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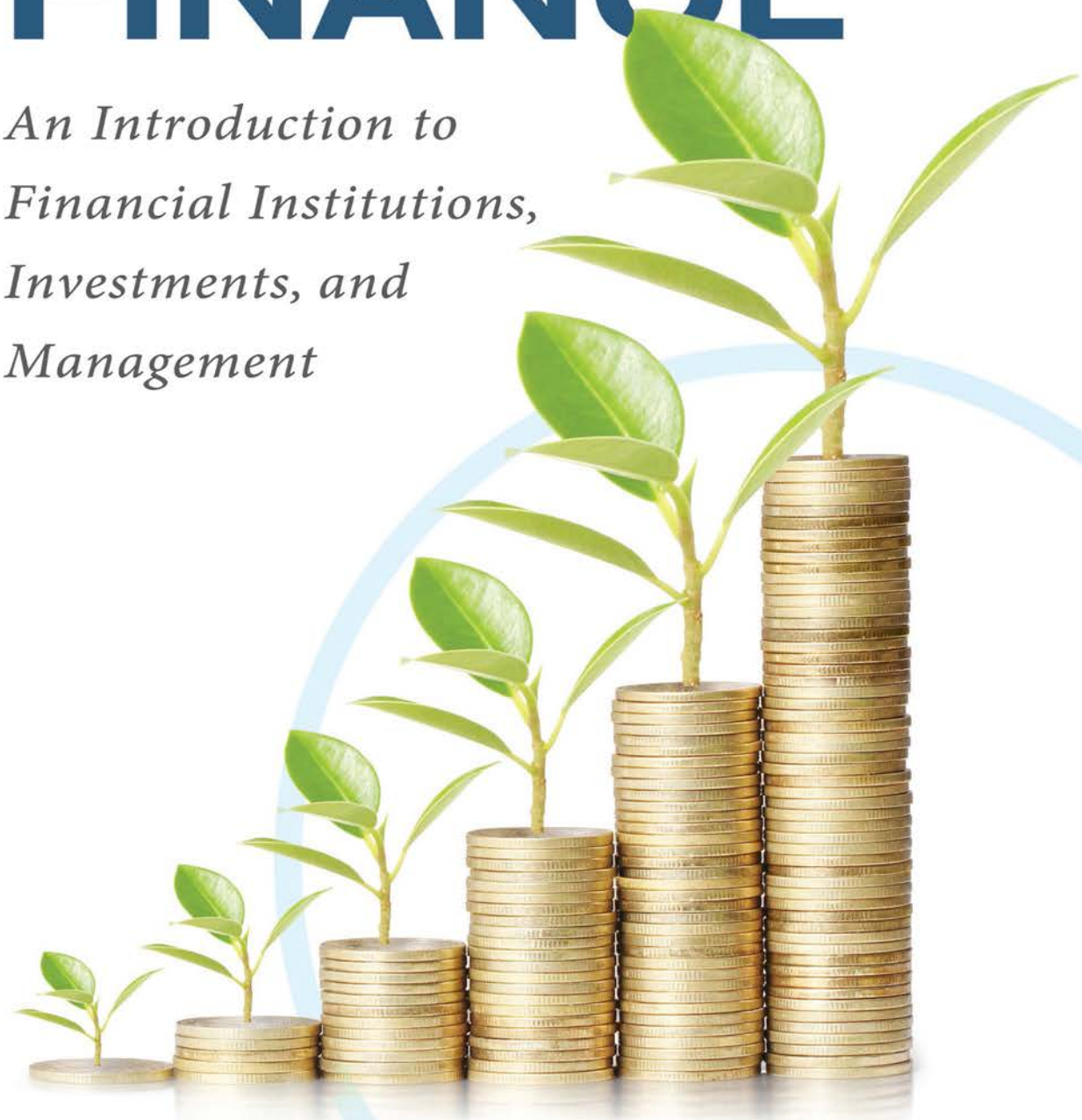
Herbert B. Mayo

basic FINANCE

An Introduction to Financial Institutions, Investments, and Management



BASIC FINANCE

An Introduction to Financial Institutions, Investments, and Management

TWELFTH EDITION

HERBERT B. MAYO
The College of New Jersey

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***BASIC FINANCE: An Introduction to Financial Institutions, Investments, and Management,* 12th edition**
Herbert Mayo

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Analyst: Ann Hoffman

Project Manager: Erika Mugavin

Sr. Art Director: Michelle Kunkler

Text Designer: cmillerdesign

Cover Designer: cmillerdesign

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For Nancy Lasher and Cathy Ann Tully for their friendship over the years.

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PREFACE

"Finance" is a broad discipline. From an individual's perspective, finance encompasses financial institutions and investments. Virtually every day I have some contact with a financial institution. I write and receive checks, review my bank balance online, and use my credit cards. Other members of my family do the same. Your contact with financial institutions is probably just as frequent.

I make investment decisions that often meet a specific purpose, such as a stock purchase in my retirement account or my grandchildren's college fund accounts. I may sell a stock that I believe is overvalued or buy one that I think is undervalued. Many people periodically make investment decisions. They may not even be conscious of these decisions: Having funds withheld from your paycheck and invested in your employer's 401(k) retirement plan is an investment decision, even if you don't select the specific assets to include in the plan. And the same applies when you leave funds in a mutual fund or continue to hold a stock. Maintaining those positions are also investment decisions.

Business owners and managers make financial decisions, so the third facet of finance is often referred to as business finance or corporate finance. The employees of governments and nonprofit institutions also make similar financial decisions. Since expected future cash inflows and outflows affect current financial decisions, many tools used for making business decisions also apply to nonbusiness financial decisions.

Of course, financial institutions, investments, and business finance do not operate independently. Some courses in finance are called "Managerial Finance," while others have titles such as "Financial Management." You might infer from such names that Financial Management is the same as Managerial Finance, but such an inference is probably incorrect. The focus in managerial finance is business financial decision making. Financial management is generally broader and combines financial institutions, investments, and business finance, although the emphasis is usually on their application to business decision making.

This text introduces you to the three areas of the finance discipline. It provides you with breadth (but not depth) of knowledge of finance and is a foundation on which you may build. I realize that many students will take only one course in a specific discipline. Finance majors generally do not take additional courses in marketing; marketing majors may take only this one course in finance. Since you may have only this exposure to the areas of finance, this text gives you a working knowledge of the terms, environment, and mechanics of financial decision making.

Besides introducing you to the broad field of finance, *Basic Finance* also aims to encourage all students to do additional work in the field. I am, of course, biased, but survey courses and introductory texts do offer instructors excellent opportunities to

encourage (do I dare say "lobby"?) students to do additional work in their areas. To do this additional work, you need basic background. By exposing you to all facets of finance, this textbook lays a foundation that will encourage and facilitate your taking additional courses in finance.

Possible Organizations for a Basic Finance Course

The book is divided into five parts: financial institutions, financial tools, investments, corporate finance, and derivatives. One advantage of short chapters is their adaptability to several approaches. If the course is meant to survey the field of finance, the instructor may select chapters throughout the text and place less emphasis on numerical problems. An alternative strategy is to approach finance through investments. Many students have an inherent interest in investments, especially since they can easily have their own online brokerage accounts. The course can be constructed to build upon this interest and expand topics into other areas of finance.

If the course emphasizes corporate finance, Part 4 is especially important, in conjunction with additional selected chapters (for example time value of money, risk measurement, initial public offerings, and the descriptions of stocks and bonds). The self-contained chapters should facilitate converting the book into a text that is readily used in a traditional corporate finance course.

The initial concept for *Basic Finance* was a text with many short chapters. This edition had 29 chapters. Most chapters were less than 25 pages, and each was essentially a self-contained unit. This approach facilitates instructors' selection of individual topics to emphasize. For example, the features and pricing of bonds can be covered but the application to preferred stock may be excluded. Concise chapters also facilitate instruction that covers content and uses the problems to illustrate and apply the concepts. An initial class may be devoted to specific topics and the subsequent class or classes may be devoted to the problems.

Pedagogical Features

All textbooks feature a variety of pedagogical tools designed to improve learning. Anecdotal evidence suggests varying degrees of success. Definitions are placed in boldface in the margins. Over the years, several students have commented on the benefits of the marginal definitions. Time value illustrations permeate this text. Their solutions using a financial calculator are also placed in the margins. This approach avoids breaking the flow of the text material. Since different financial calculators use different formats, the marginal presentation is generic. It lists the known variables and their values, and identifies the unknown. The solution for the unknown is given separately.

In previous editions every chapter began with learning objectives. One day I walked into class and casually asked, "Who reads the learning objectives at the beginning of the chapter?" By the looks on their faces I could tell I needed to add, "I want an honest answer. Don't tell me Yes if you think that is what I want to hear." A couple of students said they did read the learning objectives. I then asked, "Who reads the questions at the end of the chapter?" One student said, "Only if you assign them!"

I should not have been surprised, because as an undergraduate, I would not have read them. In this text, I have placed the learning objectives at the end of each chapter,

retitled them "review objectives," and identified where the material is covered in the chapter. The instructor may convert these review objectives into questions and use them in class to help students review the material.

Where appropriate, the chapters have numerical problems with which to review the material. These problems primarily replicate the text illustrations or present straightforward variations on the text examples. Selected answers are provided in Appendix F.

Many chapters have "Additional Problems with Answers." These problems are similar to the other problems and illustrations in the chapters. However, unlike the selected answers to the chapters' problems provided in Appendix F, the "Additional Problems with Answers" provide the steps necessary to determine the solution. The expectation is that the individual student will work through each problem and then consult the answers. Such an approach should increase the student's ability to work through and solve the problems.

Acknowledgments

A textbook author uses the input and assistance of many individuals. Over the years, I have received many thoughtful reviews and comments from individuals who sincerely offered suggestions. Unfortunately, suggestions may be contradictory. Since I cannot please all of the people all the time, I trust that those who offered advice that was not taken will not be offended.

At this point in the Preface, it is traditional for the author to thank members of the editorial and production staffs for their help in bringing the book to fruition. These individuals are geographically dispersed, and it never ceases to amaze me how this far-flung group somehow manages to pull the pieces together. For this edition, I would like to thank Sr. Product Team Manager, Joe Sabatino; Project Manager, Julie Dierig; and Content Developer, Erica Longenbach, MPS. Anne Piotrowski created the PowerPoint slides. Her willingness to work through various styles and possible presentations greatly enhanced the final product.

CHAPTER 1

An Introduction to Basic Finance

"Princes come and princes go." This quote from the musical *Kismet* is exceptionally apropos of finance. Yesterday's success may be today's failure. Bear Stearns, WorldCom, and Enron were major success stories, but thanks to questionable accounting and even illegal acts, they reported huge losses and filed for bankruptcy. Today, Amazon, eBay, and Alphabet Inc. (Google) are major success stories. Will they experience the same fate as WorldCom and Enron?

Finance studies money and its management. Like economics, it explores the allocation of resources. The process of resource allocation occurs over time. Firms invest in inventory, plant, and equipment, but the returns are earned in the future. An investor constructs a portfolio of assets, but the return is earned in the future. A commercial bank grants a loan in anticipation of earning interest and having the principal repaid. In each case the financial decision is made in the present but the return is in the future.

Because the future is unknown, finance studies the allocation of resources in a world of uncertainty. Of course, future events are anticipated, but they are not certain. Not every possible outcome that may affect returns can be anticipated. Unexpected events infuse financial decisions with uncertainty and the potential risk of loss. Investors, portfolio managers, and corporate financial managers may take actions to help manage risk, but risk still exists and is a major component in the study of finance.

1.1 The Divisions of Finance

Finance as a discipline is generally divided into three areas: financial institutions, investments, and business finance. The divisions are somewhat arbitrary, and they certainly overlap. Investment decisions and corporate financing decisions are made within the current financial environment and its institutions. And business finance is not independent of investments. For a firm to be able to issue and sell new securities, there must be individuals who are willing to invest in and buy the new securities.

The study of financial institutions, as the name implies, is concerned with the institutional aspects of the discipline, which encompass the creation of financial assets, the markets for trading securities (for example, the New York Stock Exchange), and the regulation of financial markets. Financial assets are created through investment bankers and financial intermediaries, such as commercial banks, savings and loan associations, and life insurance companies. Each of these financial firms transfers the savings of individuals to firms needing funds, and this transfer produces financial assets. Once these financial assets are created, many may subsequently be bought and sold in the secondary markets. These securities markets transfer billions of dollars of financial assets among investors ranging from individuals with small amounts to invest to large mutual funds and trust departments in commercial banks and insurance companies.

The study of investments is primarily concerned with the analysis of individual assets and the construction of well-diversified portfolios. It encompasses financial planning, specifying the investor's financial goals, analyzing various securities that the individual may acquire, and constructing diversified portfolios. Of course, investment decisions are not made in a vacuum, and the financial environment plays a role in the investment decision process. Certainly taxation, the monetary policy of the Federal Reserve, and the flow of information that publicly held firms are required to provide stockholders can and do affect the decision to buy or sell specific assets.

The study of corporate or business finance emphasizes the role of the financial manager. The financial manager must make certain that the firm can meet its obligations as they come due, determine which are the best sources of financing for the firm, and allocate the firm's resources among competing investment alternatives. The financial manager has a large and demanding job; in a large corporation, this job is performed by a staff that reports to the chief financial officer (CFO). Of course, the management of a small business must also make many of the same decisions, but these individuals have fewer resources to devote to financial management.

Financial managers and investors make similar decisions, although on a different scale. While the individual may have a few thousand dollars to invest, the corporate treasurer may have millions to allocate among competing assets. The financial manager may also make more decisions involving real assets (plant and equipment) than the individual investor, who is primarily concerned with financial assets. Both, however, are affected by the financial environment. The Federal Reserve's monetary policy, the federal government's fiscal policy, the legal requirements for the dissemination of information, and fiduciary responsibilities to creditors and stockholders affect financial decision making. Neither the firm's financial manager nor the individual investor can ignore the potential impact of the financial and legal environment.

While individual investors may work alone for their personal benefit, a firm's financial manager must work within the framework of the business. Marketing and

managing decisions can have important implications for the firm's financial well-being. Virtually every business decision has a financial implication, and financial resources are often a major constraint on the firm's nonfinancial personnel. It is certainly desirable for individuals in marketing, human resources, information systems, and planning to understand the basic concepts of finance and the role of the financial manager. Such understanding may lead to better communication, the creation of better data for decision making, and better integration of the various components of the business.

1.2 Key Financial Concepts

Several crucial concepts appear throughout this text. The first is the sources of funds used by a firm. Firms can acquire assets only if someone puts up the funds. For every dollar the firm invests, someone must invest that dollar in the firm. The second concept centers around risk and return. Individuals and firms make investments to earn a return, but that return is not certain. All investments involve risk. The third concept is financial leverage, which is an important source of risk. The last concept is valuation, or what an asset is worth. Because the return earned by an investment occurs in the future, the anticipated cash flow to be generated by the asset must be expressed in the present. That is, the asset must be valued in today's dollars in order to determine whether to make the investment. Because the goal of financial management is often specified as the maximization of the value of the firm, the valuation of assets is probably the most crucial individual concept covered in this text.

Balance sheet
Financial statement that enumerates (as of a point in time) what an economic unit owns and owes and its net worth

Assets
Items or property owned by a firm, household, or government and valued in monetary terms

Liabilities
What an economic unit owes expressed in monetary terms

Equity
Owners' investment in a firm; a firm's book value or net worth

1.2a Sources of Finance

Finance is concerned with the management of assets, especially financial assets, and the sources of finance used to acquire the assets. These sources and the assets that a firm owns are often summarized in a financial statement called a **balance sheet**. (Notice that important terms are in **boldface** and the definitions appear in the margin to facilitate learning. The terms and their definitions that appear in this chapter illustrate the presentation. Each reappears in its proper place in the text.) A balance sheet enumerates at a moment in time what an economic unit, such as a firm, owns, its **assets**; what it owes, its **liabilities**; and the owners' contributions to the firm, the **equity**.

Other economic units, such as a household or a government, may also have a balance sheet that lists what is owned (assets) and what is owed (liabilities). However, since there are no owners, the equity section may be given a different name. For example, the difference between the assets and the liabilities might be referred to as the individual's "net worth," or estate.

Although the construction of financial statements is explained in more detail in Chapter 9, the following balance sheet provides an introduction.

Corporation X Balance Sheet as of December 31, 20XX			
Assets		**Liabilities and Equity**	
Total assets	$100	Liabilities	$ 40
		Equity	60
	$100		$100

Corporation X has $100 in assets. It could not have acquired the assets unless someone (or some other firm such as a bank) put up the funds. In this example, creditors have put up $40 (the liabilities). The word *credit* is derived from the Latin word *credo*, which means "I believe," so the creditors believe that the borrower will pay the interest and repay the principal at some future date. The equity ($60) represents the funds invested by the owners (stockholders), who also have a claim on the corporation. The nature of the owners' claim, however, is different because the corporation does not owe them anything. Instead, the owners receive the benefits and bear the risks associated with controlling the corporation.

Both the creditors who have lent funds and the individuals who own the corporation are investors. Both groups are sources of the capital that will subsequently be invested in the corporation's assets. It is important to realize that creditors as well as owners are investors; the difference lies in the nature of their respective claims. The creditors have a legal claim that the borrower must meet; the owners do not have such a claim. The creditors and the owners, however, are both willing to make their respective investments in anticipation of earning a return, and both bear the risk associated with their investments.

A large part of this text is devoted to the sources of finance and their subsequent investment by the firm's financial managers. For example, Chapters 22 and 25 are devoted to the management of current and long-term assets, while Chapters 10, 12, 14, and 26 consider various sources of finance. It is important to understand the interdependence between the firm that uses the funds and the investors who supply the funds. Bonds, for example, are a major source of long-term funds for many corporations, but it should be remembered that investors buy the bonds that a corporation (or government) issues. The sale of the bonds is a source of finance to the corporation, while the purchase of the bonds is a use of investors' funds. The basic features of the bonds, however, are the same for both the issuer and the buyer.

1.2b Risk and Return

Return
What is earned on an investment; the sum of income and capital gains generated by an investment

All investments are made because the individual or management anticipates earning a **return**. Without the expectation of a return, an asset would not be acquired. While assets may generate this return in different ways, the sources of return are the income generated and/or price appreciation. For example, you may buy stock in anticipation of dividend income and/or capital gains (price appreciation). Another investor may place funds in a savings account because he or she expects to earn interest income. The financial manager of a firm may invest in equipment in anticipation that the equipment will generate cash flow and profits. A real estate investor may acquire land to develop it and sell the properties at an anticipated higher price. And the financial manager of a nonprofit institution may acquire short-term securities issued by the federal government in anticipation of the interest earned.

Risk
Possibility of loss; the uncertainty that the anticipated return will not be achieved

In each case, the investment is made in anticipation of a return in the future. However, the expected return may not be attained. That is the element of risk. **Risk** is the *uncertainty that an expected return may not be achieved*. All investments involve some elements of risk. Even the funds deposited in a federally insured savings account are at risk if the rate of inflation exceeds the interest rate earned. In that case, the investor sustains a loss of purchasing power. The individual certainly would not have made that investment if such a loss had been anticipated; instead, an alternative course of action would have been selected.

Because financial decisions are made in the present but the results occur in the future, risk permeates financial decision making. The future is not certain; it is only

expected. However, possible sources of risk can be identified, and, to some extent, risk can be managed. One way to manage risk is to construct a portfolio consisting of a variety of assets. When the portfolio is diversified, events that reduce the return on a particular asset may increase the return on another. For example, higher oil prices may benefit oil drilling operations but may hurt users of petroleum products. By combining both in the portfolio, the investor reduces the risk associated with investing in either the oil producer or the oil consumer.

Because risk is an integral part of financial decision making, it appears throughout this text. All investors and financial managers want to earn a return that is commensurate with the amount of risk taken. An investor may be able to achieve a modest return and bear virtually no risk. A federally insured savings account with a commercial bank that pays 2.5 percent is virtually risk free and will be referred to in subsequent chapters as risk-free investment. But to earn a higher return, the individual investor or the firm's management will have to accept additional risk.

1.2c Financial Leverage

One major source of risk that permeates financial decision making is the choice between equity and debt financing. You may acquire an asset by using your own funds or by borrowing them. The same choices are available to firms and governments. A corporation may retain earnings or sell new stock and use the funds to acquire assets. Or the firm may borrow the money. Governments use tax revenues and receipts to buy assets and provide services, but governments also may borrow funds. In each case, the borrower is using **financial leverage**. Financial leverage occurs when you borrow funds in return for agreeing to pay fixed payments such as interest and repay the principal after a period of time. If you can earn a higher return than you have agreed to pay, the difference accrues to you, the borrower, and magnifies the return on your investment. Notice, however, that if you earn a lower return, you have to make up the difference, which magnifies your loss. You cannot have it both ways. To increase the potential return, you also increase the potential loss. This trade-off between magnifying returns versus magnifying potential losses occurs frequently in the chapters that follow.

Financial leverage
Use of borrowed funds in return for agreeing to pay a fixed return; use of debt financing

1.2d Valuation

Assets are acquired in the present, but their returns accrue in the future. No individual or firm would purchase an asset unless there was an expected return to compensate for the risk. Since the return is earned in the uncertain future, there has to be a way to express the future in terms of the present. The process of determining what an asset is currently worth is called **valuation**. An asset's value is the present value of the future benefits. For example, the current value of a federal government bond is the sum of the present value of the expected interest payments and the expected repayment of the principal. The current value of equipment is the present value of the expected cash flows it will generate.

Valuation
Process of determining what an asset is currently worth

The determination of present value is one of the most important topics developed in this text. It requires estimates of future cash flows and measurements of what the funds invested in the asset could earn in alternative, competitive investments. The mechanics of determining present value (as well as determining future value) are covered in Chapter 7. Understanding this material is crucial to understanding much of the material covered in this text.

A firm is a combination of many assets and, therefore, its value must be related to the value of the assets it owns. The value of these assets, in turn, depends on the returns they will generate in the future. In finance, the goal of the financial manager is to *maximize the value of the firm*. Schering-Plough even titled one of its annual reports "Maximizing Shareholder Value." All financial decisions are judged by their impact on the value of the firm. Did the decision increase or reduce the present value of the firm?

This value may be readily measured if the firm has shares of ownership (stock) held by the general public. The market price of the stock is indicative of the value of the company. Because the value of the firm is the sum of the value of its shares, the market value of a share of stock times the number of shares gives the value of the company. For example, as of 2017, Capital One Financial had 482,000,000 shares outstanding. At a price of $89 a share, that made the value of the firm's equity $42,898,000,000.

Although security prices are subject to fluctuations, firms that have consistently grown and prospered have seen the price of the stock, and hence the value of the company, increase. In 1996, the value of Capital One Financial was $2,319,600,000; the value of Capital One thus rose $40.5 billion from 1996 to 2017. This suggests that management made decisions that increased the value of the company. Over time, the price of a company's stock is indicative of management performance.

Smaller firms or firms whose stock is not owned by the general public—by far the largest number of firms in existence—do not have market prices for their stock. Hence, owners and managers may not be able to ascertain the value of the firm. In these cases, the value is determined only when the firm is liquidated or sold (at that time, the value of the firm is the liquidation value or sale price). Since such liquidation or sale generally occurs only once, the owners and managers do not know the true value of the firm. They may use the value of the firm's equity as shown on the accounting statements as some indication of the firm's worth, but management cannot be certain of the firm's true value.

1.3 Assumptions

Financial analysis is built on assumptions. Consider the following illustration. Every year you contribute $1,000 to your retirement account. If you earn 4 percent annually, how much will be in the account after ten years? The answer to the question depends on the following assumptions. (1) You make the $1,000 contribution each year, not more and not less; (2) you make the contributions for ten years; and (3) you earn 4 percent every year for the ten years. There is also another assumption that is not stated but must be made in order to answer the question. Are the $1,000 contributions made at the beginning of the year or at the end of each year? If you assume they are made at the beginning of the year, you collect interest for ten years. If you make the payments at the end of each year, you collect interest for only nine years. Obviously the final amount will depend on the timing of the contributions.

Throughout this text, assumptions have to be made to illustrate the concepts. In some cases, the wording implies an assumption. For example, investors *anticipate* or *expect* a return of XX percent. In other cases historical data or current data are assumed to apply in the future. For example, annual historical stock returns were YY percent. The analysis then *assumes* the historical return will apply to future returns. Obviously the results will depend on the validity of the assumption. The results of financial models and applications of financial theory can be only as good as the accuracy of the assumptions used to complete the analysis.

1.4 Finance and Other Business Disciplines

Although finance is a separate academic discipline, its roots are in accounting and economics. Several years ago, the first finance courses tended to emphasize the analysis of financial statements and legal topics, such as the order of legal claims. Although this emphasis has diminished, accounting principles and financial statements continue to be a major source of information, and the analysis of financial statements is an integral component in the value approach to the selection of securities.

With the development of theories of portfolio behavior and asset valuation, economics began to play a more important role in finance. Theories based on economic principles encompassing corporate financial structure, the importance (or unimportance) of dividends, and option valuation became the backbone of finance and, in many cases, supplanted accounting's role. The development of empirical tools further augmented financial analysis, as statistics became a means to verify economic theory as it applies to finance. The ability to test economic and financial hypotheses further enriched the field of finance.

Although finance uses economic theory and accounting principles and financial statements, it has developed its own body of material. Finance courses, however, are generally offered as part of a program in business. Other academic disciplines within business may include information systems, human resource management, and marketing as well as accounting and economics. Finance, however, differs from these areas in one exceedingly important way. It can be studied from two perspectives: that of the users or that of the suppliers of funds.

This ability to approach finance from more than one perspective is important. Consider human resource management or marketing. In both of these disciplines (and in accounting or information systems or strategic planning), the emphasis is on the business. The individual area may have many subdivisions, but the emphasis is how each division fits into the business and its operations. The emphasis is not from an individual's perspective.

Finance may also be studied from a business perspective, which is exactly what occurs in corporate finance or financial management courses. Finance, however, may be studied from the investor's perspective. While corporate finance emphasizes raising funds and their subsequent allocation, investments emphasizes the construction of diversified portfolios and the allocation of wealth among competing securities. Of course, these two perspectives are often opposite sides of the same coin. The firm issues securities (for example, bonds or stock) to raise funds. Investors buy these securities to earn a return and diversify their portfolios. In either case, it is the same security.

The tools of analysis used in corporate finance and investments are also the same. A firm's financial statements are employed by both management and investors to analyze the firm's financial condition. Methods used to value and evaluate an investment in plant and equipment are conceptually the same as those used to value stocks and bonds. The calculations of returns on investments in stocks and bonds are the same as the calculations used to determine the returns on investments in plant, equipment, and other real (tangible) assets. The tax and legal environments and the financial institutions in which securities are initially sold and subsequently traded apply both to businesses and to individuals.

Although finance can have more than one perspective, the material as presented in an introductory finance course often emphasizes one side. Many traditional introductory finance courses stress corporate finance or financial management with a corporate emphasis. This approach makes the course more consistent with other classes

taught in a business program. It also facilitates tying together marketing, human resource management, information management, and the various other areas of a business education.

1.5 Plan of the Text

This text is a basic introduction to the three areas of finance: financial institutions, investments, and business finance. Part 1 is devoted to financial institutions and the process by which savings are transferred into investments. Chapter 1 introduces this process and Chapter 2 covers financial markets and intermediaries. Chapter 3 considers the direct transfer, that is, the creation and initial sale of securities to the general public through investment bankers. The next chapter (Chapter 4) covers the subsequent trading in stocks and bonds in the securities markets. Chapters 5 and 6 add the impact of the Federal Reserve on the money supply and credit markets (Chapter 5), and international flows of funds (Chapter 6).

Part 2 is devoted to three important tools used in investment decision making and corporate finance. Most financial decisions involve time. An investment is made in the present but the return is earned in the future. Standardizing for time is achieved by expressing the present in terms of the future or the future in terms of the present. Every student using this text needs to read carefully and understand the material in Chapter 7, "The Time Value of Money." If you do not comprehend the time value of money, much of the remaining text will have little meaning.

All investments involve risk. Chapter 8 examines the sources of risk, the measurement of risk, and the importance of diversification. As with the time value of money, the measurement of risk and risk management are difficult topics. While Chapter 8 is primarily descriptive, it does cover statistical measures of risk. Even if your background in statistics is weak, simple illustrations are provided so that you should be able to grasp the concepts. The last chapter in Part 2 covers the analysis of financial statements. Chapter 9 is a long chapter because it reviews financial statements and then illustrates the calculation of various ratios used to analyze financial statements. If you already know the analysis of financial statements, you may move forward to Part 3, which is devoted to specific financial assets.

Chapters 10 and 11 cover common stock. The first is descriptive and the second applies valuation techniques. This order is repeated in Chapters 12 and 13, which are devoted to bonds and their valuation. Chapters 14 and 15 explain preferred stock and convertible bonds, which are hybrid securities that include features of equity and debt. Chapter 16 illustrates the calculation of returns and provides historical returns that have been earned on various securities. After completing Chapters 10 through 16, you may decide to delegate investment decisions to someone else. Chapter 17 covers the variety of investment companies that relieve you of having to select specific securities. However, it remains your responsibility to select specific investment companies.

Part 4 is devoted to business finance with emphasis on corporate finance. Chapter 18 reviews the forms of business and corporate taxation, and Chapter 19 describes two simple techniques used to make investment decisions: breakeven analysis and the payback period. Chapter 20 explains leverage as it applies to business: the leverage associated with the nature of the firm's operations and the leverage associated with management's financing decisions. Financing decisions raise the question of the firm's optimal combination of debt and equity financing or optimal capital structure (Chapter 21). The cost of capital associated with the optimal capital structure is then

used in Chapter 22 on capital budgeting, which is the process of selecting long-term investments in plant and equipment. Chapters 21 and 22 (the determination of a firm's optimal capital structure and its use in capital budgeting) are among the most important in this text.

Chapters 23 and 24 consider forecasting techniques. Chapter 23 is devoted to the percent of sales and the use of regression analysis to forecast a firm's need for funding, and Chapter 24 covers the cash budget, which helps determine when the firm will need external finance. Chapters 25 and 26 treat the firm's working capital and the management of its current assets and current liabilities. The last chapter of Part 4 (Chapter 27) adds intermediate-term debt financing and leasing to the financial manager's choices of external funding.

The text ends (Part 5) with an introduction to derivatives: options to buy and sell securities (Chapter 28) followed by swap agreements and futures contracts for the future delivery of commodities and financial assets (Chapter 29). Derivatives are used to speculate on anticipated price changes or to hedge to reduce the risk of loss from fluctuations in prices and interest rates. You may find derivatives the most interesting and exciting topic covered in this introduction to basic finance. They are, however, complex, so these two chapters can only scratch the surface, but they can lay a foundation on which you may build. If you continue to study finance, you will quickly realize that the use of derivatives permeates finance.

PART

1

Financial Institutions

My bank has assets in excess of $10 billion. My checking account may have $1,000 in it. I account for about 0.00001 percent of my bank's sources of funds. Just think how many depositors my bank must have in order to generate the money it has lent.

I own 400 shares of VF Corporation. At $51.33 a share (January 2017), that is $20,532. Although $20,532 is sufficient to buy any of a number of consumer goods, it is a very small fraction of the total value of all VF Corporation shares. The firm has 425,400,000 shares outstanding for a total value of $21,837,782,000. My holdings are obviously a minute portion of the total.

Recently my family vacationed in Canada. We spent over $5,000 outside the United States, which added to the nation's deficit in its merchandise balance of trade. The amount we spent was small, however, when compared to the federal government's foreign aid programs or military spending abroad, which also contributed to the deficit in the balance of trade.

Hardly a day goes by that I do not have contact with a financial institution. The same is true for most individuals. They make deposits and withdrawals from depository institutions, buy and sell shares of stock in corporations and mutual funds, make contributions to pension plans, pay taxes, buy imported goods, and borrow funds from a variety of sources. Each of these acts involves contact with a financial institution.

The first part of this text discusses the financial environment and institutions with which we have so much contact. Some of these financial institutions facilitate the transfer of funds from lenders to borrowers (such as commercial banks), while others facilitate the exchange of securities from sellers to buyers (for example, the stock exchanges). Other financial institutions affect the level of income and the stability of consumer prices (such as the Federal Reserve), and yet another financial institution, the market for foreign currency, makes possible the exchange of foreign goods and services. The participants in these markets for financial products and services range from the large corporate giants and the federal government to the small corner store and the individual saver. Everyone reading this text is touched by these financial institutions, and increasing your knowledge of them by learning the material in Part 1 can help you better function in today's financial environment.

CHAPTER 2

The Role of Financial Markets and Financial Intermediaries

In *Hamlet*, Polonius gave Laertes the advice to "neither a borrower nor a lender be." Participants in financial markets and financial intermediaries violate both parts of that advice. Financial intermediaries borrow from one group and lend to another, a process that channels resources into productive investments. Consider how firms would be constrained if they could not borrow funds to purchase plant and equipment or how individuals would be prevented from purchasing homes by borrowing funds through mortgage loans. This transfer of savings through financial intermediaries—from individuals with funds to firms, governments, and other individuals who need funds—is one crucial component of the financial system.

Financial markets perform two exceedingly important functions. Like financial intermediaries, financial markets facilitate the transfer of funds from savers to firms, governments, and individuals who use the funds. Financial markets, however, also facilitate the transfer of existing securities from sellers to buyers. You and I are willing to make investments because we know these investments may be subsequently sold through the financial markets.

This chapter sets the framework for the remaining chapters in this text. It begins with the roles of money and interest rates. This is followed by transfer of savings to investments and the purpose of financial intermediaries through which these savings are channeled to the ultimate users of the funds. (The process of transferring funds through investment banking and the "secondary" markets in existing securities is covered in Chapters 3 and 4.) In terms of the amount of outstanding loans, commercial banks are the most important financial intermediary. Commercial banks, however, must compete with other intermediaries such as thrift institutions, life insurance companies, and money market mutual funds for the funds of savers. Attracting these savings is obviously important, since the individual intermediary can lend only what savers have lent it.

The bulk of this chapter provides a basic introduction to financial intermediaries. Emphasis is placed on commercial banks, their sources of funds, the types of loans they make, and regulation of the banking system. The subsequent sections consider life insurance companies and pension plans. And the chapter ends with money market mutual funds and money market instruments. Money market mutual funds offer individuals an alternative to the checking accounts, savings accounts, and savings certificates issued by banks and thrift institutions.

By acquiring shares in money market mutual funds, individuals are able to invest indirectly in a variety of short-term securities. Since these securities are usually issued in large denominations, most investors have insufficient funds to purchase them. By selling shares in small units, money market mutual funds permit individuals to participate in the market for money market securities. Since money market mutual funds tend to offer marginally higher yields than traditional savings accounts, shares in these funds have become a major competitor with other financial intermediaries for individuals' savings.

2.1 The Role of Money

Money
Anything that is generally accepted as a means of payment

Money is anything that is generally accepted in payment for goods and services or for the retirement of debt. This definition has several important words, especially *anything* and *generally accepted*. Anything may perform the role of money, and many different items, including shells, stones, and metals, have served as money. During the history of this country, a variety of coins and paper moneys have been used. The other important words are *generally accepted*. What serves as money in one place may not be money elsewhere. This fact is readily understood by anyone who travels abroad and must convert one currency to another. The paper that serves as money in Great Britain, called pounds, is not used as money in Paris, where European euros are used. A British traveler must convert pounds into euros to buy goods in Paris.

Money may also be used to transfer purchasing power to the future. In this second role, money acts as a store of value from one time period to another. Money, however, is only one of many assets that may be used as a store of value. Stocks, bonds, savings accounts, savings bonds, real estate, gold, and collectibles are some of the various assets that you may use to store value.

Liquidity
Ease of converting an asset into cash without loss; the depth of a financial market

While you may store value in these nonmonetary assets, you cannot buy goods and services with them. To do that, you must convert the assets into money. The ease with which an asset may be converted into money is its **liquidity**. Unfortunately, the word *liquidity* is ambiguous. In some contexts it means ease of converting an asset into cash without loss. A savings account with a commercial bank is liquid, but shares of IBM would not be liquid, since you could sustain a loss. In other contexts, liquidity means ability to sell an asset without affecting its price. In that context, liquidity refers to the depth of the market for the asset. You may be able to buy or sell thousands of shares of IBM stock without affecting its price, in

which case the stock is liquid. The context in which the word is used often indicates the specific meaning.

The power to create money is given by the Constitution to the federal government. Congress established a central bank, the Federal Reserve System, and gave it power to control the supply of money and to oversee the commercial banking system. Initially it was not the intent of Congress to create a central bank, for the Federal Reserve Act of 1913 established 12 district banks. The Federal Reserve was reorganized by the Banking Acts of 1933 and 1935 to become the central bank known today. Although the Federal Reserve has control over the supply of money, most of the money supply is produced through the creation of loans by the banking system. (The Federal Reserve and the process of loan creation are explained in Chapter 5.)

2.1a Measures of the Supply of Money

Money supply
Total amount of money in circulation

M-1
Sum of coins, currency, and demand deposits

M-2
Sum of coins, currency, demand deposits, savings accounts, and small certificates of deposit

There are several measures of the composition of the **money supply**. The traditional measure (commonly referred to as **M-1**) is the sum of coins and currency in circulation outside of banks plus demand deposits (including interest-bearing checking accounts and travelers' checks) held by the general public in all depository institutions. A broader definition of the supply of money (commonly referred to as **M-2**) includes not only demand deposits, coins, and currency but also regular savings accounts and small certificates of deposit (less than $100,000). The actual amount of money outstanding depends on which definition is used. As of January 2017, the Federal Reserve reported that M-1 and M-2 were:

	M-1	M-2
Coins and currency	$1,421.5	$ 1,421.5
Demand deposits	1,338.3	1138.3
Other checkable deposits (e.g., NOW accounts)*	555.7	555.7
Travelers' checks	2.1	2.1
Savings accounts and time deposits	—	9,238.9
	$3,317.6	$12,556.5

*NOW stands for "negotiable order of withdrawal."

Source: Summary monetary statistics are available in the Federal Reserve Bulletin. Detailed data are available at the Federal Reserve's website **www.federalreserve.gov**.

As may be seen in the preceding data, savings accounts constitute about 74 percent of the money supply when the broader definition (M-2) is used. This broader definition of the money supply is preferred by those economists and financial analysts who stress the ease with which individuals may transfer funds among the components of M-2. Individuals may transfer funds from a savings account or time deposit into a checking account. Such a movement increases M-1 because demand deposits have risen, but the transaction has no impact on M-2 because the increase in demand deposits is offset by the decline in the other account.

In summary, money is crucial to an advanced economy, for it facilitates the transfer of goods and resources. An advanced economy could not exist without something to perform the role of money. Since a large proportion of the money supply consists of deposits in various depository institutions, the student of finance should understand financial markets, the banking system, and their regulation.

2.2 The Role of Interest Rates

The words *money* and *interest* are often used together, but their meanings differ and they perform different roles. Money is a medium of exchange; its value is related to what it will purchase. Interest is the cost of credit; it is the price paid for the use of someone else's money.

The cost of credit is often expressed as a percentage, that is, the *rate* of interest. Interest rates help allocate scarce credit among competing uses for the funds. Higher interest rates increase the cost of credit and should discourage borrowing, so that the scarce credit is directed toward its best usage.

As is discussed throughout this text, there are many types of loans (such as mortgage loans, trade credit, and bonds). In addition to many debt instruments, there are also many interest rates that reflect the amount borrowed, the length of time the borrower will have the use of the funds, and the creditworthiness of the borrower. Generally, the longer the term of the debt and the riskier (or less creditworthy) the debt instrument, the higher will be the rate of interest.

Debt, and hence interest rates, is often classified as short or long term. The time period is arbitrarily established at one year. *Short-term* refers to a year or less. *Long-term* refers to greater than a year. (Debt that matures in one to ten years is sometimes referred to as intermediate term.) Of course, with the passage of time, long-term debt instruments become short-term when they mature within a year.

Financial markets have an analogous classification. The "money market" refers to the market for low-risk, large-denomination debt instruments that mature within a year. The "capital market" refers to securities with a longer-term horizon. In the case of a bond or mortgage loan, the term may be 10, 20, or more years. In some cases, such as common stock, the time dimension is indefinite. A corporation may exist for centuries. Many of the nation's banks, such as Citicorp, were started in the 1700s or early 1800s. Industrial firms such as AT&T, Coca-Cola, and ExxonMobil commenced operations in the 1800s.

2.2a The Term Structure of Interest Rates

Term structure of interest rates
Relationship between yields and the time to maturity for debt with a given level of risk

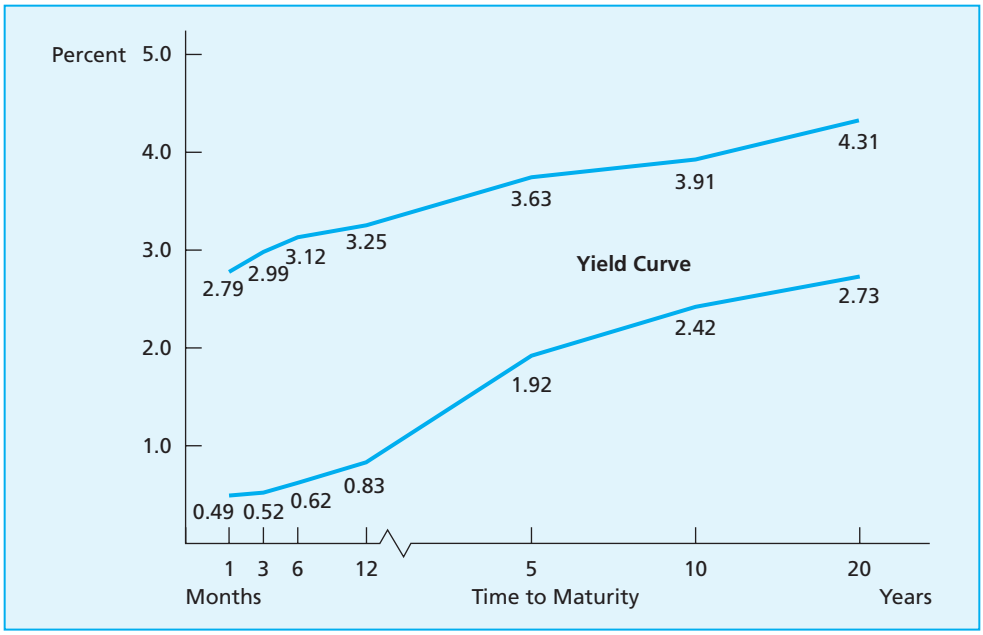
Yield curve
Graph relating interest rates and the term to maturity

The relationship between interest rates (the cost of credit) and the length of time to maturity (the term) for debt in a given risk class is referred to as the **term structure of interest rates**. This structure is illustrated by a **yield curve**, which relates the yield on debt instruments with different terms to maturity. Such a yield curve is illustrated in Figure 2.1, which plots the yield on various U.S. government securities as of 2005 and 2017. This figure shows that the bonds with the longest term to maturity have the highest interest rates. For example, short-term securities with three months to maturity had yields of 2.99 percent in 2005, five-year bonds paid 3.63 percent, and bonds that matured after 20 years paid 4.31 percent.

The figure also illustrates the substantial decline in interest rates after the financial crisis during the late 2000s. While bonds with 30 years to maturity yielded over 4.3 percent in 2005, the yield had declined to 2.7 percent in 2017. The decline in short-term rates was even more dramatic. The yield on the one-year security fell from over 3 percent to only 0.83 percent, and the yields on the one-month, three-month, and six-month securities were virtually nonexistent.

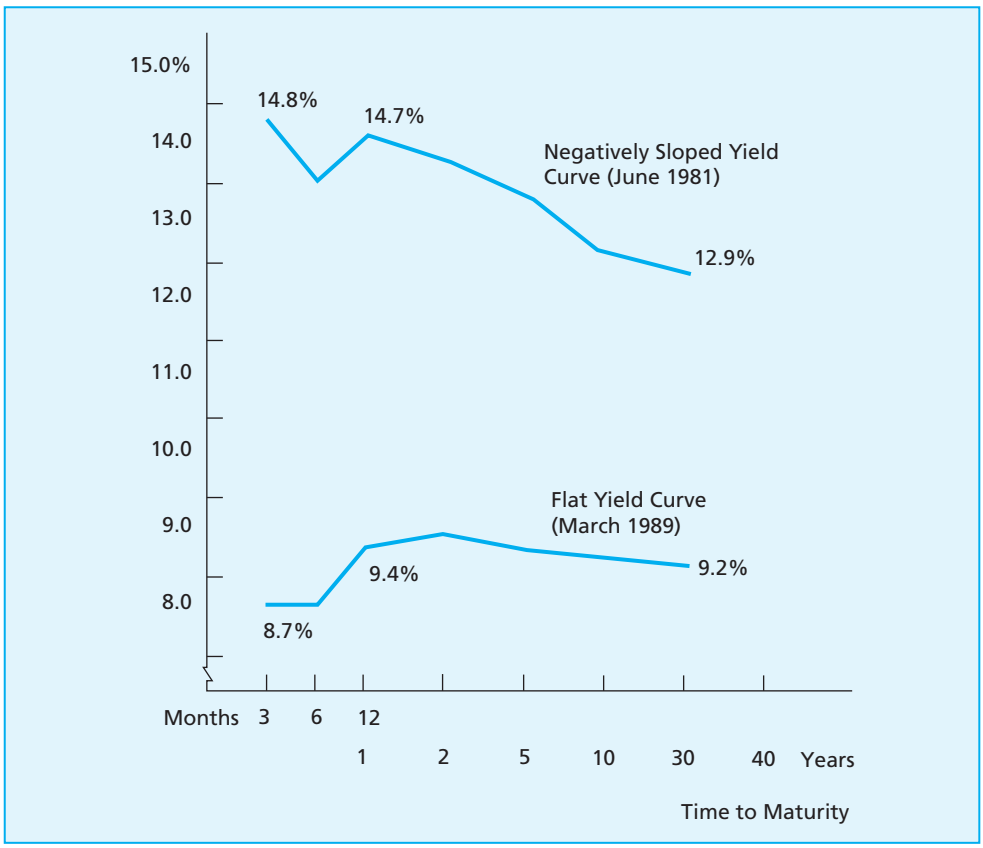
Figure 2.1 also illustrates that generally the relationship between yields (interest rates) and time is positive. There have been periods when the opposite occurred. During 1981, short-term rates exceeded long-term rates; the yield curve became inverted and had a negative slope. This is illustrated in Figure 2.2. Securities maturing in less

FIGURE 2.1
Positively Sloped Yield Curve (June 2005 and January 2017)



Source: Federal Reserve data on yields available at **www.federalreserve.gov**.

FIGURE 2.2
Yield Curves (Yields on Federal Government Securities)



Source: Data on yields derived from the Federal Reserve at **www.federalreserve.gov**.

than a year had yields exceeding 14 percent, while long-term debt that matured after ten years yielded 13 percent.

Such a yield curve can be explained by inflation and the action of the Federal Reserve to curb rising prices. As is explained in Chapter 5, the Federal Reserve fights inflation by selling short-term federal government debt securities. Such sales absorb credit by reducing the supply of money and the capacity of banks to lend because paying the Federal Reserve for the securities pulls money out of the banking system.

The sales depress securities prices and increase their yields. While the yields on all debt instruments respond to changes in the supply of credit, the Federal Reserve's selling of short-term securities has the most impact on short-term rates. In the illustration in Figure 2.2, short-term yields rose above long-term rates, resulting in an "inverted" yield curve. When the rate of inflation abated, the yield curve returned to the positive slope that it has maintained during most periods.

There have also been periods when the yield curve was relatively flat. Such a structure is also illustrated in Figure 2.2 by the yield curve for March 1989. The yield on short-term debt with three to six months to maturity was approximately 8.7 percent, and the rate on 30-year bonds was 9.2 percent. While the long-term rate did exceed the short-term rate, the small difference produced a gently rising, almost flat, yield curve.

2.3 Financial Markets and the Transfer of Savings

After working and earning income, my Auntie Bea's advice was to "spend a little, give a little, and save a little." Each year I take that advice. After I decide not to spend and to save, I have to make an additional decision: what to do with my savings. Should I put the funds in a bank or buy stock or shares in a mutual fund? I'm not going to let the funds sit idle. I want to put them to productive use to earn a return.

This process is not limited to individuals. Firms also have savings. Earnings that are not distributed and retained are saved, and management will have to decide what to do with the savings. Perhaps the funds will be used for investments in plant and equipment and other productive assets. Management could also invest the funds in financial assets for short periods of time prior to the acquisition of assets such as plant and equipment. The financial managers of governments go through the same thought process. The government collects tax revenues but does not necessarily spend the funds immediately. The funds may be placed in short-term investments to earn a return. The same principles apply to nonprofit organizations such as charitable foundations. In each case, the current savings are invested to earn a return.

When I spend my income, the funds are returned to the economy, and presumably they are returned when I give to charities. Savings are not spent; they represent a command over resources that I am not using. How are these funds returned to the economy? The answer revolves around the role of financial markets. Financial markets are the mechanism to transfer these savings to productive uses. The process of transferring savings into investments is a primary, perhaps the most important, function of the financial system. The process of transferring savings into investments leads to the creation of financial claims such as stock and debt instruments such as bonds. These securities are issued to tap the various sources of savings.

Two basic methods exist for transferring funds from savers to users. First is the direct investment. This transfer occurs when you start your own business and invest your savings in the operation. A direct transfer also occurs when securities are initially sold to investors in the "primary" market. Firms and governments issue

securities, which may be sold directly to the general public through investment bankers. (The process of issuing and selling securities through investment bankers is covered in Chapter 3.)

Once the securities are created, they may be subsequently bought and sold ("traded"). A second important purpose of financial markets is the creation of markets in *existing* securities. These "secondary" markets, however, do not transfer funds to the users of funds; they transfer ownership of securities among various investors. Sellers trade their securities for cash, and buyers trade cash for the securities. (Secondary markets are not limited to financial assets. The markets for land or antiques are secondary markets. No new assets are created; there is only the transfer of ownership of an existing asset.) Trading in existing securities through secondary markets such as the New York Stock Exchange receives substantial coverage in the financial press and is covered in Chapter 4.

2.4 The Indirect Transfer Through Financial Intermediaries

When new securities are issued, funds are directly transferred from savers to firms. While the ultimate effect is the same, the transfer through financial intermediaries is less direct. The funds are initially lent to the intermediary, and the intermediary subsequently lends the funds to the ultimate users. To obtain the funds, the financial intermediaries create *claims on themselves*. This creation of claims is an important distinction. An investment banker facilitates an initial sale; securities brokers and secondary markets facilitate subsequent sales. Investment bankers, brokers, and securities exchanges do not create claims on themselves. They are not financial intermediaries but rather function as middlemen who facilitate the buying and selling of new and existing securities.

When a saver deposits funds in a financial intermediary such as a bank, that individual receives a claim on the bank (the account) and not on the firm (or individual or government) to whom the bank lends the funds. If the saver had lent the funds directly to the ultimate users and they failed, the saver would sustain a loss. This loss may not occur if the saver lends the money to a financial intermediary. If a financial intermediary makes a bad loan, the saver does not sustain the loss unless the financial intermediary fails. Even then the saver may not sustain a loss if the deposits are insured. The combination of the intermediary's diversified portfolio of loans and the insurance of deposits has made financial intermediaries a primary haven for the savings of many risk-averse investors. (Diversification is an important topic in finance and is covered at length in Chapter 8 on the analysis of risk.)

To tap these savings, a variety of intermediaries has evolved. These include commercial banks, thrift institutions (savings and loan associations, mutual savings banks, and credit unions), and life insurance companies. Many savers are probably not aware of the differences among these financial intermediaries. They offer similar services and pay virtually the same rate of interest on deposits.

This blurring of the distinctions among the various financial intermediaries is the result of changes in the regulatory environment. Under the Depository Institutions Deregulation and Monetary Control Act of 1980 (more commonly referred to as the Monetary Control Act of 1980), all depository institutions (commercial banks, savings and loan associations, mutual savings banks, and credit unions) became subject to the regulation of the Federal Reserve. The Federal Reserve's powers extend to the types of accounts these institutions may offer and the amount that the various depository institutions must hold in reserve against their deposits.

Although the Federal Reserve has supervisory power over depository institutions' portfolios, the Monetary Control Act of 1980 gave the managements of various financial institutions more flexibility to vary their loan portfolios. In addition, each depository institution was granted the right to borrow funds from the Federal Reserve. The net effect of these reforms has been to reduce the differentiation among the various types of financial intermediaries. Thus, for most individuals the difference between the local commercial bank and the local savings and loan association is slight.

2.5 Commercial Banks

In terms of size, commercial banks are the most important depository institution. The total amount of deposits and loans made by commercial banks is given in Exhibit 2.1. Commercial banks' importance to business is evident, as loans to firms exceeded $2,096.9 billion and accounted for 13.1 percent of commercial banks' total assets. Commercial banks are also a prime source of funds to consumers, with consumer loans accounting for 8.6 percent of banks' total assets. Most of the loans to firms and households are for a relatively short term (for instance, less than one to five years to maturity). Commercial banks tend to stress loans that must be paid off ("mature") quickly. This emphasis on short maturities is the result of the rapid turnover of bank deposits (especially demand deposits) and the need for banks to coordinate their portfolios with changes in the economic environment and the level of interest rates.

EXHIBIT 2.1
Assets and Liabilities of Commercial Banks as of January 2017 (in billions)

Assets		
Cash (currency and coins), cash items in process, and deposits with the Federal Reserve	$ 2,161.5	13.5%
U.S. government securities	2,442.5	15.3
Other securities	899.5	5.6
Loans		
Commercial and industrial	$ 2,096.9	13.1
Real estate	4,131.4	25.8
Loans to individuals	1,387.7	8.6
Interbank and other loans	62.0	0.4
Other assets	2,833.3	17.7
	$16,014.8	100.0%
Liabilities		
Demand deposits, savings accounts, and CDs	$10,109.4	63.1%
Large time deposits	1,498.2	9.4
Other borrowings and liabilities	2,669.0	16.7
Equity (net worth)	1,738.2	10.8
	$16,014.8	100.0%

Source: Data available at **www.federalreserve.gov**.

The primary liabilities of commercial banks are their deposits: checking accounts (demand deposits) and various types of savings and time deposits. These deposits constitute 63.1 percent of the banks' sources of finance. Demand deposits are payable on demand. The owner of a checking account may demand immediate cash, and funds in the account may be readily transferred by check.

Savings accounts, money market accounts, and certificates of deposit are interest-bearing accounts. Funds deposited in a regular savings account may be withdrawn at will. Time deposits, which are referred to as **certificate of deposits** (or **CDs**, as they are commonly called), are issued for a fixed term, such as six months or two years. The saver may redeem the CD prior to maturity but must pay a penalty, such as the loss of interest for one quarter. For CDs issued in denominations of $100,000 or larger, the rate of interest and the length of time to maturity are mutually agreed upon by the bank and the saver with the funds. These "jumbo CDs" may be subsequently sold, as there is a secondary market in CDs with denominations exceeding $100,000. Since large-denomination CDs may be bought and sold, they are often referred to as **negotiable CDs** to differentiate them from smaller-denomination CDs, which cannot be sold but may be redeemed prior to maturity (usually with a penalty).

Certificate of deposit (CD)
Time deposit issued by a bank with a specified interest rate and maturity

Negotiable CD
Certificate of deposit issued in amounts of $100,000 or more whose terms are individually negotiated between the bank and the saver and for which there exists a secondary market

For denominations of less than $100,000, the bank establishes the terms and offers the CD to the general public. If the public finds the terms unattractive (perhaps the rate of interest is less than that offered by competing banks), the bank does not receive deposits. Thus, it is not surprising that the terms offered by one bank are similar to the terms offered by competing banks; differences tend to be small or very subtle, such as the frequency with which interest is added to the principal. (The more frequently the interest is added, or compounded, the more interest the depositor earns, as interest earns additional interest.)

The remaining liabilities of the commercial bank include other borrowings from a variety of sources. For example, commercial banks borrow from each other and borrow from the Federal Reserve. The last entry on the commercial bank's balance sheet in Exhibit 2.1 is stockholders' equity, which represents the stockholders' investment in the firm.

While Exhibit 2.1 shows the various sources of funds available to commercial banks, it also illustrates that the various types of deposits are the most important. Checking and savings accounts and time deposits constitute approximately 60 percent of the banks' sources of finance. The exhibit also indicates that total deposits greatly exceed stockholders' equity. Commercial banks have a large amount of debt outstanding when it is realized that the deposits are loans to the banks by households, firms, and governments.

2.6 Thrift Institutions

As the name implies, thrift institutions are a place for savers, especially individuals with modest sums, to deposit funds. The money is then loaned by the thrift to borrowers in need of the funds. There are essentially two types of thrifts: mutual savings banks and savings and loan associations (S&Ls). Mutual savings banks developed in the early 1800s to encourage savings. Many had colorful names (for example, Merchant Seaman's Bank) that indicated their origins. A mutual savings bank is owned by its depositors, but the bank itself is managed by a board of trustees. While a mutual savings bank may view its depositors as owners and not creditors, the owners may readily withdraw their funds. Thus, mutual savings banks must have sufficient liquidity to meet withdrawals.

Savings and loan associations developed later, primarily as a source of mortgage loans. Initially, S&L members (depositors) pooled their money to build housing. (The members were, in effect, the owners of the S&L.) Members borrowed the funds and when all the borrowed funds were repaid, the association was dissolved. Since these S&Ls were self-liquidating, they could not grow. They simply served a specific need of their members.

Today the S&L has evolved into a thrift institution that accepts deposits from anyone and makes a variety of loans. S&Ls, however, continue to place more emphasis on mortgage loans than do commercial banks. To attract deposits, S&Ls (and other thrifts) tend to pay a rate of interest that is slightly higher than the rates paid by commercial banks.

2.7 Regulation of Commercial Banks and Thrift Institutions

Commercial banks and other savings banks are subject to government regulation, whose purpose is to protect the banks' creditors, especially their depositors. The very nature of banking implies that when a commercial bank fails, substantial losses could be sustained by the bank's depositors. This is exactly what occurred during the Great Depression of the 1930s, when the failure of many commercial banks imposed substantial losses on depositors. These losses led to increased regulation of commercial banks and the establishment of federal deposit insurance, both of which are designed to protect depositors. Such protection promotes a viable banking system and eases the flow of savings into investment.

The regulation of banks comes from both state and federal banking authorities and the Federal Deposit Insurance Corporation. Banks that have national charters must join the Federal Reserve and are subjected to its regulation as well as to examination by the Comptroller of the Currency, which is the federal agency that grants national bank charters. Banks with state charters are regulated by the individual state banking commissions and are subject to regulation by the Federal Reserve. These various authorities regulate and supervise such facets of a bank's operations as its geographic location, the number of banks and branches in an area, and the types of loans and investments the bank may make.

2.7a Reserves

Required reserves
Funds that banks must hold against deposit liabilities

Commercial banks and all other depository institutions (savings and loan associations, mutual savings banks, and credit unions) must keep funds in reserve against their deposit liabilities (that is, **required reserves**). The minimum amount that all banks must maintain as a reserve is determined by the Federal Reserve. While holding reserves against deposit liabilities may increase the safety of the deposits, such safety is not the prime reason for having reserve requirements. As will be explained in Chapter 5, the reserve requirement is one of the tools of monetary control. This element of control, not safety, is the reason for having a reserve requirement against the deposit liabilities of banks.

The amount of the reserve requirement varies with the type of account. For example, as of January 2017, checking accounts had a reserve requirement of 10 percent. (The first $79.5 million in checking accounts have a reserve requirement of 3 percent.) Time deposits have no reserve requirements.

Commercial banks may hold their reserves in two forms: (1) cash in the vault or (2) deposits with another bank, especially the Federal Reserve. If the bank's reserve

requirement is 10 percent for demand deposits and the bank receives $100 cash in a checking account, it must hold $10 in reserve against the new demand deposit. The entire $100 in cash is considered part of the bank's total reserves, but the bank must hold only $10 against the deposit liability. The bank may choose to hold $1 of the required reserves in cash in the vault (to meet cash withdrawals) and $9 in the Federal Reserve. The remaining $90 are funds that the bank does not have to hold in reserve. In this example, these **excess reserves** (the difference between the bank's total reserves and its required reserves) total $100 − $10 = $90. A commercial bank's excess reserves may be lent to borrowers or used for some other purpose, such as purchasing government securities. If a commercial bank does not have any excess reserves, it is said to be "fully loaned up." To acquire additional income-earning assets, such as a government security or a business loan, the bank would have to acquire additional excess reserves.

Excess reserves
Reserves held by a bank in excess of those it must hold to meet its reserve requirement

Commercial banks (and other depository institutions) may deposit their reserves in a Federal Reserve bank, or they may deposit their reserves in other banks called **correspondent banks**. Correspondent banks in many cases are large, metropolitan commercial banks. These large correspondent banks frequently provide additional services. For example, they have efficient mechanisms for clearing checks that facilitate check clearing for smaller banks. The correspondent banks also have research staffs and give management advice and investment counsel. Thus, they are important to the well-being of the small, local banks. Of course, the correspondent banks are willing to provide these services because a small bank's deposits are like any other deposits: they are a source of funds that the larger banks may use. The large commercial banks use the funds deposited in them by small banks to purchase income-earning assets.

Correspondent bank
Major bank with which a smaller bank has a relationship to facilitate check clearing and to serve as a depository for reserves

In addition to the required reserves, commercial banks also hold **secondary reserves**. These are high-quality, short-term marketable securities such as U.S. government securities (Treasury bills) that may be readily sold. Thus, short-term marketable securities offer a bank both a source of interest income and a means to obtain funds quickly to cover a shortage in its reserves.

Secondary reserves
Short-term securities, especially Treasury bills, held by banks to increase their liquidity

The importance of reserves and reserve requirements cannot be exaggerated. The commercial banking system, through the process of loan creation, can expand or contract the nation's supply of money. The ability of commercial banks and other depository institutions to lend depends on their excess reserves. Thus, anything that affects their reserves alters their ability to lend and create money and credit. Many financial transactions affect commercial banks' reserves, including the federal government's methods of financing a deficit or the open market operations of the Federal Reserve.

2.7b Deposit Insurance

Federal government deposit insurance is one of the positive results of the Great Depression of the 1930s. The large losses sustained by commercial banks' depositors led to the establishment of the Federal Deposit Insurance Corporation (FDIC). The establishment of FDIC has significantly increased the general public's confidence in the banking system. As of this writing, FDIC insures deposits to $250,000. Thus, if a commercial bank should fail, FDIC will reimburse depositors up to the $250,000 limit. Since most individuals do not have that much on deposit, these individuals know that their funds are safe. (If you have more than $250,000, you may obtain the same degree of safety by placing amounts up to $250,000 in different banks.)

The $250,000 limit does mean that large depositors, including many corporations, are not fully insured and do stand to take losses should a bank fail.

All commercial banks that are members of the Federal Reserve System must purchase insurance from FDIC, and many state banking authorities also require that FDIC insurance be carried by their state nonmember banks. However, some state banking authorities do not require federal deposit insurance. Also foreign banks that are licensed to operate in the United States do not have to carry FDIC insurance.

Besides offering deposit insurance, FDIC has further increased public confidence in the banking system through its powers of bank examination. By exercising this power to examine banks, FDIC, along with other regulatory agencies, has improved bank practices. The improved bank practices plus the deposit insurance have improved the quality of banking. However, the establishment of FDIC and other regulatory agencies has not eliminated bank failures, for banks do fail.

Such failures became common occurrences as a result of the financial crisis that started in 2008. During 2007, only three banks failed. However, the number of bank failures increased to 25 during 2008 and rose dramatically to 140 during 2009. An additional 90 failures occurred during the first six months of 2010, then the rate of failures changed and only eight banks failed in 2015 and six during 2016. While most of these failures were small banks, losses were not sustained by the many individuals who deposited modest sums with the failed commercial banks. If necessary, such depositors received full reimbursement by FDIC. Thus, for most individuals, depositing funds in a commercial bank does not subject the funds to risk of loss.

If a bank does fail, FDIC generally seeks to merge that bank into a stronger bank. The transfer of deposits saves FDIC from having to reimburse depositors. For example, when Washington Mutual failed, its assets were acquired by JPMorgan Chase. Its depositors and customers became depositors and customers of the acquiring bank. There was no interruption of banking services, and depositors did not sustain losses. If, however, such a merger cannot be arranged, the failed bank may be liquidated, in which case the depositors receive reimbursement up to the legal limit.

2.8 Life Insurance Companies

Life insurance companies also perform the role of a financial intermediary because they receive the funds of savers, create a claim on themselves, and lend the funds to borrowers. Since other types of insurance companies do not perform this financial intermediary role, a distinction has to be made between them and life insurance companies. Other types of insurance, such as property and liability insurance, are exclusively services that the individual buys. The price of the insurance is related to the cost of the product, just as the cost of any service, such as a movie or an electrician, is related to the cost of producing the service. Of course, the property and liability insurance companies invest the funds they receive from policyholders. However, suppliers of other services will also use the funds they receive. In neither case is there a transfer of savings to borrowers.

The feature that differentiates life insurance from other forms of insurance and makes life insurance companies financial intermediaries is that life insurance may provide more than insurance against premature death. Ordinary and universal life insurance policies and endowments contain two elements, the insurance and a savings plan. The policy's premiums cover both the cost of the insurance and the savings

program. As long as the policy is in force, the policy accumulates cash value, which is the savings component of the policy. Many savers find such policies attractive because the periodic payments assure them of insurance plus a savings program. Others find them unattractive because the interest rate paid on the savings may be less than can be earned on alternative investments.

Life insurance companies use the proceeds from the policies to acquire income-earning assets. While life insurance companies compete with commercial banks for granting loans, they serve different financial markets. Commercial banks stress short-term, liquid loans and are a primary source of short-term finance. Life insurance companies, however, do not need to stress short-term liquidity. Mortality tables are scientifically constructed. A life insurance company can predict with accuracy the volume of death benefits that the company will have to pay and can construct a portfolio of long-term assets that meets the forecast benefits. Since long-term investments tend to earn higher interest rates than short-term debt, a life insurance company will seek to have a substantial amount of its funds in these more profitable investments. For example, the value of MetLife's long-term bond portfolio is almost 27 times the size of its holdings of cash and other short-term securities. (The features of these various debt instruments are covered in Chapter 12.)

2.9 Pension Plans

The role of a pension plan is to accumulate assets for workers so that they will have funds for retirement. Funds are periodically put in the pension plan by the saver, the employer, or both. The money deposited with the fund then is used to purchase income-earning assets. The saver's funds grow over time as additional contributions are paid into the pension plan, and the funds already in the plan earn income and appreciate in value.

Many pension plans exist, but few of them really perform the function of financial intermediaries. Many pension plans do not invest or lend the money directly to borrowers. Instead they may purchase *existing* securities, such as the stock of IBM; that is, the pension plan participates in the secondary, not the primary, market for securities. For a pension plan to serve as a financial intermediary, it must pass the funds directly to a borrower or invest them directly in a firm.

This distinction between pension plans may be illustrated by the pension plans used by many colleges and universities for their employees. Funds may be contributed by both the employer and the employee to the Teachers Insurance and Annuity Association (TIAA) or to the College Retirement Equity Fund (CREF). The actual dollar amount of the contribution varies with the school and the employee's salary. The funds may be contributed to either plan or may be split between the two plans.

CREF primarily purchases existing corporate stock. Money that flows into CREF does not go to the companies that issued the stock. Instead, the money goes to the seller of the stock, who may have purchased the shares many years ago. TIAA purchases an entirely different type of portfolio that stresses debt, especially mortgages. In this case funds are transferred from savers to borrowers, and the pension plan is acting as a financial intermediary. It creates a claim on itself when it receives the savers' funds, and it receives a claim from borrowers when the funds are lent to finance purchases. The transfer of purchasing power from saver to borrower by an intermediary that creates claims on itself is the role of a financial intermediary. Hence, TIAA is an example of a pension plan that does serve as a financial intermediary.

2.10 Money Market Mutual Funds and Money Market Instruments

One of the most important financial institutions is the mutual fund that invests on behalf of individuals. However, most of these funds are not financial intermediaries in the sense that they borrow from savers and lend the funds to the ultimate users. It is true that they do create claims on themselves, since investors own shares in the funds (in other words, the investors own equity claims). Whether the fund is a financial intermediary depends on what it does with the money raised by selling the shares: Does it acquire newly issued securities or buy previously issued securities?

If the fund buys securities in the secondary markets, it is not serving as a financial intermediary. No money is transferred to a firm, government, or individual seeking to borrow funds. Instead, the money is transferred to another investor who is seeking to liquidate a position in the particular security.

Of course, a mutual fund could buy newly issued securities. Some funds specialize in purchasing shares of emerging and new firms, and to the extent that these funds participate in the primary market, they are operating as financial intermediaries. Other mutual funds specialize in government securities, which may be purchased when the bonds are issued. Such funds also serve as financial intermediaries, transferring the money of savers to the ultimate users of the money. Most mutual funds, however, do not serve as financial intermediaries, as they primarily buy and sell existing securities.

Money market mutual fund
Investment company that invests solely in short-term money market instruments

Even though most mutual funds are not financial intermediaries, there is one major exception—the **money market mutual fund** that acquires short-term securities. While these are secondary markets in some money market instruments, money market mutual funds tend to acquire newly issued short-term debt instruments. These securities are then held until they are redeemed at maturity, at which time the process is repeated.

The development of these funds and their explosive growth was one of the most important developments in the financial markets. The initial growth was nothing short of phenomenal, as total assets rose from less than $10 billion in 1975 to over $2.7 trillion in 2017. This immediate popularity may be explained by three factors: safety of principal, liquidity, and interest rates that exceed the rates paid by banks. The shares are safe since the money funds acquire short-term debt obligations whose values are subject to minimal price fluctuations. In addition, these debt obligations tend to have high credit ratings, so there is minimal risk of default. Individuals may withdraw money invested in the money funds (that is, redeem shares) at will. This ease of converting to cash with minimal chance of loss means these shares are among the most liquid assets available to savers.

The money funds invest in a variety of short-term securities that include the negotiable CDs discussed earlier. Other money market instruments include the short-term debt of the federal government (Treasury bills), commercial paper issued by corporations, repurchase agreements (commonly referred to as repos), banker's acceptances, and tax anticipation notes. Of course, the individual investor may also directly acquire these securities, but the large denomination of some short-term securities (for example, the minimum denomination of negotiable CDs is $100,000) excludes most investors.

U.S. Treasury bill (T-bill)
Short-term debt instrument issued by the federal government

The safest short-term security is the **U.S. Treasury bill** (commonly referred to as a **T-bill**), which is issued by the federal government. Before the political confrontation over the federal budget in 1995, there was no question that the federal government would retire the principal and pay the interest on its obligations. (The pricing of T-bills and the calculation of yields earned on the bills and other discounted

short-term securities are covered in Chapter 25.) The short term of the bills also implies that if interest rates were to rise, the increase would have minimum impact on the bills, and the quick maturity means that investors could reinvest the proceeds in the higher-yielding securities.

Commercial paper
Unsecured short-term promissory notes issued by the most creditworthy corporations

Commercial paper is an unsecured short-term note issued by a corporation as an alternative to borrowing funds from commercial banks. Since the paper is usually unsecured, only firms with excellent credit ratings are able to sell it; hence, the risk of default is small, and the repayment of principal is virtually assured.

Repurchase agreement (repo)
Sale of a short-term security in which the seller agrees to buy back the security at a specified price

A **repurchase agreement (repo)** is a sale of a security in which the seller agrees to buy back (repurchase) the security at a specified price at a specified date. Repos are usually executed using federal government securities, and the repurchase price is higher than the initial sale price. The difference between the initial sale price and the repurchase price is the source of the return to the holder of the security. By entering into the repurchase agreement, the investor (the buyer) knows exactly how much will be made on the investment and when the funds will be returned.

Banker's acceptances
Short-term promissory notes guaranteed by a bank

Banker's acceptances are short-term promissory notes guaranteed by a bank. These acceptances arise through international trade. Suppose a firm ships goods abroad and receives a draft that promises payment after two months. If the firm does not want to wait for payment, it can take the draft to a commercial bank for acceptance. Once the bank accepts the draft (and stamps it "accepted"), the draft may be sold. The buyer purchases the draft for a discount, which becomes the source of the return to the holder. Bankers' acceptances are considered to be good short-term investments because they are supported by two parties: the firm on which the draft is drawn and the bank that accepts the draft.

Tax anticipation note
Short-term government security secured by expected tax revenues

Tax anticipation notes are issued by states or municipalities to finance current operations before tax revenues are received. As the taxes are collected, the proceeds are used to retire the debt. Similar notes are issued in anticipation of revenues from future bond issues and other sources, such as revenue sharing from the federal government. While these anticipation notes do not offer the safety of Treasury bills, the interest is exempt from federal income taxation. (The interest paid on debt issued by state and local governments is exempt from federal income taxation. These securities are discussed in Chapter 12 on bonds.) Commercial banks and securities maintain secondary markets in them, so the notes may be sold if the firm needs cash.

In addition to domestic short-term securities, money market mutual funds invest in Eurodollar certificates of deposit (Eurodollar CDs). These are similar to domestic negotiable CDs except they are issued either by branches of domestic banks located abroad or by foreign banks. Like domestic negotiable CDs, Eurodollar CDs are *denominated in U.S. dollars*, and they may be bought and sold because a secondary market exists. Eurodollar CDs offer a small yield advantage because they are not quite as liquid as domestic negotiable CDs and because they carry the additional risk of being issued in a foreign country.

Although the money funds as a whole own a wide spectrum of money market instruments, some of the funds do specialize. Schwab U.S. Treasury Money Fund, for example, invests solely in U.S. government securities or securities that are collateralized by obligations of the federal government. Other Schwab money funds invest in a wider spectrum of short-term debt obligations. For example, Schwab Cash Reserves had 13.2 percent of its assets in federal government agency obligations, 50.2 percent in negotiable CDs, 18.6 percent in commercial paper, and the remaining percentage in various other short-term assets, such as repurchase agreements.

2.11 Competition for Funds

A commercial bank or any financial intermediary can lend only what has been lent to it. Unless the bank is able to induce individuals, firms, and governments to make deposits, that bank will be unable to grant loans and make investments. This general statement holds for all financial intermediaries. None can make investments without a source of funds. Whether these claims on the intermediaries are called life insurance policies or savings accounts or shares in money market mutual funds, the essential point remains the same. No financial intermediary can exist without its sources of funds.

Conversely, if funds flow out of financial intermediaries, all intermediaries will be able to hold fewer assets (that is, make fewer loans). Unless the outflow is reversed, it will tend to increase the cost of credit as the intermediaries raise the rates of interest they charge in order to ration their remaining lending capacity.

In addition to the aggregate flows into and out of all financial intermediaries, credit markets may feel the impact of flows among financial intermediaries. Funds deposited in one particular bank are not deposited in another competitive bank. If an individual saver has funds to invest and chooses a money market mutual fund instead of the local savings and loan association, it is the mutual fund that can lend the funds and not the savings and loan association. From the standpoint of the borrowers, it would not matter which intermediary makes the loans if all financial intermediaries had similar portfolios. But the portfolios of various financial intermediaries do vary.

These differences can have an important implication. A transfer of funds from one intermediary (for example, a savings and loan association) to another (such as a money market mutual fund) can have an important impact on the supply of credit available to a particular sector of the economy. Although the total supply of credit is unaffected (because the money market fund can lend only what the savings and loan association loses), there will be a redistribution of credit from those who borrow from savings and loan associations to those who borrow from the money funds. The money market mutual fund now has more funds to acquire short-term securities. Simultaneously, the flow of funds out of the savings and loan association reduces its capacity to grant mortgage loans. Such a redistribution of funds from savings and loan associations to money market mutual funds will be felt by the construction industry and home buyers as the supply of mortgage money declines.

As this discussion implies, financial intermediaries compete with each other for funds. This competition occurs through yields and services offered. If a particular intermediary did not offer competitive rates, funds would flow from it to those intermediaries offering higher yields. Thus, differentiation among the intermediaries on the basis of yields tends to be small.

Historically, financial intermediaries have been categorized on the basis of services or products offered. Today, however, this is only partially true. In the past, savers bought life insurance through insurance agents, bought stocks through securities brokers, and invested funds in a savings account in a bank. Those days of specialization are disappearing. Insurance agents, stockbrokers, and bankers today offer a wide spectrum of services and financial products. For example, many commercial banks offer savers not only the traditional services of savings and checking accounts but other products as well, such as brokerage services (to compete with stockbrokers), money market accounts (to compete with money market mutual funds), and pension plans (to compete with insurance companies and mutual funds). Such product competition also applies to savings banks. Savings and loan associations offer a variety of savings accounts as well as checking accounts, life insurance, and brokerage services.

Summary

Financial markets transfer savings by individuals, firms, and governments into productive investments. This transfer occurs directly when new securities are issued or indirectly through financial intermediaries. Financial markets also transfer existing securities among investors.

Money is anything that is generally acceptable to pay for goods and services and to retire debt. Liquidity refers to the ease of converting nonmonetary assets into money. The narrow definition of the money supply (M-1) is the sum of coins, currency, and demand deposits. A broader definition (M-2) adds saving accounts and small certificates of deposit to M-1.

Interest rates help allocate scarce credit among competing uses for the funds. The structure of yields relates the interest rate to the length of time that the debt will be outstanding. The structure of yields is often summarized by a yield curve. Generally the yield curve is positively sloped, which indicates that the longer the borrower has the use of the funds, the greater is the cost of funds. However, there have been periods when the yield curve was negative and short-term rates exceeded long-term rates. There have also been periods when the yield curve was flat; short-term and long-term rates were equal; and there was no differentiation between the cost of short-term and long-term funds.

Funds are transferred from savers to borrowers through a system of financial intermediaries. The intermediaries borrow from savers and then lend the funds to their ultimate users. Financial intermediaries include commercial banks, thrift institutions, life insurance companies, pension plans, and money market mutual funds. All financial intermediaries compete for funds, since an individual intermediary can acquire a portfolio of assets only if it can obtain funds. The deregulation of the banking system has increased competition among the various intermediaries and blurred the distinctions among them, allowing them to offer products and services that previously were the exclusive domain of a particular intermediary.

In terms of size, commercial banks are the most important financial intermediary. These banks make a variety of loans but tend to stress loans that are quickly repaid. Other financial intermediaries, such as savings and loan associations and life insurance companies, make longer-term loans.

Recent developments in financial intermediaries include the large growth in money market mutual funds. Money market mutual funds compete directly with banks; they offer the advantages of somewhat higher yields and almost comparable safety. While the shares are not federally insured as are the deposits in banks, the short-term nature of their portfolios affords the saver safety of principal.

Money market mutual funds own a variety of short-term debt securities issued by corporations (commercial paper), commercial banks (negotiable CDs), and governments. Government short-term debt obligations include U.S. Treasury bills and tax anticipation notes. Other short-term money market instruments include repurchase agreements, banker's acceptances, and Eurodollar CDs. Each of these securities is a means for the issuer to raise short-term funds, and each is a place for investors, especially money market mutual funds, to commit funds for a short period of time.

Review Objectives

Now that you have completed this chapter, you should be able to

1. Define money and determine how the money supply is measured (pp. 13–14).
2. Develop a yield curve and contrast positive and negative yield curves (pp. 15–17).
3. Differentiate the direct and indirect transfer of savings to users of funds (pp. 17–19).
4. Enumerate the primary assets and liabilities of a commercial bank (pp. 19–20).
5. Describe several regulations that apply to the banking system (pp. 21–23).
6. Differentiate required and excess banks reserves (pp. 21–22).
7. Explain the role of FDIC (pp. 22–23).
8. Compare the assets of life insurance companies and commercial banks (p. 19 and p. 24).
9. Contrast the various money market instruments (pp. 25–26).

CHAPTER 3

Investment Banking

Two basic methods exist for transferring funds from savers to users. The indirect transfer occurs through a financial intermediary such as a bank. You lend funds to the bank, which in turn lends the funds to the ultimate borrower. (The role of commercial banks and the various types of financial intermediaries has been covered in Chapter 2.) The alternative is the direct sale of securities to investors in the primary market.

While most purchases of stocks (and bonds) occur in the secondary markets such as the New York Stock Exchange, the initial sales occur in the primary markets. The primary and secondary markets perform different functions, but both are important financial institutions. Secondary markets increase your willingness to buy securities and primary markets are the means by which your savings are transferred to firms and governments.

The initial sale of a security in the primary market is often executed with the assistance of investment bankers. While this initial sale occurs only once, it is exceedingly important because it is the process by which securities come into existence. If firms and governments did not issue securities, you would have to find alternative uses for your savings. Firms and governments, however, do need funds, and they tap your savings through issuing and selling new securities in the primary markets. The secondary markets provide you with a means to sell these securities (or buy more) once they have been issued.

This chapter also briefly describes the major federal laws that govern the issuing and subsequent trading in securities. The purpose of this legislation is not to ensure that you will earn a positive return. Instead its purpose is to ensure that you and all investors receive timely and accurate information. You continue to bear the risk associated with buying stocks and bonds.