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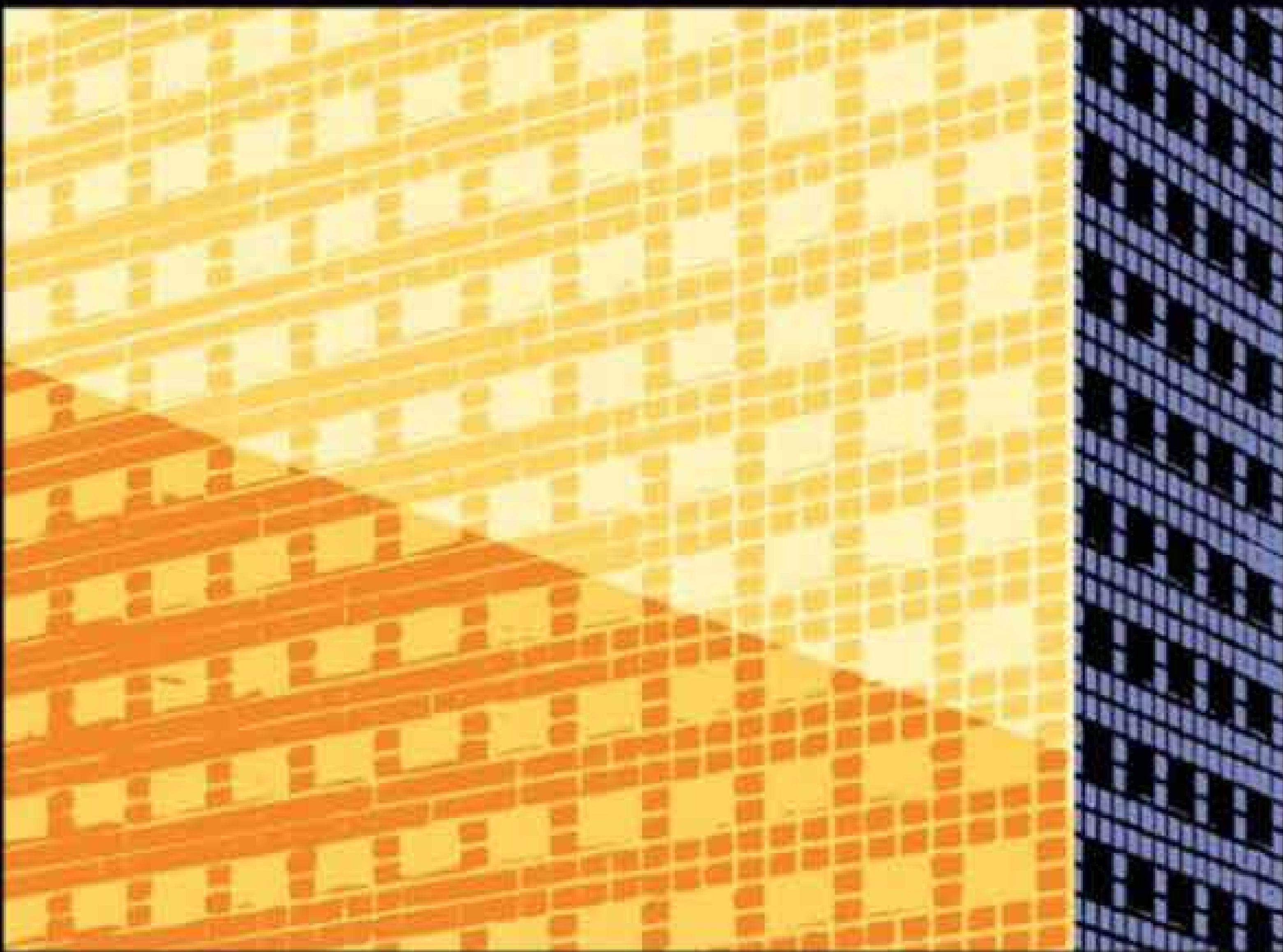

FINANCIAL INSTITUTIONS MANAGEMENT

A Risk Management Approach

EIGHTH EDITION

Financial Institutions Management

A Risk Management Approach

The McGraw-Hill/Irwin Series in Finance, Insurance, and Real Estate

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Financial Institutions Management

A Risk Management Approach

Eighth Edition

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To all my co-authors over the years.

Anthony Saunders

To my parents, Tom and Sue.

Marcia Millon Cornett

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Anthony Saunders is the John M. Schiff Professor of Finance and the former Chair of the Department of Finance at the Stern School of Business at New York University. Professor Saunders received his PhD from the London School of Economics and has taught both undergraduate- and graduate-level courses at NYU since 1978. Throughout his academic career, his teaching and research have specialized in financial institutions and international banking. He has served as a visiting professor all over the world, including INSEAD, the Stockholm School of Economics, and the University of Melbourne.

Professor Saunders has held positions on the Board of Academic Consultants of the Federal Reserve Board of Governors as well as the Council of Research Advisors for the Federal National Mortgage Association. In addition, Dr. Saunders has acted as a visiting scholar at the Comptroller of the Currency and at the Federal Reserve Banks of Philadelphia and New York. Currently, he is an academic consultant for the FDIC. He also held a visiting position in the research department of the International Monetary Fund. He is editor of *Financial Markets, Instruments and Institutions.* His research has been published in all the major money and banking and finance journals and in several books. In addition, he has authored or coauthored several professional books, the most recent of which is *Credit Risk Measurement: New Approaches to Value at Risk and Other Paradigms,* 3rd edition, John Wiley and Sons, New York, 2010. In 2008, he was ranked as the most published author in the last 50 years in the top seven journals in finance.

Marcia Millon Cornett

Marcia Millon Cornett is a Professor of Finance at Bentley University. She received her BS degree in Economics from Knox College in Galesburg, Illinois, and her MBA and PhD degrees in Finance from Indiana University in Bloomington, Indiana. Dr. Cornett has written and published several articles in the areas of bank performance, bank regulation, and corporate finance. Articles authored by Dr. Cornett have appeared in such academic journals as the *Journal of Finance,* the *Journal of Money, Credit and Banking,* the *Journal of Financial Economics, Financial Management,* and the *Journal of Banking and Finance.* In 2008, she was ranked as the 124th most published author in the last 50 years in the top seven journals in finance. Dr. Cornett served as an Associate Editor of *Financial Management* and is currently an Associate Editor for the *Journal of Banking and Finance, Journal of Financial Services Research, FMA Online,* the *Multinational Finance Journal,* and the *Review of Financial Economics.* She has served as a member of the Board of Directors, the Executive Committee, and the Finance Committee of the SIU Credit Union. Dr. Cornett has also taught at the University of Colorado, Boston College, Southern Methodist University, and Southern Illinois University at Carbondale. She is a member of the Financial Management Association, the American Finance Association, and the Western Finance Association.

Preface

The last 25 years have been dramatic for the financial services industry. In the 1990s and 2000s boundaries between the traditional industry sectors, such as commercial banking and investment banking, broke down, and competition became increasingly global in nature. Many forces contributed to this breakdown in interindustry and intercountry barriers, including financial innovation, technology, taxation, and regulation. Then in 2008–09, the financial services industry experienced the worst financial crisis since the Great Depression. Even into the mid-2010s, the U.S. and world economies have not recovered from this crisis. It is in this context that this book is written. Although the traditional nature of each sector's product activity is analyzed, a greater emphasis is placed on *new* areas of activities such as asset securitization, off-balance-sheet banking, international banking, and on changes occurring as a result of the financial crisis.

When the first edition of this text was released in 1994, it was the first to analyze modern financial institutions management from a risk perspective. Thus, the title, *Financial Institutions Management: A Modern Perspective.* At that time, traditional texts presented an overview of the industry sector by sector, concentrating on balance sheet presentations and overlooking management decision making and risk management. Over the last 20 years other texts have followed this change, such that a risk management approach to analyzing modern financial institutions is now well accepted. Thus, the title: *Financial Institutions Management: A Risk Management Approach.*

The eighth edition of this text takes the same innovative approach taken in the first seven editions and focuses on managing return and risk in modern financial institutions (FIs). *Financial Institutions Management*'s central theme is that the risks faced by FI managers and the methods and markets through which these risks are managed are similar whether an institution is chartered as a commercial bank, a savings bank, an investment bank, or an insurance company.

As in any stockholder-owned corporation, the goal of FI managers should always be to maximize the value of the financial institution. However, pursuit of value maximization does not mean that risk management can be ignored.

Indeed, modern FIs are in the risk management business. As we discuss in this book, in a world of perfect and frictionless capital markets, FIs would not exist and individuals would manage their own financial assets and portfolios. But since real-world financial markets are not perfect, FIs provide the positive function of bearing and managing risk on behalf of their customers through the pooling of risks and the sale of their services as risk specialists.

INTENDED AUDIENCE

Financial Institutions Management: A Risk Management Approach is aimed at upper-level undergraduate and MBA audiences. Occasionally there are more technical sections. *These sections may be included or dropped from the chapter reading, depending on the rigor of the course, without harming the continuity of the chapters.*

MAIN FEATURES

Throughout the text, special features have been integrated to encourage student interaction with the text and to aid in absorbing the material. Some of these features include:

- **In-chapter Internet Exercises and references,** which detail instructions for accessing important recent financial data online.
- **International material highlights,** which call out material relating to global issues.
- **In-chapter Examples,** which provide numerical demonstrations of the analytics described in various chapters.
- **Bold key terms and marginal glossary,** which highlight and define the main terms and concepts throughout the chapter.
- **In-chapter Concept Questions,** which allow students to test themselves on the main concepts within each major chapter section.
- **Notable Events from the Financial Crisis, Industry Perspectives, and After the Crisis boxes,** which demonstrate the application of chapter material to real current events.

ORGANIZATION

Since our focus is on return and risk and the sources of that return and risk, this book relates ways in which the managers of modern FIs can expand return with a managed level of risk to achieve the best, or most favorable, return-risk outcome for FI owners.

Chapter 1 introduces the special functions of FIs and takes an analytical look at how financial intermediation benefits today's economy. Chapters 2 through 6 provide an overview describing the key balance sheet and regulatory features of the major sectors of the U.S. financial services industry. We discuss depository institutions in Chapter 2, finance companies in Chapter 3, securities firms and investment banks in Chapter 4, mutual funds and hedge funds in Chapter 5, and insurance institutions in Chapter 6. In Chapter 7 we preview the risk measurement and management sections with an overview of the risks facing a modern FI. We divide the chapters on risk measurement and management into two sections: measuring risk and managing risk.

In Chapters 8 and 9, we start the risk measurement section by investigating the net interest margin as a source of profitability and risk, with a focus on the effects of interest rate volatility and the mismatching of asset and liability durations on FI risk exposure. In Chapter 10, we look at the measurement of credit risk on individual loans and bonds and how this risk adversely affects an FI's profits through losses and provisions against the loan and debt security portfolio. In Chapter 11, we look at the risk of loan (asset) portfolios and the effects of loan concentrations on risk exposure. In addition, as a by-product of the provision of their interest rate and credit intermediation services, FIs face liquidity risk. We analyze the special nature of this risk in Chapter 12.

Modern FIs do more than domestic maturity mismatching and credit extensions. They also are increasingly engaging in foreign exchange activities and overseas financial investments (Chapter 13) and engaging in sovereign lending and securities activities (Chapter 14). In Chapter 15, we analyze market risk, a risk incurred by FIs in trading assets and liabilities due to changes in interest rates, exchange rates, and other asset prices.

In addition, modern FIs do more than generate returns and bear risk through traditional maturity mismatching and credit extensions. They also are increasingly engaging in off-balance-sheet activities to generate fee income (Chapter 16) and making technological investments to reduce costs (Chapter 17). Each of these has implications for the size and variability of an FI's profits and/or revenues.

In Chapter 18 we begin the risk management section by looking at ways in which FIs can insulate themselves from liquidity risk. In Chapter 19 we look at the key role deposit insurance and other guaranty schemes play in reducing liquidity risk. At the core of FI risk insulation is the size and adequacy of the owners' capital or equity investment in the FI, which is the focus of Chapter 20. Chapter 21 analyzes how and why product and geographic diversification—both domestic and international—can improve an FI's return-risk performance and the impact of regulation on the diversification opportunity set. Chapters 22 through 26 review various new markets and instruments that have been innovated or engineered to allow FIs to better manage three important types of risk: interest rate risk, credit risk, and foreign exchange risk. These markets and instruments and their strategic use by FIs include futures and forwards (Chapter 22); options, caps, floors, and collars (Chapter 23); swaps (Chapter 24); loan sales (Chapter 25); and securitization (Chapter 26).

CHANGES IN THIS EDITION

Each chapter in this edition has been revised thoroughly to reflect the most up-to-date information available. End-of-chapter questions and problem material have also been expanded and updated to provide a complete selection of testing material.

The following are some of the new features of this revision:

- Tables and figures in all chapters have been revised to include the most recently available data.
- New boxes highlighting significant events occurring "After the Crisis" have been added to chapters throughout the book.
- Integrated Minicases have been added to Chapters 9, 13, 16, and 24.
- Updates on the major changes proposed for the regulation of financial institutions are included where appropriate throughout the book.
- Discussion of how financial institutions continue to recover from the financial crisis has been added throughout the book. Virtually every chapter includes new material detailing how the financial crisis has affected risk management in financial institutions.
- Chapters 2, 7, and 14 include discussions of the European debt crisis as it affects the risk and return of financial institutions.
- Chapter 2 includes a discussion of Bank Transfer Day, as well as a summary of the new stress tests imposed on large depository institutions.
- A section on venture capital services has been added to Chapter 5. Also, the chapter includes a discussion of the LIBOR scandal that broke in late 2012.
- Chapter 5 includes a new section on index funds and expanded discussion of ETFs. Further, the chapter includes an update on the regulation of hedge funds.

- An actual interest rate sensitivity report for a depository institution has been added to Chapter 8, and actual duration gap numbers for several banks have been added to Chapter 9.
- Detailed discussion and examples of the new international liquidity standards enacted as a result of the financial crisis have been added to Chapter 12.
- Chapter 13 includes a discussion of the pegging of the Swiss franc to the euro in September 2011.
- Chapter 14 now includes a discussion of the Euromoney Credit Risk measure. This credit risk measure is then used in Chapter 20 as it applies to the new capital standards being phased in at depository institutions.
- Chapter 15 includes a discussion and examples of the newest market risk measures enacted as a result of the financial crisis. The chapter also discusses the changes made to market risk measures as a result of Basel 2.5 and Basel III.
- Chapter 16 includes a discussion of the losses incurred by J.P. Morgan Chase from derivative trading by the "London Whale."
- Chapter 17 includes a new section on advanced technologies in banking and additional discussion of several recent technology related losses incurred by FIs.
- Chapter 18 includes extensive discussion and examples of the new insurance premium system used by depository institutions.
- Chapter 20 includes a discussion of Basel III capital adequacy rules. The major changes are described in detail. Many in-chapter and EOC problems have been added to the chapter to illustrate the many and complex changes to capital adequacy calculations.
- Chapter 21 includes a new section on shadow banks. The chapter also provides an update on implementation of the Wall Street Reform and Consumer Protection Act enacted as a result of the financial crisis.
- Chapter 26 includes a new section on synthetic CDOs.

We have retained and updated these features:

- The **risk approach** of *Financial Institutions Management* has been retained, keeping the first section of the text as an introduction and the last two sections as a risk measurement and risk management summary, respectively.
- We again present a detailed look at **what is new** in each of the different sectors of the financial institutions industry in the first six chapters of the text. We have highlighted the continued **international coverage** with a global issues icon throughout the text.
- Chapter 17 includes material on electronic technology and the Internet's impact on financial services. Technological changes occurring over the last two decades have changed the way financial institutions offer services to customers, both domestically and overseas. The **effect of technology** is also referenced in other chapters where relevant.
- **Coverage of credit risk models** (including newer models, such as Moody's Analytics, CreditMetrics, and CreditRisk+) remains in the text.
- Coverage in the **"Product and Geographic Expansion"** chapter explores the increased inroads of banks into the insurance field, the move toward nationwide banking (in the United States), and the rapid growth of foreign banks and other intermediaries in the United States.

- Numerous highlighted **in-chapter Examples** remain in the chapters.
- **Internet references** remain throughout each chapter and Internet questions are found after the end-of-chapter questions.
- An **extensive problem set,** including web exercises, can be found at the end of each chapter that allows students to practice a variety of skills using the same data or set of circumstances.

ANCILLARIES

All supplemental materials for both students and instructors can be found on the McGraw-Hill website for the eighth edition of *Financial Institutions Management* at **www.mhhe.com/saunders8e.** Instructor materials are password-protected for your security.

Print versions are available by request only—if interested, please contact your McGraw-Hill/Irwin representative. The following supplements are available for the eighth edition.

For Students

- ***Multiple-Choice Quizzes*** for each chapter consist of 10 multiple-choice questions that reflect key concepts from the text. These quizzes have instant grading.
- ***Appendices*** consist of material that has been removed from previous editions of the print textbook to allow room for new topics.

For Instructors

- The ***Test Bank,*** created by Thomas Secrest of Coastal Carolina University, offers multiple-choice and true/false questions that are designed to apply specifically to this text and this edition's revisions. The *Test Bank* is available in Word document format and EZ Test online.
- The ***Instructor's Manual,*** created by author Marcia Millon Cornett, contains answers to the text's Questions and Problems at the end of each chapter and chapter outlines.
- The ***PowerPoint Presentations*** summarize the main points of each chapter in a step-by-step fashion. These slideshows can be edited by instructors to customize presentations.
- The ***Digital Image Library*** contains electronic versions of all figures and tables from the seventh edition of the text.

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Anthony Saunders

Marcia Millon Cornett

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Chapter One

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- Appendix 1B: Monetary Policy Tools

Why Are Financial Institutions Special?

INTRODUCTION

Over the last 90 years, the financial services industry has come full cycle. Originally, the banking industry operated as a full-service industry, performing directly or indirectly all financial services (commercial banking, investment banking, stock investing services, insurance providers, etc.). In the early 1930s, the economic and industrial collapse resulted in the separation of some of these activities. In the 1970s and 1980s, new, relatively unregulated financial services industries sprang up (mutual funds, brokerage funds, etc.) that separated financial services functions even further. As we entered the 21st century, regulatory barriers, technology, and financial innovation changes were such that a full set of financial services could again be offered by a single financial services firm under the umbrella of a financial services holding company. For example, J.P. Morgan Chase operates a commercial bank, J.P. Morgan Chase Bank, an investment bank, J.P. Morgan Securities (which also sells mutual funds), and an insurance company, J.P. Morgan Insurance Agency. During the financial crisis, this financial services holding company purchased a savings institution, Washington Mutual, and several investment banks, including Bear Stearns. Not only did the boundaries between traditional industry sectors change, but competition became global in nature as well. For example, J.P. Morgan Chase is the world's eighth largest financial services holding company, operating in 60 countries. Then came the late 2000s when the United States and indeed the world experienced a collapse of financial markets second only to that experienced during the Great Depression. The financial crisis produced a major reshaping of all financial institution (FI) sectors and the end of many major FIs, e.g., Bear Stearns and Lehman Brothers. The result was a call by the Obama administration to again separate activities performed by individual FIs.

As the competitive environment changes, attention to profit and, more than ever, risk becomes increasingly important. The major themes of this book are the measurement and management of the risks of financial institutions. Financial institutions (e.g., banks, credit unions, insurance companies, and mutual funds) perform the essential function of channeling funds from those with surplus funds (suppliers of funds) to those with shortages of funds (users of funds). In 2012, U.S. FIs held assets totaling more than $28.68 trillion. In contrast, the U.S. motor vehicle and parts industry (e.g., General Motors and Ford Motor Corp.) held total assets of $0.48 trillion.

Although we might categorize or group FIs and the services they perform as life insurance companies, banks, investment banks, and so on, they face many common risks. Specifically, all FIs described in this chapter and Chapters 2 through 6 (1) hold some assets that are potentially subject to default or credit risk and (2) tend to mismatch the maturities of their balance sheet assets and liabilities to a greater or lesser extent and are thus exposed to interest rate risk. Moreover, all FIs are exposed to some degree of liability withdrawal or liquidity risk, depending on the type of claims they have sold to liability holders. In addition, most FIs are exposed to some type of underwriting risk, whether through the sale of securities or the issue of various types of credit guarantees on or off the balance sheet. Finally, all FIs are exposed to operating risks because the production of financial services requires the use of real resources and back-office support systems (labor and technology combined to provide services).

Because of these risks and the special role that FIs play in the financial system, FIs are singled out for special regulatory attention. In this chapter, we first examine questions related to this specialness. In particular, what are the special functions that FIs—both depository institutions (banks, savings institutions, and credit unions) and nondepository institutions (insurance companies, securities firms, investment banks, finance companies, and mutual funds)—provide? These functions are summarized in Table 1–1. How do these functions benefit the economy? Second, we investigate what makes some FIs more special than others. Third, we look at how unique and long-lived the special functions of FIs really are. As part of this discussion, we briefly examine how changes in the way FIs deliver services

TABLE 1–1 Areas of Financial Intermediaries' Specialness in the Provision of Services

Information costs The aggregation of funds in an FI provides greater incentive to collect information about customers (such as corporations) and to monitor their actions. The relatively large size of the FI allows this collection of information to be accomplished at a lower average cost (so-called economies of scale) than would be the case for individuals.

Liquidity and price risk FIs provide financial claims to household savers with superior liquidity attributes and with lower price risk.

Transaction cost services Similar to economies of scale in information production costs, an FI's size can result in economies of scale in transaction costs.

Maturity intermediation FIs can better bear the risk of mismatching the maturities of their assets and liabilities.

Transmission of monetary supply Depository institutions are the conduit through which monetary policy actions by the country's central bank (the Federal Reserve) impact the rest of the financial system and the economy.

Credit allocation FIs are often viewed as the major, and sometimes only, source of financing for particular sectors of the economy, such as farming, small business, and residential real estate.

Intergenerational wealth transfers FIs, especially life insurance companies and pension funds, provide savers with the ability to transfer wealth from one generation to the next.

Payment services The efficiency with which depository institutions provide payment services such as check clearing directly benefits the economy.

Denomination intermediation FIs, such as mutual funds, allow small investors to overcome constraints to buying assets imposed by large minimum denomination size.

played a major part in the events leading up to the severe financial crisis of the late 2000s. A more detailed discussion of the causes of, major events during, and regulatory and industry changes resulting from the financial crisis is provided in Appendix 1A to the chapter (located at the book's website, **www.mhhe.com/saunders8e**).

FINANCIAL INSTITUTIONS' SPECIALNESS

To understand the important economic function of FIs, imagine a simple world in which FIs do not exist. In such a world, households generating excess savings by consuming less than they earn would have the basic choice: They could hold cash as an asset or invest in the securities issued by corporations. In general, corporations issue securities to finance their investments in real assets and cover the gap between their investment plans and their internally generated savings such as retained earnings.

As shown in Figure 1–1, in such a world, savings would flow from households to corporations. In return, financial claims (equity and debt securities) would flow from corporations to household savers. In an economy without FIs, the level of fund flows between household savers and the corporate sector is likely to be quite low. There are several reasons for this. Once they have lent money to a firm by buying its financial claims, households need to monitor, or check, the actions of that firm. They must be sure that the firm's management neither absconds with nor wastes the funds on any projects with low or negative net present values. Such monitoring actions are extremely costly for any given household because they require considerable time and expense to collect sufficiently high-quality information relative to the size of the average household saver's investments. Given this, it is likely that each household would prefer to leave the monitoring to others. In the end, little or no monitoring would be done. The resulting lack of monitoring would reduce the attractiveness and increase the risk of investing in corporate debt and equity.

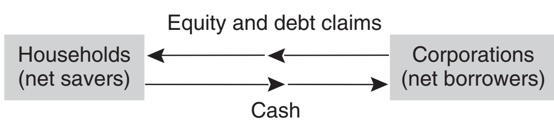
The relatively long-term nature of corporate equity and debt, and the lack of a secondary market in which households can sell these securities, creates a second disincentive for household investors to hold the direct financial claims issued by corporations. Specifically, given the choice between holding cash and holding long-term securities, households may well choose to hold cash for **liquidity** reasons, especially if they plan to use savings to finance consumption expenditures in the near future.

liquidity
The ease of converting an asset into cash.

Finally, even if financial markets existed (without FIs to operate them) to provide liquidity services by allowing households to trade corporate debt and equity securities among themselves, investors also face a **price risk** on sale of securities, and the secondary market trading of securities involves various transaction costs. That is, the price at which household investors can sell securities on secondary markets such as the New York Stock Exchange (NYSE) may well differ from the price they initially paid for the securities.

price risk
The risk that the sale price of an asset will be lower than the purchase price of that asset.

FIGURE 1–1
Flow of Funds in a World without FIs



Because of (1) monitoring costs, (2) liquidity costs, and (3) price risk, the average household saver may view direct investment in corporate securities as an unattractive proposition and prefer either not to save or to save in the form of cash. However, the economy has developed an alternative and indirect way to channel household savings to the corporate sector. This is to channel savings via FIs. Because of costs of monitoring, liquidity, and price risk, as well as for some other reasons, explained later, savers often prefer to hold the financial claims issued by FIs rather than those issued by corporations. Consider Figure 1–2, which is a closer representation than Figure 1–1 of the world in which we live and the way funds flow in our economy. Notice how financial institutions or intermediaries are standing, or intermediating, between the household and corporate sectors. These intermediaries fulfill two functions; any given FI might specialize in one or the other or might do both simultaneously.

FIs Function as Brokers

The first function is the brokerage function. When acting as a pure broker, an FI acts as an agent for the saver by providing information and transaction services. For example, full-service securities firms (e.g., Bank of America Merrill Lynch) carry out investment research and make investment recommendations for their retail (or household) clients as well as conduct the purchase or sale of securities for commission or fees. Discount brokers (e.g., Charles Schwab) carry out the purchase or sale of securities at better prices and with greater efficiency than household savers could achieve by trading on their own. This efficiency results in reduced costs of trading, or **economies of scale** (see Chapter 21 for a detailed discussion). Similarly, independent insurance brokers identify the best types of insurance policies household savers can buy to fit their savings and retirement plans. In fulfilling a brokerage function, the FI plays an extremely important role by reducing transaction and information costs or imperfections between households and corporations. Thus, the FI encourages a higher rate of savings than would otherwise exist.

economies of scale
The concept that the cost reduction in trading and other transaction services results in increased efficiency when FIs perform these services.

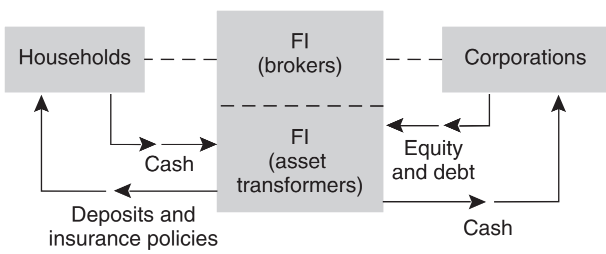
asset transformer
An FI issues financial claims that are more attractive to household savers than the claims directly issued by corporations.

primary securities
Securities issued by corporations and backed by the real assets of those corporations.

FIs Function as Asset Transformers

The second function is the asset-transformation function. In acting as an **asset transformer,** the FI issues financial claims that are far more attractive to household savers than the claims directly issued by corporations. That is, for many households, the financial claims issued by FIs dominate those issued directly by corporations as a result of lower monitoring costs, lower liquidity costs, and lower price risk. In acting as asset transformers, FIs purchase the financial claims issued by corporations—equities, bonds, and other debt claims called **primary securities**—and finance these purchases by selling financial claims to household

FIGURE 1–2
Flow of Funds in a World with FIs



secondary securities Securities issued by FIs and backed by primary securities.

investors and other sectors in the form of deposits, insurance policies, and so on. The financial claims of FIs may be considered **secondary securities** because these assets are backed by the primary securities issued by commercial corporations that in turn invest in real assets. Specifically, FIs are independent market parties that create financial products whose value added to their clients is the transformation of financial risk.

How can FIs purchase the direct or primary securities issued by corporations and profitably transform them into secondary securities more attractive to household savers? This question strikes at the very heart of what makes FIs special and important to the economy. The answer lies in the ability of FIs to better resolve the three costs facing a saver who chooses to invest directly in corporate securities.

Information Costs

agency costs Costs relating to the risk that the owners and managers of firms that receive savers' funds will take actions with those funds contrary to the best interests of the savers.

One problem faced by an average saver directly investing in a commercial firm's financial claims is the high cost of information collection. Household savers must monitor the actions of firms in a timely and complete fashion after purchasing securities. Failure to monitor exposes investors to **agency costs,** that is, the risk that the firm's owners or managers will take actions with the saver's money contrary to the promises contained in the covenants of its securities contracts. Monitoring costs are part of overall agency costs. That is, agency costs arise whenever economic agents enter into contracts in a world of incomplete information and thus costly information collection. The more difficult and costly it is to collect information, the more likely it is that contracts will be broken. In this case the saver (the so-called principal) could be harmed by the actions taken by the borrowing firm (the so-called agent).

FI's Role as Delegated Monitor

delegated monitor An economic agent appointed to act on behalf of smaller agents in collecting information and/or investing funds on their behalf.

One solution to this problem is for a large number of small savers to place their funds with a single FI. This FI groups these funds together and invests in the direct or primary financial claims issued by firms. This agglomeration of funds resolves a number of problems. First, the large FI now has a much greater incentive to collect information and monitor actions of the firm because it has far more at stake than does any small individual household. In a sense, small savers have appointed the FI as a **delegated monitor** to act on their behalf. Not only does the FI have a greater incentive to collect information, the average cost of collecting information is lower. For example, the cost to a small investor of buying a $100 broker's report may seem inordinately high for a $10,000 investment. For an FI with $10 million under management, however, the cost seems trivial. Such economies of scale of information production and collection tend to enhance the advantages to savers of using FIs rather than directly investing themselves.

FI's Role as Information Producer

Second, associated with the greater incentive to monitor and the costs involved in failing to monitor appropriately, FIs may develop new secondary securities that enable them to monitor more effectively. Thus, a richer menu of contracts may improve the monitoring abilities of FIs. Perhaps the classic example of this is the bank loan. Bank loans are generally shorter-term debt contracts than bond contracts. This short-term nature allows the FI to exercise more monitoring power and control over the borrower. In particular, the information the FI generates regarding the firm is frequently updated as its loan renewal decisions are made. When bank loan contracts are sufficiently short term, the banker becomes almost like an insider to the firm regarding informational familiarity with its operations and financial conditions. Indeed, this more frequent monitoring often replaces the need for the relatively inflexible and hard-to-enforce covenants found in bond contracts. Thus, by acting as a delegated monitor and producing better and more timely information, FIs reduce the degree of information imperfection and asymmetry between the ultimate suppliers and users of funds in the economy.

Liquidity and Price Risk

In addition to improving the flow and quality of information, FIs provide financial or secondary claims to household and other savers. Often, these claims have superior liquidity attributes compared with those of primary securities such as corporate equity and bonds. For example, depository institutions issue transaction account deposit contracts with a fixed principal value (and often a guaranteed interest rate) that can be withdrawn immediately on demand by household savers. Money market mutual funds issue shares to household savers that allow those savers to enjoy almost fixed principal (depositlike) contracts while often earning interest rates higher than those on bank deposits. Even life insurance companies allow policyholders to borrow against their policies held with the company at very short notice. The real puzzle is how FIs such as depository institutions can offer highly liquid and low price risk contracts to savers on the liability side of their balance sheets while investing in relatively illiquid and higher price risk securities issued by corporations on the asset side. Furthermore, how can FIs be confident enough to guarantee that they can provide liquidity services to investors and savers when they themselves invest in risky asset portfolios? And why should savers and investors believe FIs' promises regarding the liquidity of their investments?

diversify
Reducing risk by holding a number of different securities in a portfolio.

The answers to these questions lie in the ability of FIs to **diversify** away some but not all of their portfolio risks. The concept of diversification is familiar to all students of finance. Basically, as long as the returns on different investments are not perfectly *positively* correlated, by exploiting the benefits of size, FIs diversify away significant amounts of portfolio risk—especially the risk specific to the individual firm issuing any given security. Indeed, research has shown that equal investments in as few as 15 securities can bring significant diversification benefits to FIs and portfolio managers. Further, as the number of securities in an FI's asset portfolio increases beyond 15 securities, portfolio risk falls, albeit at a diminishing rate. What is really going on here is that FIs exploit the law of large numbers in their investments, achieving a significant amount of diversification, whereas because of their small size, many household savers are constrained to holding relatively undiversified portfolios. This risk diversification allows an FI to predict more accurately its expected return on its asset portfolio. A domestically and globally diversified FI may be able to generate an almost risk-free return on its assets. As a result, it can credibly fulfill its promise to households to supply highly liquid claims with little price or capital value risk. A good example of this is the ability of a bank to offer highly liquid demand deposits—with a fixed principal value—as liabilities, while at the same time investing in risky loans as assets. As long as an FI is sufficiently large to gain from diversification and monitoring, its financial claims are likely to be viewed as liquid and attractive to small savers compared with direct investments in the capital market.

Other Special Services

The preceding discussion has concentrated on three general or special services provided by FIs: reducing household savers' monitoring costs, increasing their liquidity, and reducing their price risk exposure. Next, we discuss two other special services provided by FIs: reduced transaction costs and maturity intermediation.

Reduced Transaction Costs

Just as FIs provide potential economies of scale in information collection, they also provide potential economies of scale in transaction costs. For example, since May 1, 1975, fixed commissions for equity trades on the NYSE have been abolished. As a result, small retail buyers face higher commission charges or transaction costs than do large wholesale buyers. By grouping their assets in FIs that purchase assets in bulk—such as in mutual funds and pension funds—household savers can reduce the transaction costs of their asset purchases. In addition, bid–ask (buy–sell) spreads are normally lower for assets bought and sold in large quantities.

Maturity Intermediation

An additional dimension of FIs' ability to reduce risk by diversification is that they can better bear the risk of mismatching the maturities of their assets and liabilities than can small household savers. Thus, FIs offer maturity intermediation services to the rest of the economy. Specifically, through maturity mismatching, FIs can produce long-term contracts, such as long-term, fixed-rate mortgage loans to households, while still raising funds with short-term liability contracts. Further, while such mismatches can subject an FI to interest rate risk (see Chapters 8 and 9), a large FI is better able to manage this risk through its superior access to markets and instruments for hedging such as loan sales and securitization (Chapters 25 and 26); futures (Chapter 22); swaps (Chapter 24); and options, caps, floors, and collars (Chapter 23).

Concept Questions

1. What are the three major risks to household savers from direct security purchases?
2. What are two major differences between brokers (such as security brokers) and depository institutions (such as commercial banks)?
3. What are primary securities and secondary securities?
4. What is the link between asset diversification and the liquidity of deposit contracts?

OTHER ASPECTS OF SPECIALNESS

The theory of the flow of funds points to three principal reasons for believing that FIs are special, along with two other associated reasons. In reality, academics, policymakers, and regulators identify other areas of specialness relating to certain specific functions of FIs or groups of FIs. We discuss these next.

The Transmission of Monetary Policy

The highly liquid nature of depository institution deposits has resulted in their acceptance by the public as the most widely used medium of exchange in the economy. Indeed, at the core of the two most commonly used definitions of the money supply—M1 and M2[1]—lie depository institutions' deposit contracts. Because the liabilities of depository institutions are a significant component of the money supply that impacts the rate of inflation, they play a key role in the *transmission of monetary policy* from the central bank to the rest of the economy. That is, depository institutions are the conduit through which monetary policy actions impact the rest of the financial sector and the economy in general. Indeed, a major reason the United States and world governments bailed out many depository institutions and increased the deposit insurance limit from $100,000 to $250,000 per person per bank during the financial crisis was so that central banks could implement aggressive monetary policy actions to combat collapsing financial markets. Monetary policy actions include open market operations (the purchase and sale of securities in the U.S. Treasury securities market), setting the discount rate (the rate charged on "lender of last resort" borrowing from the Federal Reserve), and setting reserve requirements (the minimum amount of reserve assets depository institutions must hold to back deposits held as liabilities on their balance sheets). Appendix 1B to the chapter (located at the book's website, **www.mhhe.com/saunders8e**) reviews the tools used by the Federal Reserve to implement monetary policy.

www.federalreserve.gov

Credit Allocation

A further reason FIs are often viewed as special is that they are the major and sometimes the only source of financing for a particular sector of the economy pre-identified as being in special need of financing. Policymakers in the United States and a number of other countries, such as the United Kingdom, have identified *residential real estate* as needing special subsidies. This has enhanced the specialness of FIs that most commonly service the needs of that sector. In the United States, savings associations and savings banks have traditionally served the credit needs of the residential real estate sector. In a similar fashion, farming is an especially important area of the economy in terms of the overall social welfare of the population. The U.S. government has even directly encouraged financial institutions to specialize in financing this area of activity through the creation of Federal Farm Credit Banks.

Intergenerational Wealth Transfers or Time Intermediation

The ability of savers to transfer wealth across generations is also of great importance to the social well-being of a country. Because of this, life insurance and pension funds (see Chapter 6) are often especially encouraged, via special taxation relief and other subsidy mechanisms, to service and accommodate those needs.

Payment Services

Depository institutions (see Chapter 2) are special in that the efficiency with which they provide payment services directly benefits the economy. Two important payment services are check-clearing and wire transfer services. For example, on any given day, trillions of dollars worth of payments are effected through Fedwire and

[1] M1: ($2,418.6 billion outstanding in October 2012) consists of (1) currency outside the U.S. Treasury, Federal Reserve Banks, and the vaults of depository institutions; (2) traveler's checks of nonbank issuers; (3) demand deposits at all commercial banks other than those owed to depository institutions, the U.S. government, and foreign banks and official institutions, less cash items in the process of collection and Federal Reserve float; and (4) other checkable deposits (OCDs). M2: ($10,221.0 billion outstanding in October 2012) consists of M1 plus (1) savings and small time deposits (time deposits in amounts of less than $100,000) and (2) other nondeposit obligations of depository institutions.