CHAPTER 11

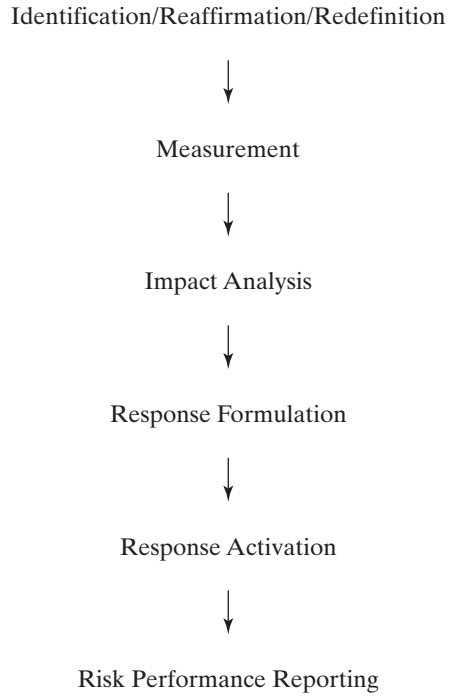
Financial Risk Management

While business is normally associated with the production and distribution of goods and services, the real contribution of business to society is the assumption and management of risk. Producers of nonfinancial products assume the risk of contracting human, physical, and financial capital to fabricate a product or service that may or may not prove acceptable to society. If their enterprise proves unsuccessful, the firm ceases to exist; if successful, the firm earns a profit. On the other side of the coin, financial institutions that provide the external funding desired by business producers assume risks of collectibility and changes in the cost and availability of loanable funds. Risk management is especially challenging at the international level owing to the larger number of variables that must be considered.

The management of risk at the enterprise level, ERM, views individual risks in the context of a firm's business strategy. Risks today are increasingly viewed from a portfolio perspective with risks of various business functions being coordinated by a senior financial manager who keeps the CEO and board of directors apprised of critical risks and devises risk optimization strategies.[1] The variables that management accountants must track to supply risk managers with relevant and timely data span a variety of dimensions that varies from company to company. Exhibit 11-1 provides a corporate example of actual practice. Infosys Technologies, introduced in Chapter 1, begins by identifying its stragegic objectives and then identifying external and internal risk factors that could affect the achievement of these objectives. These risk factors are measured by managerial accountants and formally reported to responsible managers by way of operating reviews, subsidiary reviews, disclosure committee meetings, and regular updates to its corporate risk council. Information contained in risk management performance reports then cycle back and reaffirm or alter strategic objectives and risk identification processes.[2] Infosys' Risk Management Report provides an excellent example of the kinds of information that make up an enterprise risk management system. External risk factors encompass data on macroeconomic factors, exchange rate fluctuations, political intelligence, competitive

[1] David L. Olson and Desheng Dask Wu, *Enterprise Risk Management*, New Jersey: World Scientific Publishing Co., 2008, 252 pp.
[2] Infosys Annual Report.

EXHIBIT 11-1 Risk Management Cycle Employed by Infosys



environment, revenue concentration, inflation and cost structure, immigration regulations for countries where company personnel are employed, physical security, data security and business continuity, and the risk of technology obsolence. Internal risk factors that are formally monitored include financial reporting risks, including compliance with Sarbanes-Oxley (see Chapter 9), liquidity and leverage, contractual compliance, legal compliance, intellectual property rights, engagement execution to assure high quality and timely product and service deliveries, integration and collaboration to ensure acquistions and joint ventures are good organizational fits, human resource management and, perhaps most important, culture, values, and leadership. The latter includes building a culture of ethical core values and leadership training.

While the management of individual risks is increasingly a coordinated affair, this does not in any way minimize the importance of managing individual risks. At the individual risk level, corporate treasurers around the world value new and imaginative ways to minimize their exposures to market risks[3]; that is, the volatility of foreign exchange rates, commodity prices, interest rates, and equity prices. The financial services industry now offers many financial hedge products, including currency swaps, interest rate swaps, and options. Accounting standard setters around the world are working on appropriate measurement and reporting principles for these financial products. Many of

[3] The term *market risk* is sometimes used synonymously with the term *value-at-risk*. In this chapter, the latter refers to the chance of loss on a firm's trading portfolio, which could include hedging instruments, caused by changes in asset prices, interest rates, market volatility, or market liquidity.

these financial instruments are treated as off-balance sheet items by international financial reporting entities. Accordingly, the risks inherent in their use are often masked.

Exhibit 11-2 is a glossary of risk management terms used in this chapter. We now examine internal reporting and control issues associated with the management of individual risks.

EXHIBIT 11-2 Glossary of Risk Management Terms

accounting risk. The risk that the preferred accounting treatment for a transaction is not available.

balance sheet hedge. Reducing foreign exchange (FX) exposure by varying the mix of a firm's foreign currency assets and liabilities.

counterparty. The individual or institution with whom an exchange is effected.

credit risk. The risk that a counterparty will default on its obligations.

derivative. Contractual arrangements creating special rights or obligations that derive their value from another financial instrument or commodity.

economic exposure. The effect of FX rate changes on a firm's future costs and revenues.

exposure management. Structuring a company's affairs to minimize the adverse effects of exchange rate changes on earnings.

foreign currency commitments. Firm sales or purchase commitments that are denominated in foreign currency.

inflation differential. Difference in the inflation rate between two or more countries.

liquidity risk. The inability to trade a financial instrument in a timely fashion.

market discontinuities. Sudden and significant changes in market value.

market risk. Risk of loss owing to unexpected changes in the prices of foreign exchange, credit, commodities, and equities.

net exposed asset position. An excess of exposed assets over exposed liabilities (also called a positive exposure).

net exposed liability position. An excess of exposed liabilities over exposed assets (also called a negative exposure).

net investment. A firm's net exposed asset or liability position.

notional amount. The principal amount specified in a contract to determine settlement.

operational hedge. FX risk protection that focuses on variables that impact a firm's foreign currency revenues and expenses.

option. The right but not the obligation to buy or sell a financial contract at a specified price on or before a specified date in the future.

regulatory risk. The risk that a public law will constrain the intended use of a financial product.

risk mapping. Examining the temporal relationship of various market risks to financial statement variables that affect a firm's value and assessing their likelihood of occurrence.

structural hedges. Selecting or relocating operations to reduce a firm's overall FX exposure.

tax risk. The risk that a desired tax treatment is not available.

translation exposure. Measuring the parent currency effects of FX changes on foreign currency assets, liabilities, revenues, and expenses.

transaction exposure. Exchange gains and losses that arise from the settlement (conversion) of foreign currency transactions.

value at risk. Risk of loss on an entity's trading portfolio caused by changes in market conditions.

value driver. Balance sheet and income statement accounts that impact firm value.

ESSENTIALS

The main goal of financial risk management at the individual risk level is to minimize the chance of loss arising from unexpected changes in the prices of currencies, credit, commodities, and equities. Exposure to price volatility is known as market risk. For example, a corporation in Sweden that issues new stock to domestic investors might view market risk as exposure to rising share prices. An unexpected rise in stock prices is undesirable if the issuer could have issued fewer shares for the same amount of cash by waiting. A Swedish investor, on the other hand, would view risk as the possibility of a fall in equity prices. If stock prices were to fall significantly in the near term, the investor would rather wait before buying.

Market participants tend to be risk averse. Thus, many will trade some potential profits for protection from adverse price changes. Financial intermediaries and market makers have responded by creating financial products that enable a market participant to transfer the risk of unexpected price changes to someone else—a counterparty. For example, a financial intermediary might sell a corporate issuer an option (i.e., the right but not the obligation) to buy stock and the investor (the counterparty) an option to sell the stock short.

Market risk has many dimensions. Although we will focus on price or rate volatility, management accountants consider other risks enumerated under ERM above. Liquidity risk exists because not all financial risk management products can be freely traded. Highly illiquid markets include real estate and small capitalization stocks.[4] Market discontinuities refer to the risk that markets may not always produce gradual price changes. The stock market plunge at the start of this decade is a case in point. Credit risk is the likelihood that a counterparty to a risk management contract will not meet their obligations. For example, a counterparty agreeing to exchange euros for Canadian dollars may fail to deliver euros on the promised date. Regulatory risk is the risk that a public authority may prevent a financial product from being used for its intended purpose. For example, the Kuala Lumpur stock exchange does not permit the use of short sales as a hedge against declines in equity prices. Tax risk is the risk that certain hedge transactions will not receive the desired tax treatment. An example is the treatment of foreign exchange losses as capital gains when ordinary income is preferred. Accounting risk is the chance that a hedge transaction will not be accounted for as part of the transaction it is intended to hedge. An example of this is when the gain on the hedge of a purchase commitment is treated as "other income" instead of a reduction of the cost of the purchase.

WHY MANANGE FINANCIAL RISKS?

The rapid growth of risk management services suggests that management can increase firm value by controlling financial risks.[5] Moreover, investors and other stakeholders increasingly expect financial managers to identify and actively manage market risk

[4] Many would agree that the current financial crisis was triggered by a liquidity crisis. Recent financial innovations such as credit default swaps proved ineffective in maintaing the liquidity of the market for subprime credit.

[5] For empirical evidence on this, see James M. Nelson, Jacquelyn Sue Moffitt, and John Affleck-Graves, "The Impact of Hedging on the Market Value of Equity," *Journal of Corporate Finance*, Vol. 11, no. 5 (2005): 851–881.

exposures. If the value of the firm equals the present value of its future cash flows, active exposure management is justified on several grounds.

First, exposure management helps stabilize a firm's expected cash flows. A more stable cash flow stream helps minimize earnings surprises, thereby increasing the present value of expected cash flows. Stable earnings also reduce the likelihood of default and bankruptcy risk, or the risk that earnings may not cover contractual debt service payments. Second, active exposure management enables firms to concentrate on their primary business risks. Thus, a manufacturer can hedge its interest rate and currency risks and concentrate on production and marketing. Similar benefits are available to financial institutions. Third, debt holders, employees, and customers also gain from exposure management. As debt holders generally have a lower risk tolerance than shareholders, limiting the firm's risk exposure helps align the interests of shareholders and bondholders. Fourth, derivative products allow employer-administered pension funds to enjoy higher returns by permitting them to invest in certain instruments without having to actually buy or sell the underlying instruments. Fifth, because losses caused by certain price and rate risks are passed on to customers in the form of higher prices, exposure management limits customers' exposure to these risks.[6]

ROLE OF ACCOUNTING

Management accountants play an important role in the risk management process. They help identify potential market risks, quantify trade-offs associated with alternative risk response strategies, measure a firm's exposure to specific risks, account for specific hedge products, and evaluate the effectiveness of hedging programs. In the current economic meltdown, deemed by many to be the biggest financial crisis since the Great Depression, a major limitation of quantitative risk models was the failure of management and their accountants to adjust their risk models for changes in the environment that made their data inputs questionable.[7]

Identifying Market Risks

A useful framework for identifying various types of potential market risks may be called risk mapping. This framework begins with an examination of the relationship of various market risks to the value drivers of a firm and its competitors. Exhibit 11-3 illustrates a framework first developed by J. P. MorganChase. We call it the risk-mapping cube.[8]

The term value drivers in Exhibit 11-3 refers to major financial condition and operating performance items that impact a firm's value. Market risk encompasses foreign exchange and interest rate risk, as well as commodity and equity price risk. The third dimension of the risk-mapping cube examines the relationship of market risks and value drivers for each of the firm's principal competitors.

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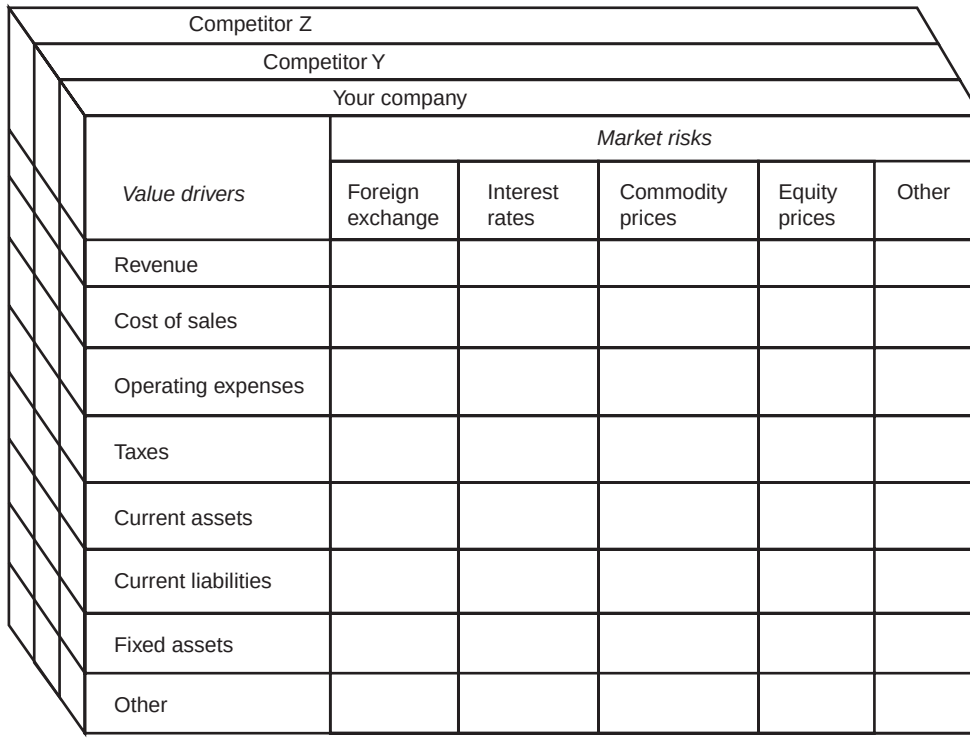
[6] J. P. Morgan & Co., Inc., Arthur Andersen & Co., SC, and Financial Engineering Limited, "The J. P. Morgan/Arthur Andersen Guide to Corporate Exposure Management," Risk Magazine (1994).
[7] Jeffrey Marshall and Gregory J. Millman, "Lessons from the Abyss: The Credit Meltdown and Risk Management," *Financial Executive*, May 2008, p. 38.
[8] Ibid.

EXHIBIT 11-3 Risk-Mapping Cube



Source: J. P. Morgan et al., "The J. P. Mohan/Arthur Andersen Guide to Corporate Exposure Management." *Risk Magazine,* 1994, 19.

To illustrate, let us examine the first row of the exposure management cube. Interest rate risk may affect the revenue of the firm in the following manner. Credit sales are normally collected after a certain period, depending on the credit terms offered the client (e.g., 30, 60, or 90 days). The firm usually relies on short-term loans to finance current operations, such as wages and other operating expenses. Rising interest rates before the receivables are collected would reduce the firm's return from sales. Credit sales denominated in foreign currency would yield less than expected parent currency should the foreign currency lose value before collection. Fluctuating commodity prices can have a significant impact on revenues as well as cost of sales. Finally, as managers of investment funds know all too well, falling equity prices immediately worsen fund performance statistics.

How does the third dimension of the exposure management cube work? This dimension examines how a competitor's exposure to market risk might impact the firm. Suppose you decide to sell baseball caps of the team you expect to win the next World Series. You decide to buy and sell these caps locally. Are you exposed to foreign exchange risk? You might not think so, but if a competitor buys baseball caps from abroad and the currency of its source country loses value relative to your home currency, this change may allow your competitor to sell at a lower price than you. This is called competitive currency exposure.

As the object of this exercise is to identify potential risks, we add two other dimensions to the risk management construct in Exhibit 11-3. For each cell of the cube management accountants should incorporate a probability density function associated with a range of possible outcomes for each value driver. To illustrate, unexpected foreign exchange rate changes could have a range of effects on a firm's revenues. Each of these outcomes would, in turn, be associated with a certain likelihood based on objective, or more likely, subjective, probability assessments. These probability scenarios, in turn, would be estimated over various time frames. Intervals such as three months, six months, and so forth add a temporal dimension to risk mapping. Accountants are well positioned to provide such data.[9]

Quantify Trade-offs

Another role that accountants play in the risk management process involves quantifying trade-offs associated with alternative risk response strategies. Management may prefer to keep some risk exposures rather than hedge whenever the costs of risk protection are deemed higher than the benefits. As an example, an importer who has a firm purchase commitment denominated in foreign currency may prefer not to hedge if he believes the foreign currency will weaken before the delivery date. Accountants would measure the benefits from hedging against its costs plus the opportunity costs of foregone gains from speculating in market movements.

Risk Management in a World of Floating Exchange Rates

Many of the market price movements we have been discussing are interrelated. In this chapter, we confine our analysis to a specific price exposure: foreign exchange rate changes. We do this for three reasons. First, a scrutiny of annual report disclosures suggest that exchange rate or FX risk is one of the most common forms of risk that multinational firms encounter. Second, influential financial executives state that one of the most difficult external risks that financial managers must cope with is foreign exchange risk.[10] Third, the risk management concepts and associated accounting treatments for foreign exchange risk parallel those for interest rate, commodity, and equity price risks.

In a world of floating exchange rates, risk management includes (1) anticipating exchange rate movements, (2) measuring a firm's exposure to exchange risk, (3) designing appropriate protection strategies, and (4) establishing internal risk management controls. These are discussed in turn.

Forecasting Exchange Rate Changes

In developing an exchange risk management program, financial managers must have information on the potential direction, timing, and magnitude of exchange rate changes. Forewarned of exchange rate prospects, financial managers can more efficiently and effectively arrange appropriate defensive measures. Whether it is possible to accurately predict currency movements, however, remains an issue.

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[9] A booklet on this subject prepared by the American Institute of Certified Public Accountants can be found at www.aicpa.org/assurance/index.htm.

[10] Quote from John Connors, former CFO of Microsoft, *Treasury and Risk*, p.mailzeen.com, December 2006.

Information frequently used in making exchange rate forecasts (e.g., currency depreciation) relates to changes in the following factors:

Inflation differentials. Evidence suggests that a higher rate of inflation in a given country tends, over time, to be offset by an equal and opposite movement in the value of its currency.

Monetary policy. An increase in a country's money supply that exceeds the real growth rate of national output fosters inflation, which affects exchange rates.

Balance of trade. Governments often use currency devaluations to cure an unfavorable trade balance (i.e., when exports < imports).

Balance of payments. A country that spends (imports) and invests more abroad than it earns (exports) or receives in investments from abroad experiences downward pressure on its currency's value.

International monetary reserves and debt capacity. A country with a persistent balance of payments deficit can forestall a currency devaluation by drawing down its savings (i.e., level of international monetary reserves) or drawing on its foreign borrowing capacity. As these resources decrease, the probability of devaluation increases.

National budget. Deficits caused by excessive government spending also worsen inflation.

Forward exchange quotations. A foreign currency that can be acquired for future delivery at a significant discount signals reduced confidence in that currency.

Unofficial rates. Increases in the spread between official and unofficial or black market exchange rates suggest increased pressure on governments to align their official rates with more realistic market rates.

Behavior of related currencies. A country's currency will normally behave in a fashion similar to currencies of countries with close economic ties to it.

Interest rate differentials. Interest rate differentials between any two countries predict future change in the spot exchange rate.

Foreign equity option prices. Since arbitrage links a foreign equity's price in its home market with its domestic currency value, changes in the domestic currency option price of a foreign equity signals a change in the market's expectations of future FX rates.[11]

These items help predict the direction of currency movements. However, they are usually not enough to predict the timing and magnitude of currency changes. Politics strongly influences currency values in many countries. Political responses to devaluation or revaluation pressures frequently result in temporary measures rather than exchange rate adjustments. These temporary measures include selective taxes, import controls, export incentives, and exchange controls. Awareness of the politics of a country whose currency is under pressure is important. It helps financial managers discern whether the government will lean toward market intervention or rely on free-market solutions.

[11] Chu and Swidler confirm this using the case of Telmex options around the 1994 Mexican peso devaluation. Ting-Heng Chu and Steve Swidler, "Forecasting Emerging Market Exchange Rates from Foreign Equity Options," *Journal of Financial Research*, no. 3 (2002): 353–366.

Some claim that exchange rate forecasting is a futile exercise. In a world where exchange rates are free to fluctuate, FX markets are said to be efficient.[12] Current market rates (i.e., forward exchange rates) represent the consensus of all market participants about future FX rates. Information that is generally available is immediately impounded in current FX rates. Thus, such information has little value in predicting future exchange rates. Under these conditions, FX rate changes are random responses to new information or unforeseen events. Forward exchange rates are the best available estimates of future rates. The randomness of FX rate changes reflect the diversity of opinions on exchange values by participants.

What do all of these factors imply for management accountants? For one thing, accountants must develop systems that gather and process comprehensive and accurate information on variables correlated with exchange rate movements. These systems can incorporate information provided by external forecasting services, financial publications that track currency movements, and daily contacts with foreign currency dealers. They should be online and computer-based to ensure managers a superior source of information on which to base their currency forecasts. Financial managers must also understand the consequences of not using other forecasting methods.

If exchange rate forecasting is not possible or too expensive to undertake, then financial managers and accountants should arrange their company's affairs to minimize the detrimental effects of rate changes. This process is known as exposure management.

EXPOSURE MEASUREMENT Structuring a company's affairs to minimize the adverse effects of exchange rate changes requires information on its exposure to FX rate risk. FX exposure exists whenever a change in FX rates changes the value of a firm's net assets, earnings, and cash flows.[13] Traditional accounting measures of FX exposure center on two major types of exposure: translation and transaction.

Translation Exposure

Translation exposure measures the impact of FX rate changes on the domestic currency equivalents of a firm's foreign currency assets and liabilities. For example, a U.S. parent company operating a wholly owned subsidiary in Ecuador (whose functional currency is the U.S. dollar) experiences a change in the dollar value of its Ecuadorean net monetary assets whenever the exchange value of the Ecuadorean sucre changes relative to the dollar. Because foreign currency amounts are typically translated to their domestic currency equivalents for either management review or external financial reporting purposes (see Chapter 6), translation effects have a direct impact on reported profits. A foreign currency asset or liability is exposed to exchange rate risk if a change in the exchange rate causes its parent currency equivalent to change. Based on this definition, foreign currency balance sheet items exposed to exchange rate risks are those items that are translated at current (as opposed to historical) exchange rates. Accordingly,

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[12] Gunter Dufey and Ian H. Giddy, "Management of Corporate Foreign Exchange Risk," in F. D. S. Choi, ed., International Finance and Accounting Handbook, New York: John Wiley & Sons, 2003, pp. 6.1–6.31. For instructional insights on this subject see: ian.giddy @stern.nyu.edu.

[13] See Niclas Hagelin and Bengt Pramborg, "Hedging Foreign Exchange Exposure: Risk Reduction from Transaction and Translation Hedging," *Journal of International Financial Management and Accounting*, Fall 2004, pp. 1–20. For recent corporate examples of FX exposure management, see Coline Sume Emadione, "Foreign Exchange Exposure and Management: Case Study of Two Large Multinationals," (2009) at www.essays.se.

translation exposure is measured by taking the difference between a firm's exposed foreign currency assets and liabilities. This process is depicted in Exhibit 11-4.

An excess of exposed assets over exposed liabilities (i.e., those foreign currency items translated at current exchange rates) causes a net exposed asset position. This is sometimes referred to as a positive exposure. Devaluation of the foreign currency relative to the reporting currency produces a translation loss. Revaluation of the foreign currency produces a translation gain. Conversely, a firm has a net exposed liability position or negative exposure whenever exposed liabilities exceed exposed assets. In this instance, devaluation of the foreign currency causes a translation gain. Revaluation of the foreign currency causes a translation loss.

Accounting measures of exposure vary depending on the translation method adopted. (Chapter 6 distinguished four major translation options.) Exhibit 11-5 illustrates

EXHIBIT 11-4 Translation Exposure

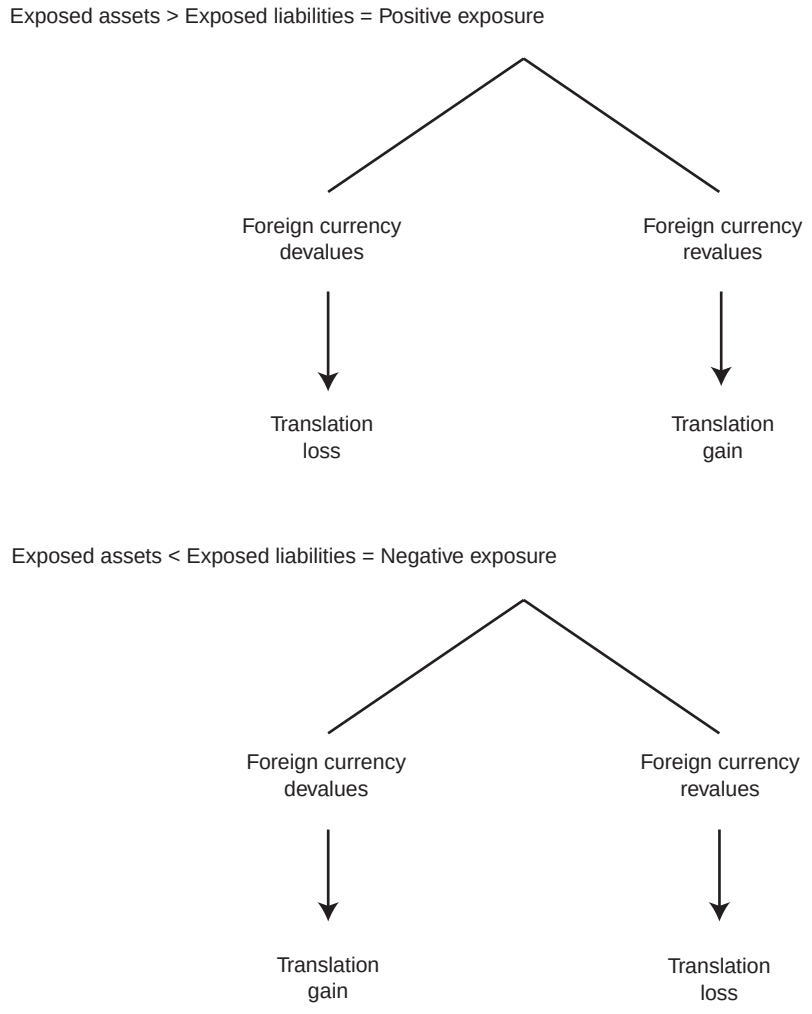

EXHIBIT 11-5 Accounting Exposure Illustrated (in thousands)

	Peso	U.S. Dollars Before Pesos Devaluation ($.03 = PHP1)	U.S. Dollars After Philippine Peso Devaluation ($.02 = PHP1) Current Rate	Current–Noncurrent	Monetary–Nonmonetary	Temporal
Assets						
Cash	PHP 500,000	$15,000	$10,000	$10,000	$10,000	$10,000
Accounts receivable	1,000,000	30,000	20,000	20,000	20,000	20,000
Inventories	900,000	27,000	18,000	18,000	27,000	18,000
Fixed assets (net)	1,100,000	33,000	22,000	33,000	33,000	33,000
Total	PHP 3,500,000	$105,000	$70,000	$81,000	$90,000	$81,000
Liabilities & Owners' Equity						
Short-term payables	PHP 400,000	$ 12,000	$ 8,000	$ 8,000	$ 8,000	$ 8,000
Long-term debt	800,000	24,000	16,000	24,000	16,000	16,000
Stockholders' equity	2,300,000	69,000	46,000	49,000	66,000	57,000
Total	PHP 3,500,000	$105,000	$70,000	$81,000	$90,000	$81,000
Accounting exposure (PHP)			2,300,000	2,000,000	300,000	1,200,000
Translation gain (loss) ($)			(23,000)	(20,000)	(3,000)	(12,000)

the major translation options described in Chapter 6. The year-end balance sheet is that of a hypothetical Philippine subsidiary of a U.S. parent company. The second column depicts the U.S. dollar equivalents of the Philippine peso (PHP) amounts at an exchange rate of $0.03 = PHP1. The peso is expected to devalue by 33⅓ percent during the coming period. As inventories are stated at market values under the lower of cost or market rule, the monetary–nonmonetary and temporal translation methods produce different exposure measures and are treated separately. Assuming the U.S. parent designates the U.S. dollar as the subsidiary's functional currency, its potential foreign exchange loss on a positive exposure of PHP1,200 million would be $12 million, determined as shown in Exhibit 11-6.

EXHIBIT 11-6 Caculation of Potential Foreign Exchange Loss (in millions)

Exposed Assets			
Cash	PHP 500		
Accounts receivable	1,000		
Inventories	900		PHP 2,400
Exposed Liabilities			
Short-term payables	PHP 400		
Long-term debt	800		1,200
Positive exposure			PHP 1,200
Pre-depreciation rate ($0.03 = PHP1)	PHP 1,200	=	$36
Post-depreciation rate ($0.02 = PHP1)	PHP 1,200	=	24
Potential foreign exchange loss			($12)

Alternatively, if the parent company designates the Philippine peso as the subsidiary's functional currency, the potential exchange loss is $23 million. This is based on a positive exposure of PHP2,300 million using the current rate method mandated by FASB No. 52. An exposure report format for the income statement based on similar concepts (suggested by the Management Accounting Practices Committee of the International Federation of Accountants) appears in Exhibit 11-7.

Exhibit 11-6 assumed that the Philippine subsidiary's transactions were denominated solely in pesos. In most foreign operations, however, transactions are done in more than one currency. FX risk is a multidimensional issue: For example, a receivable denominated in New Zealand dollars is unlikely to have the same future value as a receivable in Singapore dollars, even if both have the same face value at the time of sale. To account for these situations, management accountants prepare a variety of exposure reports that distinguish among foreign currency assets and liabilities according to the currencies in which they are denominated. Exhibit 11-8 illustrates a multicurrency exposure report for the Philippine subsidiary, which manufactures a durable good for sales in local, Australian, and American markets. Supplies are imported from Indonesia.

EXHIBIT 11-7 Format for an Income Statement Exposure Forecast

	Items Translated at Current Exchange Rates				Items Translated at Historic Exchange Rates				Total Exposure
Income Statement Category	Local Currency (amount)	Foreign Currency (amount)	Conversion Rate	Local Equivalent Rate	Local Currency (amount)	Foreign Currency (amount)	Conversion Rate	Local Equivalent Rate	
Revenues (By Category)									
Less: Cost of Sales (By Category)									
Gross Profit									
Less: Expenses (By Category)									
Earnings Before Interest and Tax Expense									
Earnings Before Tax									
Tax									
Net Income									
Net Exposed Position									
Net Covered Position									
Net Uncovered Position									

EXHIBIT 11-8 Multicurrency Translation Exposure (in thousands)

	Philippine Pesos	Australian Dollars	Indonesian Rupiahs	U.S. Dollars	Total[1]
Exposed Assets					
Cash	$ 50,000	–	–	–	$ 50,000
Receivables	45,000	$15,000	–	$40,000	100,000
Inventories	90,000			–	90,000
Total	185,000	$14,000		$40,000	$240,000
Exposed Liabilities					
Short-term payables	$ 20,000	$ 2,500	$ 12,500	$ 5,000	$ 40,000
Long-term debt	50,000			30,000	80,000
Total	$ 70,000	$ 2,500	$ 12,500	$35,000	120,000
Net exposure	$115,000	$12,500	$ (12,500)		

[1]Stated in U.S. dollars at the spot rate effective on the date of the report.

The format of the exposure report in Exhibit 11-8 resembles that in Exhibit 11-5 except that Exhibit 11-8 segregates exposed assets and liabilities by currency of denomination. Balance sheet items are typically expressed in U.S. dollars to facilitate an assessment of the relative magnitudes of the various items.

A multicurrency exposure reporting format offers many advantages over its single currency counterpart. For one thing, the information provided is more complete. Rather than disclosing a single net positive exposure figure of $120 million, the report in Exhibit 11-8 shows that this figure is comprised of several different currency exposures.

Each connotes different exchange risk consequences for the U.S. parent. Also, under a single currency perspective, the positive exposure of $12,500,000 in Australian dollars is combined with the negative exposure of $12,500,000 in Indonesian rupiahs, suggesting a natural offset. This offset is true only if the Australian dollar and Indonesian rupiah move in tandem relative to the U.S. dollar. If they do not, the translation effects could be significantly different.

A multicurrency report also enables the parent company to aggregate similar exposure reports from all its foreign subsidiaries and analyze, on a continual basis, its worldwide translation exposure by national currency. This type of analysis is particularly helpful when local managers are responsible for protection against translation exposure. One can easily imagine a situation where local managers in two foreign subsidiaries may face opposite exposures in the same currency. Multicurrency exposure reports enable a parent company to make sure its local managers avoid hedging activities that are disadvantageous to the company as a whole.

Transaction Exposure

Transaction exposure concerns exchange gains and losses that arise from the settlement of transactions denominated in foreign currencies. Unlike translation gains and losses, transaction gains and losses have a direct effect on cash flows as they result from a currency conversion process.

EXHIBIT 11-9 Multicurrency Transaction Exposure ($ thousands)

	Philippine Pesos	Australian Dollars	Indonesian Rupiahs	U.S. Dollars	Total
Exposed Assets					
Receivables	$ 45,000	$ 15,000	—	$40,000	$100,000
Inventories	90,000	—	—	—	$ 90,000
Future sales commitments	—	10,000	—	—	10,000
Total	$135,000	$ 25,000		$40,000	$200,000
Exposed Liabilities					
Short-term payables	$ 20,000	$ 2,500	$ 12,500	5,000	$ 40,000
Long-term debt commitments	50,000	—	—	30,000	80,000
Future purchase	—	—	10,000	—	10,000
Leases	—	$ 5,000	—	—	5,000
Total	$ 70,000	$ 7,500	$ 22,500	$35,000	$135,000
Net exposure		$ 17,500	$(22,500)	$ 5,000	

A multicurrency transaction exposure report for our Philippine subsidiary appears in Exhibit 11-9. It includes items that normally do not appear in conventional financial statements but cause transaction gains and losses, such as forward exchange contracts, future purchase and sales commitments, and long-term leases.[14] The exposure report excludes items that do not directly relate to foreign currency transactions (such as cash on hand). A transaction exposure report also has a different perspective than a translation exposure report. A translation exposure report takes the perspective of the parent company. A transaction exposure report takes the perspective of the foreign operation. Exhibit 11-9 focuses on what happens on the books of the Philippine affiliate if the peso changes value relative to the Australian dollar, the Indonesian rupiah, and the U.S. dollar. The peso column is of no concern, as peso transactions are recorded and settled in pesos. A devaluation of the peso relative to the Australian and U.S. dollars will produce transaction gains owing to positive exposures in both currencies. A devaluation of the peso relative to the rupiah would produce a transaction loss, as more pesos would be required to settle the Philippine subsidiary's foreign currency obligations. These transaction gains or losses (net of tax effects) directly impact U.S. dollar earnings upon consolidation.

Centralized control of a firm's overall exchange exposures is possible. This entails having each foreign affiliate send its multicurrency exposure reports to corporate headquarters continually. Once exposures are aggregated by currency and by country, the company can implement centrally coordinated hedging policies to offset potential losses.

Accounting Versus Economic Exposure

The reporting frameworks previously described highlight a firm's exposure to FX risk at a given time. Both translation and transaction exposure reports, however, do not

[14] These items are normally disclosed in footnotes to the financial statements.

measure a firm's economic exposure. This is the effect of currency value changes on the future operating performance and cash flows of the firm.

Exhibit 11-9 indicates that the Philippine subsidiary is long on Australian dollars. That is to say, exposed Australian dollar assets exceed exposed Australian dollar liabilities. Based on this report, a financial manager might decide to hedge this position by selling 17.5 million Australian dollars in the forward exchange market. Would this be the right decision? Probably not. Although the Philippine subsidiary is long on Australian dollars, not all the items in the exposure report require an immediate inflow or outflow of Australian dollars. The future sales commitment of $10 million will probably not bring in cash until a later accounting period. Also, the exposure report does not include all Australian dollar receipts or disbursements because future sales denominated in Australian dollars are not considered. Although Australian dollar receivables currently total $15 million, this figure will not stay the same for long. From an external reporting perspective, these future cash flows should not be considered. From an internal reporting perspective, they cannot be ignored.

More and more companies differentiate between exposures that are static and those that are fluid in nature. They prepare multicurrency cash flow statements that enable them to monitor monthly cash receipts and disbursements for each currency in which they do business (see Exhibit 11-10). A traditional exposure report considers the effects of exchange rate changes on account balances as of the financial statement date. A multicurrency cash flow statement emphasizes exposures generated by exchange rate changes during the forthcoming budget period. Cash receipts for each national currency include the collection of current and anticipated credit sales, asset disposals, and other cash-generating activities. Multicurrency cash disbursements incorporate those required for current and anticipated obligations, debt service, and other cash purchases.

EXHIBIT 11-10 Budgeted Cash Flows by Country

Unit/Country: _____ Date: _____

Currency		Budget Periods					
		January	February	March	April	May	June
Philippine pesos	Receipts						
	Payments						
	Net						
Australian dollars	Receipts						
	Payments						
	Net						
Indonesian rupiahs	Receipts						
	Payments						
	Net						
Other	Receipts						
	Payments						
	Net						

The notion of economic exposure recognizes that exchange rate changes affect the competitive position of firms by altering the prices of their inputs and outputs relative to those of their foreign competitors. For example, assume that our hypothetical Philippine subsidiary obtains its labor and material locally. Devaluation of the Philippine peso relative to all other foreign currencies could improve rather than worsen the subsidiary's position. It could increase its exports to Australia and the United States as the devalued peso would make its goods cheaper in terms of the Australian and U.S. dollar. Domestic sales could also rise, because the peso devaluation would make imported goods more expensive in local currency. The devaluation would have no appreciable effect on the cost of local-source inputs. Thus, the future profitability of the Philippine subsidiary might increase because of the currency depreciation. Under these circumstances, booking a transaction loss on a positive translation exposure would distort the economic implications of the peso devaluation.

Alternatively, a German manufacturing affiliate of a U.K. parent, organized to serve the German market, may have a positive translation exposure. Appreciation of the euro relative to the pound would produce a translation gain upon consolidation. If the German affiliate were to source all of its inputs in Germany, its economic exposure would appear to be shielded from exchange risk. Yet, if a major German competitor obtained some of its manufacturing components from Russia, this competitor may enjoy a cost advantage if the rouble were undervalued relative to the deutsche mark.

These examples suggest that economic or operating exposure bears little or no relation to translation and transaction exposure. Accordingly, the management of such exposure will require hedging technologies that are more strategic than tactical in nature.[15]

Companies may opt for structural hedges that involve selecting or relocating manufacturing sites to reduce the operating exposure of the business as a whole. Such actions, however, may require foregoing economies of scale, which could reduce the expected rate of return of the business.

Alternatively, parent companies could take a portfolio approach to risk reduction by selecting businesses that have offsetting exposures.[16] In so doing, the operating exposure of the firm as a whole is minimized. This strategy will necessitate careful review of individual business units' operating results after correcting for the effects of operating exposure. A company may opt to exploit exchange rate volatility by reconfiguring its businesses. The object is to preserve maximum flexibility by being able to increase production and sourcing in countries where currencies become strongly undervalued in real terms. This entails additional costs of relocating production facilities and building excess capacity. On the other hand, these strategic moves reduce average operating costs across a range of exchange rates.

The notion of economic or operating exposure places new burdens on management accountants. Traditional sources will not contain much of the required information. The proper measurement of operating exposure will require an understanding of the structure of the market in which a company and its competitors do business, as well as the

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[15] Peijie Wang, *The Economics of Foreign Exchange and Global Finance*, Berlin: Springer Publishing Company, 2005.

[16] This portfolio approach is a subset of the portfolio strategy associated with enterprise risk management systems described at the start of this chapter.

effects of real (as opposed to nominal) exchange rates. These effects are hard to measure. As operating exposures tend to be long in duration, uncertain in terms of measurables, and not based on explicit commitments, accountants will have to provide information that spans multiple operating functions and time periods.

PROTECTION STRATEGIES Once foreign exchange exposures are quantified, the next step is to design hedging strategies that minimize or eliminate such exposures. These strategies include balance sheet, operational, and contractual hedges.

Balance Sheet Hedges A balance sheet hedge reduces a firm's exposure by adjusting the levels and monetary denomination of a firm's exposed assets and liabilities. For example, increasing cash balances in foreign currency can offset declines in interest rates and income on domestic fixed income instruments. In Exhibit 11-8, a natural hedge against the $115 million positive exposure would be to increase the Philippine subsidiary's peso borrowings by $115 million. In this case the borrowed cash must be remitted to the parent or invested in nonexposed assets, otherwise the net exposed asset position would not change. Other methods of hedging a firm's positive exposure in a subsidiary located in a devaluation-prone country include:

1. Keeping local currency cash balances at the minimum level required to support current operations
2. Remitting profits above those needed for capital expansions back to the parent company
3. Speeding up (leading) the collection of outstanding local currency receivables
4. Deferring (lagging) payments of local currency payables
5. Speeding up the payment of foreign currency payables
6. Investing excess cash in local currency inventories and other assets less subject to devaluation loss
7. Investing in strong currency foreign assets

Operational Hedges This form of risk protection focuses on variables that impact foreign currency revenues and expenses. Raising selling prices (for sales invoiced in a devaluation-prone currency) in proportion to the anticipated currency depreciation helps protect targeted gross margins. One variation of this theme is invoicing sales in hard currencies. Tighter control of costs affords a larger margin of safety against potential currency losses. A final example includes structural hedges. These entail relocating manufacturing sites to reduce operating exposures of the firm or changing the country in which raw materials or manufacturing components are sourced.

Balance sheet and operational hedging are not costless. Foreign subsidiaries in devaluation-prone countries are frequently urged to minimize their local currency working capital balances (cash and receivables in particular), simultaneously increasing holdings of local currency debt. Such actions, unfortunately, are often disadvantageous. Increased export potential resulting from a devaluation might call for more working capital rather than less. The opportunity cost in lost sales could far exceed any translation loss. Also, local currency borrowing before a devaluation can be extremely expensive. Other foreign subsidiaries usually have similar ideas at the same time and, consequently, the local banking system may accommodate such credit demands only at an excessive cost. Furthermore, bank credit during such periods is usually scarce because most countries

impose severe credit restraints to counter the problems that cause devaluation pressures in the first place. The cost of borrowing under these circumstances often exceeds any protection provided.

Strategic hedges also have their limits. One strategy, for example, is to vertically integrate operations to minimize a firm's exposure to exchange rate-sensitive resources. This course of action, however, exposes the firm to additional costs connected with setting up a new foreign affiliate and the potential loss of scale economies. Vertical integration also takes a long time to carry out.

Contractual Hedges A variety of contractual hedge instruments have been developed to afford managers greater flexibility in managing foreign exchange exposures. Exhibit 11-11 shows some foreign exchange hedge products that have recently appeared. As you can see, managers have plenty of choices to consider.

EXHIBIT 11-11 Exchange-Related Financial Instruments

alternative currency option. A currency option that, if exercised, can be settled in one of several alternative currencies at the choice of the option holder.

basket hedging. The use of a basket of currencies (comprising fewer currencies than the hedged portfolio) to offset the risk of all the nonbase currencies in a portfolio.

break forward. An option that allows the buyer to fully participate in the movement of a currency beyond a specified level without having to pay an explicit option premium.

combined interest rate and currency swap (CIRCUS). A transaction in which two counterparties exchange interest payment streams denominated in two different currencies (i.e., exchanging fixed interest payments in one currency for floating rate interest in another).

contingent hedge with an agreement for rebate at maturity (CHARM). A currency option that (1) is exercisable if a bidding company wins the contract or (2) is void if the company loses the contract, where the issuer of the option rebates a portion of the premium. The value of the payoff depends on (1) the buyer's ability to obtain business requiring currency protection and (2) the movement of the underlying currency.

convertible option contract. An option to purchase or sell foreign currency that converts to a forward contract if the forward exchange rate falls below a certain price.

covered option securities (COPS). Short-term obligations that give the issuer the option to repay principal and interest in the original, or a mutually acceptable, currency.

covered interest arbitrage. An agreement in which two counterparties exchange currencies at both the spot and forward rates simultaneously.

cross-currency basis swap. A floating interest rate swap in two currencies.

cross-currency cap. An option in which the holder is paid the positive difference between the spread on two different currency base rates and a strike spread.

currency coupon swap. A fixed to floating coupon swap in two different currencies.

currency option. The right but not the obligation to buy or sell another currency at an agreed-upon strike price within a specified time period.

currency swap. The initial exchange of two currencies and subsequent reexchange of the same currencies at the end of a certain time period.

(continued)

EXHIBIT 11-11 Exchange-Related Financial Instruments (Continued)

currency swap option (swaption). An option to buy or sell a currency swap at a specified exchange rate.

dual option bonds. A bond giving the investor the choice of currencies in which to receive interest and principal repayments.

exchange rate agreement (ERA). A synthetic agreement for forward exchange whose value is correlated with the spread between two forward currency exchange rates.

forward exchange contract. A contractual agreement between two parties to exchange a specified amount of currency for another at a fixed date in the future.

futures contract. An exchange-traded contract calling for delivery of a specified amount of currency at a fixed date in the future.

foreign equity option. The right but not the obligation to buy or sell a foreign equity at a specified price on or before a specified date in the future.

indexed currency option notes (ICONS). Bonds that are denominated and pay interest in one currency with redemption value linked to the exchange rate of another currency.

look-back option. The retroactive right to buy a currency at its low point or sell a currency at its high point within the option period.

principal exchange-rate-linked securities (PERLS). Debt instruments paying interest and principal in U.S. dollars where the principal is pegged to the exchange rate between the dollar and another currency.

range forwards. A forward exchange contract specifying a range of exchange rates at which currencies will be exchanged at maturity.

synthetic position. A combined transaction to produce a security with features that could not be obtained directly (e.g., combining a fixed rate debt with a currency swap).

tailored swap. A currency swap in which the notional principle can be adjusted to meet the changing risk exposure of a business.

Source: Adapted from Gary L. Gastineau, Swiss Bank Corporation Dictionary of Financial Risk Management, Chicago: Probus, 1992.

Most of these financial instruments are derivative as opposed to basic in nature. Basic financial instruments, such as repurchase agreements (receivables), bonds, and capital stock, meet conventional accounting definitions of assets, liabilities, and owners' equity. Derivative instruments are contractual arrangements giving rise to special rights or obligations and that derive their value from another financial instrument or commodity. Many are based on contingent events. Accordingly, they do not have the same characteristics as the instrument on which they are based. An example would be a cross-currency basis swap on a principal amount of $100 million. Here the derivative product is the promise to exchange interest payment differentials based upon, but independent of, the underlying principle or notional amount of the respective borrowings. If floating rates were higher than fixed rates, one counterparty would owe the other counterparty the difference. Any amounts owing would depend upon the movement in interest rates. The market for derivatives is a 24-hour global trading market comprised largely of banks. Derivatives traders around the world are interconnected through highly sophisticated electronic and telecommunications systems.

In recent years, numerous surprises occurred in the market for derivatives that dominated the financial headlines. Names such as Long-Term Capital Management,

Merrill Lynch, AIG, UBS, Bear Stearns, and Orange County gained instant notoriety because of the magnitude of the losses they sustained. Prestigious financial institutions such as Goldman Sachs, Morgan Stanley, and Bank of America also made the front page. Reported losses ranged from hundreds of millions of dollars to the billions. While losses related to derivatives have occurred in the past, what is truly distinctive about the current experience is that is is truly global. Reasons for such losses include inadequate control over trader behavior, pricing models that do not incorporate the risks of extreme market movements (discontinuities), market illiquidity, and ultimately the naiveté of directors and senior management as to the nature and risks of these instruments.[17]

Despite these debacles, the derivatives market, currently in excess of $100 trillion in size, continues to grow in sophistication and use. Financial managers of multinational enterprises use these instruments to manage their exposures to exchange risk, especially transactions and economic, as these exposures directly impact a firm's current and future cash flows. Allayannis and Ofek find a strong negative association between foreign currency derivative use and a firm's exchange rate exposure. This suggests that firms use derivatives primarily to hedge rather than speculate in foreign currencies. It also implies that usage of foreign currency derivatives does indeed reduce foreign exchange rate risk.[18] Although we express a preference for hedging transaction and economic exposures, executives appear interested in managing translation exposure as well. They voice concern over reporting lower earnings to shareholders. In a comparative study of derivative usage among German and U.S. companies, minimizing the variability of reported earnings was rated most important among German companies. While U.S. companies tend to use financial derivatives to minimize the variability of cash flow, minimizing the variability of reported earnings was a close second.[19] In a related study, Swedish companies' use of derivatives to hedge the balance sheet (translation exposure) was as prevalent as their use of derivatives for committed and anticipated transactions.[20]

Accounting for Hedge Products

Contractual hedge products are financial contracts or instruments that enable users to minimize, eliminate, or otherwise transfer market risks to someone else's shoulders. They include, but are not limited to, forward contracts, futures, swaps, options, and combinations of these. While many of these derivative instruments have grown in complexity, user surveys document management's preference for the most basic, or vanilla, varieties.[21]

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[17] Rene M. Stulz, "Risk Management Failures: What Are They and When Do They Happen?" *Journal of Applied Corporate Finance*, Fall 2008, pp. 58–67.

[18] George Allayannis and Eli Ofek, "Echange Rate Exposure, Hedging and the Use of Foreign Currency Derivatives," Journal of International Money and Finance 20 (2001): 273–296.

[19] Reasons for the U.S. emphasis on reported earnings relate to analysts' perceptions and prediction of future earnings and management compensation. In Germany, reported earnings play an important role in taxation and dividend distribution. Gordon M. Bodner and Gunther Gebhardt, "Derivative Usage in Risk Management by US and German Non-Financial Firms: A Comparative Study," Journal of International Financial Management and Accounting 10, no. 3 (1999): 153–187.

[20] Hagelin and Pramborg, op. cit.

[21] Ed McCarthy, "Derivatives Revisited," Journal of Accountancy (May 2000). Also available at www.aicpa.org/pubs/jofa/may 2000/mccarthy.htm.

Knowledge of accounting measurement rules for derivatives is especially important when designing an effective hedge strategy for the firm. To understand the importance of hedge accounting, we illustrate some basic hedge accounting practices.

First, review the basic components of an income statement (absent taxes).

Operating revenues	XXX
− Operating expenses	XXX
= Operating income	XXX
+ Other income	XXX
− Other expense	XXX
= Net income	XXX

Analysts usually focus on operating income in evaluating how well management has operated its core business. Net income includes the confounding effects of extraordinary or nonrecurring events.

The accounting treatment for financial derivatives that is gaining acceptance internationally is to mark that product to market with any gains or losses recognized as a component of nonoperating income. In the United States at least, an exception is permitted in certain instances if the transaction meets appropriate hedge criteria, including the following:

1. The item being hedged exposes the firm to a market risk.
2. The firm describes its hedging strategy.
3. The firm designates the instrument to be employed as a hedge.
4. The firm documents its rationale as to why the hedge is likely to be effective.

If the appropriate criteria are met, the firm can use the gains or losses recognized on marking the hedge product to market to offset the gains or losses on the transaction that is being hedged (e.g., sales or purchases). To illustrate, assume that an Irish manufacturer of stout (a dark malt beverage) has a sales commitment to deliver X barrels to a buyer in the United States in two months. Fearing that the U.S. dollar will devalue before delivery, the Irish manufacturer buys a forward exchange contract that will allow it to sell U.S. dollars in two months' time at a price close to the current price. If the dollar devalues before delivery, the gain on the foreign exchange contract will offset the loss on the sales contract. If the hedging requirements listed above are met, operating income will meet its target. If the criteria are not met, the gain on the forward contract will appear as other income and operating income will come in below target.

Accounting issues associated with FX hedging products relate to recognition, measurement, and disclosure. Recognition centers on whether hedging instruments should be recognized as assets or liabilities in the body of financial statements. There is also the question of whether the hedge product should receive the same accounting treatment as the item being hedged.

Closely related to the recognition issue is the question of measurement. How, for example, should an FX derivative be valued? Should it take on the same measurement basis as the hedged instrument or transaction, or should it reflect an independent valuation? If an independent valuation, which valuation model historical cost, market value, lower of cost or market, net realizable value, or discounted present value is preferable? How should gains or losses related to the FX instrument be reflected in the

income statement? Should they be reflected in income at all? Can and should risks associated with financial instruments be recognized and measured? This last question is especially important because risks attaching to many of the newer financial instruments, such as options and futures, are symmetric. Someone's gain is another's loss. Finally, to what extent should buyers and sellers of financial instruments detail the nature and amounts of financial instruments to which they are a party? What attributes of financial instruments should be disclosed in general-purpose financial statements? How much disclosure is necessary to sufficiently inform readers of the nature and magnitude of off-balance-sheet risks associated with corporate financial instruments? We now examine some basic FX risk management products. This is followed by a discussion of appropriate accounting treatments.

FX FORWARD CONTRACTS Importers and exporters generally use forward exchange contracts when goods invoiced in foreign currencies are purchased from or sold to foreign parties. The forward contract offsets the risk of transaction gains or losses as exchange rates fluctuate between the transaction and settlement dates. Forward contracts also hedge anticipated foreign currency payables or receivables (foreign currency commitments) and can be used to speculate in foreign currencies. These contracts are not traded on any organized exchange and are consequently less liquid than other contracts. On the other hand, they are flexible in contract amount and duration.

A forward exchange contract is an agreement to deliver or receive a specified amount of foreign currency in exchange for domestic currency, on a future date, at a fixed rate called the forward rate. Differences between the forward rate and the spot rate prevailing at the date of the forward contract give rise to a premium (forward rate > spot rate) or a discount (forward rate < spot rate). The premium or discount rate multiplied by the amount of the foreign currency to be received or delivered, the notional amount of the contract, produces a recognizable premium or discount on the forward contract. The forward contract will also give rise to transaction gains or losses whenever the exchange rate prevailing at the transaction date differs from those prevailing at interim financial statement or settlement dates.

The accounting issue here is whether premiums, discounts, gains, or losses on foreign exchange contracts should receive similar or differing treatment for each use identified. Exhibit 11-12 summarizes how these accounting adjustments should be reported under FAS No. 52, now amended by FAS No. 133.

FINANCIAL FUTURES A financial futures contract is similar in nature to a forward contract. Like a forward, it is a commitment to purchase or deliver a specified quantity of foreign currency at a future date at a set price. Alternatively, it may provide for cash settlement instead of delivery and can be cancelled before delivery by entering into an offsetting contract for the same financial instrument. In contrast to a forward contract, a futures agreement is a standardized contract, involves standardized provisions with respect to size and delivery date, is traded on an organized exchange,[22] is marked to market at the end of each day, and must meet periodic margin requirements. Losses on a

[22] Examples include the International Monetary Market in Chicago and newer exchanges such as the New York Futures Exchange, the London International Financial Futures Exchange, the Singapore Money Exchange (SIMEX), the Sydney Futures Exchange, and the MATIF in Paris.

EXHIBIT 11-12 Accounting Treatment of Forward Contracts

	Gains/Losses	Discount/Premium[a]
Unsettled foreign currency transaction	Recognize in current income	Recognize in current income
Identifiable foreign commitment	Recognize in current income	Recognize in current income
Exposed net asset (liability) position		
a. Foreign currency is functional currency	Disclose in separate component of consolidated equity	Same treatment as related gains/losses, or current income
b. Parent currency is functional currency	Recognize in current income	Recognize in current income
Speculation	Recognize in current income[b]	N/A[c]

[a]Normally amortized over the life of the underlying instrument/activity.

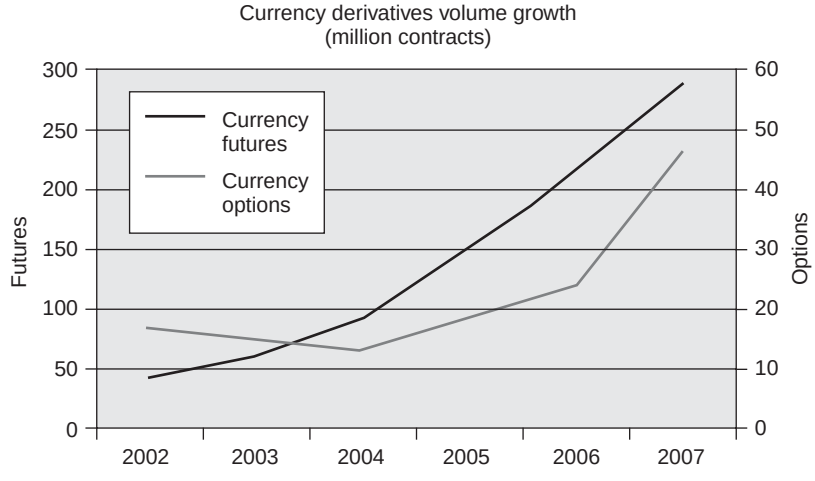
[b]Gains/losses in this category are a function of the difference between the forward rate available for the remaining period of the contract and the contracted forward rate (or the forward rate last used to measure a gain or loss on that contract for an earlier period).

[c]Not applicable.

futures contract give rise to a margin call; gains normally give rise to a cash payment. Exhibit 11-13 documents the growing size of this market.[23]

Corporate treasurers generally use futures contracts to shift the risk of price changes to someone else. They can also be used to speculate in anticipated price movements and to exploit short-term anomalies in the pricing of futures contracts.

EXHIBIT 11-13 Currency Derivatives



[23] Source: World Federation of Exchanges.

How does a financial futures contract work? If Alpha Corporation borrows yen for three months and wants to protect itself against an appreciation of the yen before maturity, it could buy a futures contract to receive an equal amount of yen in 90 days. Appreciation of the yen causes a gain on the futures contract, offsetting the loss on the yen borrowing.

CURRENCY OPTIONS A currency option gives the buyer the right to buy (call) or sell (put) a currency from the seller (writer) at a specified (strike) price on or before a specified expiration (strike) date. A European-type option may be exercised only at the expiration date. An American-type option may be exercised any time up to and including the expiration date. The buyer of a call pays a premium for the option and benefits if the price of the underlying asset exceeds the strike price at maturity; the buyer of a put benefits if the price falls below the strike price at the expiration date. Exhibit 11-13 also illustrates the growing size of this market.

To illustrate, suppose a U.S. contractor bids for a CAD100 million construction project in Canada. The outcome of the bid will not be known for three months. Should the Canadian dollar lose value during that time, the contractor will suffer a loss if it wins the fixed price contract. The U.S. contractor therefore buys an option to receive the difference between the future US$/CAD spot rate in 90 days at a strike price of $0.90 per Canadian dollar. The contract details are as follows:

Contract Type	FX CAD Put/U.S.$ Call Option
Maturity	90 days
Strike rate	$0.90 /CAD
Contract amount	$100 million
Option premium	$0.03

If, at maturity, the foreign exchange rate falls to $0.80, the contract holder gains 10 cents per CAD face value of the put contract. In this example, the change in value of the Canadian dollar yields an option payoff of $10,000,000 [($.80 − $0.90) × CAD100 million]. The option premium, which can be viewed as the cost of insuring against a falling Canadian dollar, is $3 million ($0.03 × CAD100 million). By buying the put option, the contractor makes a gain in the value of the option that offsets the potential currency loss (minus the option premium). If the value of the Canadian dollar is unchanged at the strike date, the contractor would simply let the option expire, treating the option premium as a cost of insurance.

Currency options can also be used to manage earnings. Assume an option trader believes the euro will gain in value in the near term. She would buy a naked call. Should the euro appreciate in value by the exercise date, the buyer would exercise the option and pocket the difference between the current and strike price, less the call premium. To limit downside risk, the buyer would obtain a bull call spread. This trading strategy involves buying a call and simultaneously selling an identical call with a higher strike price. The premium paid for the lower strike call will be partly offset by the amount received from the sale of the higher priced call. The maximum profit here is the difference between strike prices less the net premium. The net premium is, in effect, the maximum potential loss on the spread, ignoring transaction costs.

Straddles involve the sale of a call and a put with identical terms. Here the writer of the options bets that exchange rates will not change much during the life of the options. The writer gains revenue from premiums received for writing the options. It is a high-risk strategy, however. If exchange rates change enough to cause one or both of the options to be exercised, the writer's potential loss is unlimited.

CURRENCY SWAPS A currency swap involves a current and future exchange of two different currencies at predetermined rates. Currency swaps enable companies to access an otherwise inaccessible capital market at a reasonable cost. It also allows a firm to hedge against exchange rate risks arising from international business. Suppose, for example, that Alpha Corporation (a U.S.-based multinational) wishes to raise $10,000,000 of fixed-rate debt in British pounds to fund a newly formed London affiliate. Alpha is relatively unknown to British investors. Similarly, Beta Company, Ltd., domiciled in the United Kingdom, would like to fund a New York subsidiary with a similar amount of dollar financing. It is relatively unknown in the United States. Under these circumstances, Gamma Bank may accommodate both companies by arranging a U.S. dollar/U.K pound currency swap. Assume the following: the swap exchange rate is $1.00 = £ .66 (both at inception and maturity); the swap term is five years; and the swap specifies interest rates of 10 percent in pounds and 8 percent in dollars. The following cash flow pattern would take place. At inception, Alpha Corporation exchanges $10,000,000 for £6,600,000 from Beta Company, Ltd. Assuming interest is paid annually, Alpha pays £660,000 to Beta each year and Beta pays $800,000 to Alpha. At the end of the five-year term, each company would reexchange the principal amounts of $10,000,000 and £6,600,000.

As a result of this swap transaction, both Alpha Corporation and Beta Company, Ltd. have been able to access funds in a relatively inaccessible market. They have done so without incurring exchange rate risk. And, owing to their comparative advantage in borrowing in their home markets, they have achieved their foreign currency borrowings at a lower cost than they could otherwise obtain.

ACCOUNTING TREATMENTS The FASB issued FAS No. 133, as amended by FAS 138 and clarified by FAS 149, to provide a single comprehensive approach to accounting for derivative and hedge transactions.[24] IAS 39, recently revised, contains similar guidelines providing, for the first time, universal guidance on accounting for financial derivatives.[25] While these two pronouncements are similar in tenor, they differ in terms of the degree of detail in implementation guidance (see Chapter 8 on accounting harmonization).

Before these pronouncements, global accounting standards for derivative products were incomplete, inconsistent, and developed in piecemeal fashion. Most derivative instruments, being executory in nature, were treated as off-balance sheet items.

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[24] FAS No. 133 supercedes FAS No. 80 and amends FAS No. 52. Financial Accounting Standards Board, "Accounting for Derivative Instruments and Hedging Activities," Statement of Financial Accounting Standards 133, Stamford, CT: FASB, October 1994. FAS No 149 amends and clarifies FAS 133, resulting in more consistent reporting of contracts as either derivatives or hybrid instruments. Financial Accounting Standards Board, "Amendment of Statement 133 on Derivative Instruments and Hedging Activities," Statement of Financial Accounting Standards No. 149, Stamford, CT: FASB, April 2003. Also see FASB's Web site at www.fasb.org.

[25] International Accounting Standards Committee, "Financial Instruments: Recognition and Measurement," International Accounting Standard 39, London: IASC, December 1998. Also see their Web site at http://iasc.org.

An atmosphere of caveat emptor prevailed for statement readers attempting to gauge the volume and risks of derivative usage.

The basic provisions of these standards are as follows:

- All derivative instruments are to be recorded on the balance sheet as assets and liabilities. They are to be recorded at fair value, including those that are embedded in host contracts that are themselves not carried at fair value.
- Gains and losses from changes in the fair value of derivative instruments are not assets or liabilities. They are automatically recognized in earnings if they are not designated as hedges. There are three types of hedging relationships to be recognized, measured, and disclosed: fair value (FV) hedges that include recognized foreign currency assets and liabilities and firm foreign currency commitments, hedges of a net investment in a foreign operation (NI), and cash flow (CF) hedges that include FX-denominated forecasted transactions.
- Hedges must be highly effective to qualify for special accounting treatment; that is, gains or losses on hedging instruments should exactly offset gains or losses on the item being hedged.
- Hedging relationships must be fully documented for the benefit of statement readers. For hedges of recognized foreign currency assets or liabilities and unrecognized firm foreign currency commitments, gains or losses stemming from changes in the fair value of a derivative instrument (and nonderivative financial instruments) are included immediately in earnings. Changes in the value of the foreign currency asset, liability, or firm commitment being hedged are also recognized in current income.
- Gains or losses on hedges of a foreign currency net investment (an exposed net asset or liability position) are initially reported in other comprehensive income. It is subsequently reclassified into current earnings when the subsidiary is sold or liquidated.
- Gains or losses on hedges of uncertain future cash flows, such as forecasted export sales, are initially recognized as an element of comprehensive income. Gains or losses are recognized in earnings when the forecasted transaction affects earnings.

Practice Issues

While authoritative guidelines issued by the FASB and IASB have done much to clarify the recognition and measurement of derivatives, issues remain. The first relates to the determination of fair value. Wallace estimates 64 possible calculations for measuring change in the fair values of the risk being hedged and of the hedging instrument. He identifies four ways to measure changes in the fair value of the risks being hedged: fair market value, use of spot-to-spot exchange rates, use of forward-to-forward exchange rates, and use of an option pricing model. There are as many ways of calculating the change in value of the hedging instrument. Finally, these calculations can be done either before or after taxes.[26]

Financial reporting complexities also arise if hedges are not deemed "highly effective" in offsetting FX risk. However, the term highly effective is a subjective notion. In theory,

[26] Jeffrey B. Wallace, "FAS 133: Accounting for Derivative Instruments," in Frederick D.S. Choi, ed., Handbook of International Finance and Accounting, New York: John Wiley and Sons, 2003, pp. 19-1–19-24.

highly effective means a perfect negative correlation between changes in the value or cash flow of a derivative and changes in the value or cash flow of the item being hedged. This implies a range of acceptable value changes for the derivative. The FASB recommends an 80–120% range. If these bounds are violated, the hedge is terminated and deferred gains or losses on the derivative are recognized in current earnings. This, in turn, reintroduces undesired volatility into a firm's reported earnings stream.

Actually, a highly effective hedge may not entirely eliminate the earnings effect of FX changes. To illustrate, assume that the dollar equivalent of a Japanese yen denominated receivable falls by $10,000,000. The forward contract used to offset this FX risk experiences a gain of $10,800,000. Since the gain on the forward falls within the bounds of 80–120%, the forward has been an effective hedge. However, the $800,000 excess gain would be recognized in current income.[27]

Next we illustrate selected accounting treatments for forward contracts used as hedging instruments.

HEDGE OF A RECOGNIZED ASSET, LIABILITY, OR AN UNRECOGNIZED FIRM COMMITMENT

On September 1, a Canadian manufacturer sells, on account, goods to a Mexican importer for 1 million Mexican pesos (MXP). The Canadian dollar/peso exchange rate is CAD0.11 = MXP1. The peso receivable is due in 90 days. The peso begins to depreciate before the receivable is collected. By the end of the month, the Canadian dollar/peso exchange rate is CAD0.10 = MXP1; on December 1 it is CAD0.08 = MXP1. The Canadian exporter expects to receive CAD140,000 for the MXP1,000,000 owed if the spot rate remains unchanged through December 1. To avoid the risk of receiving less than CAD140,000 should the peso lose value before December 1, the Canadian exporter acquires a forward contract on September 1 to deliver MXP1,000,000 for Canadian dollars on December 1 at a forward rate of CAD0.10 = MXP 1. In this example, pesos can be sold only at a discount, as the spot rate is greater than the forward rate. The total discount on the forward contract is CAD10,000 [(CAD0.11 spot rate − CAD0.10 forward rate) X MXP1,000,000 notional amount] and is the price of reducing uncertainty. In effect, the Canadian exporter turns an uncertain receipt of C$140,000 to a certain receipt of CAD130,000. At later financial statement dates before maturity, the forward contract amount (peso liability) is multiplied by the spot rate in effect on those dates. Changes in spot rates cause transaction gains or losses on the forward contract. Thus, if the exchange rate prevailing on December 1 is CAD0.08 = MXP1, the Canadian exporter realizes a gain of CAD30,000 (CAD0.11 spot rate − CAD0.08 future spot rate = MXP1,000,000 liability). Had the forward contract not been purchased, the exporter would have received only CAD110,000 upon conversion of the MXP1,000,000 account receivable. Thus, the forward contract offsets a transaction loss on the foreign currency receivable with a transaction gain on the foreign currency payable.

Exhibit 11-14 provides accounting entries for the forward exchange contract just described, assuming that financial statements are prepared on September 30

[27] There are several ways of testing for hedging effectiveness. Details of the dollar offset, variability reduction, and regression methods are described in Finnerty, John D., and Dwight Grant, "Testing Hedging Effectiveness Under SFAS 133," www.nysscpa.org/cpajournal/2003/0403/features/f044033.htm.

EXHIBIT 11-14 Hedge of a Foreign Currency Transaction

Sept. 1	(CAD) Contract receivable	C$130,000	
	Deferred discount	10,000	
	MXP Contract payable		140,000
	(To record agreement with foreign currency dealer to exchange MXP1,000,000 worth CAD140,000 for CAD130,000 in three months.)		
Sept. 30	MXP Contract payable	10,000	
	Transaction (hedge) gain		10,000
	(To record transaction gain from reduced dollar equivalent of forward contract payable CAD0.11 − CAD0.10 × MXP1,000,000)		
Sept. 30	Discount expense	3,333	
	Deferred discount		3,333
	(Amortize deferred discount for one month.)		
Dec. 1	MXP Contract payable	20,000	
	Transaction (hedge) gain		20,000
	(To record additional transaction gain by adjusting contract to new current rate CAD0.10 − CAD0.08 × MXP1,000,000.)		
Dec. 1	Discount expense	6,667	
	Deferred discount		6,667
	(Amortize deferred discount balance)		
Dec. 1	MXP Contract payable	110,000	
	Mexican pesos		110,000
	(To record delivery of MXP1,000,000 to foreign currency dealer; this MXP1,000,000 is obtained from collecting the amount owed by the Mexican importer.)		
Dec. 1	Cash	130,000	
	(CAD) Contract receivable		130,000
	(To record receipt of CAD130,000 cash per forward contract.)		

prior to settlement of the peso transaction. The exchange rate on September 30 is CAD 0.10 = MXP1.

Assuming that the discount is treated as an element of operating expense, the net effect of the hedge transaction on operating income (ignoring any foreign exchange commissions) is determined as follows:

Dollar equivalent of receivable collected from Mexican importer	CAD110,000
Transaction gains on forward contract	30,000
Proceeds from sales commitment	140,000
Discount on forward contract	(10,000)
Operating income	CAD130,000

Gains on the forward contract have effectively offset the devaluation of the peso. Expected gross margins and operating income are attained. The discount on the forward contract represents the cost of hedging FX risk.

A similar accounting treatment would prevail if our Canadian exporter were to make a sales agreement on September 1 to deliver goods and receive payment of MXP1,000,000 from the Mexican importer three months in the future rather than immediately delivering goods and waiting for payment. This type of executory contract is known as a foreign currency commitment.

Alternatively, the preceding illustration might have taken the form of a forecasted export sale. This expectation is not the result of a past transaction nor is it the result of a firm sales commitment. It represents an uncertain future cash flow (an anticipated transaction). Hence, the gains or losses on the forward contract to hedge the forecasted peso receipts would initially be recorded in equity as a part of comprehensive income. These amounts would be reclassified into current earnings in the period in which the export sales are actually recognized.

HEDGE OF A NET INVESTMENT IN A FOREIGN OPERATION

As discussed in Chapter 6, whenever a foreign subsidiary with an exposed net asset position is consolidated with its parent, a translation loss results if the foreign currency loses value relative to the parent currency. A translation loss also occurs if the foreign subsidiary has an exposed net liability position and the foreign currency appreciates relative to the parent currency. One way to minimize such losses is to buy a forward contract. The strategy here is to have transaction gains realized on the forward contract offset translation losses.

To illustrate, suppose that a U.S. calendar-year foreign affiliate in Japan has a net exposed liability position of JPY135,000,000 at September 30. Its functional currency is the dollar. To minimize any translation loss triggered by an unexpected appreciation of the yen, the U.S. parent buys a forward contract to receive 135,000,000 yen in 90 days at the forward rate of $.010692. Exchange rates to the end of the year are as follows:

September 30 spot =	$.010680
September 30 90-day forward =	$.010692
December 31 spot =	$.010762

A transactions analysis of this hedge appears in Exhibit 11-15.

This example abstracts from tax effects. The expected translation loss of $11,070 (net exposed liabilities of [JPY135,000,000 X ($.010762 − $.010680)] is offset by a transaction gain on the forward contract of $11,070 minus the premium expense of $1,620. If the foreign currency had been the functional currency, any exchange adjustment arising from consolidation would bypass income and appear in other comprehensive income. Under these circumstances, transaction gains and losses on forward hedges and related premiums/discounts would also be reflected in other comprehensive income.

EXHIBIT 11-15 Hedge of a Net Exposed Liability Position

September 30	JPY Contract receivable	$1,441,800
	Deferred premium	1,620
	$ Contract payable	$1,443,420
	(To record contract with foreign currency dealer to exchange $1,443,420 for JPY135,000,000 in 90 days)	
December 31	JPY Contract receivable	11,070
	Transaction hedge gain	11,070
	(To record transaction gain from increased dollar equivalent of forward contract receivable; $.010762 − $.010680 × JPY135,000,000.)	
December 31	Premium expense	1,620
	Deferred premium	1,620
	(Amortization of deferred premium.)	
December 31	$ Contract payable	1,443,420
	Cash	1,443,420
	(To record purchase of JPY135,000,000.)	
December 31	Foreign currency	1,452,870
	JPY Contract receivable	1,452,870
	Cash	1,452,870
	Foreign currency	1,452,870
	(To record receipt of JPY135,000,000 from foreign currency dealer and its conversion.)	

SPECULATING IN FOREIGN CURRENCY

Opportunities exist for enhancing reported earnings using forward and option contracts in FX markets.[28] The forward contract in the previous example would not qualify for hedge accounting treatment had it been purchased solely to profit from an expected appreciation of the yen. Forward contracts bought as speculations are initially recorded at the forward rate. (The forward rate is the best indicator of the spot rate that will apply when the contract matures.) Transaction gains or losses recognized prior to settlement depend on the difference between the initial forward rate and the rate available for the remaining period of the contract.

Suppose that our speculator in yen (Exhibit 11-15) prepares monthly and year-end financial statements. All facts remain the same except that the 60-day forward rate for yen is $.010688 at the end of October. The Contract receivable would be initially recorded at the 90-day forward rate, or $1,443,420. At the end of October, the transaction gain on the forward contract would be $540 or JPY135,000,000 X [$.010692 (90-day forward rate on September 30) − $.010688 (60-day forward rate on October 31)]. It is

[28] Dilip K. Ghosh and Augustine C. Arize, "Profit Possibilities in Currency Markets: Arbitrage, Hedging and Speculation," The Financial Review 38 (2003): 473–496.

recognized in current income. As the foreign currency contract is recorded at the forward rate, no discounts or premiums are recognized.

Accounting treatments for the other foreign currency instruments discussed are similar to that for forward contracts. The accounting treatment prescribed is based on the nature of the hedging activity; that is, whether the derivative hedges a firm commitment, a forecasted transaction, a net investment in a foreign operation, and so on.

A measurement complication arises in measuring the fair value and changes in fair values of hedging instruments when financial derivatives are not actively traded. For example, measurement of the gains or losses associated with an option contract depends on whether the option is traded on or off a major exchange. Valuation of an option is readily done when the option is quoted on a major exchange. Valuation is more difficult when the option is traded over-the-counter. Here, one must generally rely on mathematical pricing formulas. The so-called Black–Scholes options pricing model makes it possible to value an option at any time.

DISCLOSURE

Prior to pronouncements such as FAS 133 and IAS 39, corporate financial disclosures did not tell statement readers whether, or the extent to which, management had employed derivative contracts. Assessing their potential impact on reported performance and a firm's risk complexion was difficult. Required disclosures under FAS 133 and IAS 39 remedy this to a large extent. They include the following:

- Risk management objective and strategy for undertaking hedge transactions.
- Description of the item being hedged.
- Identification of the hedged items market risk.
- Description of the hedge instrument.
- Amounts that are excluded from the assessment of a hedge's effectiveness.
- A priori justification that a hedging relationship will be highly effective in minimizing market risk.
- Ongoing assessment of the actual hedging effectives of all derivatives used during the period.

Selected excerpts from Coca-Cola's recent annual report appear in Exhibit 11-16. It illustrates corporate disclosure practices with respect to hedge instruments.

EXHIBIT 11-16 Coca-Cola's Risk Management Disclosures

Our Company recognizes all derivative instruments as either assets or liabilities in our consolidated balance sheets at fair value. The accounting for changes in fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and, further, on the type of hedging relationship. At the inception of the hedging relationship, the Company must designate the instrument as a fair value hedge, a cash flow hedge, or a hedge of a net investment in a foreign operation. This designation is based upon the exposure being hedged.

We have established strict counterparty credit guidelines and enter into transactions only with financial institutions of investment grade or better. We monitor counterparty exposures daily and review any downgrade in credit rating immediately. If a downgrade in the credit rating of a

counterparty were to occur, we have provisions requiring collateral in the form of U.S. government securities for substantially all of our transactions. To mitigate presettlement risk, minimum credit standards become more stringent as the duration of the derivative financial instrument increases. To minimize the concentration of credit risk, we enter into derivative transactions with a portfolio of financial institutions. The Company has master netting agreements with most of the financial institutions that are counterparties to the derivative instruments. These agreements allow for the net settlement of assets and liabilities arising from different transactions with the same counterparty. Based on these factors, we consider the risk of counterparty default to be minimal.

Interest Rate Management

Our Company monitors our mix of fixed-rate and variable-rate debt as well as our mix of short-term debt versus long-term debt. This monitoring includes a review of business and other financial risks. From time to time, in anticipation of future debt issuances, we may manage our risk to interest rate fluctuations through the use of derivative financial instruments. During 2008, the Company discontinued a cash flow hedging relationship on interest rate locks, as it was no longer probable that we would issue the long-term debt for which these hedges were designated. As a result, the Company reclassified a previously unrecognized gain of approximately $17 million from AOCI to earnings as a reduction to interest expense. Additionally, during 2008 the Company recognized losses of approximately $9 million related to the portion of cash flow hedges deemed to be ineffective as an increase to interest expense.

Any ineffective portion, which was not significant, of these instruments during 2007 and 2006 was immediately recognized in net income.

Foreign Currency Management

The purpose of our foreign currency hedging activities is to reduce the risk that our eventual U.S. dollar net cash inflows resulting from sales outside the United States will be adversely affected by changes in foreign currency exchange rates.

We enter into forward exchange contracts and purchase foreign currency options (principally euro and Japanese yen) and collars to hedge certain portions of forecasted cash flows denominated in foreign currencies. The effective portion of the changes in fair value for these contracts, which have been designated as foreign currency cash flow hedges, was reported in AOCI and reclassified into earnings in the same financial statement line item and in the same period or periods during which the hedged transaction affects earnings. The Company did not discontinue any foreign currency cash flow hedging relationships during the years ended December 31, 2008, 2007 and 2006. Any ineffective portion, which was not significant in 2008, 2007 or 2006, of the change in the fair value of these instruments was immediately recognized in net income.

Additionally, the Company enters into forward exchange contracts that are effective economic hedges and are not designated as hedging instruments under SFAS No. 133. These instruments are used to offset the earnings impact relating to the variability in foreign currency exchange rates on certain monetary assets and liabilities denominated in nonfunctional currencies. Changes in the fair value of these instruments are immediately recognized in earnings in the line item other income (lose)—net of our consolidated statements of income to offset the effect of remeasurement of the monetary assets and liabilities.

The Company also enters into forward exchange contracts to hedge its net investment position in certain major currencies. Under SFAS No. 133, changes in the fair value of these instruments are recognized in foreign currency translation adjustment, a component of AOCI, to offset the change in the value of the net investment being hedged. For the years ended December 31, 2008, 2007 and 2006, we recorded net gain (loss) in foreign currency translation adjustment related to those instruments of approximately $3 million, $(7) million and $3 million, respectively.

Commodities

The Company enters into commodity futures and other derivative instruments to mitigate exposure to fluctuations in commodity prices and other market risks.

We purchase commodity futures to hedge forecasted cash flows related to future purchases of certain commodities. The effective portion of the changes in fair value for these contracts, which have been designated as commodity cash flow hedges, are reported in AOCI and reclassified into earnings in the same financial statement line item and in the same period or periods during which the hedged transaction affects earnings. The Company did not discontinue any commodity cash flow hedging relationships during the years ended December 31, 2008, 2007 and 2006. Any ineffective portion, which was not significant in 2008, 2007 and 2006, of the change in the fair value of these instruments was immediately recognized in net income.

The following tables present the carrying values, fair values and maturities of the Company's derivative instruments outstanding as of December 31, 2008 and 2007 (in millions):

	Carrying Values Assets/(Liabilities)[1]	Fair Values Assets/(Liabilities)[1]	Maturity
2008			
Foreign currency forward contracts	$(124)	$(124)	2009–2010
Foreign currency options and collars	12	12	2009–2010
Interest rate locks	(43)	(43)	2009
Commodity futures	(42)	(42)	2009–2010
Other derivative instruments	(17)	(17)	2009
	$(214)	$(214)	

[1] Does not include the impact of approximately $8 million of cash collateral held or placed with the same counterparties.

	Carrying Values Assets/(Liabilities)	Fair Values Assets/(Liabilities)	Maturity
2007			
Foreign currency forward contracts	$(58)	$(58)	2008–2009
Foreign currency options and collars	46	46	2008
Interest rate locks	—	—	N/A
Commodity futures	1	1	2008
Other derivative instruments	28	28	2008
	$17	$17	

The Company estimates the fair values of its derivatives based on quoted market prices or pricing models using current market rates, and records them as prepaid expenses and other assets or accounts payable and accrued expenses in our consolidated balance sheets. The amounts recorded reflect the effect of legally enforceable master netting agreements that allow the

Company to settle positive and negative positions and cash collateral held or placed with the same counterparties. As of December 31, 2008, we had approximately $5 million reflected in prepaid expenses and other assets and $211 million reflected in accounts payable and accrued expenses. Refer to Note 12.

Summary of AOCI

For the years ended December 21, 2008, 2007 and 2006, we recorded a net gain (loss) to AOCI of approximately $(6) million, $(59) million and $(31) million, respectively, net of both income taxes and reclassifications to earnings, primarily related to gains and losses on foreign currency cash flow hedges. These items will generally offset the variability of the cash flows relating to the underlying exposures being hedged in future periods. The Company estimates that it will reclassify into earnings during the next 12 months losses of approximately $31 million from the after-tax amount recorded in AOCI as of December 31, 2008, as the anticipated cash flows occur.

The following table summarizes the activity in AOCI related to derivatives designated as cash flow hedges held by the Company during the applicable periods (in millions):

	Before-Tax Amount	**Income Tax**	**After-Tax Amount**
2008			
Accumulated derivative net gains (losses) as of January 1, 2008	**$(112)**	**$43**	**$(69)**
Net changes in fair value of derivatives	**(62)**	**23**	**(39)**
Net reclassification from AOCI into earnings	**53**	**(20)**	**33**
Accumulated derivative net gains (losses) as of December 31, 2008	**$(121)**	**$46**	**$(75)**

	Before-Tax Amount	**Income Tax**	**After-Tax Amount**
2007			
Accumulated derivative net gains (losses) as of January 1, 2007	$(16)	$6	$(10)
Net changes in fair value of derivatives	(158)	61	(97)
Net reclassification from AOCI into earnings	62	(24)	38
Accumulated derivative net gains (losses) as of December 31, 2007	$(112)	$43	$(69)

	Before-Tax Amount	**Income Tax**	**After-Tax amount**
2006			
Accumulated derivative net gains (losses) as of January 1, 2006	$35	$(14)	$21
Net changes in fair value of derivatives	(38)	15	(23)
Net reclassification from AOCI into earnings	(13)	5	(8)
Accumulated derivative net gains (losses) as of December 31, 2006	$(16)	$6	$(10)

FINANCIAL CONTROL

Any financial risk management strategy must evaluate the effectiveness of hedging programs. Feedback from a thoughtful evaluation system helps to build institutional experience in risk management practices. Performance assessment of risk management programs also provides information on when existing strategies are no longer appropriate.

FINANCIAL CONTROL POINTS There are several areas where performance evaluation systems are fruitful. These include, but are not limited to, corporate treasury, purchasing, and foreign subsidiaries. Control of corporate treasury includes assessing the performance of the total exchange risk management program. This assessment includes quantifying all exposures that were managed, identifying the hedges that were applied, and reporting on hedging results. Such an evaluation system also includes documentation of how and to what extent corporate treasury assisted other business units in the organization.

To illustrate, suppose the sales manager for the consumer markets division of Worldwide Company wishes to grant customer X a line of credit. Corporate treasury, which secures the needed funds, would quote the sales manager an internal transfer price. This price is based on current market rates for loans of comparable risk. Assume this rate is 8 percent. The sales manager can then quote customer X a borrowing rate of 8 percent plus a markup as compensation for assessing the client's credit risk. In the meantime, corporate treasury will enter the money markets and try to obtain a more favorable rate than it quoted the sales manager. The total return on this transaction includes the profit margin on the sale plus the financing spread. Management accountants need to set up a responsibility accounting system that credits the sales manager and corporate treasury for their fair share of the total profit on the sales transaction.[29]

Similar considerations apply to the purchasing function. Here, exchange risk management services are just one piece of the total risk management program. Controls are also necessary to monitor the performance of programs designed to hedge commodity price risk and mix.

In many organizations, foreign exchange risk management is centralized at corporate headquarters. This allows subsidiary managers to concentrate on their core business. However, when comparing actual to expected results, evaluation systems must have benchmarks against which to compare the success of corporate risk protection. (See Chapter 10 for more on multinational performance evaluation systems.)

APPROPRIATE BENCHMARKS

The object of risk management is to achieve an optimal balance between risk reduction and costs. Hence, appropriate standards against which to judge actual performance are necessary ingredients in any performance appraisal system. These benchmarks need to be specified in advance of any protection program and should be based on the concept

[29] If, for example, corporate treasury tries to beat the 8 percent benchmark rate but instead pays 9 percent, the sales manager should not be charged for the reduced spread.

of opportunity cost. In foreign exchange risk management, the following questions should be considered when selecting a benchmark:[30]

- Does the benchmark represent a policy that could have been followed?
- Can the benchmark be specified in advance?
- Does the benchmark provide a lower cost strategy than some other alternative?

When FX risk-management programs are centralized, appropriate benchmarks against which to compare the success of corporate risk protection would be programs that local managers could have implemented. In other cases, firms that are averse to foreign exchange risk might automatically hedge any foreign exposure in the forward market or borrow local currency. These strategies would also be natural benchmarks against which to appraise financial risk management. The performance of a certain hedge product (e.g., a currency swap), or that of a risk manager, would be judged by comparing the economic return earned on the actively hedged transaction against the economic return that would have been earned had the benchmark treatment been used.

REPORTING SYSTEMS Financial risk reporting systems must be able to reconcile both internal reporting and external reporting systems. Risk management activities (typically managed by corporate treasury) have a future orientation. However, they must eventually reconcile with exposure measurements and financial accounts for external reporting purposes. These normally fall under the jurisdiction of the corporate controller's department. A team approach is most effective in formulating financial risk objectives, performance standards, and monitoring and reporting systems. Financial risk management is a prime example of where corporate finance and accounting are closely connected.

Discussion Questions

1. What is market risk? Illustrate this risk with a foreign exchange example.
2. Your company has just decided to purchase 50 percent of its inverntory from China and purchases will be invoiced in Chinese yuan. What four processes do you need to consider in designing a foreign exchange risk protection system?
3. Compare and contrast the terms translation, transaction, and economic exposure. Does FAS No. 52 resolve the issue of accounting versus economic exposure?
4. List 10 ways to reduce a firm's foreign exchange exposure for a foreign affiliate located in a devaluation-prone country. In each instance, identify the cost–benefit trade-offs that need to be measured.
5. Explain, in your own words, the difference between a multicurrency translation exposure report and a multicurrency transactions exposure report.
6. Explain how a company might use a currency swap to hedge its foreign exchange risk on a foreign currency borrowing.
7. What is a financial futures contract? How does it differ from a forward exchange contract?
8. Identify three major types of hedges recognized by IAS 39 and FAS 133 and describe their accounting treatments.
9. All hedging relationships must be "highly effective" to qualify for special accounting treatment. What is meant by the term highly

[30] Ian Cooper and Julian Franks, "Treasury Performance Measurement," The Treasurer (February 1988): 56.

effective and why is its measurement important for financial managers?

10. The notion of an "opportunity cost" was perhaps first introduced to you in your first course in microeconomics. Explain how this notion can be applied in evaluating the effectiveness of FX risk hedging programs.

Exercises

1. Refer to Exhibit 11-1 which discloses the risk management paradigm for Infosys Technologies. Explain in your own words what each step of the cycle entails, including the feedback loop from the last to the first step.
2. Reexamine the Risk-Mapping Cube in Exhibit 11-3. Provide examples of how the various market risks—foreign exchange, interest rate, commodity price, and equity price—might affect the value driver: current assets.
3. As one of your first assignments as a new hire on the corporate treasurer's staff of Global Enterprises, Ltd., you are asked to prepare an exchange rate forecast for the Zonolian ecru (ZOE). Specifically, you are expected to forecast what the spot rate for the ecru is likely to be at the end of 2011. Selected information on which to base your forecast follows. Be sure to identify any additional bases underlying your forecast and any assumptions.

Worberg Bank Consolidated Balance Sheet as of Year-End (000)

	2006	2007	2008	2009	2010	2011
Visible trade balance (ZOEbn)	7.1	6.5	0.6	27.7	25.4	
Current account balance (ZOEbn)	21.6	21.9	27.3	215.8	213.8	
Foreign direct investment (ZOEbn)	9.5	9.2	12.8	11.3	11.6	
Portfolio flows (ZOEbn)	29.7	13.4	5.0	20.6	9.6	
Foreign exchange reserves (ZOEbn)	15.25	19.18	28.14	31.46	30.99	
Real GDP growth (% change yoy)	26.20	5.09	6.80	4.80	3.70	
Consumer prices (% changes yoy)	51.97	27.70	15.72	18.60	12.32	
Nominal GDP (ZOEbn)	266.0	335.0	412.0	415.0	479.0	
Nominal exchange rate to U.S.$	6.42	7.60	7.92	9.15	9.55	?

Cash and due from banks	$ 20,000	Deposits	$ 50,000
Loans	100,000		
Fixed assets	30,000	Owners' equity	100,000
Total	150,000		150,000

4. Exhibit 11-5 contains a hypothetical balance sheet of a foreign subsidiary of a U.S. MNC. Exhibit 11-6 shows how the foreign exchange loss is determined assuming the parent company employs the temporal method of currency translation.

   Required: Demonstrate how the exchange gains or losses would be computed under each of the other translation methodologies.
5. Following is the consolidated balance sheet (000s omitted) of Worberg Bank, a U.S. financial institution with wholly owned corporate affiliates in London and Jerusalem. Cash and due from banks includes ILS100,000 and a £ 40,000 bank overdraft. Loans consist entirely of Israeli shekel receivables while consolidated deposits include ILS40,000 and £ 15,000. Worberg Bank adopts the local currency as the functional currency for its foreign affiliates and so translates all assets and liabilities (including owners' equity) using the current

rate. The exchange rate prevailing as of the balance sheet date was (£/$/ILS= 1/2/4).

Required: Prepare a multicurrency exposure report for Worberg Bank.

6. Refer to Exercise 5. Assume that the shekel is forecast to devalue such that the new exchange relationship after the devaluation is (£ /$/ILS = 1/2/8).

   Required: Calculate the consolidated gain or loss that would result from this exchange rate movement.

7. Trojan Corporation USA borrowed 1,000,000 New Zealand dollars (NZ$) at the beginning of the calendar year when the exchange rate was $0.60 = NZ$1. Before repaying this one-year loan, Trojan learns that the NZ dollar has appreciated to $0.70 = NZ$1. It discovers, also, that its New Zealand subsidiary has an exposed net asset position of NZ$ 3,000,000, which will produce a translation gain upon consolidation. What is the amount of the exchange gain or loss that will be reported in consolidated income if:
   a. the U.S. dollar is the foreign operation's functional currency?
   b. the New Zealand dollar is the foreign operation's functional currency and Trojan Corporation. designates the New Zealand dollar borrowing as a hedge of the New Zealand affiliate's positive exposure?

8. On April 1, Anthes Corporation, a calendar-year U.S. electronics manufacturer, invests 30 million yen in a three-month yen-denominated CD with a fixed coupon of 8 percent. To hedge against the depreciation of the yen prior to maturity, Anthes designates its accounts payable due to the Sando Company as a hedge. Anthes Corporation. purchased 32.5 million yen worth of computer chips on account paying 10 percent down, the balance to be paid in three months. Interest at 8 percent per annum is payable on the unpaid foreign currency balance. The U.S. dollar/Japanese yen exchange rate on April 1 was $1.00 = ¥100; on July 1 it was $ 1.00 = ¥90.

   Required: Prepare dated journal entries in U.S. dollars to record the incurrence and settlement of this foreign currency transaction assuming that the hedge is deemed highly effective in reducing Alexaa's FX risk.

9. On June 1, ACL International, a U.S. confectionery products manufacturer, purchases on account bulk chocolate from a Swiss supplier for 166,667 Swiss francs (CHF) when the spot rate is $0.90 = CHF 1. The Swiss franc payable is due on September 1. To minimize its exposure to an exchange loss should the franc appreciate relative to the dollar prior to payment, ACL International acquires a forward contract to exchange $103,334 for francs on September 1 at a forward rate of $0.92 = CHF 1.

   Required: Given the following exchange rate information, provide journal entries to account for the forward exchange contract on June 1, June 30, and September 1. The company closes its books quarterly.

June 30 spot rate $0.91 =	CHF 1
September 1 spot rate $0.93 =	CHF 1

   What is the effective dollar cost of the Swiss chocolate purchase in Exercise 7? Show your calculations.

10. In June, Mu Corporation, a U.S. manufacturer of specialty confectionery products, submits a bid to supply a prestigious retail merchandiser with boxed chocolates for the traditional Valentine's Day. At the time the spot rate for francs was $0.89 = CHF1. If it secures the contract, it will sign a contract with a large Swiss chocolate manufacturer to buy the necessary raw material. The outcome of the bidding will not be known for two months and the treasurer of Mu Corporation is concerned that the franc may rise in value during the interim, thus reducing (or possibly even eliminating) its planned profit on the fixed-price bid.
    To protect his company against an appreciation of the franc, the treasurer buys 25 CHF September 30 option calls at 1.80 (i.e., a premium of 1.8 cents per franc) on a standard contract amount of CHF 62,500. His prediction proves accurate as the franc rises in value to 91.6 cents by the end of August. Rather than await the outcome of the bid, Mu Corporation exercises its call options at the end of August.

    Required: Provide the nessary journal entries to record the acquisition and exercise of the options.

CASES

Case 11-1

Exposure Identification

You have just landed a summer internship (congratulations) with the management information services group of Pirelli, the Italian global tire manufacturer. Management is acutely aware of the importance of risk management and the market's concern with enterprise risk. Although the firm has an active hedging program, management is interested in an impartial assessment of the company's risk exposure from a layman's point of view. Accordingly, your supervisor asks you to take a look at the company's published financial statements and accompanying notes appearing in its 2008 annual report. You are to identify as many exposures as you can that impact the company using the worksheet format provided below. To sensitize you to the company's current risk management programs, you are also asked to identify the exposures that the company is currently hedging. Pirelli's annual report can be assessed online at www. Pirelli.com.

Annual report page number	Value driver	Market Risk

Case 11-2

Value at Risk: What Are Our Options?

The scene is a conference room on the 10th floor of an office building on Wall Street, occupied by Anthes Enterprises, a small, rapidly growing manufacturer of electronic trading systems for equities, commodities, and currencies.

The agenda for the 8:00 A.M. meeting concerns reporting issues associated with a potential sales contract for the stock exchange in the Slovak Republic, which wants to upgrade its technology to effectively participate in the globalization

of financial markets. In attendance are Anthes Enterprise's COO Shevon Estwick, Controller Sy Jones, Treasurer, Bebi Karimbaksh, and Vice President of Marketing Autherine Allison.

SHEVON: Thank you for agreeing to meet on such short notice. Autherine, are you ready to give us an update on Slovakia?

AUTHERINE: You mean the Slovak Republic.

SHEVON: Yes.

AUTHERINE: I think there is a 90 percent chance we'll land the contract. Things move a little slowly over there and they're still concerned about some of the legal details of our sales contract. I think they find the legalese a bit intimidating and I can't say I blame them. I've scheduled another trip next month to go over contract details. This time I'm taking our legal counsel and have asked him to prepare another draft expressed in terms that are easier to understand. They're also waiting for approvals from their Central Bank, which has to approve major transactions such as this one.

SHEVON: Good. Are we prepared to deliver on the contract?

AUTHERINE: Yes, we've lined up the financing, have done our credit checks, and the equipment and installation teams are ready to proceed on two week's notice.

SHEVON: Given the size of the contract, are we hedged against the possibility of a devaluation?

BEBI: Yes, we've written a put option on the koruna for 90 days.

SHEVON: Do we think we'll close on the deal before then?

BEBI: Autherine doesn't think so, but you never know. The problem is no one will write an option for a longer term. We'll renew the option as we have other transactions of this extended duration.

SHEVON: Sy, are we all right on the reporting front?

SY: Not really.

SHEVON: How's that?

SY: It looks like we're up against a reporting standard that requires that gains or losses on cash flow hedges whose maturities do not match that of the underlying be recognized in current earnings.

SHEVON: Come again?

SY: The bottom line is that we won't be able to treat gains or losses on our put options as a part of comprehensive income, but we'll have to recognize them in current earnings.

SHEVON: Won't that mess up our bottom line?

SY: I'm afraid so. There would be no offsetting gain or loss from our anticipated sale.

BEBI: It's taken me a whole year to get to know the right people

and win their trust and friendship. I now have that. There's no doubt in my mind that this sale is a done deal and I anticipate closing the transaction within the next six to nine months.

SY: That may be, but we just can't find anyone who's willing to write an option for more than 90 days at a time.

SHEVON: I don't want to think about what the accounting will do to our stock price! I mean, we're about to float our first Euro-equity issue. A lower offering price would be disastrous at this stage of our development, not to mention the effect on our shareholders.

AUTHERINE: Given the nature of our business, I don't think the transactions side of our business will change much.

SHEVON: Do you think it would be worthwhile having a consultant advise us on this one?

SY, AUTHERINE, AND BEBI (IN UNISON) Why not?

SHEVON: When you do, would you show that individual the following pages that I ripped out from an nnual report I just received as a shareholder and see if it has any information value? (see attachment)

Required

As a consultant for Anthes Enterprises, identify what you believe are promising hedge accounting options.

Attachment: Torn Pages from the Annual Report of a Major U.S. Manufacturer

First page: Note 10:

We are exposed to the risk of loss arising from adverse changes in:

- commodity prices, affecting the cost of our raw materials and energy,
- foreign exchange risks,
- interest rates,
- stock prices, and
- discount rates affecting the measurement of our pension and retiree medical liabilities.

In the normal course of business, we manage these risks through a variety of strategies, including the use of derivatives. Certain derivatives are designated as either cash flow or fair value hedges and qualify for hedge accounting treatment, while others do not qualify and are marked to market through earnings.

For cash flow hedges, changes in fair value are deferred in accumulated other comprehensive loss within shareholders' equity until the underlying hedged item is recognized in net income. For fair value hedges, changes in fair value are recognized immediately in earnings, consistent with the underlying hedged item. Hedging transactions are limited to an underlying exposure. As a result, any change in the value of our derivative financial instruments would be substantially offset by an opposite change in the value of the underlying hedged items. Hedging ineffectiveness and a net earnings impact occur when the change in the value of the hedge does not offset the change in the value of the underlying hedged

item. If the derivative instrument is terminated, we continue to defer the related gain or loss and include it as a component of the cost of the underlying hedged item. Upon determintation that the hedged item will not be part of an actual transaction, we recognize the related gain or loss in net income in that period. We also use derivatives that do not qualify for hedge accounting treatment. We account for such derivatives at market value with the resulting gains and losses reflected in our income statement. We do not use derivative instruments for trading or speculative purposes and we limit our exposure to individual counterparties to manage credit risk.

Commodity Prices We are subject to commodity price risk because our ability to recover increased costs through higher pricing may be limited in the competitive environment in which we operate. This risk is managed through the use of fixed-price purchase orders, pricing agreements, geographic diversity and derivatives. We use derivatives, with terms of no more than two years, to economically hedge price fluctuations related to a portion of our anticipated commodity purchases, primarily for natural gas and diesel fuel. For those derivatives that are designated as cash flow hedges, any ineffectiveness is recorded immediately. However our commodity cash flow hedges have not had any significant ineffectiveness for all periods presented. We classify both the earnings and cash flow impact from these derivatives consistent with the underlying hedged item. During the next 12 months, we expect to reclassify gains of $24 million related to cash flow hedges from accumulated other comprehensive loss into net income.

Foreign Exchange Our operations outside of the U.S. generate over a third of our net revenue of which Mexico, the United Kingdom and Canada comprise nearly 20%. As a result, we are exposed to foreign currency risks from unforeseen economic changes and political unrest. On occasion, we enter into hedges, primarily forward contracts with terms of no more than two years, to reduce the effect of foreign exchange rates. Ineffectiveness on these hedges has not been material. *(rest of page torn off)*

Partial second page:

Our Divisions We manufacture or use contract manufacturers, market and sell a variety of slaty, sweet and grain-based snacks, carbonated and non-carbonated beverages, and foods through our North American and international business divisions. Our North American divisions include the United States and Canada. The accounting policies for the divisions are the same as those described in Note 2, except for certain allocation methodologies for stock-based compensation expense and pension and retiree medical expense, as described in the unaudited information in "Our Critical Accounting Policies." Additionally, beginning in the fourth quarter of 2005, we began centrally managing commodity derivatives on behalf of our divisions. Certain of the commodity derivatives, primarily those related to the purchase of energy for use by our divisions, do not qualify for hedge accounting treatment. These derivative hedge underlying commodity price risk

and were not entered into for speculative purposes. Such derivatives are marked to market with the resulting gains and losses recognized as a component of corporate unallocated expense. These gains and losses are reflected in division results when the divisions take delivery of the underlying commodity. Therefore, division results reflect the contract purchase price of the energy or other commodities.

Division results are based on how our Chairman and Chief Executive Officer evaluates our divisions. Division results exclude certain Corporate-initiated restructuring and impairment charges, merger related costs and divested businesses. For addition unaudited information on our divisions, see "Our Operations" in Management's Discussion and Analysis.