.bis.org</a>
International Monetary Fund (IMF)	<a href="http://www.imf.org">www.imf.org</a>
World Trade Organization (WTO)	<a href="http://www.wto.org">www.wto.org</a>
International Labor Organization	<a href="http://www.ilo.org">www.ilo.org</a>
International Chamber of Commerce	<a href="http://www.iccwbo.org">www.iccwbo.org</a>
Michigan State University Global Edge	<a href="http://globaledge.msu.edu">globaledge.msu.edu</a>
United Nations	<a href="http://www.un.org">www.un.org</a>
United Nations' Commission on International Trade Law	<a href="http://www.uncitral.org">www.uncitral.org</a>
World Bank	<a href="http://www.worldbank.org">www.worldbank.org</a>
World Bank's Multilateral Investment Guarantee Agency	<a href="http://www.miga.org">www.miga.org</a>
World Economic Forum	<a href="http://www.weforum.org">www.weforum.org</a>

## Chapter 3 Foreign Exchange and Currency Risk Management

### Answers to Conceptual Questions

3.1 Define liquidity.

Liquidity: the ease with which you can exchange an asset for another asset of equal value.

3.2 What is the difference between a money market and a capital market?

Money markets are markets for financial assets and liabilities of short maturity, usually considered to be less than one year. Capital markets are markets for financial assets and liabilities with maturities greater than one year.

3.3 What is the difference between an internal and an external market?

Debt placed in an internal market is denominated in the currency of a host country and placed within that country. Debt placed in an external market is placed outside the borders of the country issuing the currency.

3.4 What is the Eurocurrency market and what is its function?

The Eurocurrency market is an external credit market in bank deposits and loans. Like a national credit market, the Eurocurrency market permits the transfer of value over time in a given currency.

3.5 In what way is the Eurocurrency market different from an internal credit market?

There are typically no reserve requirements, interest rate regulations or caps, withholding taxes, deposit insurance requirements, or regulations influencing credit allocation decisions. There are also less stringent disclosure requirements.

3.6 What is the London Interbank Offer Rate (LIBOR)?

LIBOR is the rate at which a Euromarket bank offers to make a loan to another Euromarket bank.

3.7 What effect did the Basle Accord have on international banks?

The Basle Accord imposed minimum capital adequacy requirements on international banks as a protection against the credit risk of the banks' loan portfolios. The Basle Accord also encouraged the use of value-at-risk (VaR) measures to quantify the risk of losses greater than a certain amount over a given time period.

3.8 What is the difference between spot and forward markets for foreign exchange?

In the spot market, trades are for immediate delivery. In the forward market, trades are for future delivery according to an agreed-upon delivery date, exchange rate, and amount.

3.9 What is Rule #1 when dealing with foreign exchange? Why is it important?

Rule #1 says to "Keep track of your currency units." It is important because foreign exchange prices have a currency in both the numerator and the denominator. Most prices (for instance, a \$15,000/car price on a new car) have a non-currency asset in the denominator and a currency in the numerator.

3.10 What is Rule #2 when dealing with foreign exchange? Why is it important?

Rule #2 says to "Always think of buying or selling the currency in the denominator of a foreign exchange quote." The importance of this rule is related to that of Rule #1. Foreign exchange quotes have a currency in both the numerator and the denominator. The rule "buy low and sell high" only works for the currency in the denominator.

3.11 What are the functions of the foreign exchange market?

Currency markets transfer purchasing power from one currency to another, either today (in the spot market) or at a future date (in the forward market). When used with Eurocurrency markets, foreign exchange markets allow investors to move value both across currencies and over time. Foreign

exchange markets also facilitate hedging and speculation.

- 3.12 Define operational, informational, and allocational efficiency.

Operational efficiency refers to how large an influence transactions costs and other market frictions have on a market's operation. Informational efficiency refers to whether or not prices reflect value. Allocational efficiency refers to how efficiently a market channels capital toward its most productive uses.

- 3.13 What is a forward premium? What is a forward discount?

A currency is trading at a forward premium when the nominal value of that currency in the forward market is *higher* than in the spot market. A currency is trading at a forward discount when the nominal value of that currency in the forward market is *lower* than in the spot market.

- 3.14 Describe the empirical behavior of exchange rates.

Over daily intervals, spot rate changes are random with a nearly equal probability of rising or falling. As the forecast horizon is lengthened, the correlation between interest and inflation differentials and nominal spot rate changes rises. Eventually, the international parity conditions exert themselves and the forward rate begins to dominate the current spot rate as a predictor of future nominal exchange rates. Finally, exchange rate volatility is not constant. Instead, volatility comes in waves.

### Problem Solutions

- 3.1 a. The bid is less than the offer, so Citicorp is quoting the currency in the denominator. Citicorp is buying dollars at the DKr5.62/\$ bid rate and selling dollars at the DKr5.87/\$ offer rate.  
 b. In American terms, the bid price is \$0.1704/DKr and the ask price is \$0.1779/DKr. Citicorp is buying and selling the kroner at these quotes.  
 c. In direct terms, the bid quote for the dollar is \$0.1779/DKr and the ask price is \$0.1704/DKr. Citicorp is buying dollars at \$0.1779/DKr (which is equivalent to DKr5.62/\$) and selling dollars at \$0.1704/DKr (or DKr5.87/\$).  
 d. The bank will receive the bid-ask spread on each dollar. When buying one million dollars at DKr5.62/\$ and selling one million dollars at DKr5.87/\$, the bank's profit on the bid-ask spread will be  $(DKr5.87/\$ - DKr5.62/\$)(\$1,000,000) = DKr250,000$ .

- 3.2 The ask price is higher than the bid, so these are rates at which the bank is willing to buy or sell dollars (in the denominator). You're selling dollars, so you'll get the bank's dollar bid price. You need to pay  $SKr10,000,000 / (SKr7.5050/\$) \approx \$1,332,445$ .

- 3.3 The U.S. dollar (in the denominator) is selling at a forward premium, so the Canadian dollar must be selling at a forward discount. Annualized forward premia on the U.S. dollar are:

	<u>Bid (\$)</u>	<u>Ask (\$)</u>
Six months forward	+0.681%	+0.761%

Percent per annum on the Canadian dollar from the U.S. perspective are as follows:

	<u>Bid (C\$)</u>	<u>Ask (C\$)</u>
Six months forward	-0.678%	-0.758%

The premiums/discounts on the two currencies are opposite in sign and nearly equal in magnitude. Forward premiums and discounts are of slightly different magnitude because the bases (US vs. C\$) on which they are calculated are different. Forward premiums/discounts are as stated above regardless of where a trader resides.

- 3.4 a. The forward premium is equal to  $(F_1^{S/\text{¥}} - S_0^{S/\text{¥}}) = (\$0.008772945/\text{¥} - \$0.009057355/\text{¥}) = -\$0.000284410/\text{¥}$ , or -2.8441 basis points. As a percentage over the 90-day period, this is  $(F_1^{S/\text{¥}} - S_0^{S/\text{¥}}) / S_0^{S/\text{¥}} = -0.031401$ , or -3.1401 percent.  
 b. As an annualized forward premium following the U.S. convention, this is equal to

- (n)( $F_1^{S/\$} - S_0^{S/\$}$ )/ $S_0^{S/\$} = (4)(-0.031401) = -0.125604$ , or  $-12.5604$  percent.
- c. As an APR, the premium is  $(F_1^{S/\$}/S_0^{S/\$})^4 - 1 = -0.119811$ , or  $-11.9811$  percent.
- 3.5
- |      |           |    |           |
|------|-----------|----|-----------|
| 1984 | DM1.80/\$ | or | \$0.56/DM |
| 1987 | DM2.00/\$ | or | \$0.50/DM |
| 1992 | DM1.50/\$ | or | \$0.67/DM |
| 1997 | DM1.80/\$ | or | \$0.56/DM |
- a. 1984-87 The dollar appreciated 11.1%;  $((DM2.0/\$)-(DM1.8/\$)/(DM1.8/\$) = +0.111$   
 1987-92 The dollar depreciated 25%;  $((DM1.5/\$)-(DM2.0/\$)/(DM2.0/\$) = -0.25$   
 1992-97 The dollar appreciated 20%;  $((DM1.8/\$)-(DM1.5/\$)/(DM1.5/\$) = +0.20$
- b. 1984-87 The mark depreciated 10.7%;  $(\$0.50/DM)/(\$0.56/DM)-1 = -0.107$   
 1987-92 The mark appreciated 34.0%;  $(\$0.67/DM)/(\$0.50/DM)-1 = +0.340$   
 1992-97 The mark depreciated 16.4%;  $(\$0.56/DM)/(\$0.67/DM)-1 = -0.164$
- 3.6
- a.  $(PZ5,000,000) / (PZ4.0200/\$) = \$1,243,781$ . Warsaw's bid price for PZ is their ask price for dollars. So, PZ4.0200/\$ is equivalent to \$0.2488/PZ.
- b.  $(PZ20,000,000) / (PZ3.9690/\$) = \$5,039,053$   
 PZ3.9690/\$ is equivalent to \$0.2520/PZ  
 Payment is made on the second business day after the three-month expiration date.
- 3.7 You initially receive  $P_0^{\$} = P_0^{\text{¥}}/S_0^{\text{¥}/\$} = (\text{¥}104,000,000)/(\text{¥}104/\$) = \$1$  million. When you buy back the yen, you pay  $P_1^{\$} = P_1^{\text{¥}}/S_1^{\text{¥}/\$} = (\text{¥}104,000,000)/(\text{¥}100/\$) = \$1.04$  million. Your loss is \$40,000.
- 3.8 When buying one currency, you are simultaneously selling another, so a yen bid price is a euro ask price. Yen quotes yield  $S^{\text{¥}/\text{€}} = 1/S^{\text{€}/\text{¥}} = 1/(\text{€}0.007634/\text{¥}) = \text{¥}130.99/\text{€}$  and  $S^{\text{¥}/\text{€}} = 1/(\text{€}0.007643/\text{¥}) = \text{¥}130.84/\text{€}$ , so euro quotes (in the denominator) are  $\text{¥}130.84/\text{€}$  BID and  $\text{¥}130.99/\text{€}$  ASK.
- 3.9
- a.  $(1+s^{\text{¥}/\$}) = 0.90 = 1/(1+s^{\text{\$/¥}}) \Leftrightarrow s^{\text{\$/¥}} = (1/0.90)-1 = +0.111$ , or an 11.1% appreciation.
- b.  $(1+s^{\text{Rbl}/\$}) = 11 = 1/(1+s^{\text{\$/Rbl}}) \Leftrightarrow s^{\text{\$/Rbl}} = (1/11)-1 = -0.909$ , or a 90.9% depreciation.
- 3.10 The 90-day dollar forward price is 33 bps below the spot price:  $F_1^{\text{SFr}/\$} - S_0^{\text{SFr}/\$} = (\text{SFr}0.7432/\$ - \text{SFr}0.7465/\$) = -\text{SFr}0.0033/\$$ . The percentage dollar forward premium is  $(F_1^{\text{SFr}/\$} - S_0^{\text{SFr}/\$})/S_0^{\text{SFr}/\$} = (\text{SFr}0.7432/\$ - \text{SFr}0.7465/\$)/(\text{SFr}0.7465/\$) = -0.442\%$  per 90 days, or  $(-0.442\%)*4 = -1.768\%$  on an annualized basis.
- 3.11 Banks make a profit on the bid-ask spread. A bank quoting \$0.5841/SFr BID and \$0.5852/SFr ASK is buying francs (in the denominator) at \$0.5841/SFr and selling francs at \$0.5852/SFr ASK. A bank quoting \$0.5852/SFr BID and \$0.5841/SFr ASK is buying dollars (in the numerator) at \$0.5852/SFr BID and selling dollars at \$0.5841/SFr ASK. Hence, these are equivalent.
- 3.12 DKr is at a forward discount
- |          |   |
|----------|---|
| 30 day:  | $(\$0.18519/\text{DKr} - \$0.18536/\text{DKr})/\$0.18536/\text{DKr} = -0.092\%$ |
| 90 day:  | $(\$0.18500/\text{DKr} - \$0.18536/\text{DKr})/\$0.18536/\text{DKr} = -0.194\%$ |
| 180 day: | $(\$0.18488/\text{DKr} - \$0.18536/\text{DKr})/\$0.18536/\text{DKr} = -0.259\%$ |
- 3.13
- a.  $S_1^{S/\text{¥}} = S_0^{S/\text{¥}}(1+s^{\text{S/\text{¥}}}) = (\$0.0100/\text{¥})(1.2586) = (\$0.012586/\text{¥})$
- b.  $(1+s^{\text{¥}/\$}) = S_1^{\text{¥}/\$}/S_0^{\text{¥}/\$} = (1/S_1^{S/\text{¥}}) / (1/S_0^{S/\text{¥}}) = 1 / (S_1^{S/\text{¥}}/S_0^{S/\text{¥}}) = 1 / (1+s^{\text{S/\text{¥}}}) = 1 / (1.2586) = 0.7945$ , so  $s^{\text{S/\text{¥}}} = 0.7945 - 1 = -0.2055$ , or  $-20.55\%$
- 3.14  $(F_t^{\text{d}/\text{f}} - S_0^{\text{d}/\text{f}})/S_0^{\text{d}/\text{f}} = [(1/F_t^{\text{f}/\text{d}}) - (1/S_0^{\text{f}/\text{d}})] / (1/S_0^{\text{f}/\text{d}}) = [(S_0^{\text{f}/\text{d}}/F_t^{\text{f}/\text{d}}) - (S_0^{\text{f}/\text{d}}/S_0^{\text{f}/\text{d}})] / (S_0^{\text{f}/\text{d}}/S_0^{\text{f}/\text{d}}) = [(S_0^{\text{f}/\text{d}}/F_t^{\text{f}/\text{d}}) - 1] = (S_0^{\text{f}/\text{d}} - F_t^{\text{f}/\text{d}}) / F_t^{\text{f}/\text{d}}$ .
- 3.15  $\sigma_t^2 = (0.0034) + (0.40)(0.05)^2 + (0.20)(0.10)^2 = 0.0064 \Rightarrow \sigma_t = 0.08$ , or 8%.