

Chapter 2

Securities Markets and Transactions

■ Outline

Learning Goals

I. Securities Markets

- A. Types of Securities Markets
 - 1. The Primary Market
 - a. Going Public: The IPO Process
 - b. The Investment Banker's Role
 - 2. Secondary Markets
- B. Broker Markets and Dealer Markets
 - 1. Broker Markets
 - 2. The New York Stock Exchange
 - a. Trading Activity
 - b. Listing Policies
 - 3. NYSE Amex
 - 4. Regional Stock Exchanges
 - 5. Options Exchanges
 - 6. Futures Exchanges
 - 7. Dealer Markets
- C. Alternative Trading Systems
- D. General Market Conditions: Bull or Bear

Concepts in Review

II. Globalization of Securities Markets

- A. Growing Importance of International Markets
- B. International Investment Performance
- C. Ways to Invest in Foreign Securities
- D. Risks of Investing Internationally

Concepts in Review

III. Trading Hours and Regulation of Securities Markets

- A. Trading Hours of Securities Markets
- B. Regulation of Securities Markets
 - 1. Securities Act of 1933
 - 2. Securities Exchange Act of 1934
 - 3. Maloney Act of 1938
 - 4. Investment Company Act of 1940
 - 5. Investment Advisers Act of 1940
 - 6. Securities Acts Amendments of 1975
 - 7. Insider Trading and Fraud Act of 1988
 - 8. Sarbanes-Oxley Act of 2002

Concepts in Review

IV. Basic Types of Securities Transactions

- A. Long Purchase
- B. Margin Trading
 - 1. Essentials of Margin Trading
 - a. Magnified Profits and Losses
 - b. Advantages and Disadvantages of Margin Trading
 - 2. Making Margin Transactions
 - a. Initial Margin
 - b. Maintenance Margin
 - 3. The Basic Margin Formula
 - 4. Return on Invested Capital
 - 5. Uses of Margin Trading
- C. Short Selling
 - 1. Essentials of Short Selling
 - a. Making Money When Prices Fall
 - b. Who Lends the Securities?
 - c. Margin Requirements and Short Selling
 - d. Advantages and Disadvantages
 - 2. Uses of Short Selling

Concepts in Review

Summary

Key Terms

Discussion Questions

Problems

Case Problems

2.1 Dara's Dilemma: What to Buy?

2.2 Ravi Dumar's High-Flying Margin Account

Excel with Spreadsheets

■ Key Concepts

1. The types of securities markets in which transactions are made
2. The operations, function, and nature of broker (organized securities exchanges) and dealer (the over-the-counter) market
3. The importance of international securities markets and a discussion on the performance and risk involved in these investments
4. General market conditions and extended hours trading
5. Regulation of the securities markets
6. The basic long transaction
7. The motives for margin transactions and the procedures for making them
8. Margin requirements, formulas for initial and maintenance margin, and the uses of margin trading
9. The short sale transaction, why one shorts securities, and the uses of short selling

■ Overview

1. The text divides securities markets into *money markets* and *capital markets*. The instructor should explain the difference.
2. Both *primary* and *secondary transactions* are carried out in capital markets. The instructor should define these transactions for students and explain the role of the investment banker in the selling of new securities (primary transactions).
3. The secondary markets include various *broker markets* and *dealer markets*. Broker markets include the *organized securities exchanges*, while *dealer markets* include the *Nasdaq*, the National Association of Securities Dealers Automated Quotation System, and *over-the-counter (OTC) markets*. The instructor should emphasize the importance of the NYSE Amex among all these markets. The instructor might also discuss these aspects of organized security exchanges: the membership of an exchange; its listing policies; the role of the brokers, traders, and specialists; trading activity; and the auctioning process.
4. The dealer markets are described next. The instructor should point out that the Nasdaq and OTC markets are not physical institutions like the organized securities exchanges. Nasdaq includes larger companies than the over-the-counter market, with companies listed on the *OTC Bulletin Board* being larger than those included in the *OTC Pink Sheets*. The instructor should also point out that shares normally traded in the broker markets may trade in the dealer market, in what is known as the *third market*, while *fourth market* trades between institutions are completed using *electronic communications networks*.
5. The chapter then discusses the globalization of international securities markets, including a description of investing in the foreign securities marketplace, how to buy foreign securities, and the risks of international investment. Related issues are the existence of after-hours trading and the mergers of stock markets foreshadowing the creation of a worldwide stock exchange, the NYSE Euronext.

6. In the next section, various regulations applicable to brokers, investment advisers, and stock exchanges are described. The instructor need not dwell on this section at length; however, the instructor might want to bring in any recent litigation or securities market trial that is being widely covered by the press. Ethical issues and insider trading are interesting and serve to make a point about the challenges facing those attempting to regulate the exchanges.
7. The text now moves to the different types of transactions, beginning with long purchases. The next section deals extensively with *margin trading*, including the magnification of profits and losses, initial and maintenance margin, and the formulas for their calculation. There are a number of review problems and a case at the end of the chapter to aid the student in understanding the concept of margin.
8. The final section of the chapter deals with *short selling*, including the mechanics and uses of short sales.

■ Answers to Concepts in Review

1. (a) In the *money market*, short-term securities such as CDs, T-bills, and bankers' acceptances are traded. Long-term securities such as stocks and bonds are traded in the *capital markets*.
 (b) A new security is issued in the *primary market*. Once a security has been issued, it can be bought and sold in the *secondary market*.
 (c) *Broker markets* are organized securities exchanges that are centralized institutions where securities listed on a particular exchange are traded. The *dealer market* is a complex system of buyers and sellers linked by a sophisticated telecommunication network. Dealer markets include Nasdaq and OTC markets.
2. The *investment banker* is a financial intermediary who specializes in selling new security issues in what is known as an *initial public offering (IPO)*. Underwriting involves the purchase of the security issue from the issuing firm at an agreed-on price and bearing the risk of reselling it to the public at a profit. For very large issues, an investment banker brings in other bankers as partners to form the underwriting syndicate and thus spread the financial risk. The investment banker also provides the issuer with advice about pricing and other important aspects of the issue.

In a *public offering*, a firm offers its shares for sale to the general public after registering the shares with the SEC. Rather than issue shares publicly, a firm can make a *rights offering*, in which it offers shares to existing stockholders on a pro rata basis. In a *private placement* of its shares, a firm sells directly to groups of investors, such as insurance companies and pension funds, and does not register with the SEC.

3. (a) (5) NYSE Amex is the second largest security exchange.
 (b) (2) The *Chicago Board of Trade (CBT)* is a futures exchange on which both commodity and financial futures are traded.
 (c) (6) NYSE has the most stringent listing requirement among U.S. exchanges.
 (d) (4) The *Boston Stock Exchange (BSE)* is an example of a regional stock exchange.
 (e) (3) The *Chicago Board Options Exchange (CBOE)* is the major call and put options exchange.
 (f) (1) The *over-the-counter (OTC)* is the market in which unlisted securities are traded.

4. The dealer market is really a system of markets spread all over the country and linked together by a sophisticated telecommunication system. It accounts for about 40% of the total dollar volume of all shares traded. These markets are made up of traders known as dealers, who offer to buy or sell stocks at specific prices. The “bid” price is the highest price offered by the dealer to purchase a security; the “ask” price is the lowest price at which the dealer is willing to sell the security. The dealers are linked together through Nasdaq. In order to create a continuous market for unlisted securities, IPOs, both listed and unlisted, are sold in the dealer market. About 2,700 Nasdaq stocks are included in the *Nasdaq/National Market System*, which lists, carefully tracks, and provides detailed quotations on these actively traded stocks. The Nasdaq Global Select Market contains the 1,000 biggest and most actively traded companies. An additional 1,000 firms are included in the Nasdaq National Market listing. Another 700 firms that are generally smaller can be found on the Nasdaq Capital Markets list. Companies that do not make the Nasdaq listing standards are traded on the OTC market’s Bulletin Board or “Pink Sheets.”

Trading in large blocks of outstanding securities, known as *secondary distributions*, also takes place in the OTC market in order to reduce potential negative effects of such transactions on the price of listed securities. *Third markets* are over-the-counter transactions made in securities listed on the NYSE, the Amex, or any other organized exchange. Mutual funds, pension funds, and life insurance companies use third markets to make large transactions at a reduced cost. *Fourth markets* include transactions made directly between large institutional investors. Unlike the third market, this market bypasses the dealer; however, sometimes an institution will hire a firm to find a suitable buyer or seller and facilitate the transaction.

5. The third market consists of over-the-counter transactions made in securities listed on the NYSE or one of the other exchanges. The fourth market consists of transactions using a computer network, rather than an organized exchange, between large institutional buyers and sellers of securities.
6. A *bull market* is a favorable market normally associated with rising prices, investor optimism, economic recovery, and governmental stimulus. In contrast, *bear markets* are associated with falling prices, investor pessimism, economic downturn, and government restraint.
7. The *globalization* of securities markets is important because today investors seek out securities with high returns in markets other than their home country. They may invest in companies based in countries with rapidly growing economies or choose international investments to diversify their portfolios. The U.S. securities markets, while still the world’s largest, no longer dominate the investment scene. In recent years, foreign exchanges have provided investors with high returns. Only once since 1980 has the United States finished number one among the major stock markets of the world. In 2005, investors could have earned higher returns from investing in markets in South Korea, Mexico, Japan, Finland, Germany, and France than from investing in markets in the United States.
8. To achieve some degree of international diversification, an investor can make foreign security investments either indirectly or directly. An investor can diversify indirectly by investing in shares of U.S.-based multinational companies with large overseas operations that receive more than 50% of their revenues from overseas operations. Investors can make these transactions conventionally through their stockbrokers; the procedure is similar to buying a domestic security. An investor can also purchase foreign securities indirectly by purchasing shares in a mutual fund that primarily invests in these securities. The investor can also purchase foreign stocks and bonds directly on foreign exchanges, buy shares of foreign companies that are traded on organized or over-the-counter U.S. exchanges, or buy *American depositary receipts (ADRs)* and *Yankee bonds*.

9. The investor must be aware of the additional risks involved in buying foreign securities: country risk, government policies, market regulation (or lack thereof), and foreign currency fluctuations. Investors must consider risks beyond those in making any security transaction. In particular, investors in foreign markets must bear risks associated with doing business in the foreign country, such as trade policies, labor laws, taxes, and political instability.

Because investing internationally involves purchasing securities in foreign currencies, trading profits and losses are affected not only by security price changes, but by *foreign exchange risk*. This risk is caused by the varying exchange rates between two countries. Profits in a foreign security may translate into losses once the foreign currency has been exchanged for dollars. Similarly, transaction losses can result in gains. The bottom line is that investors must be aware that the value of the foreign currency relative to the dollar can have profound effects on returns from foreign security transactions.

10. The exchanges, Nasdaq, and *electronic communications networks (ECNs)* offer extended trading sessions before and after regular hours. Most of the after-hours markets are crossing markets, in which orders are only filled if they can be matched with identical opposing orders at the desired price. One after-hours session trades stocks at that day's closing price on a first-come, first-served basis. Many large brokerage firms, both traditional and online, offer after-hours trading services for their clients.

ECNs handle after-hours trading for their client brokerages. ECNs are generally crossing markets, in which orders are filled only if they can be matched at the desired price. Obviously, the two investors would have to have different expectations about subsequent share price performance. The development of securities markets around the globe has essentially created the situation where we have continuous trading in stocks. After-hours trading sessions carry more risk. Price changes tend to be more volatile than regular sessions, and the markets are generally less liquid than day-trading sessions.

11. (a) The *Securities Act of 1933* requires companies to disclose all information relevant to new security issues. The company must file a registration statement with the Securities and Exchange Commission (SEC) giving required and accurate information about the new issue. No new securities can be sold publicly unless the SEC approves the registration statement.
- (b) The *Securities Exchange Act of 1934* established the SEC as the agency in charge of administration of the federal securities laws. It gave the SEC power to regulate the organized exchanges and the OTC. It required stock exchanges to register with the SEC a list of all stocks traded on the exchange.
- (c) The *Maloney Act of 1938* required that all trade associations be registered with the SEC and allows for the self-regulation of the securities industry. Since its passage, only the National Association of Securities Dealers (NASD) has been formed under this act.
- (d) The *Investment Company Act of 1940* set certain rules and regulations for investment companies. It also empowered the SEC to regulate their practices and procedures. Investment companies were required to register with the SEC and fulfill certain disclosure requirements. The act was amended in 1970 to prohibit investment companies from paying excessive fees to advisers and charging excessive commissions to purchasers of shares.
- (e) The *Investment Advisers Act of 1940* was passed to protect the public from potential abuses by investment advisers. Advisers were required to register and file regular reports with the SEC. In a 1960 amendment, the SEC was authorized to inspect the records of advisers and to revoke their registration if they violated the provisions of this act.

- (f) The *Securities Acts Amendments of 1975* were enacted to require the SEC and the securities industry to develop a competitive national system for trading securities. The first step the SEC took was to abolish fixed commission rates. In 1978, the Intermarket Trading System (ITS) was established, which today links eight markets in an electronic communications network.
 - (g) The *Inside Trading and Fraud Act of 1988* established penalties for using nonpublic information to make personal gain. An insider, which originally referred only to a company's employees, directors, and their relatives, was expanded to include anyone who obtains private information about a company. To allow the SEC to monitor insider trades, the SEC requires corporate insiders to file monthly reports detailing all transactions made in the company stock.
 - (h) The *Sarbanes-Oxley Act of 2002* attempts to eliminate fraudulent accounting and regulate information releases. Heavy penalties are applied to CEOs and financial officers who release deliberately misleading information. The law also established guidelines minimizing analyst conflicts of interest, increased SEC authority, and required instant disclosure of stock sales by corporate executives.
12. When an investor purchases a security in the hope that it will increase in value and can be sold later for a profit, the investor is making a *long purchase*. The long purchase, the most common type of transaction, derives its returns from dividends or interest received during ownership, plus capital gains or losses—the difference between the purchase price and the sale price.

Margin trading involves buying securities in part with borrowed funds. Therefore, investors can use margin to reduce their money and use borrowed money to make a long purchase. Once the investment increases in value, the investor will pay off the loan (with fixed interest charges) and keep the rest as profits. Of course, buying on margin is quite risky, as the investors can lose their whole capital if the investment decreases in value.

13. When buying on margin, the investor puts up part of the required capital (perhaps 50 to 70% of the total); this is the *equity* portion of the investment and represents the investor's margin. The investor's broker (or banker) then lends the rest of the money required to make the transaction. Magnification of profits (and losses) is the main advantage of margin trading. This is called *financial leverage* and is created when the investor purchases stocks or other securities on margin. Only the equity portion is financed by the investor; but if the stock goes up, the investor gets all the capital gains, so leverage magnifies the return.

Through leverage, an investor can (1) increase the size of his or her total investment, or (2) purchase the same investment with less of his or her own funds. Either way, the investor increases the potential rate of return (or potential loss). If the margin requirement is, say, 50%, the investor puts up only half the funds and borrows the other half. Suppose the security goes up 10%. If the investor bought the stock without using margin, he or she would earn 10%. However, if the investor used 50% margin, ignoring margin interest, he or she *would earn the same dollar return with only half the funds, so the rate of return would double* to 20%. On the other hand, suppose the stock fell by 10%. Without margin trading, he or she has a 10% loss. With margin trading, *the loss is also doubled*. Both profits and losses are magnified using leverage.

Note: Table 2.5 provides an excellent illustration of this point.

Margin trading has both advantages and disadvantages. *Advantages:* Margin trading provides the investor leverage and the ability to magnify potential profits. It can also be used to improve current dividend income. Through margin trading, an investor can gain greater diversification or be able to take larger positions in the securities he or she finds attractive. *Disadvantages:* With greater leverage comes greater risk, and this is a disadvantage of margin trading. Interest rates on the debit balance can be high, a further disadvantage since these costs can significantly lower returns.

14. In order to execute a margin transaction, an investor first must establish a margin account. Although the Federal Reserve Board sets the minimum amount of equity for margin transactions, it is not unusual for brokerage houses and exchanges to establish their own, more restrictive, requirements.

Once a margin account has been established, the investor must provide the minimum amount of required equity at the time of purchase. This is called the *initial margin*, and it is required to prevent excessive trading and speculation. If the value of the investor's account drops below this initial margin requirement, the investor will have a *restricted account*. The *maintenance margin* is the absolute minimum amount of equity that an investor must maintain in the margin account. If the value of the account drops below the maintenance margin, the investor receives a *margin call*, in which case the investor has limited time to replenish the equity up to the initial margin. If the investor cannot meet the margin call, the broker is authorized to sell the investor's holdings to bring the account up to the required initial margin.

The size of the margin loan is called the *debit balance* and is used along with the value of the securities being margined (the collateral) to calculate the amount of the investor's margin.

Typically, margin is used to magnify the returns to a long purchase. However, when a margin account has more equity than is required by the initial margin, an investor can use this "paper" equity to purchase more securities. This tactic is called *pyramiding* and takes the concept of magnifying returns to the limit.

15. An investor attempting to profit by selling short intends to "sell high and buy low," the reverse of the usual (long purchase) order of the transaction. The investor borrows shares and sells them, hoping to buy them back later (at a lower price) and return them to the lender. Short sales are regulated by the SEC and can be executed only after a transaction where the price of the security rises; in other words, short sales are feasible only when there is an uptick.

Equity capital must be put up by a short seller; the amount is defined by an initial *margin requirement* that designates the amount of cash (or equity) the investor must deposit with a broker. For example, if an investor wishes to sell (short) \$4,000 worth of stock when the prevailing short sale margin requirement is 50%, he or she must deposit \$2,000 with the broker. This margin and the proceeds of the short sale provide the broker with assurance that the securities can be repurchased at a later date, even if their price increases.

16. In order to make a short sale, the investor must make a deposit with the broker that is equal to the initial margin requirement. Maintenance margins are still the lowest allowed percentage of equity in a position. Short seller margins decline if the share price rises because some of the deposit (plus the initial proceeds) will be necessary to buy back the shares. If the stock price rises by an amount sufficient to reduce short seller margins to the maintenance levels, they will receive a margin call. The short sellers can either deposit initial margin (and bet on a share price decline) or close out their position by buying back the shares (and take the loss).
17. The major *advantage* of short selling is the chance to convert a price decline into a profit-making situation. The technique can also be used to protect profits already earned and to defer taxes on those profits. The major *disadvantage* of short selling is the high risk exposure in the face of limited return opportunities. Also, short sellers never earn dividends, but must pay them as long as the transaction is outstanding.

Short sales can earn speculative profits because the investor is betting against the market, which involves considerable risk exposure. If the market moves up instead of down, the investor could lose all (or more) of the short sale proceeds and margin.

■ Suggested Answers to Discussion Questions

1. One reason for the large initial returns is the significant amount of hype surrounding new issues. This was especially true in the late 1990s, during what is now described as the “tech-stock bubble.” Investor demand for shares of these firms far exceeded the supply.

Underwriters may intentionally underprice issues to increase their own profits and make it easier to sell the shares. Issuing firms may be willing to accept a lower price if it draws attention to their firm, making it easier to sell additional shares at a later date. Institutional investors tend to receive most of the shares in IPOs, particularly for those issues in great demand. Since they do not want to overpay for the shares, this is yet another factor contributing to underpricing.

2. The main advantage of listing on the NYSE is the perception of greater prestige and public awareness of the firm. The main disadvantage is that the NYSE has the strictest listing requirements of any securities market in the United States.
3. Not all securities markets are open simultaneously, although there exists the possibility of trading in after-hour markets. This assumes the markets are equivalent when it comes to liquidity and information ability. There is talk of a market that could trade any share in the world, with the many mergers and cooperative arrangements among securities exchanges enhancing the likelihood of a worldwide stock exchange. However, major impediments to such trading still exist especially in listing and trading requirements. Many developing economies place foreign ownership restrictions on their listed stocks and do not insist on the level of disclosure required on the NYSE or other major exchanges. Another stumbling block still prevails related to currency conversion. At present, there are still many foreign currencies which are not acceptable internationally. These restrictions prevent many foreign stocks from trading in one market place.
4. The argument in favor of expanded trading sessions is that they would facilitate additional trading, especially for international investors, and increase liquidity. On the other hand, some market participants feel that increasing opportunities to trade encourages a short-term focus rather than a long-term one, and the additional trading will increase market volatility. A “breathing period” gives investors time to process new information before they react to it. Larger brokerages and ECNs are the biggest proponents of expanding trading because they are equipped to handle it and stand to increase their profits significantly.
5.
 - (a) Long purchases are typically used by conservative investors so that they receive their expected returns over time.
 - (b) Margin trading is typically used by aggressive investors seeking short-term capital appreciation.
 - (c) Short selling is typically used by aggressive investors seeking short-term profits from falling security prices.

■ Solutions to Problems

1. The \$/yen exchange rate is the inverse of the yen/\$ exchange rate. If an investor could get 116.915 yen per dollar, then 1,000 yen buys $(1/116.915 \times 1,000)$ dollars, or 8.55 dollars.
2. The investor will receive 1.1 dollars for each euro or $20,000 \times 1.1 = \$22,000$.

3.

	Share Price in Foreign Currency	+	Exchange Rate per US\$	=	Share Price in US\$
(a)	103.2 euro		0.8595/US\$		\$120.07
(b)	93.3 Sf		1.333 Sf/US\$		\$ 69.99
(c)	1,350.0 yen		110 y/US\$		\$ 12.27

4. (a) The euro *depreciated* relative to the US\$, as each US\$ is worth more euros. Stated another way, it takes a larger fraction of a euro to obtain one US\$. At an exchange rate of 0.78/US\$, it took 1.28 (\$1/0.78) dollars to buy 1 euro. Today, it only takes only \$1.16 (\$1/0.86) dollars to buy 1 euro.

	Date	Transaction	Number of Shares	Price/ Share (€)	Transaction Value (€)	Exchange Rate/US\$	Value in US\$
(b)	1 yr. ago	Buy	50	64.5	3,225	1.28	4,128.00
(c)	Today	Sell	50	68.4	3,420	1.16	3,967.20
Profits/(Losses):					196		-160.80
(d)	Sale price		\$3,967.20				
	Purchase price		\$4,128.00				
	Loss		\$ 160.80				

5. No. If the value of the dollar goes up, then the investor will receive fewer dollars for the yen received from the sale of the investment. Therefore, the investor should purchase the U.S. dollar investment.
6. (a) \$1,000 loss. This is because her short sale would have realized \$6,000, while the replacement of the shares would cost Courtney Schinke \$7,000.
- (b) A profit of \$1,500. The long position would initially cost Courtney Schinke \$6,000. When she sells the stock at \$75 per share, she is realizing \$15 per share (\$75 – \$60) in profit for a total of \$1,500 (100 shares at \$15 per share).
- (c) \$1,500 profit. The short sale brings in \$6,000, while the return of the shares to the owner costs only \$4,500.
- (d) A breakeven situation. The long position costs Courtney Schinke \$6,000, and the sale of the stock brings in \$6,000, thereby providing neither a profit nor a loss.
7. (a) Debit balance is transaction amount minus margin. $(100 \times \$50) - .60 \times (100 \times \$50) = \$2,000$.
- (b) Equity is the margin amount, or $.60 \times (100 \times \$50) = \$3,000$.
8. $\text{Margin} = (\text{Value} - \text{Debit balance}) / \text{Value} = [(100 \times \$60) - \$2,000] \div (100 \times \$60) = 66.67\%$
9. If an individual purchases 100 shares of stock at \$50 per share with a 70% margin:
- (a) The debit balance (or the amount borrowed in the transaction) would be:
- | | | | | |
|----------------------------|---|----------------------------------|---|---------|
| Market value of securities | = | $\$50 \times 100 \text{ shares}$ | = | \$5,000 |
| Debit balance | = | $(1 - .7) \times \$5,000$ | = | \$1,500 |
- (b) Equity portion = $\$5,000 - \$1,500 = \$3,500$

(c) If the stock rises to \$80, we would use the formula provided in the book to find the new margin:

$$\begin{aligned}\text{Margin (\%)} &= \frac{\text{Value of securities} - \text{Debit balance}}{\text{Value of securities}} \\ &= \frac{(\$80 \times 100) - \$1,500}{\$80 \times 100} \\ &= \frac{\$6,500}{\$8,000} \\ &= 81.25\%\end{aligned}$$

10. Miguel needs to cover a margin call. His margin is $(\$3,000 - \$2,500) \div \$3,000 = 16.7\%$, below the 30% maintenance requirement. Value – (Margin \times Value) = Debit balance:

$$\$3,000 - (.3 \times \$3,000) = \text{New debit balance}$$

$$\$3,000 - \$900 = \$2,100 = \text{New debit balance}$$

$$\text{Old debit balance} - \text{New debit balance} = \$2,500 - \$2,100 = \$400$$

Miguel must add \$400 to the account to get back to the maintenance margin requirement of 30%.

11. Market value of securities at purchase = $100 \times \$80 = \$8,000$

$$\text{Debit balance in the transaction} = .40 \times \$8,000 = \$3,200$$

Given a maintenance margin of 25%, the stock has to fall to *\$42.67 per share* in order to justify a margin call; that is:

$$\begin{aligned}.25 &= \frac{\text{Value of securities (V)} - \$3,200}{\text{Value of securities (V)}} \\ .25V &= V - \$3,200 \\ .75V &= \$3,200 \\ \text{Value} &= \frac{\$3,200}{.75} = \$4,267 \text{ (for 100 shares of stock)}\end{aligned}$$

On a per share basis, this translates to: $\$4,267/100 = \42.67 .

Note: This problem could also be solved by using a “hit-and-miss” approach which finds a value for V in the margin (%) formula that results in a margin of 25%:

$$\text{Margin (\%)} = \frac{\$4,267 - \$3,200}{\$4,267} = \frac{\$1,067}{\$4,267} = 25\%$$

12. Market value of securities at purchase = $200 \times \$80$ = \$16,000
 Market value of securities at sale = $200 \times \$104$ = \$20,800
 Total current dividend income received = $200 \times \$1 \times (6/12)$ = \$100
 (6/12 is used since the stock will be held for only six months.)
 Equity in investment = $.60 \times \$16,000$ = \$9,600
 Margin loan (or debit balance) = $\$16,000 - \$9,600$ = \$6,400
 Interest paid on loan = $.08 \times \$6,400 \times (6/12)$ = \$256
 (6/12 is used since the margin loan will be outstanding for only half a year.)

Return on invested capital:

$$\frac{\begin{array}{r} \text{Total current} \\ \text{income received} \end{array} - \begin{array}{r} \text{Total interest paid} \\ \text{on margin loan} \end{array} + \begin{array}{r} \text{Market value} \\ \text{of securities} \\ \text{at sale} \end{array} - \begin{array}{r} \text{Market value} \\ \text{of securities} \\ \text{at purchase} \end{array}}{\text{Amount of equity invested}}$$

Return on invested capital:

$$\begin{aligned} & \frac{\$100 - \$256 + \$20,800 - \$16,000}{\$9,600} \\ &= \frac{\$4,644}{\$9,600} \\ &= 48.38\% \text{ (for the six-month period)} \end{aligned}$$

The annualized rate of return is found in the following manner:

Computed return \times (12/Number of months in holding period)

$$\begin{aligned} \text{Annualized rate of return} &= 48.38\% \times (12/6) \\ &= 48.38\% \times 2 = 96.76\% \end{aligned}$$

13. (a) Initial value: 300 shares \times \$55 per share = \$16,500

Debit balance: \$16,500 \times .50 margin = \$8,250

Equity position: \$16,500 \times .50 margin = \$8,250

(b) Margin % = $\frac{V - \text{Debit balance}}{V}$

$$\begin{aligned} (1) \text{ Margin \%} &= \frac{(\$45 \times 300) - \$8,250}{\$45 \times 300} \\ &= \frac{\$13,500 - \$8,250}{\$13,500} = \frac{\$5,250}{\$13,500} = 38.89\% \end{aligned}$$

Account is *restricted*; margin is below required initial margin (50%).

$$\begin{aligned} (2) \text{ Margin \%} &= \frac{(\$70 \times 300) - \$8,250}{\$70 \times 300} \\ &= \frac{\$21,000 - \$8,250}{\$21,000} = \frac{\$12,750}{\$21,000} = 60.71\% \end{aligned}$$

Account has *excess equity*; margin is above 50%.

$$\begin{aligned} (3) \text{ Margin \%} &= \frac{(\$35 \times 300) - \$8,250}{\$35 \times 300} \\ &= \frac{\$10,500 - \$8,250}{\$10,500} = \frac{\$2,250}{\$10,500} = 21.43\% \end{aligned}$$

Account is *below minimum maintenance margin* (25%) and subject to a call.

(c) (1) Dividends received: $300 \text{ shares} \times \$1.50 = \$450$

(2) Interest paid: $\$8,250 \times .09 \times 4/12 = \247.50

(d) Return on invested capital =

$$\frac{\text{Total current income received} - \text{Total interest paid on margin loan} + \text{Market value of securities at sale} - \text{Market value of securities at purchase}}{\text{Amount of equity invested}}$$

$$(1) \text{ Return on invested capital} = \frac{\$450 - \$247.50 + 300(\$50) - \$16,500}{\$8,250}$$

$$= \frac{\$1,297.50}{\$8,250.00}$$

= -15.7% (for the four month period)

= -47.1% annual rate of return

$$(2) \text{ Return on invested capital} = \frac{\$450 - \$247.50 + 300(\$60) - \$16,500}{\$8,250}$$

$$= \frac{\$1,702.50}{\$8,250.00}$$

= 20.6% (for the four month period)

= 61.91% annual rate of return

$$(3) \text{ Return on invested capital} = \frac{\$450 - \$247.50 + 300(\$70) - \$16,500}{\$8,250}$$

$$= \frac{\$4,702.50}{\$8,250.00}$$

= 57% (for the four month period)

= 171% annual rate of return

14. First transaction: Buy 200 shares at \$45 per share, using 60% margin.

$$\text{Cost of transaction} = 200 \times \$45 = \$9,000$$

$$\text{Debit balance} = \$9,000 \times .40 = \$3,600$$

Second transaction: Buy another 300 shares at \$60 per share.

$$\text{Cost of transaction} = 300 \times \$60 = \$18,000$$

Total value of securities held *after* second transaction:

$$(200 \text{ shares} \times \$60) + (300 \text{ shares} \times \$60) = \$12,000 + \$18,000 = \$30,000$$

Maximum amount of money that can be borrowed under the new 50% margin requirement:

$$\$30,000 \times .50 = \$15,000 \text{ (new debit balance)}$$

Amount of unused credit in new debit balance:

$$\$15,000 - \$3,600 = \$11,400$$

Thus, since \$11,400 is the amount that can be borrowed in the second transaction, the balance of the investment must be provided by Mr. Edwards in the form of equity; that is:

$$\$18,000 - \$11,400 = \$6,600 \text{ new equity}$$

15. $\$2,000 \times .5 = \$1,000$
16. The investor will deposit the margin requirement of $50\% \times \$2,000 = \$1,000$, and the proceeds of the sale of \$2,000 will be deposited by the broker. The account balance will be $\$1,000 + \$2,000 = \$3,000$.
17. Margin is the account equity divided by the cost to cover. The account equity would be the initial amount with the broker from the margin deposit of \$1,000, plus the proceeds from the short sale of \$2,000, less the cost to cover the short sale ($\$12 \times 100 = \$1,200$). $\$1,000 + \$2,000 - \$1,200 = \$1,800$ account equity. The margin is the account equity divided by the cost to cover, or $1,800/1,200 = 150\%$. Since the margin of 150% is far above the maintenance margin of 30%, there is no margin call.
18. Margin is the account equity divided by the cost to cover. The account equity would be the initial amount with the broker from the margin deposit of \$1,000, plus the proceeds from the short sale of \$2,000, less the cost to cover the short sale ($\$28 \times 100 = \$2,800$). $\$1,000 + \$2,000 - \$2,800 = \200 account equity. The margin is the account equity divided by the cost to cover, or $200/2,800 = 7\%$. Because the margin of 7% is below the maintenance margin of 30%, there is a margin call.
19. **Intuition:** If the stock price falls subsequent to a short sale, the transaction results in a profit. If the stock price rises subsequent to a short sale, the transaction results in a loss.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Shares	Profit/Loss per Share on Each Transaction (in \$)
A	75	83	$= 75 - 83$ $= -8$ (Loss)
B	30	24	$= 30 - 24$ $= 6$ (Profit)
C	18	15	$= 18 - 15$ $= 3$ (Profit)
D	27	32	$= 27 - 32$ $= -5$ (Loss)
E	53	45	$= 53 - 45$ $= 8$ (Profit)

20. Number of Bio International shares short sold by Charlene Hickman: 200 short-selling price/share = \$27.50.

Intuition: If the stock price falls below \$27.50 in four months, the transaction results in a profit. If the stock price rises above \$27.50 in four months, the transaction results in a loss.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Shares	Profit/Loss per Share on Each Transaction (in \$)	Total Profit/Loss on Each Transaction (in \$)
A	27.50	24.75	$= 27.50 - 24.75$ $= 2.75$	$= 2.75 \times 200$ $= 550$
B	27.50	25.13	$= 27.50 - 25.13$ $= 2.37$	$= 2.37 \times 200$ $= 474$
C	27.50	31.25	$= 27.50 - 31.25$ $= -3.75$	$= -3.75 \times 200$ $= -750$
D	27.50	27.00	$= 27.50 - 27.00$ $= .50$	$= .50 \times 200$ $= 100$

■ Solutions to Case Problems

Case 2.1 Dara's Dilemma: What to Buy?

In this case, the student has to evaluate several alternatives, given a limited amount of information. The instructor can expect a variety of answers for each question, which should provide for lively discussion and high student interest.

- (a) In evaluating the four alternatives, one must consider: taxes (approximately 11% of the current \$54 price would go to taxes if sold this year rather than next); the volatility of the stock price (large swings in the price); and Dara's attitude toward risk (she seems to be risk averse). Since a case can be made for any alternative, each is listed below with its advantages and disadvantages.

Alternative 1—Sell now at \$54 and buy bonds: Taxes of \$6 more per share now rather than in four months would have to be paid; no possibility would exist for gain or loss from future stock price movements. (This is the lowest risk alternative.)

Alternative 2—Place a limit order to sell at \$60: High risk, since this strategy does nothing for a drop in price. With high volatility, the sell order may be exercised soon with the tax consequences mentioned. (This alternative seems to limit Dara's potential gain, but not her loss.)

Alternative 3—Place a stop-loss order to sell at \$45: This eliminates much of her risk of loss without limiting potential gain. If the stop-loss order is executed in the next four months, tax considerations are not as important. If the stop-loss is not executed during the next four months, new information may exist making other alternatives more attractive. Even if the price drops to \$45, the stock may sell for less than \$45. When executed, a stop-loss order becomes a market order and sells at the market price. (This alternative provides for some risk.)

Alternative 4—Hold the stock for four more months: This allows potential losses of \$54 per share and unlimited potential gains. (This alternative is the most risky.)

Alternative 3 is probably the best choice here. Remember: many other considerations go into common stock selection and management; these are discussed in Chapters 6 through 9.

- (b) If the stock price rises to \$60, under Alternative 2, the stock should be sold, yielding a total profit of \$2,400 (\$6 per share \times 400 shares). A disadvantage of Alternative 2 is that *if* the stock price had risen to, say, \$59 and then fallen, the order would not have been executed. In addition, if the price goes to \$60 in the next four months, a much higher percentage will go for taxes.

If Alternative 3 were followed, the stop-loss order would not have been executed. Alternative 3 would have helped Dara minimize her losses in the event of a price decline.

- (c) If the price falls to \$45, Alternative 2 would be meaningless, and the limit order would expire unexecuted. Any sale then would bring in approximately \$18,000 (400 shares \times \$45 per share). Thus, Dara's loss would be held to \$3,600 (400 shares \times \$54 per share – 400 shares \times \$45 per share). Under Alternative 3, the loss could be greater if the price fell below \$45 before the sell order was actually executed.

Case 2.2 Ravi Dumar's High-Flying Margin Account

This case requires the student to review the concept of pyramiding. It also requires the student to review the mechanics of margin trading and to evaluate the risk-return characteristics of a specific pyramiding example.

- (a) Pyramiding is a margin trading technique in which the investor uses the paper profits in his or her margin account to acquire additional securities. Here, Ravi has a margin account with a margin of 60% [(\$75,000 – \$30,000)/\$75,000 = .60]. Since the initial margin requirement is only 50%, he has excess margin and can use it to acquire additional shares of RS. The trick with pyramiding is to add as many stocks as possible to the account without putting up any additional money and without violating the initial margin required *in the account*.
- (b) Ravi currently has an account with a market value of \$75,000 and a debit balance of \$30,000. His margin position is:

$$\text{Margin (\%)} = \frac{V - D}{V} = \frac{\$75,000 - \$30,000}{\$75,000} = 60\%$$

- (c) If Ravi purchases 1,000 shares of RS (a \$20,000 transaction):

1. Using \$10,000 cash and \$10,000 from a margin loan:

	Initial	+	New Purchase	=	Total Account
Value of securities	\$75,000		\$20,000		\$95,000
Debit balance	\$30,000		\$10,000		\$40,000
Equity	\$45,000		\$10,000		\$55,000

Thus, new margin in account = \$55,000/\$95,000 = 57.90%

2. Using \$2,500 cash and \$17,500 in a margin loan:

	Initial	+	New Purchase	=	Total Account
Value of securities	\$75,000		\$20,000		\$95,000
Debit balance	\$30,000		\$17,500		\$47,500
Equity	\$45,000		\$2,500		\$47,500

Therefore, new margin in the account = $\$47,500/\$95,000 = 50\%$.

3. Ravi can purchase the stock, in question (b) above, with only 12.5% margin ($\$2,500/\$20,000$) because the margin requirements are on the account, not on the transaction. As long as he has excess margin in the account, new purchases can be made with transaction margin percentages below the initial requirement; the key is that *after* the transaction, the margin in the account be equal to or greater than the required initial margin.
- (d) If Ravi purchases 1,000 shares using \$2,500 cash and \$17,500 in a margin loan and the stock then goes to \$40 per share, he will earn:
1. Return on invested capital

$$= \frac{\$0 - (\$17,500 \times .10) + (\$40 \times 10,000) - (\$20 \times 1,000)}{\$2,500}$$

$$= \frac{\$0 - \$1,750 + \$40,000 - \$20,000}{\$2,500} = 730\%$$

2. If he had purchased the 1,000 shares using \$20,000 cash, then return on invested capital

$$= \frac{\$0 - \$0 + (\$40 \times 1,000) - (\$20 \times 1,000)}{\$20,000} = 100\%$$

- (e) Ravi's idea to pyramid appears to be a good one since he can make use of his paper profits to gain additional leverage and magnify his potential profit. If he is right about RS, he will increase his return even more by pyramiding. The disadvantage is that he has to make interest payments on the margin loan, and the stock appreciation must be sufficient to compensate him for these interest payments. Also, given the low margin Ravi will be using (12.5%), it will not take much of a price decline for Ravi to lose money in a big way.