Fundamentals of Corporate Finance 4th edition Parrino Solutions Manual

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Chapter 2

The Financial System and the Level of Interest Rates

Before You Go On Questions and Answers

Section 2.1

1. *What critical economic role does the financial system play in the economy?*

   The financial system is in place to gather money from people and businesses and then channel these funds to those who need it. An efficient financial system is essential for a healthy economy. The major players in the U.S. financial system are big institutions such as the New York Stock Exchange, Citigroup, or State Farm Insurance.

2. *What are the two basic ways in which funds flow through the financial system from lender–savers to borrower–spenders?*

   There are two basic mechanisms by which funds flow through the financial system: 1) Funds can flow directly through financial markets, and (2) funds can flow *indirectly* through financial institutions.

Section 2.2

1. *Why is it difficult for individuals to participate in the direct financial markets?*

   The financial markets where direct transactions take place are wholesale markets with a typical minimum transaction size of $1 million. Major buyers and sellers of securities in direct financial markets include commercial banks, large corporations, the federal government, hedge funds, and some wealthy individuals.

2. *Why might a firm prefer to have a security issue underwritten by an investment banking firm?*

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In the most common type of underwriting arrangement, called *firm-commitment underwriting,* the investment banker assumes the risk of buying the new securities from the issuing company and reselling them to investors. The investment banker guarantees to buy the entire security issue from the company at a fixed price.

Section 2.3

1. *What is the difference between primary and secondary markets?*

   Primary markets are markets where new securities are sold for the first time. Secondary markets are where the owners of outstanding securities can sell them to other investors. They provide the means for investors to sell their securities and get cash.

2. *How and why do large business firms use money markets?*

   Large businesses use money markets to adjust their liquidity positions. If a firm has idle cash sitting around, it can invest it in negotiable CDs, Treasury bills, or other money market instruments. On the other hand, if a company has a temporary cash shortage, it can borrow in the money markets by selling commercial paper at lower interest rates than it could borrow through a commercial bank.

3. *What are capital markets, and why are they important to corporations?*

   Capital markets refer to the segment of the marketplace where capital goods are financed with long-term debt or equities. The most important capital market instruments are common stocks and corporate bonds. Capital markets are important to corporations because they allow them to obtain necessary financing.

Section 2.4

1. *How does information about a firm's prospects get reflected in its share price?*

   Investors act upon the expectations of a firm's prospects through trading of the securities. The buying and selling then causes the price of the security to reflect their assessment of its value.

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2. *What is strong-form market efficiency? Semistrong-form market efficiency? Weak-form market efficiency?*

Strong-form market efficiency is a market in which all information, private and public, is reflected in the price of the security. The semistrong-form of market efficiency suggests that only public information is reflected in a security's price, while the weak-form of market efficiency holds that only information contained in the past price of a security is reflected in its current price (it does not reflect public or private information).

Section 2.5

1. *What is financial intermediation, and why is it important?*

Financial intermediation is the process of converting financial securities with one set of characteristics into securities with another set of characteristics. For example, commercial banks use consumer CD deposits to make loans to small businesses.

2. *What are some services that commercial banks provide to businesses?*

Commercial banks are the largest financial intermediaries in the economy and offer the widest range of financial services to businesses. Nearly every business has a significant relationship with a commercial bank – usually a checking or transaction account and some type of credit or loan arrangement. In addition, banks do a significant amount of equipment lease financing.

3. *What is an IPO, and what role does an investment banker play in the process?*

Investment bankers specialize in helping firms to sell their new debt or equity issues in financial markets. In an initial public offering (IPO), the investment banker prepares the new issue for sale and then underwrites the deal. Other functions of the investment banker in an IPO process include preparing the prospectus, registering the documentation with the SEC, and providing general financial advice to the issuer.

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Section 2.6

1. *Explain how the real rate of interest is determined.*

   The real rate of interest depends on interaction between the rate of return that businesses can expect to earn on investments in capital goods and savers' time preference for consumption today versus willingness to save. Therefore, the real rate of interest is determined when the desired saving level equals the desired level of investment.

2. *How are inflationary expectations accounted for in the nominal rate of interest?*

   The nominal interest rate is the rate that is actually observed in the financial markets, and it is equal to the real interest rate plus the expected annualized changes in commodity prices, or inflation premium. This is commonly referred to as the Fisher effect.

3. *Explain why interest rates follow the business cycle.*

   Interest rates tend to follow the business cycle to rise during economic expansion and decline during recession. On the one hand, during an expansion, there is upward pressure on interest rates as businesses begin to grow and borrow more money. On the other hand, during a recession, the demand for goods and services is lower, businesses borrow less, and as a result the economy slows down and the interest rates decline. Typically, the Fed also loosens credit to stimulate the economy, which puts further downward pressure on the interest rates.

Self-Study Problems and Solutions

2.1 Economic units that need to borrow money are said to be:

a. Lender–savers

b. Borrower–spenders

c. Balanced budget keepers.

d. None of the above.

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Solution: Such units are said to be **(b)** Borrower-spenders.

LO: **1**

Level: **Basic**

2.2 Explain what the marketability of a security is and how it is determined.

Solution: Marketability refers to the ease with which a security can be sold and converted into cash. The level of marketability depends on the cost of trading the security and the cost of searching for information. The lower these costs are, the greater the security's marketability.

LO: **3**

Level: **Basic**

2.3 What are over-the-counter markets (OTCs), and how do they differ from organized exchanges?

Solution: Securities that are not listed on an organized exchange are sold OTC. An OTC market differs from an organized exchange in that there is no central trading location. OTC security transactions are made via phone or computer as opposed to on the floor of an exchange.

LO: **3**

Level: **Basic**

2.4 What effect does an increase in the demand for business goods and services have on the real interest rate? What other factors can affect the real interest rate?

Solution: An increase in the demand for business goods and services will cause the borrowing schedule in Exhibit 2.4 to shift to the right, thus increasing the real rate of interest. Other factors that can affect the real interest rate include increases in productivity, changes in technology, or changes in the corporate tax rate.

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Demographic factors, such as growth or age of the population, and cultural differences can also affect the real rate of interest.

LO: **6**

Level: **Intermediate**

2.5 How does the business cycle affect the nominal interest rate and inflation rate?

Solution: Both the nominal interest and inflation rates tend to follow the business cycle; that is, they rise with economic expansion and fall during a recession.

LO: **6**

Level: **Basic**

2.6.1 You lent $100 to a friend for one year at a nominal rate of interest of 3 percent. Inflation during that year was 2 percent. Did you experience an increase or decrease in the purchasing power of your money? How much did it increase or decrease?

Solution: Since the interest rate that you received (3 percent) exceeded the rate of inflation, the amount that you received from your friend when the loan was repaid had greater purchasing power than $100. The amount by which the purchasing power increased can be calculated using Equation 2.1:

$1 + i = (1 + r) \times (1 + \Delta P_e)$

Solving for r yields:

$r = (1 + i)/(1 + \Delta P_e) - 1$

$r = (1 + 0.03)/(1 + 0.02) - 1$

$r = 0.0098$, or 0.98%

Therefore, the purchasing power increased by slightly less than 1 percent.

LO:

Level:

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Discussion Questions

2.1 *Explain why total financial assets in the economy must equal total financial liabilities.*

Every financial asset must be financed with some type of a claim or liability. Since all of an economy's financial assets are just a collection of the individual financial assets, then they should also sum to the collective claims on those assets in the economy.

LO: **1**

Level: **Basic**

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance; Business Economics
AICPA: Resource Management

2.2 *Why don't small businesses make greater use of the direct credit markets since these markets enable firms to finance their activities at a very low cost?*

Direct credit markets are geared toward big, established companies since they are wholesale in nature and the minimum transaction size is far beyond the needs of a small business. Small businesses are better off borrowing money from financial intermediaries, such as commercial banks.

LO: **5**

Level: **Basic**

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.3 *Explain the economic role of brokers and dealers. How does each make a profit?*

Brokers and dealers play a similar economic role in that they both bring buyers and sellers of a commodity together in a market. However, brokers only facilitate a transaction by helping the two parties make a transaction and brokers are therefore only compensated for taking on that role. They bear no risk of ownership of securities during the transaction. Dealers on the other hand, take risk in that they will purchase (sell) a commodity from a seller (buyer) without another buyer (seller) necessarily being

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available. In other words, a dealer will take the risk of purchasing (selling) a commodity and will therefore be compensated for taking that risk.

LO: 3

Level: Basic

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Resource Management

2.4 *Why were commercial banks prohibited from engaging in investment banking activities until 1999?*

Banks had been barred from investment banking following the Great Depression because it was believed that these activities were too risky for banks. At the time, it was believed that excessive risk taking by banks had resulted in a large number of bank failures, which precipitated the Great Depression. Recent research has exonerated the banking system of this charge.

LO: 2

Level: Basic

Bloomcode: Knowledge
AACSB: Analytic
IMA: FSA
AICPA: Legal/Regulatory Perspective

2.5 *What are two basic services that investment banks provide in the economy?*

Investment banks specialize in helping companies sell new debt or equity as well as provide other services such as broker and dealer services.

LO: 2

Level: Basic

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.6 *How do large corporations adjust their liquidity in the money markets?*

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Large corporations can take advantage of money markets to adjust for their liquidity by selling or buying short-term financial instruments such as commercial paper, CDs, or Treasury bills. Large corporations with cash surplus can invest in short-term securities, while corporations with cash shortfalls can sell securities or borrow funds on a short-term basis. Money market instruments have a maturity anywhere between one day and one year and therefore are very liquid and less risky than long-term debt.

LO: 3

Level: Basic

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.7 *The CFO of a certain company always wears his green suit on a day that the firm is about to release positive information about his company. You believe that you can profit from this information by buying the firm's shares at the beginning of every day that the CFO shows up wearing this green suit. Describe which form of market efficiency is consistent with your belief.*

You believe that the CFO's decision to wear a green suit indicates that positive information will be announced and that the company's stock price will increase following that announcement. If you are correct, knowing what the CFO is wearing before any announcement is valuable private information which should enable you to earn abnormally high returns. Therefore, your belief is consistent with the semistrong-form of market efficiency – according to which it is possible to earn abnormally high returns by trading on private information.

LO: 4

Level: Intermediate

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Strategic/Critical Thinking

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2.8 *Shouldn't the nominal rate of interest (Equation 2.1) be determined by the actual rate of inflation (ΔP_a), which can be easily measured, rather than by the expected rate of inflation (ΔP_e)?*

The nominal rate of interest is a forward-looking measure, and therefore it makes sense that it is using the expected rate of inflation as opposed to the actual rate of inflation. The expected rate of inflation is the market's best estimate of what the inflation rate will be in the future.

LO: 6

Level: Basic

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.9 *How does Exhibit 2.5 help explain why interest rates were so high during the early 1980s as compared to the relatively low interest rates in the early 1960s?*

The nominal rate of interest is determined by the real rate of interest plus the expected rate of inflation, and during the 1980s, the U.S. economy experienced a very high rate of inflation and, thus, high interest rates. Looking at Exhibit 2.5, we can see that the inflation increased from less than 2 percent in the 1960s to almost 13 percent in the 1980s. This was a result of the monetary policy instituted by the U.S. government during this period of time.

LO: 6

Level: Basic

Bloomcode: Analysis
AACSB: Analytic
IMA: Business Economics
AICPA: Resource Management

2.10 *When determining the real interest rate, what happens to businesses that find themselves with unfunded capital projects whose rate of return exceeds the cost of capital?*

The real rate of interest reflects a complex set of forces that control the desired level of lending and borrowing in the economy. In this example, businesses are not investing in

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projects where the rate of return exceeds the cost of capital. This means that there is reduced demand for investment funds at the current real interest rate. This will remain so until either the real interest rate changes or until something changes for the firm such as introducing a new technology that will increase the rate of return on projects for the firm.

LO: **6**

Level: **Basic**

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

Questions and Problems

BASIC

2.1 **Financial System:** What is the role of the financial system, and what are the two major components of the financial system?

Solution: The role of the financial system is to gather money from businesses and individuals who have surplus funds and channel funds to those who need them. The financial system consists of financial markets and financial institutions.

LO: 2.1

Bloomcode: Knowledge
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.2 **Financial System:** What does a competitive financial system imply about interest rates?

Solution: If the financial system is competitive, one will receive the highest possible rate for money invested with a bank and the lowest possible interest rate when borrowing money. Also, only firms with good credit ratings and projects with high rates of return will be financed.

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LO: 2.1

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.3 **Financial System:** What is the difference between saver–lenders and borrower–spenders, and who are the major representatives of each group?

Solution: Saver–lenders are those who have more money than they need right now. The principal saver–lenders in the economy are households. Borrower–spenders are those who need the money saver–lenders are offering. The main borrower–spenders in the economy are businesses followed by the federal government, although households are important mortgage borrowers.

LO: 2.1

Bloomcode: Analysis
AACSB: Reflective Thinking
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.4 **Financial Markets:** List the two ways in which a transfer of funds takes place in an economy. What is the main difference between these two?

Solution: Funds can flow directly through financial markets or indirectly through intermediation markets where funds flow through financial institutions first.

LO: 2.2

Bloomcode: Knowledge
AACSB: Analytic
IMA: Business Economics
AICPA: Resource Management

2.5 **Financial Markets:** Suppose you own a security that you know can be easily sold in the secondary market, but the security will sell at a lower price than you paid for it. What does this imply for the security's marketability and liquidity?

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Solution: As the price of the security is lower than that you paid for it, it has a lower degree of liquidity to you, the owner. That is because the security cannot now be sold without a loss in value to the owner. Marketability refers to the ease with which a security can be sold or converted to cash. The information in the problem mentions that the security could be easily sold in secondary market, which implies it has high degree of marketability to you.

LO: 2.3

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.6 Financial Markets: Why are direct financial markets also called wholesale markets?

Solution: The financial markets are also called wholesale markets because the minimum transaction or security denomination is $1 million or more.

LO: 2.2

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.7 Financial Markets: Trader Inc.is a $300 million company, as measured by asset value, and Horst Corp. is a $35 million company. Both are privately held corporations. Explain which firm more likely to go public and register with the SEC, and why.

Solution: Trader Inc. is more likely to go public because of its larger size. Though the cost of SEC registration and compliance is very high, larger firms can offset these costs by the lower funding cost in public markets. Smaller companies find the cost prohibitive for the dollar amount of securities they sell.

LO: 2.3

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

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2.8 Primary Markets: What is a primary market? What does IPO stand for?

Solution: A primary market is where new securities are sold for the first time. IPO stands for Initial Public Offering.

LO: 2.3

Bloomcode: Knowledge
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.9 Primary Markets: Identify whether the following transactions are primary market or secondary market transactions.

a. Jim Hendry bought 300 shares of IBM through his brokerage account.

b. Peggy Jones bought $5,000 of General Motors bonds from another investor.

c. Hathaway Insurance Company bought 500,000 shares of Trigen Corp. when the company issued stock.

Solution:

a. Secondary market transactions.

b. Secondary market transactions.

c. Primary market transactions.

LO: 2.3

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.10 Investment Banking: What does it mean to "underwrite" a new security issue? What compensation does an investment banker get from underwriting a security issue?

Solution: To underwrite a new security issue means that the investment banker buys the entire issue from the firm at a guaranteed price and then resells the security to individual investors or

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other institutions at a higher price. The difference between the banker's purchase price and the total resale price is called the underwriting spread, and it is the banker's compensation. In addition to underwriting new securities, investment banks also provide other services, such as preparing the prospectus, preparing legal documents to be filed with the SEC, and providing general financial advice to the issuer.

LO: 2.2

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.11 Investment Banking: Cranjet Inc. is issuing 10,000 bonds, and its investment banker has guaranteed a price of $985 per bond. If the investment banker sells the entire issue to investors for $10,150,000.

a. What is the underwriting spread for this issue?

b. What is the percentage underwriting cost?

c. How much did Cranjet raise?

Solution:

a. $300,000 ($10,150,000 – $985 x 10,000)

b. 3.05 percent [($1,105-985) /$985]

c. $9,850,000 ($985 x 10,000)

LO: 2.2

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.12 Financial Institutions: What are some of the ways in which a financial institution or intermediary can raise money?

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Solution: A financial intermediary can raise money through the sale of financial products that individuals or businesses will purchase, such as checking and savings accounts, life insurance policies, pension or retirement funds.

LO: 2.1

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.13 Financial Institutions: How do financial institutions act as intermediaries to provide services to small businesses?

Solution: Financial intermediaries allow smaller companies to access the financial markets. They do this by converting securities with one set of characteristics into securities with another set of characteristics that meets the needs of smaller companies. By repackaging securities, they are able to meet the needs of different clients.

LO: 2.5

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.14 Financial Institutions: Which financial institution is usually the most important to businesses?

Solution: The primary financial intermediaries are commercial banks, life insurance companies, casualty insurance companies, pension funds, investment funds, and business finance companies. Commercial banks are the largest and most prominent financial intermediaries in the economy and offer the widest range of financial services to businesses.

LO: 2.5

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

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2.15 Financial Markets: What is the main difference between money markets and capital markets?

Solution: Money markets are markets in which short-term debt instruments with maturities of less than one year are bought and sold. Capital markets are markets in which equity securities and debt instruments with maturities of more than one year are bought and sold.

LO: 2.3

Bloomcode: Analysis
AACSB: Reflective Thinking
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.16 Money Markets: What is the primary role of money markets? Explain how the money markets work.

Solution: Money markets provide an option for large corporations to adjust their liquidity positions. Since only seldom are cash receipts and cash expenditures perfectly synchronized, money markets allow companies to temporarily invest idle cash in Treasury bills or negotiable CDs. If a company is short on cash, it can borrow the money from money markets by selling commercial paper at lower interest rates than through commercial banks.

LO: 2.3

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.17 Money Markets: What are the main types of securities in the money markets?

Solution: Treasury bills, bank negotiable CDs, and commercial paper.

LO: 2.3

Bloomcode: Knowledge
AACSB: Analytic
IMA: Corporate Finance

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AICPA: Industry/Sector Perspective

2.18 Capital Markets: How do capital market instruments differ from money market instruments?

Solution: Capital market instruments are less liquid or marketable, they have longer maturities, usually between 1 and 30 years, and they carry more financial risk.

LO: 2.3

Bloomcode: Analysis
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.19 Market Efficiency: Describe the informational differences that distinguish the three forms of market efficiency.

Solution: The strong-form of market efficiency states that all information is reflected in the security prices. In other words, there is no private or inside information, that if released would potentially change the price. The semistrong-form holds that all public information available to investors is reflected in the security's price. Therefore, insiders with access to private information could potentially profit from trading on this knowledge before it becomes public. Finally, the weak-form of market efficiency holds that there is both public and private information that is not reflected in the security's price and having access to it can lead to abnormal profits.

LO: 2.4

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.20 Market Efficiency: Zippy Computers announced strong fourth quarter results. Sales and earnings were both above analysts' expectations. You notice in the newspaper that

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Zippy's stock price went up sharply on the day of the announcement. If no other information about Zippy became public on the day of the announcement and the overall market was down, is this evidence of market efficiency?

Solution: Yes, if no other information became public and the market was down, the increase in Zippy's price most likely reflects the effects of investors trading on the good news. Investors, believing that Zippy is now more valuable than they had thought, are willing to pay a higher price for the shares.

LO: 2.4

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.21 Market Efficiency: In problem 2.20, if the market is efficient, would it have been possible for Zippy's stock price to go down on the day that the firm announced the strong fourth quarter results?

Solution: Yes. The last sentence in the statement of problem 2.20 suggests why this might happen. If, on the same day of the announcement, some very bad news about the future prospects for Zippy became public or if the market went down substantially, Zippy's stock price might also have gone down despite the positive sales and earnings announcement. Zippy's stock price may also go down if strong results were anticipated and this information was already reflected in the stock price, but the actual results were not as strong as anticipated.

LO: 2.4

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

2.22 Market Efficiency: If the market is strong-form efficient, then trading on tips you hear from Jim Cramer (the host of Mad Money on CNBC) will generate no excess returns (i.e., returns in excess of fair compensation for the risk you are bearing). True or false?

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Solution: True. If the market is strong-form efficient then all new information gets reflected in stock prices very quickly. In such a market, there is nothing you will hear from Jim Cramer on his TV show that will enable you to consistently earn excess returns. The information in his tips will already be reflected in stock prices by the time you can trade on them.

LO: 2.4

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.23 Financial Markets: What are the major differences between public and private markets?

Solution: Public markets are organized financial markets (also referred to as Exchanges) where the public buys and sells securities through their stock brokers. The SEC regulates public securities markets in the United States. In contrast, private markets involve direct transactions between two parties. These transactions lack SEC regulation.

LO: 2.3

Bloomcode: Analysis
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.24 Financial Instruments: What are the two risk-hedging instruments discussed in the chapter?

Solution: The two risk-hedging instruments discussed are futures and options contracts.

LO: 2.3

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Risk Analysis

2.25 Interest Rates: What is the real rate of interest, and how is it determined?

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Solution: The real rate of interest measures the return earned on savings, and it represents the cost of borrowing to finance capital goods. It is the interest rate determined in the absence of inflation. The real rate of interest is determined by the interaction between firms that invest in capital projects and the rate of return businesses can expect to earn on investments in capital goods, and individuals' time preference for consumption. Graphically, it is that point when the desired saving level equals the desired level of investment in the economy.

LO: 2.6

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.26 Interest Rates: How does the nominal rate of interest vary over time?

Solution: The nominal rate is the rate that we observe in the marketplace. It is determined by both the real rate as well as expected inflation. Therefore, the nominal rate will fluctuate with changes in the real rate as well as changes in expected inflation.

LO: 2.6

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.27 Interest Rates: What is the Fisher equation, and how is it used?

Solution: The Fisher equation reflects the expected, not the reported or actual, annualized change in commodity prices (ΔP_e). It is used to protect the buying power from changes in inflation, and it is incorporated into a loan contract by including the real interest rate that would exist in the absence of inflation.

LO: 2.6

Bloomcode: Knowledge
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

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2.28 **Interest Rates**: Imagine you borrow $500 from your roommate, agreeing to pay her back $500 plus 7 percent nominal interest in one year. Assume inflation over the life of the contract is expected to be 4.25 percent. What is the total dollar amount you will have to pay her back in a year? What percentage of the interest payment is the result of the real rate of interest?

Solution: You will pay her back $535 ($500 × 1.07) in one year. Given an inflation of 4.25 percent, the real rate of interest is approximately 2.368 percent using the Fisher equation:

$1 + i = (1 + r) \times (1 + \Delta P_e)$

$1 + 0.07 = (1 + r) \times (1 + 0.0425)$

$r = (1.07/1.0425) - 1 = 0.02638$, or 2.638%

This means that $13.19 ($500 × 0.02638) will be a result of the real interest rate which is 37.69 percent of the total interest payment.

The simplified, or approximate, Fisher equation yields a real interest rate of 2.75 percent:

$i = r + \Delta P_e$

$r = 0.07 - 0.0425 = 0.0275$, or 2.75%

This means that $13.75 ($500 × 0.0275) will be a result of the real interest rate which is 39.29 percent of the total interest payment.

LO: 2.6

Bloomcode: Analysis
AACSB: Reflective Thinking
IMA: Corporate Finance
AICPA: Resource Management

2.29 **Interest Rates**: Your parents have given you $1,000 a year before your graduation so that you can take a trip when you graduate. You wisely decide to invest the money in a bank CD that pays 6.75 percent interest. You know that the trip costs $1,025 right now

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and that the inflation for the year is predicted to be 4 percent. Will you have enough money in a year to purchase the trip?

Solution: Yes. The CD will be worth $1,067.50 at the end of the year ($1,000 x 6.75% + $1,000), and the price of the trip will be $1,066 ($1,025 x 4% + $1,025). The CD will be able to cover the trip.

LO: 2.6

Bloomcode: Analysis
AACSB: Reflective Thinking
IMA: Corporate Finance
AICPA: Resource Management

2.30 Interest Rates: When are the nominal and real interest rates equal?

Solution: The only time the nominal and real interest rates are equal is when the expected rate of inflation over the contract period is zero.

LO: 2.6

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

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Sample Test Problems

2.1 What are the two basic mechanisms through which funds flow through the financial system, and how do they differ?

Solution: The two basic mechanisms are the *direct financing mechanism* and the *indirect financing mechanism*. In the direct financing mechanism, issuers of securities (borrower-spenders) sell the securities directly to investors (lender-savers). In the indirect financing mechanism, financial institutions aggregate money from lender-savers and make this capital available through loans to borrower-spenders.

LO: 1

Level: Intermediate

Bloomcode: Comprehension
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.2 You just purchased a share of IBM stock on the New York Stock Exchange. What kind of transaction was this?

a. Primary market transaction.
b. Secondary market transaction.
c. Futures market transaction.
d. Private placement.

Solution: b. (The secondary market is the one in which owners of outstanding securities sell their securities to other investors.)

LO: 3

Level: Intermediate

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Industry/Sector Perspective

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2.3 How are brokers different from dealers?

Solution: Brokers bring buyers and sellers together. They execute a transaction for their client and are compensated with a commission fee. Brokers never own the securities being sold and therefore do not bear any risk of ownership.

In contrast, dealers purchase securities and sell them from an inventory that they own. Dealers profit if they are able to sell securities for a price greater than they paid for them. Because they own the securities, dealers face the risk that the prices of the securities in their inventory will fall below what they paid for those securities.

LO: 3

Level: Intermediate

Bloomcode: Analysis
AACSB: Reflective Thinking
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.4 List the three forms of the efficient market hypothesis, and describe what information is assumed to be reflected in security prices under each of these hypotheses.

Solution:

1) Strong-Form Efficiency – all information is reflected in the security prices.
2) Semistrong-Form Efficiency – all public information is reflected in the security prices.
3) Weak-Form Efficiency – all information contained in past prices is reflected in security prices.

LO: 4

Level: Intermediate

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

2.5 If the nominal rate of interest is 4.25 percent and the expected rate of inflation is 1.75 percent, what is the real rate of interest?

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Solution:

Using the Fisher equation:

$i = r + \Delta P_e + r\,\Delta P_e$ where $i = 0.0425$ and $\Delta P_e = 0.0175$

Solving for r, we get $r = 0.02457$, or 2.457%

LO: 6

Level: Intermediate

Bloomcode: Application
AACSB: Analytic
IMA: Corporate Finance
AICPA: Resource Management

2.6 What is the relation between business cycles and the general level of interest rates?

Solution: As Exhibit 2.5 shows, interest rates tend to follow the business cycle. The level of interest rates tends to rise during periods of economic expansion and decline during periods of economic contraction.

LO: 6

Level: Intermediate

Bloomcode: Comprehension
AACSB: Analytic
IMA: Business Economics
AICPA: Industry/Sector Perspective

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