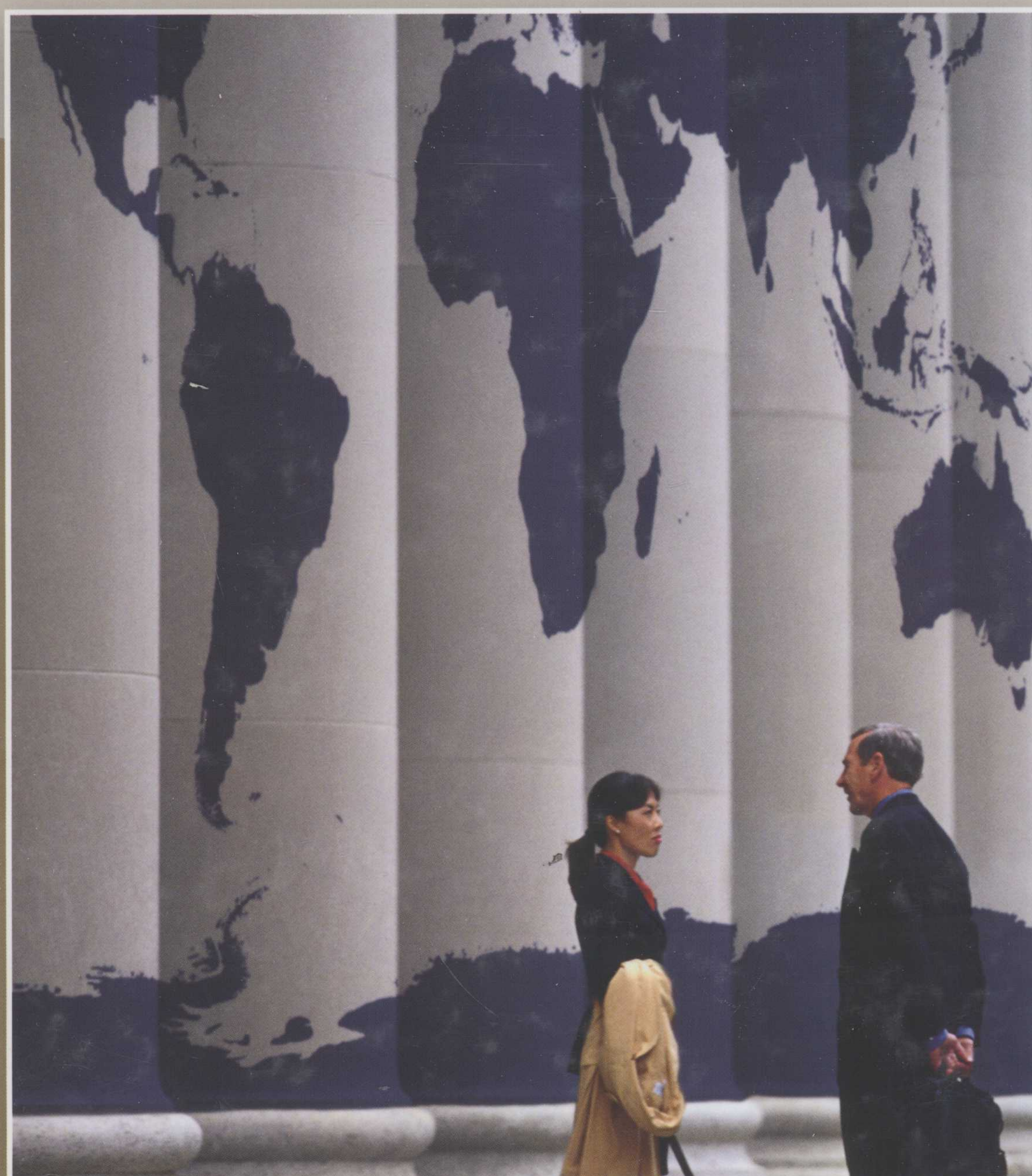
Sixth Edition

INTERNATIONAL FINANCIAL MANAGEMENT



Cheol S. Eun • Bruce G. Resnick

International Financial Management

Sixth Edition

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Georgia Institute of Technology

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Wake Forest University

McGraw-Hill Irwin

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International Financial Management

Sixth Edition

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To Elizabeth

C.S.E.

To Donna

B.G.R.

About the Authors

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Cheol S. Eun (Ph.D., NYU, 1981) is the Thomas R. Williams Chair and Professor of Finance at the College of Management, Georgia Institute of Technology. Before joining Georgia Tech, he taught at the University of Minnesota and the University of Maryland. He also taught at the Wharton School of the University of Pennsylvania, Korea Advanced Institute of Science and Technology (KAIST), Singapore Management University, and the Esslingen University of Technology (Germany) as a visiting professor. He has published extensively on international finance issues in such major journals as the *Journal of Finance, JFQA, Journal of Banking and Finance, Journal of International Money and Finance, Management Science,* and *Oxford Economic Papers*. Also, he has served on the editorial boards of the *Journal of Banking and Finance, Journal of Financial Research, Journal of International Business Studies,* and *European Financial Management*. His research is widely quoted and referenced in various scholarly articles and textbooks in the United States as well as abroad.

Dr. Eun is the founding chair of the *Fortis/Georgia Tech Conference on International Finance.* The key objectives of the conference are to promote research on international finance and provide a forum for interactions among academics, practitioners, and regulators who are interested in vital current issues of international finance.

Dr. Eun has taught a variety of courses at the undergraduate, graduate, and executive levels, and was the winner of the Krowe Teaching Excellence Award at the University of Maryland. He also has served as a consultant to many national and international organizations, including the World Bank, Apex Capital, and the Korean Development Institute, advising on issues relating to capital market liberalization, global capital raising, international investment, and exchange risk management. In addition, he has been a frequent speaker at academic and professional meetings held throughout the world.

Bruce G. Resnick,

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Bruce G. Resnick is the Joseph M. Bryan Jr. Professor of Banking and Finance at the Schools of Business of Wake Forest University in Winston-Salem, North Carolina. He has a D.B.A. (1979) in finance from Indiana University. Additionally, he has an M.B.A. from the University of Colorado and a B.B.A. from the University of Wisconsin at Oshkosh. Prior to coming to Wake Forest, he taught at Indiana University for ten years, the University of Minnesota for five years, and California State University for two years. He has also taught as a visiting professor at Bond University, Gold Coast, Queensland, Australia, and at the Helsinki School of Economics and Business Administration in Finland. Additionally, he served as the Indiana University resident director at the Center for European Studies at the University of Limburg, Maastricht, the Netherlands. He also served as an external examiner to the Business Administration Department of Singapore Polytechnic and as the faculty advisor on a Wake Forest University study trip to China and Hong Kong.

Dr. Resnick teaches M.B.A. courses at Wake Forest University. He specializes in the areas of investments, portfolio management, and international financial management. Dr. Resnick's research interests include market efficiency studies of options and financial futures markets and empirical tests of asset pricing models. A major interest has been the optimal design of internationally diversified portfolios constructed to control for parameter uncertainty and exchange rate risk. In recent years, he has focused on information transmission in the world money markets and yield spread comparisons of domestic and international bonds. His research articles have been published in most of the major academic journals in finance. His research is widely referenced by other researchers and textbook authors. He is an associate editor for the *Emerging Markets Review, Journal of Economics and Business,* and the *Journal of Multinational Financial Management.*

Preface

Our Reason for Writing this Textbook

Both of us have been teaching international financial management to undergraduates and M.B.A. students at Georgia Institute of Technology, Wake Forest University, and at other universities we have visited for three decades. During this time period, we conducted many research studies, published in major finance and statistics journals, concerning the operation of international financial markets. As one might imagine, in doing this we put together an extensive set of teaching materials which we used successfully in the classroom. As the years went by, we individually relied more on our own teaching materials and notes and less on any one of the major existing textbooks in international finance (most of which we tried at some point).

As you may be aware, the scope and content of international finance have been fast evolving due to deregulation of financial markets, product innovations, and technological advancements. As capital markets of the world are becoming more integrated, a solid understanding of international finance has become essential for astute corporate decision making. Reflecting the growing importance of international finance as a discipline, we have seen a sharp increase in the demand for experts in the area in both the corporate and academic worlds.

In writing *International Financial Management,* Sixth Edition, our goal was to provide well-organized, comprehensive, and up-to-date coverage of the topics that take advantage of our many years of teaching and research in this area. We hope the text is challenging to students. This does not mean that it lacks readability. The text discussion is written so that a self-contained treatment of each subject is presented in a *user-friendly* fashion. The text is intended for use at both the advanced undergraduate and M.B.A. levels.

The Underlying Philosophy

International Financial Management, Sixth Edition, like the first five editions, is written based on two tenets: emphasis on the basics and emphasis on a managerial perspective.

Emphasis on the Basics

We believe that any subject is better learned if one first is well grounded in the basics. Consequently, we initially devote several chapters to the fundamental concepts of international finance. After these are learned, the remaining material flows easily from them. We always bring the reader back, as the more advanced topics are developed, to their relationship to the fundamentals. By doing this, we believe students will be left with a framework for analysis that will serve them well when they need to apply this material in their careers in the years ahead.

Sixth Edition Organization

International Financial Management, Sixth Edition, has been completely updated. All data tables and statistics are the most current available when the text went to press. Additionally, the chapters incorporate several new International Finance in Practice boxes that contain real-world illustrations of chapter topics and concepts. In the margins below, we highlight specific changes in the sixth edition.

This part lays the macroeconomic foundation for all the topics to follow.

Recent economic developments such as the global financial crisis and sovereign debt crisis of Europe.

Updated coverage of monetary developments, including the euro zone crisis.

Updated balance-of-payments statistics.

Review of corporate governance systems in different countries, the Dodd-Frank Act, and managerial implications.

This part describes the market for foreign exchange and introduces currency derivatives that can be used to manage foreign exchange exposure.

Fully updated market data and examples. Expanded coverage on forward cross-exchange rates to facilitate understanding.

Integrated coverage of key parity conditions and currency carry trade.

Fully updated market data and examples. New International Finance in Practice box reading. Improved presentation of graphs. Expanded discussion of binomial options pricing model to facilitate understanding. Excel spreadsheet example of European options-pricing model using text software FXOPM.xls.

This part describes the various types of foreign exchange risk and discusses methods available for risk management.

Systematic coverage of foreign currency transaction exposure management.

Conceptual and managerial analysis of economic exposure to currency risk.

Expanded coverage of International Accounting Standards and FASB 133.

A Managerial Perspective

The text presentation never loses sight of the fact that it is teaching students how to make managerial decisions. *International Financial Management,* Sixth Edition, is founded in the belief that the fundamental job of the financial manager is to maximize shareholder wealth. This belief permeates the decision-making process we present from cover to cover. To reinforce the managerial perspective, we provide numerous "real-world" stories whenever appropriate.

This part provides a thorough discussion of international financial institutions, assets, and marketplaces.

Fully updated market data and statistics. New discussion on Basel III capital adequacy standards. New lengthy discussion on the causes and consequences of the global financial crisis. Coverage of Eurodollar interest rate futures contracts moved to this chapter to show relationship to forward rate agreements. New appendix on mortgage-backed securities, structured debt obligations, collateralized debt obligations, and credit default swaps.

Fully updated market data and examples. Expanded coverage of the features, characteristics, and regulations governing dollar denominated foreign bonds, Eurobonds, and global bonds.

Fully updated market data and statistics. New discussion of cross-listing and security regulation. Expanded coverage of American Depository Receipts and global registered shares. New section on empirical findings on cross-listings and ADRs.

Fully updated market data and statistics. New International Finance in Practice box. Excel spreadsheet example of a currency swap using text software CURSWAP.xls and associated end-of-chapter problem.

Updated statistical analysis of international markets and diversification with small-cap stocks.

This part covers topics on financial management practices for the multinational firm.

Updated trends in cross-border investment and M&A deals. Updated political risk scores for countries.

New analysis of home bias and the cost of capital around the world.

Updated discussion of multilateral netting systems available for commercial use.

Fully updated comparative national income tax rate table with updated examples. New discussion on branch versus subsidiary organizational structure.

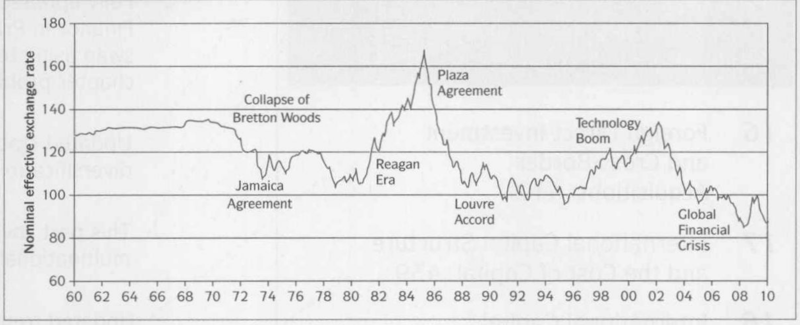
Pedagogical Features

Chapter Outline—At the beginning of each chapter, a chapter outline is presented to provide a roadmap of concepts to be learned in that chapter.

CHAPTER OUTLINE

Exhibits—Within each chapter, extensive use is made of graphs and tables to illustrate important concepts.

EXHIBIT 2.3 The Value of the U.S. Dollar since 1960[a]



[a]The value of the U.S. dollar represents the nominal exchange rate index (2005 = 100) with weights derived from trade among 21 industrialized countries.
Source: International Financial Statistics.

Examples—These are integrated throughout the text, providing students with immediate application of the text concepts.

EXAMPLE | 11.1: Rollover Pricing of a Eurocredit

Teltrex International can borrow $3,000,000 at LIBOR plus a lending margin of .75 percent per annum on a three-month rollover basis from Barclays in London. Suppose that three-month LIBOR is currently $5\frac{17}{32}$ percent. Further suppose that over the second three-month interval LIBOR falls to $5\frac{1}{8}$ percent. How much will Teltrex pay in interest to Barclays over the six-month period for the Eurodollar loan?

Solution: $3,000,000 × (.0553125 + .0075)/4 + $3,000.000 × (.05125 + .0075)/4 = $47,109.38 + $44,062.50 = $91,171.88

International Finance in Practice Boxes—Selected chapters contain International Finance in Practice boxes. These real-world illustrations offer students a practical look at the major concepts presented in the chapter.

INTERNATIONAL FINANCE IN PRACTICE

FX Market Volumes Surge

The FX market is growing at record levels, according to figures released by the CME Group, the largest regulated foreign exchange market in the world.

Last month the CME Group reported average daily notional volume at a record level of $121 billion, up 82 percent compared to a year earlier.

With a number of indicators at play, like the news of Greece's credit concerns and the continued appetite for high-yielding currencies like the Australian dollar and the Canadian dollar, the CME saw record volumes and notional values in the euro and Australian and Canadian dollars. Euro FX futures and options saw total average daily volume of 362,000 contracts with total notional ADV of slightly over $62 billion.

Australian dollar futures and options climbed to nearly $119,000 in average daily volume with almost $11 billion in total notional ADV, and Canadian dollar futures and options surpassed $88,000 in ADV and $8 billion in total notional ADV.

With foreign currency futures going from strength to strength, the CME Group recently published a white paper outlining the benefits of FX futures.

"These contracts provide an ideal tool to manage currency or FX risks in an uncertain world," it said. "Product innovation, liquidity, and financial surety are the three pillars upon which the CME Group has built its world-class derivatives market. The CME Group provides products based on a wide range of frequently transacted currencies, liquidity offered on the state-of-the-art CME Globex electronic trading platform, and financial sureties afforded by its centralized clearing system."

Source: *Global Investor*, March 2010.

www.cmegroup.com

This is the website of the CME Group. It provides detailed information about the futures contracts and options contracts traded on it.

www.nasdaqtrader.com

This is the website of NASDAQ OMX. It provides detailed information about the stocks and derivative products, including the NFX World Currency Futures, that trade on the exchanges.

Annotated Web Resources—Web links located in the margins within each chapter serve as a quick reference of pertinent chapter-related websites. Each URL listed also includes a short statement on what can be found at that site.

In More Depth—Some topics are by nature more complex than others. The chapter sections that contain such material are indicated by the section heading "In More Depth"' and are in *blue type.* These sections may be skipped without loss of continuity, enabling the instructor to easily tailor the reading assignments to the students. End-of-chapter Questions and Problems relating to the In More Depth sections of the text are also indicated by *blue type.*

In More Depth

European Option-Pricing Formula

In the last section, we examined a simple one-step version of binomial option-pricing model. Instead, we could have assumed the stock price followed a multiplicative binomial process by subdividing the option period into many subperiods. In this case, S_T and C_T could be many different values. When the number of subperiods into which the option period is subdivided goes to infinity, the European call and put pricing formulas presented in this section are obtained. Exact European call and put pricing formulas are:[5]

$$C_e = S_t e^{-r_i T} N(d_1) - E e^{-r_\$ T} N(d_2) \tag{7.12}$$

and

$$P_e = E e^{-r_\$ T} N(-d_2) - S_t e^{-r_i T} N(-d_1) \tag{7.13}$$

The interest rates r_i and $r_\$$ are assumed to be annualized and constant over the term-to-maturity T of the option contract, which is expressed as a fraction of a year.

Invoking IRP, where with continuous compounding $F_T = S_t e^{(r_\$ - r_i)T}$, C_e and P_e in Equations 7.12 and 7.13 can be, respectively, restated as:

$$C_e = [F_T N(d_1) - EN(d_2)]e^{-r_\$ T} \tag{7.14}$$

and

$$P_e = [EN(-d_2) - F_T N(-d_1)]e^{-r_\$ T} \tag{7.15}$$

where

$$d_1 = \frac{ln\,(F_T/E) + .5\sigma^2 T}{\sigma\sqrt{T}}$$

and

$$d_2 = d_1 - \sigma\sqrt{T}$$

$N(d)$ denotes the cumulative area under the standard normal density function from $-\infty$ to d_1 (or d_2). The variable σ is the annualized volatility of the change in exchange rate $ln(S_{t+1}/S_t)$. Equations 7.14 and 7.15 indicate that C_e and P_e are functions of only five variables: F_T, E, $r_\$$, T, and σ. It can be shown that both C_e and P_e increase when σ becomes larger.

End-of-Chapter Features

SUMMARY

This chapter presents an introduction to the market for foreign exchange. Broadly defined, the foreign exchange market encompasses the conversion of purchasing power from one currency into another, bank deposits of foreign currency, the extension of credit denominated in a foreign currency, foreign trade financing, and trading in foreign currency options and futures contracts. This chapter limits the discussion to the spot and forward markets for foreign exchange. The other topics are covered in later chapters.

1. The FX market is the largest and most active financial market in the world. It is open somewhere in the world 24 hours a day, 365 days a year.
2. The FX market is divided into two tiers: the retail or client market and the wholesale or interbank market. The retail market is where international banks service their customers who need foreign exchange to conduct international commerce or trade in international financial assets. The great majority of FX trading takes place in the interbank market among international banks that are adjusting inventory positions or conducting speculative and arbitrage trades.
3. The FX market participants include international banks, bank customers, nonbank FX dealers, FX brokers, and central banks.
4. In the spot market for FX, nearly immediate purchase and sale of currencies take place. In the chapter, notation for defining a spot rate quotation was developed. Additionally, the concept of a cross-exchange rate was developed. It was determined that nondollar currency transactions must satisfy the bid-ask spread determined from the cross-rate formula or a triangular arbitrage opportunity exists.
5. In the forward market, buyers and sellers can transact today at the forward price for the future purchase and sale of foreign exchange. Notation for forward exchange rate quotations was developed. The use of forward points as a shorthand method for expressing forward quotes from spot rate quotations was presented. Additionally, the concept of a forward premium was developed.
6. Exchange-traded currency funds were discussed as a means for both institutional and retail traders to easily take positions in nine key currencies.

Summary—A short summary concludes each chapter, providing students with a handy overview of key concepts. The main points of the chapter are summarized and numbered for easy reference and study.

Key Words—One of the most interesting aspects of studying international finance is learning new terminology. All key terms are presented in boldfaced type when they are first introduced, and they are defined thoroughly in the chapter. A list of key words is presented at the end of the chapter with convenient page references.

KEY WORDS

contingent exposure, *208*
cross-hedging, *208*
economic exposure, *198*
exposure netting, *211*
forward market hedge, *200*
hedging through invoice currency, *210*
lead/lag strategy, *211*
money market hedge, *203*
options market hedge, *203*
reinvoice center, *211*
transaction exposure, *198*
translation exposure, *198*

QUESTIONS

1. How would you define *transaction exposure*? How is it different from economic exposure?
2. Discuss and compare hedging transaction exposure using the forward contract versus money market instruments. When do alternative hedging approaches produce the same result?
3. Discuss and compare the costs of hedging by forward contracts and options contracts.

PROBLEMS

The spreadsheet TRNSEXP.xls may be used in solving parts of problems 2, 3, 4, and 6.

1. Cray Research sold a supercomputer to the Max Planck Institute in Germany on credit and invoiced €10 million payable in six months. Currently, the six-month forward exchange rate is \$1.10/€ and the foreign exchange adviser for Cray Research predicts that the spot rate is likely to be \$1.05/€ in six months.
   a. What is the expected gain/loss from a forward hedge?
   b. If you were the financial manager of Cray Research, would you recommend hedging this euro receivable? Why or why not?

Questions and Problems—Each chapter contains a set of Questions and Problems. This material can be used by students on their own to test their understanding of the material, or as homework exercises assigned by the instructor. Questions and Problems relating to the In More Depth sections of the text are indicated by *blue type.*

Questions with Excel Software—An icon in the margin indicates that the end-of-chapter question is linked to an Excel software program created by the authors. See the Ancillary Materials section for more information on the software.

CFA Questions—Many chapters include problems from CFA Program Curriculum study materials. These CFA problems, indicated with the CFA logo, show students the relevancy of what is expected of certified professional analysts.

CFA®
PROBLEMS

Internet Exercises—Found at the end of each chapter, these highlight specific topics, and they prompt the student to search the Internet for specific data. The student is then asked to analyze the data found to solve the exercise.

INTERNET EXERCISES

Case Applications—Case Applications are incorporated within selected chapters throughout the text in order to enhance specific topics and help students apply theories and concepts to "real-world" situations.

CASE APPLICATION

Diva Shoes, Inc.

Susan J. Chaplinsky and Amy S. Spurr

In April 1995, Lisa Stone ended a conversation with Benjamin Bisno, the president and chief executive officer of Diva Shoes, Inc., concerning his firm's growing exchange rate exposure. Since joining the foreign exchange desk at Merrill Lynch three years ago, Stone had worked with Bisno in executing relatively simple "forex" transactions for the company. She provided information and advice on the firm's decision to increase purchases of materials from Italian suppliers and to expand into the Canadian and Japanese markets. Diva Shoes, a U.S.-based company, had first introduced its products in Japan in June 1993, and sales had reached an unexpectedly high level of (Japanese yen) ¥2.47 billion ($25 million) the following year. Although Bisno was pleased with his initial success, he questioned how long this demand—and the strong yen that had accompanied it—would last.

Mini Cases—Almost every chapter includes a mini case for student analysis of multiple concepts covered throughout the chapter. These Mini Case problems are "real-world" in nature to show students how the theory and concepts in the textbook relate to the everyday world.

MINI CASE

Shrewsbury Herbal Products, Ltd.

Shrewsbury Herbal Products, located in central England close to the Welsh border, is an old-line producer of herbal teas, seasonings, and medicines. Its products are marketed all over the United Kingdom and in many parts of continental Europe as well.

Shrewsbury Herbal generally invoices in British pound sterling when it sells to foreign customers in order to guard against adverse exchange rate changes. Nevertheless, it has just received an order from a large wholesaler in central France for £320,000 of its products, conditional upon delivery being made in three months' time and the order invoiced in euros.

Shrewsbury's controller, Elton Peters, is concerned with whether the pound will appreciate versus the euro over the next three months, thus eliminating all or most of the profit when the euro receivable is paid. He thinks this an unlikely possibility, but he decides to contact the firm's banker for suggestions about hedging the exchange rate exposure.

Mr. Peters learns from the banker that the current spot exchange rate in €/£ is €1.4537; thus the invoice amount should be €465,184. Mr. Peters also learns that the three-month forward rates for the pound and the euro versus the U.S. dollar are $1.8990/£1.00 and $1.3154/€1.00, respectively. The banker offers to set up a forward hedge for selling the euro receivable for pound sterling based on the €/£ forward cross-exchange rate implicit in the forward rates against the dollar.

What would you do if you were Mr. Peters?

References and Suggested Readings—At the end of each chapter a list of selected references and suggested readings is presented, allowing the student to easily locate references that provide additional information about topics discussed in that chapter.

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UBS Investment Bank. *Foreign Exchange and Money Market Transactions*. This book can be found and downloaded at www.ibb.ubs.com/Individuals/files/brochure/booken.pdf.

Ancillary Materials

To assist in course preparation, the following ancillaries are offered on the Online Learning Center—www.mhhe.com/er6e:

- **Solutions Manual**—Includes detailed suggested answers and solutions to the end-of-chapter questions and problems, written by the authors.
- **Lecture Outlines**—Chapter outlines, learning objectives, and teaching notes for each chapter.
- **Test Bank**—True/false and multiple-choice test questions for each chapter prepared by John Stansfield, University of Missouri. Available as Word documents and in computerized EZ Test format.
- **PowerPoint Presentations**—PowerPoint slides for each chapter to use in classroom lecture settings, created by John Stansfield.

The site also includes the International Finance Software that can be used with this book. This Excel software has four main programs:

- A currency options pricing program allows students to price put and call options on foreign exchange.
- A hedging program allows the student to compare forward, money market instruments, futures, and options for hedging exchange risk.
- A currency swap program allows students to calculate the cash flows and notional values associated with swapping fixed-rate debt from one currency into another.
- A portfolio optimization program based on the Markowitz model allows for examining the benefits of international portfolio diversification.

The four programs can be used to solve certain end-of-chapter problems (marked with an Excel icon) or assignments the instructor devises. A User's Manual and sample projects are included on the website.

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