

Chapter 2 Securities Markets and Transactions

■ Outline

Learning Goals

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- A. Types of Securities Markets
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 - a. Public Offerings: The IPO Process
 - b. Public Offerings: The Investment Bank's Role
 - c. Public Offerings: The Direct Listing Process
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 - 5. Dealer Markets
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 - C. Electronic and High-Frequency Trading
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 - D. Risks of Investing Internationally
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- A. Trading Hours of Securities Markets
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- Concepts in Review

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 - a. Making Money When Prices Fall
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 - 2. Uses of Short Selling
- Concepts in Review

Summary

Key Terms and Concepts

Discussion Questions

Problems

Case Problems

- 2.1 Darren's Dilemma: What to Buy?
- 2.2 Ravi Dumar's High-Flying Margin Account

■ Key Concepts

- 2.1 The types of securities markets in which transactions are made
- 2.2 Explain public offering process.
- 2.3 The operations, function, and nature of broker (organized securities exchanges) and dealer (the over-the-counter) market
- 2.4 Explain how orders are executed in the various markets
- 2.5 Discuss transaction costs of trading including the bid/ask spread
- 2.6 The historical and current significance of the New York Stock Exchange and recent changes
- 2.7 Discuss other financial markets including options exchanges and futures exchanges
- 2.8 History of the Nasdaq and the OTC market
- 2.9 Introduce electronic trading (ECNs) and high-frequency trading (HFT)
- 2.10 How market conditions are classified as Bull or Bear
- 2.11 The importance of international securities markets and a discussion on the performance and risk involved in these investments
- 2.12 Discuss ways to invest in foreign securities
- 2.13 Extended hours trading and regulation of the securities markets
- 2.14 The basic long transaction
- 2.15 The motives for margin transactions and the procedures for making them
- 2.16 Margin requirements, formulas for initial and maintenance margin, and the uses of margin trading
- 2.17 The short sale transaction, why one shorts securities, and the uses of short selling

■ Overview

- 2.1 The text divides securities markets into *money markets* and *capital markets*. The instructor should explain the difference.
- 2.2 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).
- 2.3 Initial public offerings (IPOs) are the most important transaction in the primary market. The sequence of events includes filing a prospectus with SEC, a quiet period, the distribution of the “red herring” preliminary prospectus, and finally the first day of trading. First day returns and the number of IPOs vary greatly over time with market conditions. Most IPOs take place with the assistance of an investment banking firm. In the underwriting process, the investment bankers buy all of the stock from the issuing firm and bear the risk of reselling at a profit. The instructor should discuss the gross proceeds of an IPO and underpricing offerings.
- 2.4 The secondary markets include various *broker markets* and *dealer markets*. The liquidity function of the secondary market and why this is important to investors should be explained to students. How do market makers help provide liquidity? Instructors should explain the difference between a bid price and an ask price and how a market order will be executed. Competition tends to keep the spreads between bid and ask prices fairly narrow.
- 2.5 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. 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.
- 2.6 The chapter introduces options and discuss the Chicago Board Options Exchange (CBOE). It also discusses futures exchanges, futures contracts, and how futures are traded.
- 2.7 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. The instructor should also mention that while there is only one specialist for each stock on an exchange, there may be several or even many dealers for large companies traded on Nasdaq. The distinctions between broker and dealer markets are blurring as more and more trades are executed electronically. 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*.
- 2.8 Electronic communications networks (ECNs) are computer-based trading systems that electronically match buy and sell orders among individual traders. Dealers make their profit by buying securities at a *bid* price and selling at a higher *ask* price. ECNs cut out the dealer and function and the payment of the bid/ask spread. Instructors should have students explore other alternative trading systems and high-frequency trading (HFT) and HFT strategies.
- 2.9 Instructors should lead the class in a discussion of bull markets and bear markets. How are they defined? Have students look up some history on these terms and how they came to be associated with rising and falling markets. Have students list some recent bull and bear markets.
- 2.10 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 which now includes the Paris, Brussels, Amsterdam and Lisbon exchanges.

- 2.11 The chapter discusses returns from international investing and outlines the various options available for international investing including multinational corporations, global and country mutual funds, and ADRs. The instructor needs to provide some discussion of the risks of investing internationally such as differences in securities regulation, accounting practices, and currency exchange risk.
- 2.12 The next section introduces extended trading hours as well as various regulations applicable to brokers, investment advisers, and stock exchanges. Recent legislation, such as the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, was passed in the wake of financial scandals and designed to protect investors and consumers. If they were not already discussed in Chapter 1, the instructor might want to bring in any recent litigation or securities market trial currently being covered by the press (e.g., the 2012 conviction of former Goldman Sachs trader Rajat Gupta, currently serving a two year sentence for insider trading violations). Widespread allegations of malfeasance on the part of financial firms leading up to the crisis of 2007–2008 have perhaps added to the importance of this topic. Ethical issues and insider trading are interesting and serve to make a point about the challenges facing those attempting to regulate the exchanges.
- 2.13 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. A number of review problems and a case at the end of the chapter will aid students in understanding the concept of margin.
- 2.14 The final section of the chapter deals with *short selling*, including the mechanics and uses of short sales. The text explains initial and maintenance margin requirements and the calculation of profit and loss on short sale transactions.

■ Answers to Concepts in Review

- 2.1
 - 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.
- 2.2 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.

- 2.3
 - a. 5. The prospectus describes the key aspects of a security offering.
 - b. 2. Underwriting is buying securities from firms and reselling them to investors.
 - c. 6. The NYSE is the largest stock exchange in the world.
 - d. 4. The Nasdaq OMX BX is a regional stock exchange.
 - e. 3. Listing requirements are the conditions a firm must meet before its stock can be traded on an exchange.
 - f. 1. The OTC trades unlisted securities.
- 2.4 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 3,000 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 1,450 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.

- 2.5 Electronic Communications Networks (ECNs) are automated computer-based trading systems that electronically execute orders by matching the buy and sell orders submitted by individual traders. ECNs eliminate the dealer function and the payment of the bid/ask spread.
- 2.6 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.
- 2.7 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 spite of a strong U.S. market

with double digit returns in 2017, 34 countries around the world had higher returns; Hong Kong, Denmark, and France all bested the Dow's 25% return.

- 2.8 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*.
- 2.9 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. To further complicate matters, many foreign companies earn much of their profits in U.S. dollars, and U.S. companies may earn much of their profit in foreign currencies. 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.
- 2.10 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. Many large brokerage firms, both traditional and online, offer their clients after-hours trading services. ECNs handle after-hours trading for their client brokerages. Obviously, the two investors would have different expectations about subsequent share price performance. The development of securities markets around the globe has essentially created 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. On the other hand, recent research suggests that ETF prices are less likely to overreact and then overcorrect in relation to news announcements during after-hours trading than during regular trading hours.
- 2.11
 - 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 *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.

- c. 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.
 - d. The *Insider 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.
 - e. Reg FD requires companies to disclose material information to all investors at the same time.
 - f. 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 establishes guidelines minimizing analyst conflicts of interest, increases SEC authority, and requires instant disclosure of stock sales by corporate executives.
 - g. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 was passed to promote financial stability, accountability and transparency in the United States. It created the *Bureau of Consumer Financial Protection* and other agencies.
- 2.12 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.

- 2.13 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 2.3 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.

- 2.14 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.

- 2.15 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.

- 2.16 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).

- 2.17 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 (back to the lender) 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

- 2.1 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. In addition to serving their clients who are issuing shares in an IPO, underwriters also serve clients who buy those shares, and those clients (whom underwriters transact with frequently) benefit if IPO shares are underpriced. 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.

- 2.2 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. For large tech firms, listing on Nasdaq is a part of their public image as innovative, technology-oriented companies.

- 2.3 Due to global time differences, not all securities markets are open simultaneously, although the possibility exists 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. Large companies headquartered in North America, Europe, or Japan already trade on many national markets. 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 that are not acceptable internationally. These restrictions prevent many foreign stocks from trading in one market place. It is not hard to imagine the emergence of 24-hour trading in a unified market consisting of North American, Western European, and major Asian exchanges such as Tokyo.

- 2.4 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. It may also be worth noting that when the NYSE begins trading at 9:30 a.m., it is only 6:30 a.m. in California and 5:30 a.m. in Hawaii.

- 2.5 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

- 2.1 a. First day close \$39.73; IPO price \$29. The IPO was underpriced by \$10.73 or 37%.
- b. DocuSign raised $\$29 \times 21,700,000$ shares or \$629,300,000. If the IPO had been priced at \$39.73, they would have raised $\$39.73 \times 21,700,000$ or \$862,141,000, so they left \$232,841,000 on the table.
- 2.2 a. IPO gross proceeds: $\$11 \times 10,500,000 = \$115,500,000$.
- b. IPO underpricing: $(\$13.41 - \$11)/\$11 = .2191$, or 21.91%.
- c. Money left on table: $\$2.41 \times 10,500,000 = \$25,305,000$.

2.3

Shares sold	Offer Price
8,250,000.00	\$ 18.00
First day closing price	\$ 16.10
a. Total Proceeds	\$ 148,500,000
b. Over pricing	\$ 1.90
c. The shares were actually overpriced, and the subscribers paid too much. This might have been due to the underwriter's misevaluation, new information, or simply shifts in the market.	
d. No money was left on the table by the company, which actually realized a surplus of $8,250,000 \times \$1.90 = \$15,675,000$.	

2.4

Shares sold	Offer Price	Underwriting discount per share	First day closing price	Shares outstanding
13,000,000.00	\$17.00	\$1.19	\$24.75	125,991,577
a. Total proceeds	\$221,000,000			
b. Percentage underwriter's discount	7%			
c. Underwriting fee	\$ 15,470,000			
d. Net proceeds	\$205,530,000			
e. Percentage IPO underpricing	45.6%			
f. Market capitalization	\$3,118,291,531			

- 2.5 a. Bid ask spread = $\$263,770 - \$262,850 = \$920$
- b. NYSE: The brokerage cost of \$7.00 is the potential minimum.
- c. Nasdaq: maximum transaction cost = $(\# \text{ of shares} \times \frac{1}{2} \text{ bid/ask spread} + \text{commission} = 1 \times 920/2 + 7.00 = \$467)$
- Using the midpoint convention, market value would be $(263,770 + \$262,850)/\$263,310$.

- 2.6 a. Total Transaction Costs = (Number of Shares \times 1/2 the Bid/Ask Spread) + Brokerage Commission
 $\$59.95 = (1,200 \times \frac{1}{2} \times \text{Spread}) + \29.95
 $\$30 = 600 \times \text{Spread}$
 $\$0.03 = \text{Spread}$
- b. Because Twitter is listed on the NYSE, which is a broker market, if Charles Schwab routed the order to the NYSE, it could have been executed against a buy order for Twitter. In this case, the total transaction costs would have only been the \$29.95 brokerage commission. Because the total transaction costs included one half of the bid/ask spread per share traded, one of two things must have happened. One possibility is that Charles Schwab routed the order to the NYSE, and no public buy order existed to provide liquidity, so the market maker used her inventory to provide liquidity and charged the half spread for doing so. A second possibility is that Charles Schwab routed the order to the a dealer market, such as Nasdaq, and the market maker simply used his inventory to provide liquidity and charged the half spread per share for doing so.
- c. Total Transaction Costs = (Number of Shares \times 1/2 the Bid/Ask Spread) + Brokerage Commission
 $\$47.95 = (1,200 \times \frac{1}{2} \times \text{Spread}) + \29.95
 $\$18 = 600 \times \text{Spread}$
 $\$0.03 = \text{Spread}$
- d. The total round-trip transaction costs are the totals for selling and buying combined.
 Total round-trip transaction costs = $\$59.95 + \$47.95 = \$107.90$
 To reduce the total costs you could have placed the trades online and only paid the \$4.95 commission per trade, and you could have requested that the your trade be routed to the NYSE where it would have the best chance of crossing with another public order.
- 2.7 The \$/yen exchange rate is the inverse of the yen/\$ exchange rate. If an investor could get 109 yen per dollar, then 1,000 yen buys ($\text{¥}1,000/109$) dollars, or \$9.17.
- 2.8 The investor will receive 1.200 dollars for each euro or $20,000 \times 1.200 \times \$24,000$.
- 2.9

	Share Price in Foreign Currency	÷	Exchange Rate per US\$	=	Share Price in US\$
a.	103.2 euro		0.93 €/US\$		\$110.97
b.	93.3 Sf		.96Sf/US\$		\$ 97.19
c.	1,350.0 yen		110 ¥/US\$		\$ 12.27

- 2.10 a. The euro *appreciated* relative to the US\$, as each euro is costs more in dollar terms and a euro buys more dollars.

	Date	Transaction	Number of Shares	Price/ Share (€)	Transacti on Value (€)	Exchange Rate/ US\$/€	Value in US\$
b.	1 yr. ago	Buy	50	85.5	4,275	1.10 US\$/€	\$4,702.50
c.	Today	Sell	50	87.1	4,355	1.16 US\$/€	\$5,051.80
		Profits/(Losses):			80		349.30
d.		Sale price					\$5,051.80
		Purchase price					\$4,702.50
		LOSS					\$349.30

- 2.11. Money spent to acquire the shares (in \$): $100 \times \text{£}260 \times \$1.50/\text{£} = \$39,000$
 Money received when selling the shares (in \$): $100 \times \text{£}280 \times \$1.25/\text{£} = \$35,000$
 Loss in dollars: $\$35,000 - \$39,000 = \text{\$}(4,000)$.
- 2.12 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.
- 2.13 a. \$2,500 loss. This is because her short sale would have realized \$27,000, while the replacement of the shares would cost Olivia \$29,500.
 b. A profit of \$2,500. The long position would initially cost Olivia \$27,000. When she sells the stock at \$295 per share, she is realizing \$25 per share ($\$295 - \270) in profit for a total of \$2,500 (100 shares at \$25 per share).
 c. \$1,500 profit. The short sale brings in \$27,000, while the return of the shares to the owner costs only \$25,500.
 d. A \$1,500 profit; buy at \$27,000, sell at \$25,500.
- 2.14 a. Value of the position = $250 \times \$37.50 = \$9,375$
 b. $\$9,375 \times 0.45 = \$4,218.75$
 c. $\$9,375 - \$4,218.75 = \$5,156.25$
- 2.15 Original margin = $100 \times \$45 \times 0.65 = \$2,925$. If the share rises to \$60, equity will increase by \$15 per share or \$1,500. The new margin position is \$6,000 less debit balance of $0.35(\$4,500) / \$6,000$ or 73.75%.
- 2.16 If an individual purchases 100 shares of stock at \$35 per share with a 75% margin:
- a. The debit balance (or the amount borrowed in the transaction) would be:
- | | | | | |
|----------------------------|---|----------------------------------|---|---------|
| Market value of securities | = | $\$35 \times 100 \text{ shares}$ | = | \$3,500 |
| Debit balance | = | | = | \$875 |
- b. Equity portion = $\$3,500 - \$875 = \$2,625$
- c. If the stock rises to \$55, we would use the formula provided in the book to find the new margin:
- $$\begin{aligned} \text{Margin (\%)} &= \frac{\text{Value of securities} - \text{Debit balance}}{\text{Value of securities}} \\ &= \frac{\$55 \times 100 - \$875}{\$55 \times 100} \\ &= \frac{\$4,625}{\$5,500} \\ &= 0.84 \end{aligned}$$
- 2.17 When she initially purchased the shares, Barbara put up \$10,285 in margin (55% of the value of shares purchased), and she borrowed \$8,415. Now, Barbara needs to cover a margin call. After the stock price falls to \$142, her margin is too low. She now has a margin of 40.7% computed by: $(\$14,200 - \$8,415) \div \$14,200 = 40.7\%$. This amount is below the 45% maintenance requirement. Barbara needs equity in this account of at least $45\% \times \$14,200 = \$6,390$, so she needs to add at least $\$6,390 - (\$14,200 - \$8,415)$ or \$605 in cash to her margin account.

2.18 Market value of securities at purchase = $300 \times \$95 = \$28,500$

Debit balance in the transaction = $(1 - 0.60) \times \$28,500 = \$11,400$

Given a maintenance margin of 35%, the stock has to fall below \$58.46 *per share* in order to justify a margin call; that is:

$$0.35 = (V - 11,400)/V$$

$$0.35V = V - 11,400$$

$$0.65V = 11,400$$

$$V = \$17,538.46$$

Or $\$17,538.46/300 = \58.46 per share

Note: This problem could also be solved by using a “hit-and-miss” approach or the Excel Solver add-in, which finds a value for V in the margin (%) formula that results in a margin of 35%.

2.19 Market value of securities at purchase	= $300 \times \$65$	= \$19,500
Market value of securities at sale	= $300 \times \$84$	= \$25,200
Total current dividend income received (6/12 is used since the stock will be held for only six months.)	= $300 \times \$2 \times (6/12)$	= \$300
Equity in investment	= $0.70 \times \$19,500$	= \$13,650
Margin loan (or debit balance)	= $\$19,500 - \$13,650$	= \$5,850
Interest paid on loan (6/12 is used since the margin loan will be outstanding for only half a year.)	= $0.04 \times \$5,850 \times (6/12)$	= \$117

Return on invested capital:

Total current income received –	Total interest paid on margin loan +	Market value of securities at sale	Market value of securities – at purchase
<hr/>			
Amount of equity invested			

Return on invested capital:

$$R = (\$300 - \$117 + \$25,200 - \$19,500)/\$13,650 = \$5,833/\$13,650 = 43.1\%$$

$$r = \frac{\$300 - \$117 + \$25,200 - \$19,500}{\$13,650}$$

$$r = \frac{\$5,833}{\$13,650} \quad r = \frac{\$300 - \$117 + \$25,200 - \$19,500}{\$13,650}$$

The annualized rate of return is double the 6 month return or 86.2 %

2.20 a. Initial value: 50 shares \times \$190 per share = \$9,500

Debit balance: $\$9,500 \times (1 - .50)$ margin = \$4,750

Equity position: $\$9,500 \times 0.50$ margin = \$4,750

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

1. $(\$175 \times 50 - \$4,750)/(\$175 \times 50) = 45.71\%$

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

2. $(\$207 \times 50 - \$4,750)/(\$207 \times 50) = 54.11\%$

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

$$3. (\$122 \times 50 - \$4,750)/(\$122 \times \$50) = 22.13\%$$

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

c. 1. Dividends received: $50 \text{ shares} \times \$1.46 = \$73$

2. Interest paid: $\$4,750 \times 0.048 \times 6/12 = \114

d. Return on invested capital =

	Market value	Market value	
Total current	Total interest paid	of securities	of securities
income received	– on margin loan	+ at sale	– at purchase
Amount of equity invested			

1. $(\$73 - \$114 + (\$185 - \$190 \times 50))/\$4,750 = -\$291/\$4,750 = -6.13\%$ for 6 months or –12.25 annualized rate of return.

2. $(\$73 - \$114 + (\$195 - \$190 \times 50))/\$4,750 = -\$209/\$4,750 = 4.40\%$ for 6 months or 8.80% annualized rate of return.

3. $(\$73 - \$114 + (\$207 - \$190 \times 50))/\$4,750 = -\$809/\$4,750 = 17.03\%$ for 6 months or 34.06% annualized rate of return.

2.21 Ed buys 400 shares at \$47 per share, using 60% margin.

$$\text{Cost of transaction} = 400 \times \$47 = \$18,800$$

$$\text{Debit balance} = \$18,800 \times 0.60 = \$11,280$$

$$\text{At 50\%, the new debit balance is } \$18,800 \times 0.5 = \$9,400$$

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

Amount of unused credit in new debit balance:

$$(\$60 \times 400 \times 0.5) - \$9,400 = \$5,200$$

Thus, since $(\$60 \times 350 \times 0.5) = \$10,500$ is the amount that can be borrowed in the second transaction, the balance of the investment must be provided by Ed in the form of equity; that is:

$$\$10,500 - \$5,200 = \$5,300 \text{ new equity}$$

2.22 The investor sells 500 shares short at \$35 per share ($\$35 \times 500 = \$17,500$). 0% percent margin would require a deposit of $\$17,500 \times 0.5 = \$8,750$.

2.23 The investor will deposit the margin requirement of $60\% \times (\$250 \times \$43) = \$6,450$ and the proceeds of the sale of 10,750 will be deposited by the broker. The account will have a cash balance of $\$10,750 + \$6,450 = \$17,200$ and a liability of $\$10,750 \times (1 - 0.60) = \$4,300$. Equity is $\$17,200 - \$4,300 = \$12,900$.

2.24 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 ($75 \times \$69 \times 0.6 = \$3,105$), plus the proceeds from the short sale of ($75 \times \$69 = \$5,175$), less the cost to cover the short sale ($\$57 \times 75 = \$4,275$). $\$3,105 + \$5,175 - \$4,275 = \$3,555$ account equity. The margin is the account equity divided by the cost to cover, or $3,555/4,725 = 75.24\%$, far above the maintenance margin of 30%, so there is no margin call.

2.25 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 ($75 \times \$69 \times 0.6 = \$3,105$), plus the proceeds from the short sale of ($75 \times \$69 = \$5,175$), less the cost to cover the short sale ($\$82 \times 75 = \$6,150$). $\$3,105 + \$5,175 - \$6,150 = \$2,130$ account equity. The margin is the account equity divided by the cost to cover, or $2,130/6,150 = 34.63\%$, below the maintenance margin of 40%, so there will be a margin call.

- 2.26 **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	93	78	= 93 – 78 = 15 (Profit)
B	13	27	= 13 – 27 = –14 (Loss)
C	98	75	= 98 – 75 = 23 (Profit)
D	62	44	= 62 – 44 = 18 (Profit)
E	129	134	= 129 – 134 = –5 (Loss)

- 2.27 Number of PharmaScripts shares short sold by Sharnel Bitker: 1,000 short-selling price/share = \$9.75.

Intuition: If the stock price falls below \$9.75 in eight months, the transaction results in a profit. If the stock price rises above \$9.75 in eight months, the transaction results in a loss. Transaction costs are ignored.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Shares	Profit/Loss per Share on Each Transaction (per share in \$)	Total Profit/Loss on Each Transaction (total in \$)
A	9.75	12.50	= 9.75 – 12.50 = –2.75	= –2.75 × 1000 = –2,750
B	9.75	9.00	= 9.75 – 9.00 = 0.75	= 0.75 × 1000 = 750
C	9.75	5.75	= 9.75 – 5.75 = 4.00	= 4.00 × 1000 = 4,000
D	9.75	16.45	= 9.75 – 16.45 = –6.70	= –6.70 × 1000 = –6,700
E	9.75	10.67	= 9.75 – 10.67 = –0.92	= –0.92 × 1000 = –920

2.28	Without Margin (100% Equity)	With Margin (70%)
	Number of \$25 shares purchased	300
	Cost of investment	\$ 7,500
b.	Less: Borrowed money (debit balance)	\$ 2,250
a.	Equity in investment	<u>\$ 7,500</u>
	Investors Position if price rises by \$15 to \$40 per share	
	Value of stock	\$ 12,000
	Less: Cost of investment	\$ 7,500
	Capital gain	<u>\$ 4,500</u>
d.	Margin Position(V-DB)/V	81%
	Return on investor's equity (capital gain/original equity in investment)	60%
	Investor's position if price falls by \$15 to \$10 per share	
	Value of stock	\$ 3,000
	Less: Cost of investment	\$ 7,500
e.	Capital loss	<u>\$ (4,500)</u>
	Margin Position(V-DB)/V	<u>25%</u>
f.	Return on investor's equity (capital gain/original equity in investment)	-60%
	If the price declines to \$10, the investor will need to deposit additional equity to raise the margin to the maintenance level of 30%. Current equity is \$750 (\$5250-\$4500); it needs to be \$900 ($\$300 \times .30$), so she will need to add \$150.	

■ Solutions to Case Problems

Case 2.1 Darren'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: the volatility of the stock price (large swings in the price); Darren's attitude toward risk, and how the new purchases would affect the diversification of her portfolio; we know that she has invested previously, but nothing about the extent or nature of those investments except that they are relatively conservative.. Since a case can be made for any alternative, each is listed below with its advantages and disadvantages.

Alternative 1— It appears that Darren is willing to tolerate more risk in an effort to increase the returns on his fairly conservative portfolio. The NewestHighTech IPO will certainly accomplish this goal. The stock, by definition, has no track record and the company is only 1 year old. It could turn out to be the next Apple or Google, or the next Research in Motion, maker of the once successful, but now largely obsolete Blackberry phones. By leveraging the risk of an IPO with the risk of a startup tech, the investment could be hugely profitable

or result in major losses. It is worth noting, however, that the most he could lose would be his \$20,000 investment.

Alternative 2— Buying say 400 shares of Casino International now at \$54 and monitoring closely is a lower risk alternative than the tech IPO purchase. Darren might decide now how much loss he is willing to tolerate (10% or 20%) before he sells. He might also try to track the progress of the company's application to open a floating casino and sell if it appears that the bid will be unsuccessful. Later chapters will discuss some excellent strategies using options and stop loss orders to limit risk or leverage gains.

Alternative 3— Short selling Casinos provides a profitable opportunity if things start to look bad for the company and its floating casino project. Darren really needs to decide which outcome he considers more likely. If he cannot decide, then perhaps he should avoid this company altogether. The short selling option is perhaps the riskiest alternative of all because losses are potentially unlimited. If the floating casino project is approved against expectations, he would need to react very quickly to avoid major losses.

Alternative 4— If Darren waits to see what happens with the casino permit, it will probably be too late to earn exceptional profits from either a long or short position because the stock price will have already moved up or down based on the news. Again, there are ways to exploit the uncertainty with options, but they will be studied later.

Alternative 1 may be the best choice if Darren really wants to accept more risk in exchange for the possibility of higher returns. If he monitors the investment closely, he might be able to avoid catastrophic losses and the company just may turn out to be the next Google or Apple. If he can purchase the IPO at the offer price, underpricing could lead to a quick gain. The Casino alternatives might be more attractive if there were any indication which outcome Darren considered more likely.

- b. If the stock price rises to \$60, under Alternative 2, Darren would have a gain of \$6.00 per share or \$2,400 if he bought 400 shares. Under alternative 3, he would lose the \$2,400. Which of the alternatives is preferable depends entirely on the probability of a favorable or unfavorable outcome, and even Darren seems unable to decide about that.
- c. If the price falls to \$45, under alternative 2 Darren would likely sell the stock, accept his loss and move on. The lower price would most likely have resulted from denial of the floating casino permit or failure of the project. With a pessimistic economic outlook for the casino industry, the stock is unlikely to recover any time soon. Under alternative 3, Darren should probably cover his short and celebrate his \$9.00 per share profit. There would be no particular reason to expect the price to go lower because the price would have quickly reflected the bad news.

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% $[(\$75,000 - \$30,000)/\$75,000 = 0.60]$. 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:
- $$= \frac{\$0 - (\$17,500 \times .10) + (\$40 \times 1,000) - (\$20 \times 1,000)}{\$2,500}$$
- $$= \frac{\$0 - \$1,750 + \$40,000 - \$20,000}{\$2,500} = 730\%$$
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.