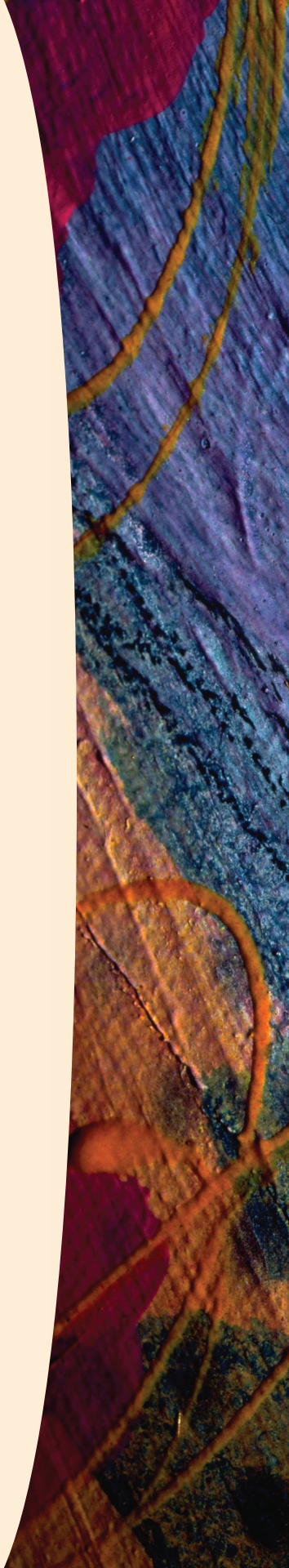
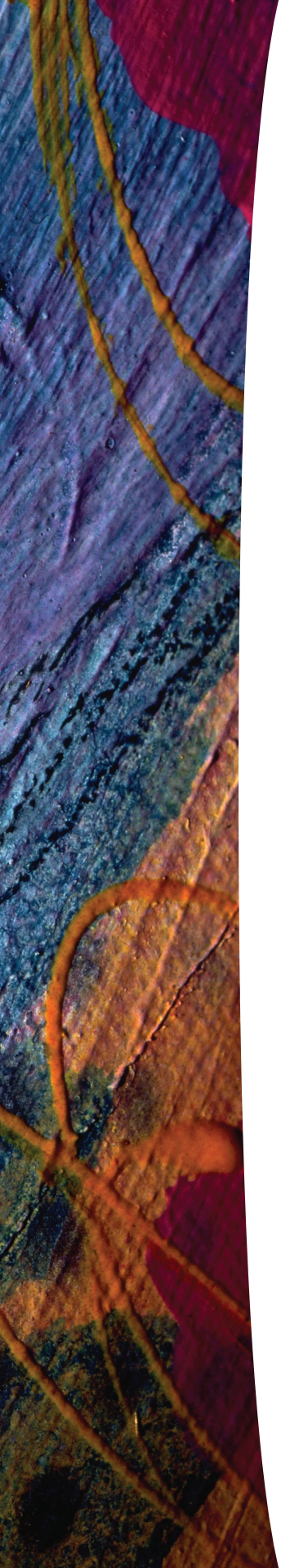
Part *I*

Money and the Financial System





Chapter 1

An Introduction to Money and the Financial System

Learning Objectives

Understand . . .

LO1* The parts of the financial system

LO2 The core principles of money and banking

LO3 Special features and organization of the book

This morning, a typical American college student bought coffee at the local café, paying for it with an ATM card. Then she jumped into her insured car and drove to the university, which she attends thanks to her student loan. She may have left her parents' home, which is mortgaged, a few minutes early to avoid construction work on a new dormitory, financed by bonds issued by the university. Or perhaps she needed to purchase this book online, using her credit card, before her first money and banking class began.

Beneath the surface, the financial transactions embedded in this story—even the seemingly simple ones—are quite complicated. If the café owner and the student use different banks, paying for the coffee will require an interbank funds transfer. The company that insures the student's car has to invest the premiums she pays until they are needed to pay off claims. The student's parents almost surely obtained their home mortgage through a mortgage broker, whose job was to find the cheapest mortgage available. And the bonds the university issued to finance construction of the new dormitory were created with the aid of an investment bank.

This brief example hints at the complex web of interdependent institutions and markets that is the foundation for our daily financial transactions. The system is so efficient that most of us rarely take note of it. But a financial system is like air to an economy: If it disappeared suddenly, everything would grind to a halt.

In the autumn of 2008, we came closer to such a financial meltdown than at any time since the 1930s. In the earlier episode, the collapse of the banking system led to the Great Depression. In the recent crisis, some of the world's largest financial institutions failed. Key markets stopped functioning. Credit dried up, even for sound borrowers. As a result, vibrant companies that relied on short-term loans to pay their employees and buy materials faced potential ruin. Even some fundamental ways that we make payments for goods and services were threatened.

Gasping for air in this financial crisis, the global economy during 2008 and 2009 sank into the deepest, broadest, and longest downturn since the 1930s. Around the

*LO Learning Objective

world, tens of millions of people lost their jobs. In the United States, millions lost their homes and their life's savings. Others became unable to borrow to buy a home or go to college. And the weakness added to financial fragility elsewhere, especially in Europe, where the viability of the euro, the world's leading currency after the U.S. dollar, was threatened. The chances are good that you know someone—in your neighborhood, your school, or your family—whose life was changed for the worse by the crisis.

So, what happens in the financial system—whether for good or for bad—matters greatly for all of us. To understand the system—both its strengths and its vulnerabilities—let's take a closer look.

The Six Parts of the Financial System

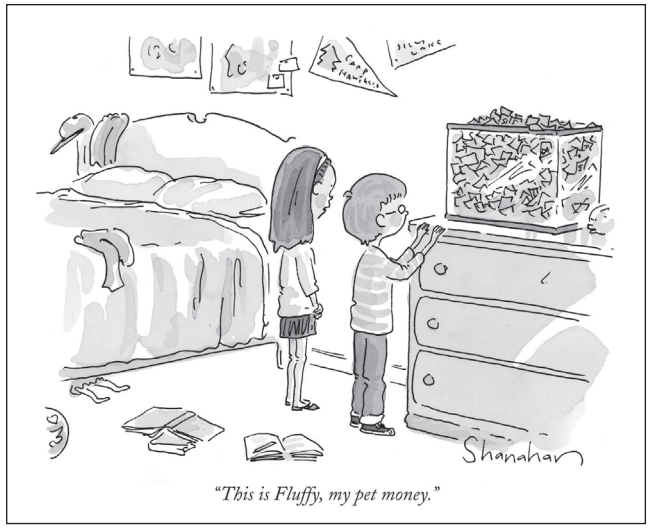
The **financial system**[1] has six parts, each of which plays a fundamental role in our economy. Those parts are money, financial instruments, financial markets, financial institutions, government regulatory agencies, and central banks.

We use the first part of the system, **money**, to pay for our purchases and to store our wealth. We use the second part, **financial instruments**, to transfer resources from savers to investors and to transfer risk to those who are best equipped to bear it. Stocks, mortgages, and insurance policies are examples of financial instruments. The third part of our financial system, **financial markets**, allows us to buy and sell financial instruments quickly and cheaply. The New York Stock Exchange is an example of a financial market. **Financial institutions**, the fourth part of the financial system, provide a myriad of services, including access to the financial markets and collection of information about prospective borrowers to ensure they are creditworthy. Banks, securities firms, and insurance companies are examples of financial institutions. Government **regulatory agencies** form the fifth part of the financial system. They are responsible for making sure that the elements of the financial system—including its instruments, markets, and institutions—operate in a safe and reliable manner. Finally, **central banks**, the sixth part of the system, monitor and stabilize the economy. The **Federal Reserve System** is the central bank of the United States.

While the essential functions that define these six categories endure, their form is constantly evolving. *Money* once consisted of gold and silver coins. These were eventually replaced by paper currency, which today is being eclipsed by electronic funds transfers. Methods of accessing means of payment have changed dramatically as well. As recently as 1970, people customarily obtained currency from bank tellers when they cashed their paychecks or withdrew their savings from the local bank. Today, they can get cash from practically any ATM anywhere in the world. To pay their bills, people once wrote checks and put them in the mail, then waited for their monthly bank statements to make sure the transactions had been processed correctly. Today, payments can be made automatically, and account holders can check the transactions at any time on their bank's website or on their smartphone.

Financial instruments (or securities, as they are often called) have evolved just as much as currency. In the last few centuries, investors could buy individual stocks through stockbrokers, but the transactions were costly. Furthermore, putting together a portfolio of even a small number of stocks and bonds was extremely time consuming; just collecting the information necessary to evaluate a potential investment was a daunting task. As a result, investing was an activity reserved for the wealthy. Today, financial institutions offer people with as little as $1,000 to invest the ability to purchase

[1]Throughout the book, terms in bold red are "key terms" listed at the end of each chapter and defined in the glossary.



"This is Fluffy, my pet money."

SOURCE: 1999 © Danny Shanahan/The New Yorker Collection/www.cartoonbank.com.

shares in *mutual funds,* which pool the savings of a large number of investors. Because of their size, mutual funds can construct portfolios of hundreds or even thousands of different stocks and/or bonds.

The markets where stocks and bonds are sold have undergone a similar transformation. Originally, *financial markets* were located in coffeehouses and taverns where individuals met to exchange financial instruments. The next step was to create organized markets, like the New York Stock Exchange—trading places specifically dedicated to the buying and selling of stocks and bonds. Today, much of the activity that once occurred at these big-city financial exchanges is handled by electronic networks. Buyers and sellers obtain price information and initiate transactions from their desktop computers or from handheld devices. Because electronic networks have reduced the cost of processing financial transactions, even small investors can afford to participate in them. Just as important, today's financial markets offer a much broader array of financial instruments than those available even 50 years ago.

Financial institutions have changed, as well. Banks began as vaults where people could store their valuables. Gradually, they developed into institutions that accepted deposits and made loans. For hundreds of years, in fact, that was what bankers did. Today, a bank is more like a financial supermarket. Walk in and you will discover a huge assortment of financial products and services for sale, from access to the financial markets to insurance policies, mortgages, consumer credit, and even investment advice.

The activities of government regulatory agencies and the design of **regulation** have been evolving and have entered a period of more rapid change, too. In the aftermath of the financial crisis of 1929–1933, when the failure of thousands of banks led to the Great Depression, the U.S. government introduced regulatory agencies to provide wide-ranging financial regulation—rules for the operation of financial institutions and markets—and **supervision**—oversight through examination and enforcement. The U.S. agencies established in the 1930s to issue and enforce these financial rules still operate.

Yet, the evolution of financial instruments, institutions, and markets has led to many changes in the ways that regulatory agencies work. A bank examiner used to count the money in the cash drawers and call borrowers to see if the loans on a bank's books were real. They might even visit workplaces to see if the loans were used as designed to buy equipment or build a factory. Today, banks engage in millions of transactions, many of which are far more complex and difficult to understand than a loan or a mortgage. So, a government examiner also looks at the systems that a bank uses to manage its various risks. In doing so, regulators try to encourage best practices throughout the financial industry.

However, the failure of regulators in the United States and elsewhere around the world to anticipate or prevent the financial crisis of 2007–2009 has led many governments to undertake far-reaching changes to financial regulation and the regulatory agencies. The Dodd-Frank Wall Street Reform and Consumer Protection Act, adopted

in 2010 and known as the **Dodd-Frank Act**, is the largest U.S. regulatory change since the 1930s. Also in 2010, regulators of many nations agreed on a third, major update of standards for internationally active banks—known as **Basel III** after the Swiss city where the policymakers meet. Both reforms will take years to implement, and their influence will shape the financial system for decades.

Finally, *central banks* have changed a great deal. They began as large private banks founded by monarchs to finance wars. For instance, King William of Orange created the Bank of England in 1694 for the express purpose of raising taxes and borrowing to finance a war between Austria, England, and the Netherlands on one side and Louis XIV's France on the other. Eventually, these government treasuries grew into the modern central banks we know today. While only a few central banks existed in 1900, now nearly every country in the world has one, and they have become one of the most important institutions in government. Central banks control the availability of money and credit to promote low inflation, high growth, and the stability of the financial system. Because their current mission is to serve the public at large rather than land-hungry monarchs, their operating methods have changed as well. A central bank's decisions used to be shrouded in mystery, but today's policymakers strive for transparency in their operations. Officials at the **European Central Bank** and the U.S. Federal Reserve—two of the most important central banks in the world—go out of their way to explain the rationale for their decisions.

Though the changing nature of our financial system is a fascinating topic, it poses challenges for both students and instructors. How can we teach and learn about money and banking in a way that will stand the test of time, so that the knowledge we gain won't become outmoded? The answer is that we must develop a way to understand and adapt to the evolutionary structure of the financial system. That means discussing money and banking within a framework of core principles that do not change over time. The next section introduces the five core principles that will guide our studies throughout this book.

The Five Core Principles of Money and Banking

Five core principles will inform our analysis of the financial system and its interaction with the real economy. Once you have grasped these principles, you will have a better understanding not only of what is happening in the financial world today but of changes that will undoubtedly occur in the future. The five principles are based on **Time, Risk, Information, Markets,** and **Stability.**

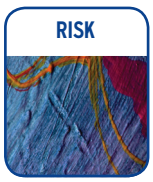
Core Principle 1: Time Has Value

The first principle of money and banking is that *time has value.* At some very basic level, everyone knows this. If you take a job at the local supermarket, you will almost surely be paid by the hour. An hour's worth of work equals a certain number of dollars. Literally, your time has a price.

On a more sophisticated level, **time** affects the value of financial transactions. Most loan contracts allow the borrower to spread out the payments over time. If you take out an auto loan, for example, the lender will allow you to make a series of monthly payments over three, four, or even five years. If you add up the payments, you'll discover that the total exceeds the amount of the loan. At an interest rate of 4 percent, a four-year, $10,000 car loan will require 48 monthly payments of $226 each. That means

you will repay a total of $10,848 (48 times $226). The reason your repayments total more than the loan amount is that you are paying interest to compensate the lender for the time during which you use the funds. That is, the resources you borrowed have an opportunity cost to the lender so you have to pay rent on them.

Interest payments are fundamental to a market economy. In Chapter 4, we will develop an understanding of interest rates and how to use them. Then, throughout the remainder of Part II, we will apply the principle that time has value in our discussion of the valuation of bonds, stocks, and other financial instruments involving future payments. How much should you be willing to pay for a particular stock or bond? Figuring out what alternative investments are worth, and comparing them, means valuing payments made on different future dates. The same principle applies to the question of how much you must invest today to achieve a particular financial objective in the future. How much of your salary, for example, do you need to save each month to meet your goal of buying a house? The length of time your savings will be earning interest is a key to answering this question.



Core Principle 2: Risk Requires Compensation

The world is filled with uncertainty. More events, both good and bad, *can* happen than *will* happen. Some of the possibilities, such as the likelihood of your home doubling in value after you buy it, are welcome. Other possibilities, such as the chance that you might lose your job and not be able to make your car payments, are distinctly unwelcome. Dealing effectively with **risk** requires that you consider the full range of possibilities in order to eliminate some risks, reduce others, pay someone to assume particularly onerous risks, and just live with what's left. Needless to say, no one will assume your risks for free, which brings us to the second core principle of money and banking: *Risk requires compensation.* In the financial world, compensation is made in the form of explicit payments. That is, investors must be paid to assume risk; the higher the risk, the bigger the required payment.

Car insurance is a common example of paying someone else to shoulder a risk you don't want to take. If your car is wrecked in an accident, you will want to be able to repair it. But beyond that, auto insurance shelters drivers from the possibility of losing all their wealth in the event that they cause an accident in which someone is seriously injured. Although the chances of causing such an accident are quite small, the results can be so serious that, even if the government didn't require it, most of us would voluntarily purchase auto insurance. Driving without it just isn't worth the risk. The insurance company pools the premiums that policyholders pay and invests them. Even though some of the premiums will be spent to settle claims when cars are stolen or damaged by collisions, the chance to make a profit is good. So both the insurance company and the drivers who buy policies are ultimately better off.

Bearing in mind that time has value and risk requires compensation, we can begin to see the rationale behind the valuation of a broad set of financial instruments. For example, a lender will charge a higher interest rate on a loan if there is a chance that the borrower will not repay. In Chapters 6 and 7, we will use this principle when we examine the interest rates on bonds. As we will see, a company or a government that is on the verge of being unable to pay its bills may still be able to issue bonds (called *junk bonds*), but it will have to pay an extremely high interest rate to do so. The reason is that the lender must be compensated for the substantial risk that the company will not repay the loan. Risk requires compensation.

Core Principle 3: Information Is the Basis for Decisions

Most of us collect **information** before making decisions. The more important the decision, the more information we gather. Think of the difference between buying a $5 sandwich and a $10,000 used car. You will surely spend more time comparing cars than comparing sandwiches.

What's true for sandwiches and cars is true for finance as well. That is, *information is the basis for decisions.* In fact, the collection and processing of information is the foundation of the financial system. In Chapter 11, we will learn how financial institutions like banks funnel resources from savers to investors. Before a bank makes a loan, a loan officer will investigate the financial condition of the individual or firm seeking it. Banks want to provide loans only to the highest-quality borrowers. Thus, they spend a great deal of time gathering the information needed to evaluate the creditworthiness of loan applicants.

To understand the problem faced by the two parties to any financial transaction, think about a home mortgage. Before making the loan, the mortgage broker examines the applicant's finances and researches the home's value to make sure the applicant can afford the monthly payments and the property is more valuable than the loan.

And before the broker transfers the funds to the seller, the new homeowner must purchase fire insurance. All these requirements arise from the fact that the lender doesn't know much about the borrower and wants to make sure the loan will be repaid. When lenders fail to assess creditworthiness properly, they end up with more borrowers who are unable to repay their loans in the future. Large mistakes like these were a key factor in the wave of U.S. mortgage delinquencies and defaults that preceded the financial crisis of 2007–2009. Even five years later, nearly one-fifth of residential mortgages still exceeded the underlying property value.

Information plays a key role in other parts of the financial system as well. In Chapters 2 and 3, we'll see that many types of transactions are arranged so that the buyer doesn't need to know anything about the seller. When merchants accept cash, they don't need to worry about the customer's identity. When stocks change hands, the buyer doesn't need to know anything about the seller, or vice versa. Stock exchanges are organized to eliminate the need for costly information gathering, facilitating the exchange of securities. In one way or another, information is the key to the financial system.

Core Principle 4: Markets Determine Prices and Allocate Resources

Markets are the core of the economic system. They are the place, physical or virtual, where buyers and sellers meet, where firms go to issue stocks and bonds, and where individuals go to trade assets. Financial markets are essential to the economy, channeling its resources and minimizing the cost of gathering information and making transactions. In fact, well-developed financial markets are a necessary precondition for healthy economic growth. For the most part, the better developed a country's financial markets, the faster the country will grow.

The reason for this connection between markets and growth is that *markets determine prices and allocate resources.* Financial markets gather information from a large number of individual participants and aggregate it into a set of prices that signals what is valuable and what is not. Thus, markets are sources of information. By attaching prices to different stocks or bonds, they provide a basis for the allocation of capital.

To see how prices in the financial markets allocate capital, think about a large firm wishing to finance the construction of a new factory costing several hundred million dollars. To raise the funds, the firm can go directly into the financial markets and issue stocks or bonds. The higher the price investors are willing to pay in the market, the more appealing the idea will be, and the more likely it is that the firm will issue securities to raise the capital for the investment.

We will refer to the financial markets throughout much of this book. While our primary focus in Part II will be the nature of financial instruments, we will also study the markets in which those instruments are traded. Chapters 6 through 10 describe the markets for bonds, stocks, derivatives, and foreign currencies.

Importantly, financial markets do not arise by themselves—at least, not the large, well-oiled ones we see operating today. Markets like the New York Stock Exchange, where billions of shares of stock change hands every day, require rules in order to work properly, as well as authorities to police them. Otherwise, they will not function. For people to be willing to participate in a market, they must perceive it as fair. As we will see, this creates an important role for the government. Regulators and supervisors of the financial system make and enforce the rules, punishing people who violate them. When the government protects investors, financial markets work well and help promote economic growth; otherwise they don't.

Finally, even well-developed markets can break down. When they do—as some did during the financial crisis of 2007–2009—the financial system as a whole can be at risk. So today, governments must also play a role in promoting the healthy operation of markets.

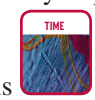
Core Principle 5: Stability Improves Welfare

Most of us prefer stable to variable incomes. We like getting raises, but the prospect of a salary cut is not a pleasant one. This brings us to the fifth core principle of money and banking: *Stability improves welfare*. **Stability** is a desirable quality, not just in our personal lives but in the financial system as a whole. As we saw at the start of this chapter, financial instability in the autumn of 2008 brought us closer to a collapse of the system than at any time since the 1930s, triggering the worst global downturn since the Great Depression. And the banking and government debt crisis in the euro area partly reversed Europe's financial integration, a cornerstone of its successful economic and political framework in recent decades.

If you are wondering whether this principle is related to Core Principle 2 (risk requires compensation), you are right. Because volatility creates risk, reducing volatility reduces risk. But while individuals can eliminate many risks on their own (we'll see how when we study financial instruments in Part II), some risks can only be reduced by government policymakers. Business cycle fluctuations are an example of the sort of instability individuals can't eliminate on their own. And though "automatic stabilizers" like unemployment insurance and the income tax system reduce the burden of recessions on individuals, they cannot eliminate an economic slowdown. Monetary policymakers can moderate these downswings by carefully adjusting interest rates. Central banks also have powerful tools to steady fragile financial systems and to repair or support dysfunctional markets. In stabilizing the economy as a whole, they eliminate risks that individuals can't, improving everyone's welfare in the process.

As we will learn in Part IV of this book, stabilizing the economy is a primary function of central banks like the Federal Reserve and the European Central Bank. Officials of these institutions are charged with controlling inflation and reducing business cycle fluctuations. That is, they work to keep inflation low and stable and to keep growth

high and stable. They also have key roles in securing financial stability. When they are successful, they reduce both the risk that individuals will lose their jobs and the uncertainty that firms face in making investment decisions. Not surprisingly, a stable economy grows faster than an unstable economy. Stability improves welfare.

Throughout the book you will notice icons like this 

in the margin at various points. These will guide you to the core principle that provides the foundation for what is being discussed at that point in the text.

Special Features of This Book

The very first special feature of every chapter in this book is its introduction—each one presents a real-world example that leads to the big questions the chapter is designed to answer, such as: What is money? What do banks do? How does the bond market work? What does the Federal Reserve do to prevent or limit financial crises?

After that real-world setup, the text of each chapter presents the economic and financial theory you need to understand the topics covered. Learning objectives listed at the beginning of the chapter outline the core concepts that are discussed and should be mastered. Each chapter also contains a series of inserts that apply the theory. There are five types of inserts: Your Financial World, Applying the Concept, Lessons from the Crisis, In the News, and Tools of the Trade. Finally, the end of each chapter is divided into four sections: Key Terms, Using FRED, Chapter Lessons, and Problems. Here are some guidelines for using the inserts and end-of-chapter materials.

Your Financial World

When most people decide to make a major purchase, they begin by collecting information. If they are considering buying a car, they will first try to decide which model is best for them and then work hard to pay the lowest price possible. Even for smaller purchases, like clothes or groceries, people first gather information and then buy.

Financial transactions should be no different from consumer purchases. Become informed first, and then buy. If you're thinking, "That's easier said than done," you're right. The problem is that most people have very little knowledge of the financial system, so they don't know how to start or what kind of information to collect.

That's where Your Financial World comes in. These inserts provide basic guidelines for applying economic theory to the bread-and-butter financial decisions you make nearly every day. Your Financial World answers questions about:

- Banking and Payments
  - What's the difference between credit and debit cards?
  - How should you pick a bank?
- Investments
  - Should you own stocks or bonds or gold?
  - Should you invest in the company you work for?
- Credit, Loans, and Mortgages
  - What do you need to know when you shop for a mortgage?
  - What is your credit score and why is it important?
- Insurance
  - How much life insurance do you need?
  - How much car insurance do you need?

YOUR FINANCIAL WORLD

Guard Your Identity

There is a television commercial in which a middle-aged man is sitting in his living room drinking a beer. Out of the man's mouth comes the voice of a woman describing some very expensive clothing she just bought. She didn't care how much the clothes cost because she wasn't paying—she used a credit card that was in the man's name. The ad catches viewers' attention because it is funny. But its primary purpose is to serve as a warning about identity theft, in which one person takes on the identity of another to do things like make credit card purchases.

It is important to realize that someone who has a few pieces of key information about you can get a credit card in your name. To prevent this, you need to protect personal information. Do your best to never tell anyone your birth date and birthplace, your address, or your mother's maiden name. Most importantly, guard your Social Security number. Because it is unique, it is the key to identity theft. Give out your Social Security number only when absolutely necessary—on tax forms, for employment records, and to open bank accounts. If your driver's license has your Social Security number on it, ask that it be removed. If a business requests it, ask if some alternative number can be used. Importantly, if you get a telephone call or an e-mail from someone you don't know asking for personal data, don't provide it.

Beyond protecting access to personal information, you need to monitor your financial statements closely, looking for things that shouldn't be there. Be on the lookout for unauthorized charges. This means maintaining careful records so that you know what should be on your bank and credit card statements.

Identity theft is a crime, and governments work hard to find and prosecute the offenders. Even so, millions of people are victims each year. Don't be one of them. For more information about identity theft and how to avoid being a victim, see the U.S. Department of Justice's website: *www.justice.gov/criminal/fraud/websites/idtheft.html.*

- Saving and Retirement
  - How big an emergency saving reserve should you have?
  - Is your retirement savings insured?

Applying the Concept

Applying the Concept inserts show how to put theory into practice. They provide real-world examples of the ideas introduced in the chapter, drawn primarily from history or from relevant public policy debates. Here are some of the questions examined in Applying the Concept:

- Why do interest rates rise when inflation goes up?
- Why does a country's exchange rate suddenly plummet?
- Why do large-scale frauds that damage investors occur repeatedly?
- Why is it important for central banks to be free of political influence?
- Can monetary policy be used to stabilize the economy?
- What determines inflation?
- What are the implications of China's exchange rate policy?

Lessons from the Crisis

These inserts cover episodes from the financial crisis of 2007–2009 and from the European banking and government debt crisis that began shortly thereafter. One goal is to give you a framework for understanding these crises and how they are transforming the world of finance. Another goal is to highlight the relevance and power of the ideas in the book more generally. Along the way, the various Lessons from the Crisis offer you insight into the sources and effects of financial instability. They also address the

means that governments—including regulators and central bankers—use to counter financial instability. Most chapters contain one such insert.

The topics range from specific aspects of the crises to key issues that have wide application. Here are some of the questions examined in Lessons from the Crisis:

- What factors led to the financial crisis of 2007–2009?
- What made financial institutions especially vulnerable in this period?
- Why do financial markets sometimes stop functioning?
- How do threats to the financial system differ from threats to specific financial institutions?
- When a crisis erupts, what can central banks do to prevent another Great Depression?
- What factors link banks and governments in the euro-area crisis?

In the News

One of the primary purposes of this textbook is to help you understand the business and financial news. Critically evaluating what you read, hear, and see means developing a clear understanding of how the financial system works, as well as reading the news regularly. Like many other skills, critical reading of newspapers and magazines takes practice. You can't just pick up a newspaper and skim through it quickly and efficiently; you need to learn how. Your instructor will make suggestions about what you should read. See Table 1.1 on page 12 for a list of reliable sources of information on the economy and the financial system.

Given your need to become a skilled consumer of financial information, each chapter in this book closes with an article drawn from the financial press. These stories from *The Wall Street Journal,* the *Financial Times, The Economist, Bloomberg Businessweek,* and other sources are reproduced under the heading In the News. Each provides an example of how the concepts introduced in the chapter are discussed in the real world, and each is followed by a brief summary.

Tools of the Trade

Many chapters in this book include an insert called Tools of the Trade that concentrates on practical knowledge relevant to the chapter. Some of these inserts cover basic skills, including how to read bond and stock tables, how to read charts, and how to do some simple algebraic calculations. Others provide brief reviews of material from principles of economics classes, such as the relationship between the current account and the capital account in the balance of payments. Still other Tools of the Trade inserts address questions such as:

- What is leverage, and how does it affect risk?
- What are hedge funds?
- What tools did the Fed use to address the financial crisis?
- How is a recession defined?

End-of-Chapter Sections

Key Terms A listing of all the technical terms introduced (in bold red) and defined in the chapter. The key terms are defined in full in the glossary at the end of the book.

Table 1.1 Sources of Economic and Financial News and Data

Sources of Daily News

***The Wall Street Journal* and www.wsj.com**

Published six days a week, and available both in print and on the Internet, *The Wall Street Journal* provides news, as well as comprehensive coverage of business and finance. Some content on the website is free.

***Financial Times* and www.ft.com**

The *Financial Times* offers reporting, analysis, and commentary on major business, political, financial, and economic events. The *FT* is written from a distinctly European perspective and includes detailed coverage of non-U.S. business and financial news. Free registration gives access to some of the *FT* web content.

***Bloomberg* (www.bloomberg.com)**

Bloomberg offers a wide range of financial market services, including news. A wide variety of news and data can be found on the free portion of its website.

***Yahoo! Finance* (http://finance.yahoo.com)**

Yahoo! Finance provides free quotes on stocks, bonds, currencies, and commodities. It also presents news from various sources about business finance and portfolio management.

Sources of Weekly News

***The Economist* and www.economist.com**

The Economist covers global politics, economics, business, finance, and science. It not only reports the facts but also analyzes them and draws policy conclusions. The Finance and Economics section, located roughly three-quarters of the way into each print issue, is of particular interest.

***Bloomberg Businessweek* and www.businessweek.com**

Bloomberg Businessweek is a U.S.-based publication that offers balanced reporting and analysis of top economic, financial, business, and technological issues.

Economic and Financial Data

The Federal Reserve Bank of St. Louis maintains a comprehensive database called FRED (**F**ederal **R**eserve **E**conomic **D**ata) that you can access by going to http://research.stlouisfed.org/fred2. This website includes tutorials for using FRED that will help you answer the end-of-chapter problems.

The Bureau of Labor Statistics supplies data on prices, employment, and unemployment at www.bls.gov.

The Bureau of Economic Analysis provides information on gross domestic product, consumption, investment, and other macroeconomic data at www.bea.gov.

The Federal Reserve Board website www.federalreserve.gov provides a variety of banking, monetary, interest rate, and exchange rate data.

Personal Finance Information

Many financial websites offer a variety of personal finance resources, including financial calculators to help you with mortgages, auto loans, and insurance. They are:

- www.choosetosave.org
- www.dinkytown.net
- www.wsj.com (under the "markets" tab, go to "personal finance" then the "family finance" section and look for "tools")

Using FRED: Codes for Data in This Chapter A table identifying economic and financial data highlighted in the chapter together with the data code (identifier) that is used to retrieve the data from the Federal Reserve's online database, FRED.

Chapter Lessons A list of the key lessons in the chapter summarized in the form of an outline that matches the chapter headings—a format designed to aid comprehension and retention.

Problems Each chapter contains two types of problems at varying levels of difficulty: (1) conceptual and analytical problems and (2) data exploration problems using FRED. The problems are designed to reinforce the lessons in the chapter. The data exploration problems ask you to manipulate economic and financial data from FRED (Federal Reserve Economic Data), the extensive online resource maintained and provided free of charge by the Federal Reserve Bank of St. Louis at http://research.stlouisfed.org/fred2. Many of the graphs in this book are based on data in FRED. See Appendix B of this chapter for further information on FRED and how to use it.

The Organization of This Book

This book is organized into five sections. Each one employs core principles to illuminate a particular part of the financial system and applies economic theory to the world around us. The next two chapters will continue our overview of the financial system. First, we'll study money—what it is and how it is used. We'll see that currency allows transactions to be made anonymously, which reduces the need to gather information. This advantage of currency is related to Core Principle 3: Information is the basis for decisions. In Chapter 3, we'll take a bird's-eye view of financial instruments, financial markets, and financial institutions. At various points in that chapter, we'll refer to the first four core principles.

Part II includes detailed descriptions of financial instruments. We'll study bonds, stocks, and derivatives, as well as exchange rates for foreign currency. The valuation of financial instruments requires a comparison of payments made on different dates as well as an estimate of the risk involved in each instrument. Thus, these chapters focus on Core Principles 1 and 2: Time has value and Risk requires compensation.

Throughout Part II and continuing in Part III, we'll discuss financial markets, whose purpose is to facilitate the buying and selling of financial instruments. No one would buy stocks or bonds if they could not be easily resold at little cost. Financial markets also provide the information necessary to understand the value and risk that are associated with particular financial instruments. Core Principles 3 and 4 (Information is the basis for decisions and Markets determine prices and allocate resources) are both relevant to our discussion of markets.

Part III covers financial institutions, especially banks and their regulation. Earlier in this chapter (page 7), we emphasized that financial institutions spend a great deal of time collecting and processing information. Without that information, many financial transactions could not take place. This dependence of banks on information is an example of Core Principle 3: Information is the basis for decisions. Financial regulation is driven by Core Principle 5: Stability improves welfare.

Part IV describes central banks, especially the Federal Reserve and the European Central Bank. These institutions exist to stabilize the real economy as well as the financial system. Thus, like financial regulators in Part III of the book, they embody

Core Principle 5: Stability improves welfare. We'll see how central banks manipulate interest rates and other less conventional policy tools to stabilize the economy.

Finally, Part V brings together material covered in the first four sections to explain how the financial system influences the real economy. We'll use a macroeconomic model to analyze the mechanism through which central banks influence the economy, paying particular attention to the role of the financial system in determining inflation and growth.

Learning money and banking is going to be hard work. Reading and working through the remaining 22 chapters of this book will take lots of time and energy. But when you are done, you will be armed with the tools you need to understand how the financial system works and why it changes as it does. You will be an informed reader of the financial and economic news and know how to put the financial system to use for you. You will understand the various ways that you can pay for your morning coffee and how each one of them works. You will understand the usefulness of bonds and stocks as well as what financial institutions do and how central banks work. You will know how to make sound financial decisions for the rest of your life. You will understand how financial crises arise, how they threaten economic stability, and what can be done to prevent and contain them. Regardless of the career you choose to follow, a solid background in money, banking, and financial markets will help you make sound financial decisions for the rest of your life.

Terms

Basel III, 5
central bank, 3
Dodd-Frank Act, 5
European Central Bank, 5
Federal Reserve System, 3
financial institution, 3
financial instrument, 3
financial market, 3
financial system, 3
information, 7
markets, 7
money, 3
regulation, 4
regulatory agencies, 3
risk, 6
stability, 8
supervision, 4
time, 5

Using FRED: Codes for Data in This Chapter

Data Series	FRED Data Code
Nominal GDP	GDP
Real GDP	GDPC1
GDP deflator	GDPDEF

Chapter Lessons

1. A healthy and constantly evolving financial system is the foundation for economic efficiency and economic growth. It has six parts:
   a. Money is used to pay for purchases and to store wealth.
   b. Financial instruments are used to transfer resources and risk.
   c. Financial markets allow people to buy and sell financial instruments.
   d. Financial institutions provide access to the financial markets, collect information, and provide a variety of other services.
   e. Government regulatory agencies aim to make the financial system operate safely and reliably.
   f. Central banks stabilize the economy.
2. The core principles of money and banking are useful in understanding all six parts of the financial system.
   a. Core Principle 1: Time has value.
   b. Core Principle 2: Risk requires compensation.
   c. Core Principle 3: Information is the basis for decisions.
   d. Core Principle 4: Markets determine prices and allocate resources.
   e. Core Principle 5: Stability improves welfare.

Conceptual and Analytical Problems

1. List the financial transactions you have engaged in over the past week. How might each one have been carried out 50 years ago? *(LO1)*
2. How were you, or your family or friends, affected by the failure of the financial system to function normally during the financial crisis of 2007–2009? *(LO1)*
3. List three items you formerly bought with cash but now purchase with a debit card. *(LO1)*
4. Various financial instruments usually serve one of two distinct purposes: to store value or to transfer risk. Name a financial instrument used for each purpose. *(LO1)*
5. Financial innovation has reduced individuals' need to carry cash. Explain how. *(LO1)*
6.* Many people believe that, despite ongoing financial innovations, cash will always be with us to some degree as a form of money. What Core Principle could justify this view? *(LO2)*
7. When you apply for a loan, you are required to answer lots of questions. Why? Why is the set of questions you must answer standardized? *(LO2)*
8. Name two distinct financial markets and describe the kind of asset traded in each. *(LO1)*
9.* Why do you think the global financial system has become more globally integrated over time? Can you think of any downside to this increased integration? *(LO1)*
10. The government is heavily involved in the financial system. Explain why. *(LO1)*

*Indicates more difficult problems

11. If offered the choice of receiving $1,000 today or $1,000 in one year's time, which option would you choose, and why? *(LO2)*
12. If time has value, why are financial institutions often willing to extend you a 30-year mortgage at a lower annual interest rate than they would charge for a one-year loan? *(LO2)*
13. Using Core Principle 2, under what circumstances would you expect a job applicant to accept an offer of a low base salary and an opportunity to earn commission over one with a higher base salary and no commission potential? *(LO2)*
14. Suppose medical research confirms earlier speculation that red wine is good for you. Why would banks be willing to lend to vineyards that produce red wine at a lower interest rate than before? *(LO2)*
15.* If the U.S. Securities and Exchange Commission eliminated its requirement for public companies to disclose information about their finances, what would you expect to happen to the stock prices for these companies? *(LO2)*
16. If 2 percent growth is your break-even point for an investment project, under which outlook for the economy would you be more inclined to go ahead with the investment: (1) A forecast for economic growth that ranges from 0 to 4 percent, or (2) a forecast of 2 percent growth for sure, assuming the forecasts are equally reliable? What Core Principle does this illustrate? *(LO2)*
17.* Why are large, publicly listed companies much more likely than small businesses to sell financial instruments such as bonds directly to the market, while small businesses get their financing from financial institutions such as banks? *(LO2)*
18.* During the financial crisis of 2007–2009, some financial instruments that received high ratings in terms of their safety turned out to be much riskier than those ratings indicated. Explain why markets for other financial instruments might have been adversely affected by that development. *(LO2)*
19. Suppose financial institutions didn't exist but you urgently needed a loan. Where would you most likely get this loan? Using Core Principles, identify an advantage and a disadvantage this arrangement might have over borrowing from a financial institution. *(LO2)*

FRED ECONOMIC DATA | ST. LOUIS FED

Scan here for quick access to the hints for these problems. Need a barcode reader? Try ScanLife, available in your app store.

Data Exploration

For detailed instructions on using Federal Reserve Economic Data (FRED) online to answer each of the following problems, visit www.mheducation.asia/olc/cecchetti and click on Student Edition, then Data Exploration Hints.

1. Go to the FRED website (http://research.stlouisfed.org/fred2). Register to set up your own account. Doing so will allow you to save and update graphs, alter them for submitting assignments and making presentations, and receive a notice whenever the data is updated.
2. To begin using FRED, plot the consumer price index (FRED code: CPIAUCSL) and find the date and level of the latest observation. Then, plot the inflation rate measured as the percent change from a year ago of this index.
3. Plot the level of real GDP (FRED code: GDPC1). Then, plot the rate of economic growth as the percent change from a year ago of this index. Describe how real GDP

behaves in recessions, which are denoted in the FRED graph by vertical shaded bars. If you registered on FRED (as in Data Exploration problem 1 on the previous page), save the graph so that you can recall and update it easily when new observations become available.

4. Examine nominal GDP (FRED code: GDP) by repeating the steps in Data Exploration Problem 3. Based on the figure showing percent change from a year ago, what was special about the behavior of nominal GDP during the financial crisis of 2007–2009 compared to previous decades?
5. Plot on one figure the percent change from a year ago of both the GDP deflator (FRED code: GDPDEF) and real GDP (FRED code: GDPC1). How does the GDP deflator link nominal and real GDP? Since the mid-1980s, does it fluctuate more or less than real GDP?

Appendix A to Chapter 1

Measuring Economic Activity, Prices, and the Inflation Rate

Measuring Economic Activity

Gross Domestic Product (GDP) is the most commonly used measure of economic activity. In order to see if the economy is improving, you can look at whether GDP is growing (or shrinking) and the rate of that growth. And to compare well-being in two countries, you can look at the GDP per person in each country—*per capita GDP.*

The definition of GDP is *the market value of final goods and services produced in a country during a year.* Let's look at the pieces of this definition:

- **Market value:** In order to add together production of cars, corn flakes, and computers, we take the market price of each and multiply it times the quantity of each that is produced, and sum the products together. That is, add up (market price of cars × quantity of cars produced) plus (market price of corn flakes × quantity of corn flakes produced), and so on.
- **Final goods and services:** We take only the price of the final product purchased by the person who uses it. For example, when a consumer buys a car, the car is considered a final good so it's included. But when the automobile manufacturer buys steel from a steel company in order to build the car, the steel is an intermediate product so it is not included.
- **In a country:** Only production within the country counts. This means that if a U.S. company owns a factory in China, the production of the factory is included in China's GDP.
- **During a year:** To measure production we need to specify a time period, and the time period is usually one year.

So, to compute U.S. GDP in 2015, for example, we sum the quantity of goods and services produced in the United States in 2015 times their 2015 prices. In an economy with only cars and corn flakes, the calculation would look like this:

$$\begin{aligned}\text{GDP in 2015} = &(\text{2015 price of cars} \times \text{quantity of cars produced in 2015}) \\ &+ (\text{2015 price of corn flakes} \times \text{quantity of corn flakes produced in 2015})\end{aligned}$$

Note that we could always measure incomes rather than production. That is, instead of measuring total production, we can measure the total payments made to factors used to produce the output—the payments to labor, capital, and land. Because the revenue from selling all of the goods and services produced must always go to the people responsible for making them—the workers and the owners—total income equals GDP as well.

Real versus Nominal GDP

It is essential when measuring the level of economic activity to distinguish changes in prices from changes in quantities. As defined so far, GDP confuses the two changes. For example, U.S. GDP rose from $15.534 trillion in 2011 to $16.245 trillion in 2012. Computing the annual growth rate, the percentage change from one year to the next, means that the U.S. economy grew by 4.58 percent.

$$\text{GDP growth rate from 2011 to 2012} = \frac{\$16.245\,trillion - \$15.534\,trillion}{\$15.534\,trillion} \times 100$$
$$= 4.58\%$$

This number alone only tells us the sum of the growth in the quantity of output produced (something that is beneficial) and the change in prices (which is not so good). To see the point, look back at the computation for the car and corn flakes economy and note that GDP can rise either because quantities rise or because prices go up.

Separating changes in the quantities from changes in the prices requires computing *real* GDP. To do this, government statisticians fix the prices at a base-year level and then calculate the sum of the quantities times these base-year prices. Currently, real GDP in the United States is reported in year-2009 dollars. That is, statisticians sum up the value of all production in the United States during a year measured at the prices at which the goods and services were sold in the year 2009. This procedure isolates the part of change in GDP that is due to growth in the quantity produced from the part that came from changes in prices.

For the car and corn flakes economy, the formula looks like this:

$$\text{Real GDP in 2015} = (\text{2009 price of cars} \times \text{quantity of cars produced in 2015})$$
$$+ (\text{2009 price of corn flakes} \times \text{quantity of corn flakes produced in 2015})$$

To see what this means for the United States as a whole, we can look at www.bea.gov and find that, in 2011, real GDP (in year-2009 dollars) was $15.052 trillion. In 2012, real GDP (again in year-2009 dollars) had increased to $15.471 trillion. That's an increase of 2.78 percent.

$$\text{Real GDP growth rate from 2011 to 2012} = \frac{\$15.471\,trillion - \$15.052\,trillion}{\$15.052\,trillion} \times 100$$
$$= 2.78\%$$

The GDP Deflator and the Inflation Rate

It should come as no surprise that from nominal and real GDP we get a measure of prices on average in the economy as a whole. We can start by thinking about nominal GDP as the product of real GDP times a measure of prices in the economy as a whole. That is:

$$Nominal\ GDP = Prices \times Real\ GDP$$

Looking at this expression, you can see that by taking the ratio of nominal GDP to real GDP we get a measure of prices. This is what's called the GDP *deflator,* and using the data from 2011, we get:

$$\text{GDP deflator in 2011} = \frac{\text{Nominal GDP in 2011}}{\text{Real GDP in 2011}} = \frac{\$15.534\,\text{trillion}}{\$15.052\,\text{trillion}} = 1.032$$

The same computation for 2012 tells us that the GDP deflator in 2012 is 1.050.

No one spends much time worrying about the level of the GDP deflator. Instead, we are concerned with the rate at which the index is changing. The inflation rate is defined as the rate of growth in the price level. Using the GDP deflator from 2011 to 2012, we get an inflation rate of 1.74 percent.

$$\text{Inflation rate} = \frac{(1.050 - 1.032)}{1.032} \times 100 = 1.74\%$$

This result makes sense. Because real GDP is designed to strip out the effect of price changes, the inflation rate (1.74 percent) should equal the growth rate of nominal GDP minus the growth rate of real GDP (4.58% − 2.78% = 1.80%). Approximation error accounts for the small difference between these two rates (1.74 percent versus 1.80 percent).

While it is the easiest to explain and compute, the GDP deflator is unfortunately not the most commonly used price index. The Consumer Price Index, or CPI, designed to measure the changes in the cost of living, lays claim to that title. We will learn more about the CPI throughout this book, starting with the Tools of the Trade in Chapter 2.

Appendix B to Chapter 1

Using FRED

Scan here for quick access to the hints for these problems. Need a barcode reader? Try ScanLife, available in your app store.

Throughout this book, you will find economic data that highlight the role of money and finance in modern economies. A key new feature of the book is the use of data provided by FRED, the free, highly accessible online database created and maintained by the Federal Reserve Bank of St. Louis. Captions of figures that use data from FRED include FRED codes (identifiers) for finding and updating the data. And the end-of-chapter problem sets now include a group of data exploration problems requiring you to use FRED.

To learn how to use FRED, visit the Data Exploration Hints at www.mheducation.asia/olc/cecchetti. The hints include detailed instructions on using FRED to answer each of the Data Exploration problems in Chapters 1 through 10. Beginning with Chapter 11, the online hints provide instructions only for FRED techniques that were not used in the first 10 chapters.

Also included on the book website, are FRED Resources, where you will find up-to-date links to the tutorials on the FRED website (http://research.stlouisfed.org/fred2). The tutorials show you how to make and alter graphs using the FRED interface through your computer or cell phone. FRED allows you to change the graph type, add data series, change the observation period or frequency of a data series, and transform the data (e.g., percent change, percent change from a year ago, percent change at an annual rate). You can also alter the graph's appearance (e.g., size, background, color, font, line style).

The data in FRED cover many countries, and the information is widely used by students and professional economists alike. As of September 2013, FRED contained more than 140,000 economic time series from more than 50 data producers. FRED is updated daily.

Understanding money and banking requires understanding the data that describe an economy and its financial system. There are many producers of these data, including private associations and universities, government agencies such as central banks and commerce departments, and public international organizations such as the International Monetary Fund. Until recently, however, it was difficult for the general public, including students, to gain direct exposure to such a wide range of data; only businesses and professionals who could afford the services of private data gatherers enjoyed rapid access to broad data sets.

FRED now provides access to a wide set of data through a single interface. By using FRED, this textbook makes acquiring and manipulating the relevant data simple. A close look at data will help you understand key issues such as the nature and causes of business cycles and the tools of monetary policy. When reading news stories about money and finance, you can also use FRED to check their accuracy or get updates.

At the end of each chapter, the data series that are highlighted in the chapter appear in a table along with the data code (identifier) used in FRED. FRED makes it easy to

display and examine the data online in graphic form. From the FRED interface, you can also download the data into an Excel spreadsheet for further analysis; or, if you prefer, install an Excel "add-in" from the FRED website that will allow you to more quickly access and manipulate FRED data. Finally, FRED mobile apps allow you to use it directly on iOS and Android devices.

Getting acquainted with FRED as you start reading this book will prepare you to answer the FRED-linked end-of-chapter problems. When you have finished using the book, the ability you have gained to find, manipulate, and understand economic and financial data will be an enduring benefit of your studies.