

PART I

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LEARNING OUTCOMES,  
SUMMARY OVERVIEW,  
AND PROBLEMS

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# CHAPTER 1

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## MARKET ORGANIZATION AND STRUCTURE

### LEARNING OUTCOMES

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*After completing this chapter, you will be able to do the following:*

- Explain and illustrate the main functions of the financial system.
- Describe classifications of assets and markets.
- Describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes.
- Describe the types of financial intermediaries and the services that they provide.
- Compare and contrast the positions an investor can take in an asset.
- Calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call.
- Compare and contrast execution, validity, and clearing instructions.
- Compare and contrast market orders with limit orders.
- Describe the primary and secondary markets and explain how secondary markets support primary markets.
- Describe how securities, contracts, and currencies are traded in quote-driven markets, order-driven markets, and brokered markets.
- Describe the characteristics of a well-functioning financial system.
- Describe the objectives of market regulation.

### SUMMARY OVERVIEW

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- The financial system consists of mechanisms that allow strangers to contract with each other to move money through time, to hedge risks, and to exchange assets that they value less for those that they value more.
- Investors move money from the present to the future when they save. They expect a normal rate of return for bearing risk through time. Borrowers move money from the future to the present to fund current projects and expenditures. Hedgers trade to reduce their exposure to risks they prefer not to take. Information-motivated traders are active investment managers who try to identify under- and overvalued instruments.

- Securities are first sold in primary markets by their issuers. They then trade in secondary markets.
- People invest in pooled investment vehicles to benefit from the investment management services of their managers.
- Forward contracts allow buyers and sellers to arrange for future sales at predetermined prices. Futures contracts are forward contracts guaranteed by clearinghouses. The guarantee ensures that strangers are willing to trade with each other and that traders can offset their positions by trading with anybody. These features of futures contract markets make them highly attractive to hedgers and information-motivated traders.
- Many financial intermediaries connect buyers to sellers in a given instrument, acting directly as brokers and exchanges or indirectly as dealers and arbitrageurs.
- Financial intermediaries create instruments when they conduct arbitrage, securitize assets, borrow to lend, manage investment funds, or pool insurance contracts. These activities all transform cash flows and risks from one form to another. Their services allow buyers and sellers to connect with each other through instruments that meet their specific needs.
- Financial markets work best when strangers can contract with each other without worrying about whether their counterparts are able and willing to honor their contract. Clearinghouses, variation margins, maintenance margins, and settlement guarantees made by creditworthy brokers on behalf of their clients help manage credit risk and ultimately allow strangers to contract with each other.
- Information-motivated traders short sell when they expect that prices will fall. Hedgers short sell to reduce the risks of a long position in a related contract or commodity.
- Margin loans allow people to buy more securities than their equity would otherwise permit them to buy. The larger positions expose them to more risk so that gains and losses for a given amount of equity will be larger. The leverage ratio is the value of a position divided by the value of the equity supporting it. The returns to the equity in a position are equal to the leverage ratio times the returns to the unleveraged position.
- To protect against credit losses, brokers demand maintenance margin payments from their customers who have borrowed cash or securities when adverse price changes cause their customer's equity to drop below the maintenance margin ratio. Brokers close positions for customers who do not satisfy these margin calls.
- Orders are instructions to trade. They always specify instrument, side (buy or sell), and quantity. They usually also provide several other instructions.
- Market orders tend to fill quickly but often at inferior prices. Limit orders generally fill at better prices if they fill, but they may not fill. Traders choose order submission strategies on the basis of how quickly they want to trade, the prices they are willing to accept, and the consequences of failing to trade.
- Stop instructions are attached to other orders to delay efforts to fill them until the stop condition is satisfied. Although stop orders are often used to stop losses, they are not always effective.
- Issuers sell their securities using underwritten public offerings, best efforts public offerings, private placements, shelf registrations, dividend reinvestment programs, and rights offerings. Investment banks have a conflict of interests when setting the initial offering price in an IPO.
- Well-functioning secondary markets are essential to raising capital in the primary markets because investors value the ability to sell their securities if they no longer want to hold them or if they need to disinvest to raise cash. If they cannot trade their securities in a liquid market, they will not pay as much for them.

- Matching buyers and sellers in call markets is easy because the traders (or their orders) come together at the same time and place.
- Dealers provide liquidity in quote-driven markets. Public traders as well as dealers provide liquidity in order-driven markets.
- Order-driven markets arrange trades by ranking orders using precedence rules. The rules generally ensure that traders who provide the best prices, display the most size, and arrive early trade first. Continuous order-driven markets price orders using the discriminatory pricing rule. Under this rule, standing limit orders determine trade prices.
- Brokers help people trade unique instruments or positions for which finding a buyer or a seller is difficult.
- Transaction costs are lower in transparent markets than in opaque markets because traders can more easily determine market value and more easily manage their trading in transparent markets.
- A well-functioning financial system allows people to trade instruments that best solve their wealth and risk management problems with low transaction costs. Complete and liquid markets characterize a well-functioning financial system. Complete markets are markets in which the instruments needed to solve investment and risk management problems are available to trade. Liquid markets are markets in which traders can trade when they want to trade at low cost.
- The financial system is operationally efficient when its markets are liquid. Liquid markets lower the costs of raising capital.
- A well-functioning financial system promotes wealth by ensuring that capital allocation decisions are well made. A well-functioning financial system also promotes wealth by allowing people to share the risks associated with valuable products that would otherwise not be undertaken.
- Prices are informationally efficient when they reflect all available information about fundamental values. Information-motivated traders make prices informationally efficient. Prices will be most informative in liquid markets because information-motivated traders will not invest in information and research if establishing positions based on their analyses is too costly.
- Regulators generally seek to promote fair and orderly markets in which traders can trade at prices that accurately reflect fundamental values without incurring excessive transaction costs. Governmental agencies and self-regulating organizations of practitioners provide regulatory services that attempt to make markets safer and more efficient.
- Mandated financial disclosure programs for the issuers of publicly traded securities ensure that information necessary to estimate security values is available to financial analysts on a consistent basis.

## PROBLEMS

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1. Akihiko Takabe has designed a sophisticated forecasting model, which predicts the movements in the overall stock market, in the hope of earning a return in excess of a fair return for the risk involved. He uses the predictions of the model to decide whether to buy, hold, or sell the shares of an index fund that aims to replicate the movements of the stock market. Takabe would *best* be characterized as a(n):
  - A. Hedger.
  - B. Investor.
  - C. Information-motivated trader.

2. James Beach is young and has substantial wealth. A significant proportion of his stock portfolio consists of emerging market stocks that offer relatively high expected returns at the cost of relatively high risk. Beach believes that investment in emerging market stocks is appropriate for him given his ability and willingness to take risk. Which of the following labels *most appropriately* describes Beach?
  - A. Hedger.
  - B. Investor.
  - C. Information-motivated trader.
  
3. Lisa Smith owns a manufacturing company in the United States. Her company has sold goods to a customer in Brazil and will be paid in Brazilian real (BRL) in three months. Smith is concerned about the possibility of the BRL depreciating more than expected against the U.S. dollar (USD). Therefore, she is planning to sell three-month futures contracts on the BRL. The seller of such contracts generally gains when the BRL depreciates against the USD. If Smith were to sell these future contracts, she would *most appropriately* be described as a(n):
  - A. Hedger.
  - B. Investor.
  - C. Information-motivated trader.
  
4. Which of the following is *not* a function of the financial system?
  - A. To regulate arbitrageurs' profits (excess returns).
  - B. To help the economy achieve allocational efficiency.
  - C. To facilitate borrowing by businesses to fund current operations.
  
5. An investor primarily invests in stocks of publicly traded companies. The investor wants to increase the diversification of his portfolio. A friend has recommended investing in real estate properties. The purchase of real estate would *best* be characterized as a transaction in the:
  - A. Derivative investment market.
  - B. Traditional investment market.
  - C. Alternative investment market.
  
6. A hedge fund holds its excess cash in 90-day commercial paper and negotiable certificates of deposit. The cash management policy of the hedge fund is *best described* as using:
  - A. Capital market instruments.
  - B. Money market instruments.
  - C. Intermediate-term debt instruments.
  
7. An oil and gas exploration and production company announces that it is offering 30 million shares to the public at \$45.50 each. This transaction is *most likely* a sale in the:
  - A. Futures market.
  - B. Primary market.
  - C. Secondary market.

8. Consider a mutual fund that invests primarily in fixed-income securities that have been determined to be appropriate given the fund's investment goal. Which of the following is *least likely* to be a part of this fund?
  - A. Warrants.
  - B. Commercial paper.
  - C. Repurchase agreements.
9. A friend has asked you to explain the differences between open-end and closed-end funds. Which of the following will you *most likely* include in your explanation?
  - A. Closed-end funds are unavailable to new investors.
  - B. When investors sell the shares of an open-end fund, they can receive a discount or a premium to the fund's net asset value.
  - C. When selling shares, investors in an open-end fund sell the shares back to the fund whereas investors in a closed-end fund sell the shares to others in the secondary market.
10. The usefulness of a forward contract is limited by some problems. Which of the following is *most likely* one of those problems?
  - A. Once you have entered into a forward contract, it is difficult to exit from the contract.
  - B. Entering into a forward contract requires the long party to deposit an initial amount with the short party.
  - C. If the price of the underlying asset moves adversely from the perspective of the long party, periodic payments must be made to the short party.
11. Tony Harris is planning to start trading in commodities. He has heard about the use of futures contracts on commodities and is learning more about them. Which of the following is Harris *least likely* to find associated with a futures contract?
  - A. Existence of counterparty risk.
  - B. Standardized contractual terms.
  - C. Payment of an initial margin to enter into a contract.
12. A German company that exports machinery is expecting to receive \$10 million in three months. The firm converts all its foreign currency receipts into euros. The chief financial officer of the company wishes to lock in a minimum fixed rate for converting the \$10 million to euro but also wants to keep the flexibility to use the future spot rate if it is favorable. What hedging transaction is *most likely* to achieve this objective?
  - A. Selling dollars forward.
  - B. Buying put options on the dollar.
  - C. Selling futures contracts on dollars.
13. A book publisher requires substantial quantities of paper. The publisher and a paper producer have entered into an agreement for the publisher to buy and the producer to supply a given quantity of paper four months later at a price agreed upon today. This agreement is a:
  - A. Futures contract.
  - B. Forward contract.
  - C. Commodity swap.

14. The Standard & Poor's Depository Receipts (SPDRs) is an investment that tracks the S&P 500 stock market index. Purchases and sales of SPDRs during an average trading day are *best* described as:
- A. Primary market transactions in a pooled investment.
  - B. Secondary market transactions in a pooled investment.
  - C. Secondary market transactions in an actively managed investment.
15. The Standard & Poor's Depository Receipts (SPDRs) is an exchange-traded fund in the United States that is designed to track the S&P 500 stock market index. The current price of a share of SPDRs is \$113. A trader has just bought call options on shares of SPDRs for a premium of \$3 per share. The call options expire in five months and have an exercise price of \$120 per share. On the expiration date, the trader will exercise the call options (ignore any transaction costs) if and only if the shares of SPDRs are trading:
- A. Below \$120 per share.
  - B. Above \$120 per share.
  - C. Above \$123 per share.
16. Which of the following statements about exchange-traded funds is *most correct*?
- A. Exchange-traded funds are not backed by any assets.
  - B. The investment companies that create exchange-traded funds are financial intermediaries.
  - C. The transaction costs of trading shares of exchange-traded funds are substantially greater than the combined costs of trading the underlying assets of the fund.
17. Jason Schmidt works for a hedge fund and he specializes in finding profit opportunities that are the result of inefficiencies in the market for convertible bonds—bonds that can be converted into a predetermined amount of a company's common stock. Schmidt tries to find convertibles that are priced inefficiently relative to the underlying stock. The trading strategy involves the simultaneous purchase of the convertible bond and the short sale of the underlying common stock. The above process could best be described as:
- A. Hedging.
  - B. Arbitrage.
  - C. Securitization.
18. Pierre-Louis Robert just purchased a call option on shares of the Michelin Group. A few days ago he wrote a put option on Michelin shares. The call and put options have the same exercise price, expiration date, and number of shares underlying. Considering both positions, Robert's exposure to the risk of the stock of the Michelin Group is:
- A. Long.
  - B. Short.
  - C. Neutral.
19. An online brokerage firm has set the minimum margin requirement at 55 percent. What is the maximum leverage ratio associated with a position financed by this minimum margin requirement?
- A. 1.55.
  - B. 1.82.
  - C. 2.22.



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20. A trader has purchased 200 shares of a non-dividend-paying firm on margin at a price of \$50 per share. The leverage ratio is 2.5. Six months later, the trader sells these shares at \$60 per share. Ignoring the interest paid on the borrowed amount and the transaction costs, what was the return to the trader during the six-month period?
- A. 20 percent.
  - B. 33.33 percent.
  - C. 50 percent.
21. Jason Williams purchased 500 shares of a company at \$32 per share. The stock was bought on 75 percent margin. One month later, Williams had to pay interest on the amount borrowed at a rate of 2 percent per month. At that time, Williams received a dividend of \$0.50 per share. Immediately after that he sold the shares at \$28 per share. He paid commissions of \$10 on the purchase and \$10 on the sale of the stock. What was the rate of return on this investment for the one-month period?
- A. -12.5 percent.
  - B. -15.4 percent.
  - C. -50.1 percent.
22. Caroline Rogers believes the price of Gamma Corp. stock will go down in the near future. She has decided to sell short 200 shares of Gamma Corp. at the current market price of €47. The initial margin requirement is 40 percent. Which of the following is an appropriate statement regarding the margin requirement that Rogers is subject to on this short sale?
- A. She will need to contribute €3,760 as margin.
  - B. She will need to contribute €5,640 as margin.
  - C. She will only need to leave the proceeds from the short sale as deposit and does not need to contribute any additional funds.
23. The current price of a stock is \$25 per share. You have \$10,000 to invest. You borrow an additional \$10,000 from your broker and invest \$20,000 in the stock. If the maintenance margin is 30 percent, at what price will a margin call first occur?
- A. \$9.62.
  - B. \$17.86.
  - C. \$19.71.
24. You have placed a sell market-on-open order—a market order that would automatically be submitted at the market's open tomorrow and would fill at the market price. Your instruction, to sell the shares at the market open, is a(n):
- A. Execution instruction.
  - B. Validity instruction.
  - C. Clearing instruction.
25. A market has the following limit orders standing on its book for a particular stock. The bid and ask sizes are number of shares in hundreds.

| Bid Size | Limit Price | Offer Size |
|----------|-------------|------------|
| 5        | €9.73       |            |
| 12       | €9.81       |            |
| 4        | €9.84       |            |
| 6        | €9.95       |            |
|          | €10.02      | 5          |
|          | €10.10      | 12         |
|          | €10.14      | 8          |

What is the market?

- A. 9.73 bid, offered at 10.14.
  - B. 9.81 bid, offered at 10.10.
  - C. 9.95 bid, offered at 10.02.
26. Consider the following limit order book for a stock. The bid and ask sizes are number of shares in hundreds.

| Bid Size | Limit Price | Offer Size |
|----------|-------------|------------|
| 3        | ¥122.80     |            |
| 8        | ¥123.00     |            |
| 4        | ¥123.35     |            |
|          | ¥123.80     | 7          |
|          | ¥124.10     | 6          |
|          | ¥124.50     | 7          |

- A new buy limit order is placed for 300 shares at ¥123.40. This limit order is said to:
- A. Take the market.
  - B. Make the market.
  - C. Make a new market.
27. Currently, the market in a stock is “\$54.62 bid, offered at \$54.71.” A new sell limit order is placed at \$54.62. This limit order is said to:
- A. Take the market.
  - B. Make the market.
  - C. Make a new market.
28. Jim White has sold short 100 shares of Super Stores at a price of \$42 per share. He has also simultaneously placed a “good-till-cancelled, stop 50, limit 55 buy” order. Assume that if the stop condition specified by White is satisfied and the order becomes valid, it will get executed. Excluding transaction costs, what is the maximum possible loss that White can have?
- A. \$800.
  - B. \$1,300.
  - C. Unlimited.
29. You own shares of a company that are currently trading at \$30 a share. Your technical analysis of the shares indicates a support level of \$27.50. That is, if the price of the shares is

going down, it is more likely to stay above this level rather than fall below it. If the price does fall below this level, however, you believe that the price may continue to decline. You have no immediate intent to sell the shares but are concerned about the possibility of a huge loss if the share price declines below the support level. Which of the following types of orders could you place to most appropriately address your concern?

- A. Short sell order.
  - B. Good-till-cancelled stop sell order.
  - C. Good-till-cancelled stop buy order.
30. In an underwritten offering, the risk that the entire issue may not be sold to the public at the stipulated offering price is borne by the:
- A. Issuer.
  - B. Investment bank.
  - C. Buyers of the part of the issue that is sold.
31. A British company listed on the Alternative Investment Market of the London Stock Exchange, announced the sale of 6,686,665 shares to a small group of qualified investors at £0.025 per share. Which of the following *best describes* this sale?
- A. Shelf registration.
  - B. Private placement.
  - C. Initial public offering.
32. A German publicly traded company, to raise new capital, gave its existing shareholders the opportunity to subscribe for new shares. The existing shareholders could purchase two new shares at a subscription price of €4.58 per share for every 15 shares held. This is an example of a(n):
- A. Rights offering.
  - B. Private placement.
  - C. Initial public offering.
33. Consider an order-driven system that allows hidden orders. The following four sell orders on a particular stock are currently in the system's limit order book. Based on the commonly used order precedence hierarchy, which of these orders will have precedence over others?

| Order Number | Time of Arrival (HH:MM:SS) | Limit Price | Special Instruction (If any) |
|--------------|----------------------------|-------------|------------------------------|
| I            | 9:52:01                    | €20.33      |                              |
| II           | 9:52:08                    | €20.29      | Hidden order                 |
| III          | 9:53:04                    | €20.29      |                              |
| IV           | 9:53:49                    | €20.29      |                              |

- A. Order I (time of arrival of 9:52:01).
  - B. Order II (time of arrival of 9:52:08).
  - C. Order III (time of arrival of 9:53:04).
34. Zhenhu Li has submitted an immediate-or-cancel buy order for 500 shares of a company at a limit price of CNY 74.25. There are two sell limit orders standing in that stock's

order book at that time. One is for 300 shares at a limit price of CNY 74.30 and the other is for 400 shares at a limit price of CNY 74.35. How many shares in Li's order would get cancelled?

- A. None (the order would remain open but unfilled).
- B. 200 (300 shares would get filled).
- C. 500 (there would be no fill).

35. A market has the following limit orders standing on its book for a particular stock:

| Buyer | Bid Size<br>(number of shares) | Limit Price | Offer Size<br>(number of shares) | Seller   |
|-------|--------------------------------|-------------|----------------------------------|----------|
| Keith | 1,000                          | £19.70      |                                  |          |
| Paul  | 200                            | £19.84      |                                  |          |
| Ann   | 400                            | £19.89      |                                  |          |
| Mary  | 300                            | £20.02      |                                  |          |
|       |                                | £20.03      | 800                              | Jack     |
|       |                                | £20.11      | 1,100                            | Margaret |
|       |                                | £20.16      | 400                              | Jeff     |

Ian submits a day order to sell 1,000 shares, limit £19.83. Assuming that no more buy orders are submitted on that day after Ian submits his order, what would be Ian's average trade price?

- A. £19.70.
  - B. £19.92.
  - C. £20.05.
36. A financial analyst is examining whether a country's financial market is well functioning. She finds that the transaction costs in this market are low and trading volumes are high. She concludes that the market is quite liquid. In such a market:
- A. Traders will find it hard to make use of their information.
  - B. Traders will find it easy to trade and their trading will make the market less informationally efficient.
  - C. Traders will find it easy to trade and their trading will make the market more informationally efficient.
37. The government of a country whose financial markets are in an early stage of development has hired you as a consultant on financial market regulation. Your first task is to prepare a list of the objectives of market regulation. Which of the following is *least likely* to be included in this list of objectives?
- A. Minimize agency problems in the financial markets.
  - B. Ensure that financial markets are fair and orderly.
  - C. Ensure that investors in the stock market achieve a rate of return that is at least equal to the risk-free rate of return.