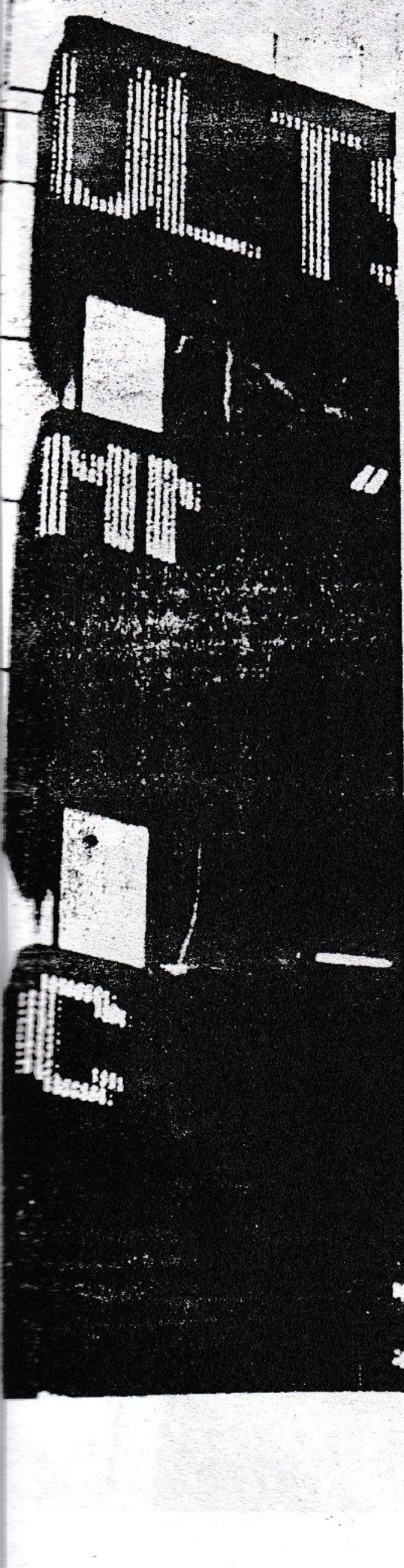
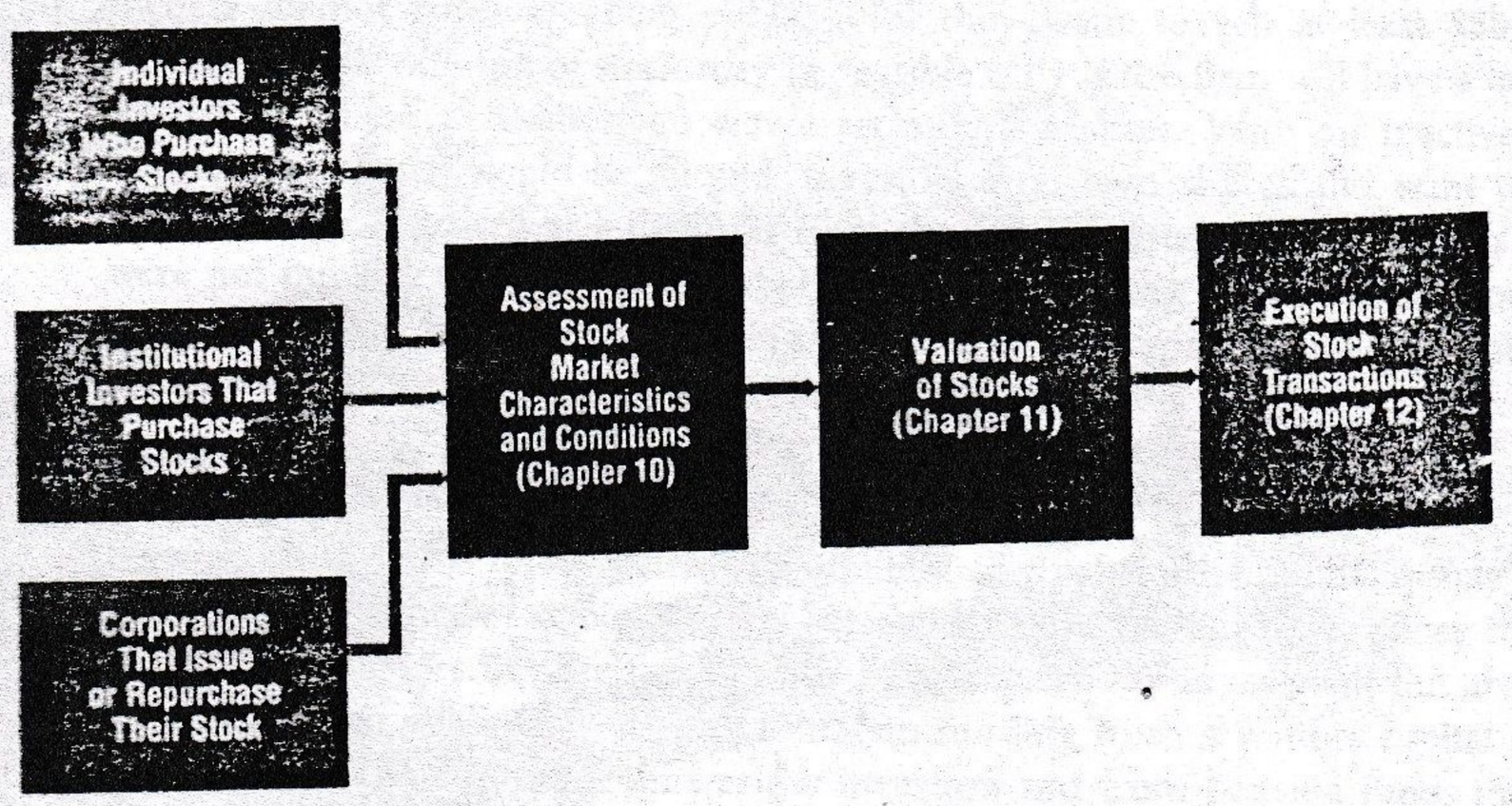
PART 4

Equity Markets



Equity markets facilitate the flow of funds from individual or institutional investors to corporations. Thus, they enable corporations to finance their investments in new or expanded business ventures. They also facilitate the flow of funds between investors. Chapter 10 describes stock offerings and explains how participants in the stock market monitor firms that have publicly traded stock. Chapter 11 explains the valuation of stocks, describes investment strategies involving stocks, and indicates how a stock's performance is measured. Chapter 12 describes the stock market microstructure and explains how orders are placed and executed on stock exchanges.





10 Stock Offerings and Investor Monitoring

CHAPTER OBJECTIVES

The specific objectives of this chapter are to:

- describe the private equity market,
- describe investor participation in the stock markets,
- describe the process of initial public offerings,
- describe the process of secondary offerings,
- explain how the stock market is used to monitor and control firms, and
- describe the globalization of stock markets.

Stock markets facilitate equity investment into firms and the transfer of equity investments between investors.

10-1 Private Equity

When a firm is created, its founders typically invest their own money in the business. The founders may also invite some family or friends to invest equity in the business. This is referred to as private equity because the business is privately held and the owners cannot sell their shares to the public. Young businesses use debt financing from financial institutions and are better able to obtain loans if they have substantial equity invested. Over time, businesses commonly retain a large portion of their earnings and reinvest it to support expansion. This serves as another means of building equity in the firm.

The founders of many firms dream of going public someday so that they can obtain a large amount of financing to support the firm's growth. They may also hope to "cash out" by selling their original equity investment to others. Normally, however, a firm's owners do not consider going public until they want to sell at least $50 million in stock. A public offering of stock may be feasible only if the firm will have a large enough shareholder base to support an active secondary market. With an inactive secondary market, the shares would be illiquid. Investors who own shares and want to sell them would be forced to sell at a discount from the fundamental value, almost as if the firm were not publicly traded. This defeats the purpose of being public. In addition, there are many fixed costs associated with going public, and these costs would be prohibitive for a firm that seeks to raise only a small amount of funds.

10-1a Financing by Venture Capital Funds

Even if a firm wants to sell at least $50 million of stock to the public, it may not have a long enough history of stable business performance that it can raise money from a large number of investors. Private firms that need a large equity investment but are not yet in a position to go public may attempt to obtain funding from a venture capital (VC) fund. Such funds receive money from wealthy investors and from pension funds that are willing to maintain the investment for a long-term period, such as 5 or 10 years. These investors are not allowed to withdraw their money before a specified deadline. Venture capital funds have participated in a number of businesses that ultimately went public and became very successful, including Apple, Microsoft, and Oracle Corporation.

Venture Capital Market The venture capital market brings together the private businesses that need equity funding and the VC funds that can provide funding. One

way of doing this is through venture capital conferences, where each business briefly makes its pitch as to why it will be successful (and generate high returns to the VC fund) if it receives equity funding. Alternatively, businesses may submit proposals directly to VC funds. If a VC fund identifies a proposal that it believes has much potential, it may arrange a meeting with the business's owners and request more detailed information. Most proposals are rejected, however, since VC funds recognize that the majority of new businesses ultimately fail.

Terms of a Venture Capital Deal When a VC fund decides to invest in a business, it will negotiate the terms of its investment, including the amount of funds it is willing to invest. It will also set out clear requirements that the firm must meet, such as providing detailed periodic progress reports. When a VC fund invests in a firm, the fund's managers have an incentive to ensure that the business performs well. Thus, the VC fund managers may serve as advisers to the business. They may also insist on having a seat on the board of directors so that they can influence the firm's future progress. The VC fund often provides its funding in stages based on various conditions that the firm must satisfy. In this way, the VC fund's total investment is aligned with the firm's ability to meet specified financial goals.

Exit Strategy of VC Funds A VC fund typically plans to exit from its original investment within about four to seven years. One common exit strategy is to sell its equity stake to the public after the business engages in a public stock offering. Many VC funds sell their shares of the businesses in which they invest during the first 6 to 24 months after the business goes public. Alternatively, the VC fund may cash out if the company is acquired by another firm, since the acquirer will purchase the shares owned by the VC fund. Thus, the VC fund commonly serves as a bridge for financing the business until it either goes public or is acquired.

Performance of VC Funds The performance of VC funds tends to vary over time. In periods when stock prices are low, VC funds can invest their money more wisely in companies, and therefore have a better chance of earning decent returns. However, when stock prices are high, VC funds may pay too much when investing in companies.

The performance of VC funds is also influenced by the amount of investment received from investors. In some periods, they might receive more funds from investors than they can feasibly invest, especially if prevailing valuations of companies are high. Under these conditions, they are more likely to compete with each other to buy companies, and the bidding will cause them to pay a higher premium for the company. Conversely, when VC funds receive more limited funds, they can focus only on the most desirable investments, and are less likely to pay too much when investing in companies.

10-1b Financing by Private Equity Funds

Private equity funds pool equity funding provided by institutional investors (such as pension funds and insurance companies) and invest in businesses. They also rely heavily on borrowing to finance their investments. Unlike VC funds, private equity funds commonly take over businesses and manage them. Their managers typically take a percentage of the profits they earn from their investments in return for managing the fund. They pursue companies that are overvalued and mismanaged (in their opinion), because they can more easily achieve a high return on their investment when buying weak firms that they can improve. They also charge an annual fee for managing the fund. Because they commonly purchase a majority stake or all of a business, they have control to restructure the business as they wish. They sell their stake in the business after several years.

If they were able to improve the business substantially while they managed it, they should be able to sell their stake to another firm for a much higher price than what they paid for it. Alternatively, they may be able to take the business public through an initial public offering (IPO) and cash out at that time.

Some critics (including some unions) suggest that private equity firms destroy firms by laying off employees. Yet private equity firms might counter that the firms they target are overstaffed and inefficient, and that they need to restructure these firms to help them survive.

Performance of Private Equity Funds The performance of private equity firms tends to vary over time. Like VC funds, private equity funds invest their funds more wisely in companies when stock prices are generally low. However, if they invest in companies while stock prices are very high, private equity funds may be subject to large losses (if stock market conditions deteriorate) even if they can improve operations.

Private equity funds may be especially prone to making bad investments when they receive large amounts of funds from investors, and pursue more investments than are feasible. Conversely, when they receive more limited funds, they can more carefully screen their potential targets, and are more likely to make feasible investments.

10-2 Public Equity

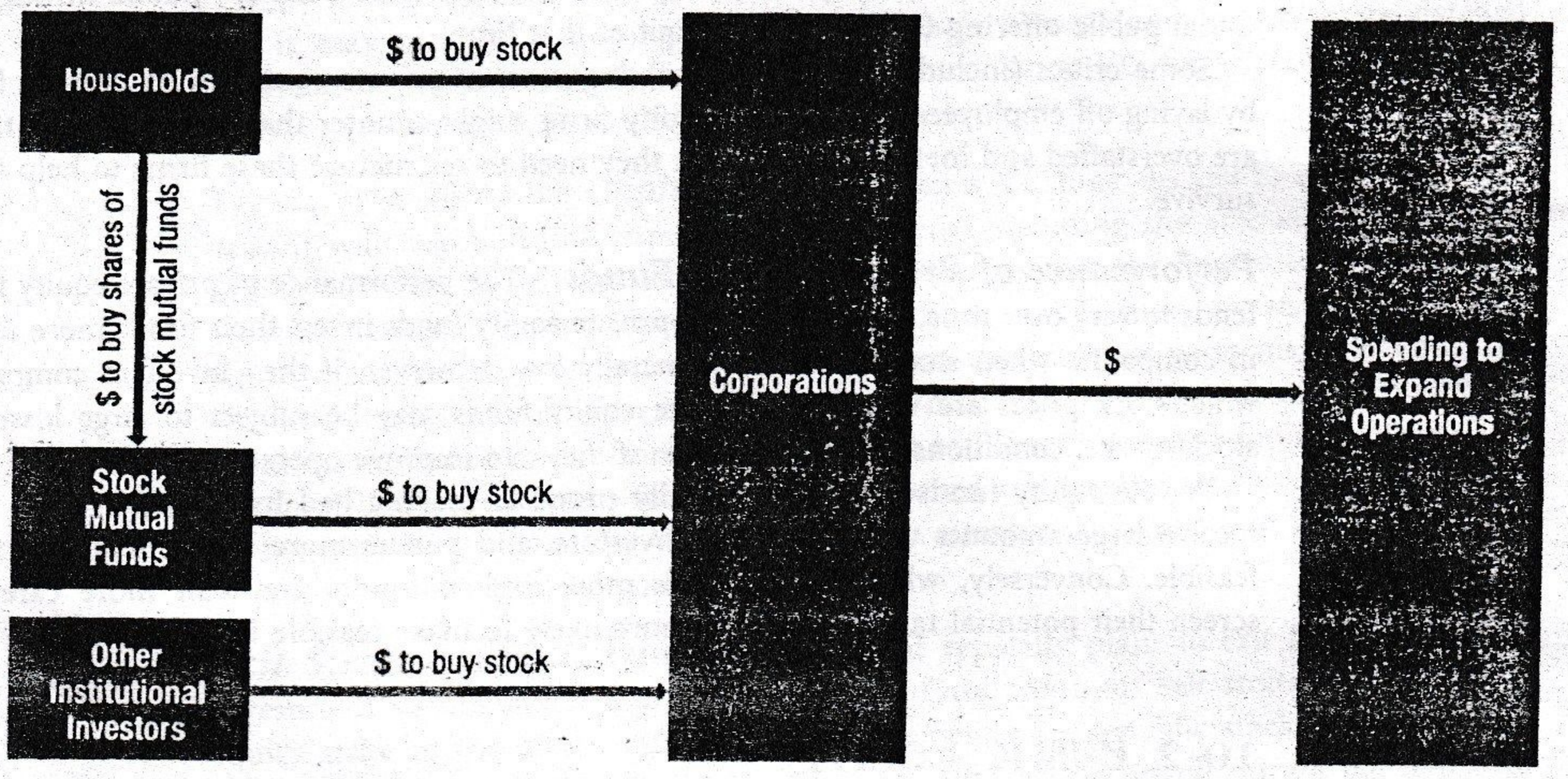
When a firm goes public, it issues stock in the primary market in exchange for cash. This changes the firm's ownership structure by increasing the number of owners. It changes the firm's capital structure by increasing the equity investment in the firm, which allows the firm to pay off some of its debt. It also enables corporations to finance their growth.

A stock is a certificate representing partial ownership in the firm. Like debt securities, common stock is issued by firms in the primary market to obtain long-term funds. Yet the purchaser of stock becomes a part owner of the firm, rather than a creditor. This ownership feature attracts many investors who want to have an equity interest in a firm but do not necessarily want to manage their own firm. Owners of stock can benefit from the growth in the value of the firm and therefore have more to gain than creditors. However, they are also susceptible to large losses, as the values of even the most respected corporations have declined substantially in some periods.

The means by which stock markets facilitate the flow of funds are illustrated in Exhibit 10.1. The stock markets are like other financial markets in that they link the surplus units (that have excess funds) with deficit units (that need funds). Stock issued by corporations may be purchased directly by households. Alternatively, households may invest in shares of stock mutual funds; the managers of these funds use the proceeds to invest in stocks. Other institutional investors such as pension funds and insurance companies also purchase stocks. The massive growth in the stock market has enabled many corporations to expand to a much greater degree and has allowed investors to share in the profitability of corporations.

In addition to the primary market, which facilitates new financing for corporations, there is also a secondary market that allows investors to sell the stock they previously purchased to other investors who want to buy it. Thus the secondary market creates liquidity for investors who invest in stocks. In addition to realizing potential gains when they sell their stock, investors may also receive dividends on a quarterly basis from the corporations in which they invest. Some corporations distribute a portion of their earnings to shareholders in the form of dividends, but others reinvest all of their earnings so that they can achieve greater growth.

Exhibit 10.1 How Stock Markets Facilitate the Flow of Funds



10-2a Ownership and Voting Rights

The owners of small companies also tend to be the managers. In publicly traded firms, however, most of the shareholders are not managers. Thus they must rely on the firm's managers to serve as agents and to make decisions in the shareholders' best interests.

The ownership of **common stock** entitles shareholders to a number of rights not available to other individuals. Normally only the owners of common stock are permitted to vote on certain key matters concerning the firm, such as the election of the board of directors, authorization to issue new shares of common stock, approval of amendments to the corporate charter, and adoption of bylaws. Many investors assign their vote to management through the use of a *proxy*, and many other shareholders do not bother to vote. As a result, management normally receives the majority of the votes and can elect its own candidates as directors.

10-2b Preferred Stock

Preferred stock represents an equity interest in a firm that usually does not allow for significant voting rights. Preferred shareholders technically share the ownership of the firm with common shareholders and are therefore compensated only when earnings have been generated. Thus, if the firm does not have sufficient earnings from which to pay the preferred stock dividends, it may omit the dividend without fear of being forced into bankruptcy. A cumulative provision on most preferred stock prevents dividends from being paid on common stock until all preferred stock dividends (both current and those previously omitted) have been paid. The owners of preferred stock normally do not participate in the profits of the firm beyond the stated fixed annual dividend. All profits above those needed to pay dividends on preferred stock belong to the owners of common stock.

Because the dividends on preferred stock can be omitted, a firm assumes less risk when issuing it than when issuing bonds. However, a firm that omits preferred stock

dividends may be unable to raise new capital until the omitted dividends have been paid, because investors will be reluctant to make new investments in a firm that is unable to compensate its existing sources of capital.

From a cost perspective, preferred stock is a less desirable source of capital for a firm than bonds. Because a firm is not legally required to pay preferred stock dividends, it must entice investors to assume the risk involved by offering higher dividends. In addition, preferred stock dividends are technically compensation to owners of the firm. Therefore, the dividends paid are not a tax-deductible expense to the firm, whereas interest paid on bonds is tax deductible. Because preferred stock normally has no maturity, it represents a permanent source of financing.

10-2c Participation in Stock Markets

Investors can be classified as individual or institutional. The investment by individuals in a large corporation commonly exceeds 50 percent of the total equity. Each individual's investment is typically small, however, which means that ownership is scattered among numerous individual shareholders.

The various types of institutional investors that participate in the stock markets are summarized in Exhibit 10.2. Because some financial institutions hold large amounts of stock, their collective sales or purchases of stocks can significantly affect stock market prices.

In addition to participating in stock markets by investing funds, financial institutions sometimes issue their own stock as a means of raising funds. Many stock market transactions involve two financial institutions. For example, an insurance company may purchase the newly issued stock of a commercial bank. If the insurance company someday sells this stock in the secondary market, the purchaser may be a mutual fund or pension fund.

Exhibit 10.2 Institutional Use of Stock Markets

TYPE OF FINANCIAL INSTITUTION	PARTICIPATION IN STOCK MARKETS
Commercial banks	• Issue stock to boost their capital base. • Manage trust funds that usually contain stocks.
Stock-owned savings institutions	• Issue stock to boost their capital base.
Savings banks	• Invest in stocks for their investment portfolios.
Finance companies	• Issue stock to boost their capital base.
Stock mutual funds	• Use the proceeds from selling shares to individual investors to invest in stocks.
Securities firms	• Issue stock to boost their capital base. • Place new issues of stock. • Offer advice to corporations that consider acquiring the stock of other companies. • Execute buy and sell stock transactions of investors.
Insurance companies	• Issue stock to boost their capital base. • Invest a large proportion of their premiums in the stock market.
Pension funds	• Invest a large proportion of pension fund contributions in the stock market.

10-2d How Investor Decisions Affect Stock Prices

Investors make decisions to buy a stock when its market price is below their valuation, which means they believe the stock is undervalued. They may sell their holdings of a stock when the market price is above their valuation, which means they believe the stock is overvalued. Thus, stock valuation drives their investment decisions. Investors commonly disagree on how to value a stock (as explained in Chapter 11). Thus some investors may believe a stock is undervalued while others believe it is overvalued. This difference in opinions allows for market trading, because it means that there will be buyers and sellers of the same stock at a given moment in time.

When there is a shift in the demand for shares or the supply of shares for sale, the equilibrium price changes. When investors revise their expectations of a firm's performance upward, they revise their valuations upward. If the consensus among investors is a favorable revision of expected performance, there are more buy orders for the stock. Then the demand for shares exceeds the supply of shares for sale, placing upward pressure on the market price. Conversely, if the consensus among investors is lowered expectations of the firm's future performance, there are more sell orders for the stock. In this case, the supply of shares for sale exceeds the demand for shares, placing downward pressure on the market price. Overall, the prevailing market price is determined by the participation of investors in aggregate. Stock transactions between investors in the secondary market do not affect the capital structure of the issuer; they merely transfer shares from one investor to another.

10-2e Investor Reliance on Information

Investors respond to the release of new information, which affects their opinions about a firm's future performance. In general, favorable news about a firm's performance will make investors believe that the firm's stock is undervalued at its prevailing price. The demand for shares of that stock will increase, placing upward pressure on the stock's price. Unfavorable news about a firm's performance will make investors believe that the firm's stock is overvalued at its prevailing price. Some investors will sell their holdings of that stock, placing downward pressure on the stock's price. Thus, information is incorporated into stock prices through its impact on investors' demand for shares and the supply of shares for sale by investors.

Each stock has its own demand and supply conditions and therefore has a unique market price. Nevertheless, new information about macroeconomic conditions commonly causes expectations for many firms to be revised in the same direction and therefore causes stock prices to move in the same direction.

Investors continually respond to new information in their attempt to purchase stocks that are undervalued or sell their stock holdings that are overvalued. When investors properly determine which stocks are undervalued, they can achieve abnormally high returns from investing in those stocks. Thus, the valuation process used by an investor can have a strong influence on the investor's investment performance.

10-3 Initial Public Offerings

A corporation first decides to issue stock to the public in order to raise funds. It engages in an initial public offering (IPO), which is a first-time offering of shares by a specific firm to the public. An IPO is commonly used not only to obtain new funding but also to offer some founders and VC funds a way to cash out their investment. A typical IPO is for at least $50 million, since this would be the minimum size needed to ensure adequate liquidity in the secondary market if investors wish to sell their shares.

10-3a Process of Going Public

Because firms that engage in an IPO are not well known to investors, they must provide detailed information about their operations and their financial condition. A firm planning on going public normally hires a securities firm that serves as the lead underwriter for the IPO. The lead underwriter is involved in the development of the prospectus and the pricing and placement of the shares.

Developing a Prospectus A few months before the IPO, the issuing firm (with the help of the lead underwriter) develops a prospectus and files it with the Securities and Exchange Commission (SEC). The prospectus contains detailed information about the firm and includes financial statements and a discussion of the risks involved. It is intended to provide potential investors with the information they need to decide whether to invest in the firm. Within about 30 days, the SEC will assess the prospectus and determine whether it contains all the necessary information. In many cases the SEC, before approving the prospectus, recommends some changes in order to provide more information about the firm's financial condition.

Once the SEC approves the prospectus, it is sent to institutional investors who may want to invest in the IPO. In addition, the firm's management and the underwriters of the IPO meet with institutional investors. Often these meetings occur in the form of a *road show*: the firm's managers travel to various cities and put on a presentation for large institutional investors in each city. The institutional investors are informed of the road show in advance so that they can attend if they have any interest in purchasing shares of the IPO. Some institutional investors may even receive separate individual presentations. Institutional investors are targeted because they may be willing to buy large blocks of shares at the time of the IPO. For this reason, they typically have priority over individual investors in purchasing shares during an IPO.

A law in 2012 loosened the reporting restrictions for smaller firms about to go public. However, most of the firms that could have qualified did not capitalize on the looser requirements, because they wanted to provide investors with as much financial information as possible. They may have attracted more interest from institutional investors by providing more complete information.

Pricing Before a firm goes public, it attempts to gauge the price that will be paid for its shares. It may rely on the lead underwriter to determine the so-called offer price. The valuation of a firm should equal the present value of the firm's future cash flows. Although the future cash flows are uncertain, the lead underwriter may forecast future cash flows based on the firm's recent earnings.

The offer price also may be influenced by prevailing market and industry conditions. If other publicly traded firms in the same industry are priced high relative to their earnings or sales, then the offer price assigned to shares in the IPO will be relatively high.

During the road show, the lead underwriter solicits indications of interest in the IPO by institutional investors as to the number of shares that they may demand at various possible offer prices. This process is referred to as *bookbuilding*.

EXAMPLE Saint Louis Company has hired Bucknell Investment Company as lead underwriter for its IPO. Bucknell organizes a road show for a large set of institutional investors that commonly invest in IPO shares. During the road show, managers from St. Louis Company explain the firm's business and how it will use the IPO proceeds. Then Bucknell contacts the investors to request indications of interest. A summary of its findings is provided in Exhibit 10.3. Based on the feedback received, Bucknell decides that an initial offer price of $11 would be appropriate. This price is low enough that it will almost surely result in sufficient demand for 4 million shares, which would provide

Exhibit 10.3 Summary of Bookbuilding Process Just before the IPO

POSSIBLE OFFER PRICE	TOTAL SHARES DEMANDED	TOTAL PROCEEDS TO ISSUER
$13	3,000,000	$39,000,000
$12	3,500,000	$42,000,000
$11	4,000,000	$44,000,000
$10	4,300,000	$43,000,000

$44 million to St. Louis Company. Bucknell is concerned that if it sets the price higher, it might not be able to place all of the shares in the IPO. ●

As a result of the bookbuilding process for setting an offer price, many institutional investors pay a lower price than they would have been willing to pay for the shares. In the preceding example, some institutional investors would have paid $13, but the underwriter used an offer price of $11 for all investors to ensure that at least 4 million shares would be sold. Should the issuing firm be satisfied as long as all the shares are placed? What if St. Louis Company firmly believes that all 4 million shares could have been sold at an offer price of $13 per share? In this case the firm would have received $52 million (4 million shares × $13 per share), but instead received only $44 million. It gave up $8 million because the underwriter sold the shares for a lower price. In finance terminology, this is known as "leaving money on the table." Some issuing firms may be especially concerned that they left money on the table when the market price rises substantially on the day of the IPO, because the price increase may suggest that the demand for shares exceeded the supply of shares for sale on that day. The underwriter might counter that the lower offer price was appropriate because it ensured that all the shares would be sold at the offering. If the stock price rises over time (which means that the IPO investors benefit from their investment), the issuing firm may more easily engage in another stock offering in the future because it has gained investors' trust.

Some critics suggest that setting a lower offer price provides institutional investors with special favors and may be a way for the securities firm that is underwriting the IPO to attract other business from institutional investors. To the extent that the shares were essentially discounted from their appropriate price, the proceeds that the issuing firm receives from the IPO are less than it deserves.

In some other countries, an auction process is used for IPOs and investors pay whatever they bid for the shares. The top bidder's order is accommodated first, followed by the next highest bidder, and so on, until all shares are issued. The issuer can set a minimum price at which the bidding must occur for shares to be issued. This process prevents the underwriter from setting the offer price at a level that is intended to please specific institutional investors.

Allocation of IPO Shares The lead underwriter may rely on a group (called a *syndicate*) of other securities firms to participate in the underwriting process and share the fees to be received for the underwriting. Each underwriter in the syndicate contacts institutional investors and informs them of the offering. Most of the shares are sold to institutional investors, as it is more convenient for the underwriting syndicate to sell shares in large chunks. Brokerage firms may receive a very small portion (such as 2 percent) of the IPO shares, which they can sell to their individual investors. They normally give priority to their biggest customers.

Transaction Costs The transaction cost to the issuing firm is usually 7 percent of the funds raised. For example, an IPO of $50 million would result in a transaction cost of $3.5 million (0.07 × $50 million). In addition, the issuer incurs other costs, such as the cost of assessing whether to go public, compiling data for the prospectus, and ensuring that the prospectus is properly written. It also incurs fees from hiring legal or financial advisers during this process. Thus the total cost of engaging in an IPO may be close to 10 percent of the total offering.

10-3b Underwriter Efforts to Ensure Price Stability

The lead underwriter's performance can be partially measured by the movement in the IPO firm's share price following the IPO. If investors quickly sell the stock that they purchased during the IPO in the secondary market, there will be downward pressure on the stock's price. Underwriters may attempt to stabilize the stock's price by purchasing shares that are for sale in the secondary market shortly after the IPO. If most stocks placed by a particular underwriter perform poorly after the IPO, institutional investors may no longer want to purchase shares sold by that underwriter.

Lockup The lead underwriter attempts to ensure stability in the stock's price after the offering by requiring a lockup provision, which prevents the original owners of the firm and the VC firms from selling their shares for a specified period (usually six months from the date of the IPO). The purpose of the lockup provision is to prevent downward pressure that could occur if the original owners or VC firms immediately sold their shares in the secondary market.

In reality, the provision simply defers the possible excess supply of shares sold in the secondary market. When the lockup period expires, the number of shares for sale in the secondary market may increase abruptly, in which case the share price typically declines significantly. In fact, some investors who are allowed to sell their shares before the lockup expiration date now recognize this effect and sell their IPO shares just before that date. Consequently, the stock price begins to decline shortly before the expiration date.

10-3c Timing of IPOs

Initial public offerings tend to occur more frequently during bullish stock markets, when potential investors are more interested in purchasing new stocks. Prices of stocks tend to be higher in these periods, and issuing firms attempt to capitalize on such prices.

EXAMPLE

In the 2004-2007 period, stocks of most firms were priced high relative to their respective earnings or revenues. Investor demand for new stocks was strong. Firms were more willing to engage in IPOs because they were confident that they could sell all of their shares at relatively high prices.

After the credit crisis began in 2008, the stock market weakened and thus reduced the valuation of stocks relative to earnings or revenues. For this reason, some firms that had planned to go public withdrew their plans. They recognized that their shares would have to be sold for a lower price than they desired. In addition, as economic conditions weakened, some firms cut back on their expansion plans and therefore had less need for additional funds. These firms recognized that they should defer their offering until economic conditions were more favorable and stock prices were higher. ●

www.nasdaq.com/markets/ipos/ Information about IPOs, including a schedule of planned IPOs.

10-3d Initial Returns of IPOs

The initial (first-day) return of IPOs in the United States has averaged about 20 percent over the last 30 years. Such a return is unusual for a single day and exceeds the typical return earned on stocks over an entire year. The initial return on IPOs was especially high for Internet firms during the 1996–1999 period. During 1998, for example, the

mean increase in price on the first trading day following the IPO was 84 percent for Internet stocks. Thus a $1 million investment in each of the Internet IPOs in 1998 would have resulted in a one-day gain of $840,000.

The successful IPOs of some Internet firms turned small investors into millionaires, and the resulting media attention attracted many other investors who had never invested in the stock market before. Some investors were investing money that they could not afford to lose, not recognizing the risk associated with investing in Internet stocks. Many of the Internet firms wasted the proceeds of their IPOs, and their stock prices fell below their initial IPO prices within a year. Many Internet firms ultimately went bankrupt, and the investors who invested in those IPOs and held on to the shares lost their entire investments.

10-3e Flipping Shares

Some investors who know about the unusually high initial returns on IPOs attempt to purchase the stock at its offer price and sell the stock shortly afterward. This strategy is referred to as *flipping*. Investors who engage in flipping have no intention of investing in the firm over the long run and are simply interested in capitalizing on the initial return that occurs for many IPOs. If many institutional investors flip their shares, the market price of the stock may decline shortly after the IPO. Thus underwriters are concerned that flipping might place excessive downward pressure on the stock's price. To discourage flipping, some securities firms make more shares of future IPOs available to institutional investors that retain shares for a relatively long period of time. The securities firms may also prevent institutional investors that engage in flipping from participating in any subsequent IPOs that they underwrite.

10-3f Google's IPO

On August 18, 2004, Google engaged in an IPO that attracted massive media attention because of the firm's name recognition. Google generated $1.6 billion from the offering, more than four times the combined value of the IPOs by Amazon.com, America Online, Microsoft, Netscape, and Priceline.com. Google's two co-founders, Larry Page and Sergey Brin, sold a portion of their shares within the IPO for about $40 million each but retained shares valued at $3 billion each. The Google IPO offers interesting insight into the process by which firms obtain equity funding from investors.

Estimating the Stock's Value Investors attempt to determine the value of the stock that is to be issued so that they can decide whether to invest in the IPO. In the case of Google, some investors used Yahoo! as a benchmark because Yahoo! stock had been publicly traded since 1996. To determine the appropriate price of Google's stock, investors multiplied Google's earnings per share by Yahoo!'s price-earnings ratio. This method had some major limitations, however. First, Google and Yahoo! are not exactly the same type of business. Some investors might argue that Microsoft would have been a better benchmark than Yahoo! for Google. If Google has more growth potential than Yahoo!, it might deserve a higher multiple. In addition, Yahoo! and Google use different accounting methods, so estimating a value by comparing the earnings of the two firms was subject to further error. These limitations of valuation are discussed in more detail in Chapter 11, but the main point here is that stock valuations are error prone, especially for IPOs, where the firms have no stock market history.

The Auction Process Google's IPO was unique in that it used a Dutch auction process instead of relying almost exclusively on institutional investors. Specifically, it

allowed all investors to submit a bid for its stock by a specific deadline. It then ranked the bid prices and determined the minimum price at which it would be able to sell all of the shares that it wished to issue. All bids that were equal to or above that minimum price were accepted, and all bids below the minimum price were rejected.

From Google's perspective, the benefit of the auction process was lower costs (as a percentage of proceeds) than with a traditional IPO. The auction may have saved Google about $20 million in fees. In addition, the auction allowed Google to attract a diversified investor base, including many individual investors. However, such an auction process is unlikely to be as successful for firms that are less well known to individual investors as Google.

Results of Google's Dutch Auction Google's auction resulted in a price of $85 per share, meaning that all investors whose bids were accepted paid $85 per share. Google was able to sell all of its 19.6 million shares at this price, which generated proceeds of $1.67 billion. Some investors who obtained shares at the time of the IPO sold (flipped) their shares in the secondary market shortly after the auction was completed. The share price increased by 18 percent to $100.34 by the end of the first day, so investors who obtained shares through the auction and sold them at the end of the first day earned an 18 percent return.

In retrospect, Google was undervalued at the time of the IPO, since its price increased more than 700 percent by 2013.

10-3g Facebook's IPO

On May 18, 2012, Facebook engaged in an IPO, and raised about $16 billion with its offering. Because of its popularity, Facebook's IPO attracted much attention. There were 33 securities that served as underwriters by selling the shares to investors. These underwriters earned fees of about $176 million for their services. This fee is actually lower than the norm for underwriters engaged in an IPO, but many securities firms were willing to accept a lower fee in order to participate in this major event. The opening stock price of Facebook was $38 on the IPO date. The stock price initially increased but then declined later in the day. Based on the open price, the market value of Facebook was about $104 billion at that time, larger than almost all other firms in the United States.

On the day of Facebook's IPO, about 571 million shares were traded, and the stock price of Facebook ended at $38.23, just 23 cents above the open price. Yet some traders experienced substantial profits or losses because of wild gyrations in the stock price on the first day. Some institutional traders reportedly lost more than $100 million on this single day of trading.

As the price declined from its high of about $43 and approached the opening price of $38, some of the securities firms that served as underwriters for the offering purchased shares in order to provide price support. They essentially offset the excess supply of shares for sale at that time in order to prevent the market price from declining below the open price on that day.

One month after the IPO, Facebook's stock price was $31.40. Three months after the IPO, Facebook's stock price was about $20 per share, or about 48 percent below the IPO open price. In other words, its market valuation declined by about $50 billion in three months. A $10,000 investment in the IPO at the opening price would have been worth about $5,200 three months later.

One obvious lesson of the Facebook IPO is that a company can be very valuable, yet overpriced. Many investors were willing to invest in Facebook at any price at the time of the IPO, without considering whether the stock price was justified based on fundamental characteristics that influence Facebook's expected cash flows and true valuation. The financial media documented how some investors recognized that the price might be too

high at the time of the IPO, but just hoped for a quick "pop" in price, so that they could sell their shares at a quick profit. In other words, some investors did not mind paying an excessive price for an overvalued stock as long as they could quickly sell their shares to other investors who were willing to pay even more than they did.

The opening price of $38 per share reflected a multiple of about 100 times Facebook's annual earnings per share at the time. As a basis of comparison, Apple's price-earnings ratio at that time was about 14. In August 2013, Facebook's stock price surged to about $37 per share. The only way that Facebook's extremely high stock price could be justified was if its growth in earnings would be much higher than that of Apple and other companies. For Facebook's earnings to grow at this rate, its customer base would have to grow substantially across the world. However, some countries already had local firms that provided a similar service. Some of the more conservative valuations based on less aggressive growth assumptions estimated the value of Facebook to be about $20 per share, consistent with the price three months after the IPO.

10-3h Abuses in the IPO Market

Initial public offerings have received negative publicity because of several abuses. In 2003, regulators issued new guidelines in an effort to prevent such abuses in the future. Some of the more common abuses are described here.

Spinning Spinning occurs when the underwriter allocates shares from an IPO to corporate executives who may be considering an IPO or to another business requiring the help of a securities firm. The underwriter hopes that the executives will remember the favor and hire the securities firm in the future.

Laddering When there is substantial demand for an IPO, some brokers engage in *laddering*. In other words, these brokers encourage investors to place first-day bids for the shares that are above the offer price. This helps to build upward price momentum. Some investors may be willing to participate to ensure that the broker will reserve some shares of the next hot IPO for them.

Excessive Commission Some brokers have charged excessive commissions when demand was high for an IPO. Investors were willing to pay the price because they could normally recover the cost from the return on the first day. Because the underwriter set an offer price significantly below the market price that would occur by the end of the first day of trading, investors were willing to accommodate the brokers. The gain to the brokers was a loss to the issuing firm, however, because its proceeds were less than they would have been if the offer price had been set higher.

Distorted Financial Statements Prior to an IPO, a firm must disclose financial statements to summarize its revenue, expenses, and financial condition. Many investors use this information to derive a valuation of the firm, which can be used to determine a value per share based on the firm's number of shares. With this information, investors can decide whether the offer price of shares at the time of the IPO is below or above their own valuation, which will dictate whether they purchase shares. To the extent that financial statements are distorted, so may be the valuations.

EXAMPLE

On November 4, 2011, Groupon went public. Its stock price quickly jumped from $20 to about $31 (a 55 percent return) on the first day of the IPO, before declining. Critics voiced their concerns that Groupon was understating its expenses, and therefore exaggerating its earnings. In its first year as a public company, Groupon frequently made amendments to its financial statements to

correct them. It then acknowledged that its internal controls were weak. By November 2012, its stock price had declined to about $3 per share, which represented an 85 percent loss from its offer price at the time of the IPO. Thus, an employee who owned shares before the IPO was able to sell 1,000 shares for $20,000 at the time of the IPO. But an investor who purchased those 1,000 shares for $20,000 at the time of the IPO would have received about $3,000 from selling those shares one year later. In retrospect, it appears that owners of Groupon before the IPO benefitted from the exaggerated earnings, because the investors who trusted the financial statements paid too much for shares during the IPO. ●

The lesson of this example is that even with all the existing regulations for reporting financial statements, accountants still have much flexibility in their reporting process, and therefore can still exaggerate earnings. Consequently, those investors who rely on earnings to value IPO shares might pay too much if the earnings are later determined to be exaggerated.

10-3i Long-Term Performance Following IPOs

There is strong evidence that, on average, IPOs of firms perform poorly over a period of a year or longer. Thus, from a long-term perspective, many IPOs are overpriced at the time of the issue. Investors may be overly optimistic about firms that go public. To the extent that investors base their expectations on the firm's performance before the IPO, they should be aware that firms do not perform as well after going public as they did before. There are several reasons for this. First, this weak performance may be partially attributed to irrational valuations at the time of the IPO, which are corrected over time. Second, the poor performance following an IPO may be caused by the firm's managers, who may spend excessively and waste some of the funds received from the IPO by making bad investments. Third, some firms might have exaggerated their earnings at the time of the IPO in order to maximize the price at which the shares can be sold. The price is corrected downward over time once it becomes obvious that the firm cannot sustain such a high earnings level.

www.hoovers.com/ipo-central/ipo-performance/100004163-1.html Information on the performance of stocks following the IPO.

10-4 Stock Offerings and Repurchases

Even after a firm has gone public, it may issue more stock or repurchase some of the stock that it previously issued. These actions are explained next.

10-4a Secondary Stock Offerings

A firm may need to raise additional equity to support its growth or to expand its operations. A **secondary stock offering** is a new stock offering by a specific firm whose stock is already publicly traded. Some firms have engaged in several secondary offerings to support their expansion. A firm that wants to engage in a secondary stock offering must file the offering with the SEC. It will likely hire a securities firm to advise on the number of shares it can sell, to help develop the prospectus submitted to the SEC, and to place the new shares with investors.

Because there is already a market price for the stock of a firm that engages in a secondary offering, the firm hopes that it can issue shares at the existing market price. But given that a secondary offering may involve millions of shares, there may not be sufficient demand by investors at the prevailing market price. In this case, the underwriter will have to reduce the price so that it can sell all the new shares. Many secondary offerings cause the market price to decline by 1 to 4 percent on the day of the offering, which reflects the new price at which the increased supply of shares in the market is equal to the demand for those shares. Because of the potential for a decline in the equilibrium

price of all of its shares, a firm considering a secondary stock offering commonly monitors stock market movements. It prefers to issue new stock when the market price of its outstanding shares is relatively high and when the general outlook for the firm is favorable. Under these conditions, it can issue new shares at a relatively high price, which will generate more funds for a given amount of shares issued.

Corporations sometimes direct their sales of stock toward a particular group, such as their existing shareholders, by giving them preemptive rights (first priority) to purchase the new stock. By placing newly issued stock with existing shareholders, the firm avoids diluting ownership. Preemptive rights are exercised by purchasing new shares during the subscription period (which normally lasts a month or less) at the price specified by the rights. Alternatively, the rights can be sold to someone else.

Shelf Registration Corporations can publicly place securities without the time lag often caused by registering with the SEC. With this so-called shelf registration, a corporation can fulfill SEC requirements as many as two years before issuing new securities. The registration statement contains financing plans over the upcoming two years. The securities are, in a sense, shelved until the firm needs to issue them. Shelf registrations allow firms quick access to funds without repeatedly being slowed by the registration process. Thus, corporations anticipating unfavorable conditions can quickly lock in their financing costs. Although this is beneficial to the issuing corporation, potential purchasers must realize that the information disclosed in the registration is not continually updated and therefore may not accurately reflect the firm's status over the shelf-registration period.

10-4b Stock Repurchases

Corporate managers have information about the firm's future prospects that is not known by the firm's investors, knowledge that is often referred to as *asymmetric information*. When corporate managers believe that their firm's stock is undervalued, they can use the firm's excess cash to purchase a portion of its shares in the market at a relatively low price based on their valuation of what the shares are really worth. Firms tend to repurchase some of their shares when share prices are at very low levels.

In general, studies have found that stock prices respond favorably to stock repurchase announcements, which implies that investors interpret the announcement as signaling management's perception that the shares are undervalued. Investors respond favorably to this signal.

Although many stock repurchase plans are viewed as a favorable signal, some investors may ask why the firm does not use its funds to expand its business instead of buying back its stock. Thus, investors' response to a stock repurchase plan varies with the firm's characteristics.

10-5 Stock Exchanges

Any shares of stock that have been issued as a result of an IPO or a secondary offering can be traded by investors in the secondary market. In the United States, stock trading between investors occurs on the organized stock exchanges and the over-the-counter (OTC) market.

10-5a Organized Exchanges

Each organized exchange has a trading floor where floor traders execute transactions in the secondary market for their clients. Although there are several organized stock exchanges in the United States, the New York Stock Exchange (NYSE) is by far the largest.

The NYSE was merged with stock exchanges in Paris, Brussels, and Amsterdam in 2007, resulting in NYSE Euronext. In December 2012, NYSE Euronext was purchased by Intercontinental Exchange (ICE) Inc., (subject to regulatory approval) although it would still use the NYSE Euronext name. The ICE, based in Atlanta, emerged in 2000 to facilitate electronic trades of futures contracts on commodities such as cotton and oil. It is known for its efficiency in electronic trading of derivative contracts and went public in 2005. The combination of the ICE and NYSE Euronext exchanges creates a massive network that can trade stocks, bonds, commodities, and derivative securities across the world. The firms listed on the NYSE are typically much larger than those listed on the other exchanges. For some firms, more than 100 million shares are traded on a daily basis.

The NYSE has a trading floor where trades can be executed. It has two broad types of members: floor brokers and specialists. **Floor brokers** are either commission brokers or independent brokers. **Commission brokers** are employed by brokerage firms and execute orders for clients on the floor of the NYSE. **Independent brokers** trade for their own account and are not employed by any particular brokerage firm. However, they sometimes handle the overflow for brokerage firms and handle orders for brokerage firms that do not employ full-time brokers. The fee that independent brokers receive depends on the size and liquidity of the order they trade.

Specialists can match orders of buyers and sellers. In addition, they can buy or sell stock for their own account and thereby create more liquidity for the stock.

www.nyse.com
New York Stock Exchange market summary, quotes, financial statistics, and so forth.

While the NYSE was always known for its trading floor, much of the trading has been executed by the NYSE Super Display Book System (SDBK), which is an electronic system for matching trades. At the time NYSE Euronext was purchased by Intercontinental Exchange, only about 20 percent of the NYSE trades were executed on the trading floor, versus about 40 percent in 2007. The other trades are executed electronically. The proportion of trades executed electronically will likely increase to the point in which the trading floor is no longer needed.

Listing Requirements The NYSE charges an initial fee to firms that wish to have their stock listed. The fee depends on the size of the firm. Corporations must meet specific requirements to have their stock listed on the NYSE, such as a minimum number of shares outstanding and a minimum level of earnings, cash flow, and revenue over a recent period. Once a stock is listed, the exchange also requires that the share price of the stock be at least $1 per share. As time passes, new listings are added and some firms are delisted when they no longer meet the requirements.

The requirement of a minimum number of shares outstanding is intended to ensure adequate liquidity. For a stock to be liquid, there should be many willing buyers and sellers at any time so that an investor can easily buy or sell the stock at the prevailing market price. In a liquid market, the bid price that brokers are willing to pay for a stock should be just slightly less than the ask price at which they would sell the stock.

10-5b Over-the-Counter Market

Stocks not listed on the organized exchanges are traded in the over-the-counter (OTC) market. Like the organized exchanges, the OTC market also facilitates secondary market transactions. Unlike the organized exchanges, the OTC market does not have a trading floor. Instead, the buy and sell orders are completed through a telecommunications network. Because there is no trading floor, it is not necessary to buy a seat to trade on this exchange; however, it is necessary to register with the SEC.

Nasdaq Many stocks in the OTC market are served by the **National Association of Securities Dealers Automatic Quotations (Nasdaq)**, which is an electronic quotation

WEB

www.nasdaq.com
Trends and other statistical information on various Nasdaq indexes.

system that provides immediate price quotations. Firms that wish to have their prices quoted by the Nasdaq must meet specific requirements on minimum assets, capital, and number of shareholders. More than 3,000 stocks trade on the Nasdaq. Although most stocks listed in this market are issued by relatively small firms, stocks of some very large firms (e.g., Apple and Intel) are also traded there.

OTC Bulletin Board The OTC Bulletin Board lists stocks that have a price below $1 per share, which are sometimes referred to as *penny stocks*. More than 3,500 stocks are listed here. Many of these stocks were once traded in the Nasdaq market but no longer meet that exchange's requirements. Penny stocks are less liquid than those traded on exchanges because there is an extremely limited amount of trading. They are typically traded only by individual investors. Institutional investors tend to focus on more liquid stocks that can be easily sold in the secondary market at any time.

Pink Sheets The OTC market has another segment, known as the "pink sheets," where even smaller stocks are traded. Like those on the OTC Bulletin Board, these stocks typically do not satisfy the Nasdaq's listing requirements. Financial data on them are very limited, if available at all. Companies whose stocks are traded on the pink sheets market do not have to register with the SEC. Some of the stocks have very little trading volume and may not be traded at all for several weeks.

10-5c Extended Trading Sessions

The NYSE and Nasdaq market offer extended trading sessions beyond normal trading hours. A late trading session enables investors to buy or sell stocks after the market closes, and an early morning session (sometimes referred to as a *pre-market* session) enables them to buy or sell stocks just before the market opens on the following day. Beyond the sessions offered by the exchanges, some electronic communication networks (ECNs) allow for trading at any time. Since many announcements about firms are made after normal trading hours, investors can attempt to take advantage of this information before the market opens the next day.

However, market liquidity during the extended trading sessions is limited. For example, the total trading volume of a widely traded stock at night may be only 5 percent (or less) of its trading volume during the day. Some stocks are rarely traded at all during the night. Thus, a large trade is more likely to jolt the stock price during an extended trading session because a large price adjustment may be necessary to entice other investors to take the opposite position. Some investors attempt to take advantage of unusual stock price movements during extended trading sessions, but they are exposed to the risk that the market price will not adjust in the anticipated manner.

10-5d Stock Quotations Provided by Exchanges

The trading of stocks between investors in the secondary market can cause any stock's price to change. Investors can monitor stock price quotations at financial websites and in newspapers. Although the format varies among sources, most quotations provide similar information. Stock prices are always quoted on a per share basis, as in the example of Zikard Company in Exhibit 10.4. Use the exhibit to supplement the following discussion of other information in stock quotations.

WEB

www.nasdaq.com
U.S. stock quotes and charts.

52-Week Price Range The stock's highest price and lowest price over the previous 52 weeks are commonly listed just to the left of the stock's name. The high and low prices indicate the range for the stock's price over the last year. Some investors use this range as an indicator of how much the stock price fluctuates.

Exhibit 10.4 Example of Stock Price Quotations

YTD % CHANGE	HI	LO	STOCK	SYM	DIV	YLD%	PE	VOL 100S	LAST	NET CHG
+10.3	121.88	80.06	ZIKARD CO.	ZIK	.56	.6	20	71979	93.77	+1.06
Year to-date percentage change in stock price	Highest price of the stock in this year	Lowest price of the stock in this year	Name of stock	Stock symbol	Annual dividend paid per year	Dividend yield, which represents the annual dividend as a percent-age of the prevailing stock price	Price–earnings ratio based on the prevailing stock price	Trading volume during the previous trading day	Closing stock price	Change in the stock price from the close on the day before

Notice that Zikard's 52-week high price was $121.88 and its low price was $80.06 per share. The low price is about 34 percent below the high price, which indicates a wide range of values over the last year.

Symbol Each stock has a specific symbol that is used to identify the firm. This symbol may be used to communicate trade orders to brokers. Ticker tapes at brokerage firms or on financial news television shows use the symbol to identify each firm. If included in the stock quotations, the symbol normally appears just to the right of the firm's name. Each symbol is usually composed of two to four letters. Zikard's ticker symbol is ZIK. Nike's symbol is NKE, the symbol for Home Depot is HD, and the symbol for Motorola is MOT.

Dividend The annual dividend (Div) is commonly listed to the right of the firm's name and symbol. It shows the dividends distributed to stockholders over the last year on a per share basis. Zikard's dividend is $0.56 per share, which indicates an average of $0.14 per share for each quarter. The annual dollar amount of dividends paid can be determined by multiplying the dividends per share by the number of shares outstanding.

Dividend Yield Next to the annual dividend, some stock quotation tables also show the dividend yield (Yld), which is the annual dividend per share as a percentage of the stock's prevailing price. Since Zikard's annual dividend is $0.56 per share and its prevailing stock price is $93.77, its stock's dividend yield is

$$\text{Dividend yield} = \frac{\text{Dividends paid per share}}{\text{Prevailing stock price}}$$

$$= \frac{\$0.56}{\$93.77}$$

$$= 0.60\%$$

Some firms attempt to provide a fairly stable dividend yield over time, but other firms do not.

Price-Earnings Ratio Most stock quotations include the stock's price–earnings (PE) ratio, which represents its prevailing stock price per share divided by the firm's earnings per share (earnings divided by number of existing shares of stock) generated over the last year. Zikard's PE ratio of 20 in Exhibit 10.4 is derived by dividing its stock price



USING THE WALL STREET JOURNAL

Late Trading

The *Wall Street Journal* provides information on stocks that were heavily traded after normal trading hours, as shown here. It describes the trading volume and the percentage change in the stock price for specific stocks that were heavily traded.

Late Trading

Most-active and biggest movers among NYSE, NYSE Arca, NYSE MKT and Nasdaq issues from 4 p.m. to 6:30 p.m. ET as reported by electronic trading services, securities dealers and regional exchanges. Minimum share price of $2 and minimum after-hours volume of 5,000 shares.

Most-active issues in late trading

Company	Symbol	Volume (000)	Last	Net chg	AFTER HOURS $ chg	AFTER HOURS % chg	High	Low
SPDR S&P 500	SPY	26,284.7	151.97	0.06		0.04	153.29	148.61
Ford Motor	F	23,303.4	12.75	-0.01	-0.08		12.80	12.68
Groupon Inc	GRPN	12,804.4	4.46	-1.52	-25.45		6.17	4.25
Johnson Controls	JCI	4,569.3	31.21	-0.20	-0.65		31.41	31.19
JC Penney	JCP	4,192.2	18.21	-2.95	-13.94		21.35	17.94
PwrShrs QQQ Tr Series 1	QQQ	3,129.4	67.21	-0.03	-0.04		67.56	66.55
Abbott Labs	ABT	2,994.1	34.43	0.17		0.50	34.43	34.22
AbbVie Inc.	ABBV	2,682.9	36.70	-0.03	-0.08		36.73	36.69
Percentage gainers...								
Babcock Wilcox	BWC	5.9	28.75	2.32		8.78	28.75	26.29
Unilife	UNIS	11.8	2.66	0.10		3.91	2.66	2.55
Accuray	ARAY	29.0	4.44	0.16		3.85	4.67	4.28
Universal Display	PANL	40.3	28.89	0.99		3.55	29.10	27.30
Idenix Pharmaceuticals	IDIX	53.4	4.27	0.15		3.53	4.75	4.12
...And losers								
Groupon Inc	GRPN	12,804.4	4.46	-1.52	-25.45		6.17	4.25
BroadSoft	BSFT	819.3	23.92	-6.99	-22.61		43.95	23.92
AegeanMrnPete	ANW	11.5	5.80	-1.19	-17.02		6.21	5.80
JC Penney	JCP	4,192.2	18.21	-2.95	-13.94		21.35	17.94
Vocera Communications	VCRA	7.3	25.90	-3.17	-10.90		29.07	25.00

Real-time U.S. stock quotes are available on WSJ.com. Track most-active stocks, new highs/lows, mutual funds and ETFs. Plus, get deeper money-flows data and email delivery of key stock-market data. All are available free at WSJMarkets.com.

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of $93.77 by the previous year's earnings. Price–earnings ratios are closely monitored by some investors who believe that a low PE ratio (relative to other firms in the same industry) signals that the stock is undervalued in terms of the company's earnings.

Volume Stock quotations also usually include the volume (referred to as "Vol" or "Sales") of shares traded on the previous day. The volume is normally quoted in hundreds of shares. It is not unusual for several million shares of a large firm's stock to be traded on a single day. Exhibit 10.4 shows that more than 7 million shares of ZIK stock were traded. Some financial media also show the percentage change in the volume of trading from the previous day.

Closing Price Quotations Stock quotations show the closing price ("Last") on the day (on the previous day if the quotations are in a newspaper). In addition, the change

finance.yahoo.com/indices
Quotations on various U.S. stock market indexes.

in the price ("Net Chg") is typically provided and indicates the increase or decrease in the stock price from the closing price on the day before.

10-5e Stock Index Quotations

Stock indexes serve as performance indicators of specific stock exchanges or of particular subsets of the market. The indexes allow investors to compare the performance of individual stocks with more general market indicators. Some of the more closely monitored indexes are identified next.

Dow Jones Industrial Average The Dow Jones Industrial Average (DJIA) is a value-weighted average of stock prices of 30 large U.S. firms. ExxonMobil, IBM, and the Coca-Cola Company are among the stocks included in the index. Since the DJIA is based on only 30 large stocks, it is not always an accurate indicator of the overall market or (especially) of smaller stocks.

Standard & Poor's 500 The Standard & Poor's (S&P) 500 index is a value-weighted index of stock prices of 500 large U.S. firms. Because this index contains such a large number of stocks, it is more representative of the U.S. stock market than the DJIA. However, because the S&P 500 index focuses on large stocks, it does not serve as a useful indicator for stock prices of smaller firms.

Wilshire 5000 Total Market Index The Wilshire 5000 Total Market Index was created in 1974 to reflect the values of 5,000 U.S. stocks. Because stocks have been added over time, the index now contains more than 5,000 stocks. The Wilshire 5000 is the broadest index of the U.S. stock market. It is widely quoted in financial media and closely monitored by the Federal Reserve and many financial institutions.

New York Stock Exchange Indexes The NYSE provides quotations on indexes that it has created. The *Composite Index* is the average of all stocks traded on the NYSE. This is an excellent indicator of the general performance of stocks traded on the NYSE. However, because these stocks represent mostly large firms, the Composite Index is not an appropriate measure of small stock performance. In addition to the Composite Index, the NYSE also provides indexes for four sectors:

1. Industrial
2. Transportation
3. Utility
4. Financial

These indexes are commonly used as benchmarks for comparison to an individual firm or portfolio in that respective sector. Although the indexes are positively correlated, there are substantial differences in their movements during some periods.

Nasdaq Stock Indexes The National Association of Securities Dealers (NASD) provides quotations on indexes of stocks traded on the Nasdaq. These indexes are useful indicators of small stock performance because many small stocks are traded on that exchange.

10-5f Private Stock Exchanges

Prior to an IPO, some private firms list their private shares on a private stock exchange. Thus, employees or owners who own shares of these firms can sell their shares to other investors. Second Market and Shares Post are examples of private stock exchanges that facilitate the sale of private firm shares. The main advantage of a private stock exchange

is that it allows owners of a private firm to obtain cash. The owners can sell some of their shares to investors in exchange for cash. In addition, the private stock exchange allows investors to become part owners of privately held firms. Many of these firms may ultimately engage in IPOs, which would allow investors to purchase shares. However, if investors can invest in private firms, they may be able to obtain shares at a lower price. In addition, they may not have access to purchasing shares at the time of the IPO, because most IPOs give priority to the large institutional investors. When investors purchase shares of a private firm, they might be able to pay a lower price than if they wait until the private firm goes public.

There are some possible disadvantages of a private stock market that should also be considered. First, investors need to register with the private stock exchange, and prove that they have sufficient income (such as about $200,000 per year) and sufficient net worth (such as at least $1 million). Therefore, the private stock exchanges are not for all investors. Second, the required disclosure of information by private firms listed on private stock exchanges may be less than what is required when firms go public. Firms are required to have their financial statements audited when their shares are publicly traded. The limited information could cause some investors to make bad investment decisions. Third, investors should consider why the existing owners of a private firm are willing to sell their shares for a specific price. Is it because the owners need cash, or because they know that the firm is worth less than the price at which they can sell the shares? Investors are at a disadvantage because they do not have all the information that the owners have in order to estimate the proper value of shares. Fourth, the trading volume in a private stock market is very limited. With such limited participation by investors, it is difficult to determine the appropriate market price. The price at which the shares are trading could possibly be much higher than what they would sell at if the shares were publicly traded, which suggests that the investors are paying too much for private shares. Alternatively, the shares might be trading at lower prices than if the shares were publicly traded, which suggests that the existing owners are not receiving a sufficient price for their shares. Even the existing owners can make mistakes when attempting to determine the proper valuation of shares, because the true market valuation (when the firm goes public in the future) is partially influenced by market sentiment, which is difficult to forecast.

10-6 Monitoring Publicly Traded Companies

Since a firm's stock price is normally related to its performance, the return to investors depends on how well the firm is managed. A publicly traded firm's managers serve as agents for shareholders by making decisions that are supposed to maximize the stock's price. The separation of ownership (by shareholders) and control (by managers) can result in agency problems because of conflicting interests. Managers may be tempted to serve their own interests rather than those of the investors who own the firm's stock.

Many institutional investors own millions of shares of a single firm and therefore have an incentive to ensure that managers serve the shareholders' interests. The easiest way for shareholders to monitor the firm is to monitor changes in its value (as measured by its share price) over time. Since the share price is continuously available, shareholders can quickly detect any abrupt changes in the value of the firm. If the stock price is lower than expected, shareholders may attempt to take action to improve the management of the firm. In addition, publicly traded firms are required to provide financial statements that disclose their financial condition to the public, so investors can monitor these statements as well.

Investors also rely on the board of directors of each firm to ensure that its managers make decisions that enhance the firm's performance and maximize the stock price.

A firm's board of directors is responsible for supervising its business and affairs. The board attempts to ensure that the business is managed in a way that serves the shareholders. Directors are also responsible for monitoring operations and making sure that the firm complies with the laws. They cannot oversee every workplace decision, but they can ensure that the firm has a process that can guide some decisions about moral and ethical conduct. They can also ensure that the firm has a system for internal control and reporting.

10-6a Role of Analysts

WEB

finance.yahoo.com/marketupdate/upgrades?
List of stocks that were upgraded or downgraded by analysts.

Analysts are often employed by securities firms and assigned to monitor a small set of publicly traded firms. They communicate with the high-level managers of the firms that they cover. Because they have expertise in analyzing the financial condition of these firms and in valuing stocks, analysts may detect financial problems within a firm that would not be recognized by most investors. Analysts publicize their opinion of the companies that they monitor for investors by assigning a rating (or recommendation) to the firm's stock such as Strong Buy, Buy, Hold, or Sell.

Although analysts can provide useful information for investors, they have historically been very generous when rating stocks. Thus, their effectiveness in monitoring publicly traded companies has been limited. In fact, the bonuses paid to analysts were sometimes based on how much business they generated for their employer and not on the accuracy of their stock ratings.

Stock Exchange Rules In the 2002–2004 period, U.S. stock exchanges imposed new rules to prevent some obvious conflicts of interest faced by analysts. First, analysts cannot be supervised by the division that provides advisory services, and their compensation cannot be based on the amount of advisory business they generate. This rule is intended to encourage analysts to provide more unbiased ratings of stocks. Second, securities firms must disclose summaries of their analysts' ratings for all the firms that they rate so that investors can determine whether the ratings are excessively optimistic.

10-6b Accounting Irregularities

To the extent that managers can manipulate the financial statements, they may be able to hide information from investors. In recent years, many firms (including Enron, Tyco, and WorldCom) used unusual accounting methods to create their financial statements. As a result, it was difficult for investors to ascertain the true financial condition of these firms and therefore to monitor them. The problem was compounded because the auditors hired to audit the financial statements of some firms allowed them to use these irregular accounting methods. A subset of a firm's board members serve on an audit committee, which is supposed to ensure that the audit is performed properly. In some firms, however, the committee failed to monitor the auditors. Overall, investors' monitoring of some firms was limited because the accountants distorted the financial statements, the auditors did not properly audit, and the audit committees of those firms did not properly oversee the audit.

10-6c Sarbanes-Oxley Act

The Sarbanes-Oxley Act was enacted in 2002 to ensure more accurate disclosure of financial information to investors, and therefore allows investors to more effectively monitor the financial condition of firms. It requires firms to establish an internal control process to improve their reporting. It also attempts to prevent potential conflicts of interest that could occur when firms have their financial statements audited by a public accounting firm. For example, it prevents a public accounting firm from auditing a client firm whose

chief executive officer (CEO) of other executives were employed by the accounting firm within one year prior to the audit. The act also prevents the members of a firm's audit committee from receiving consulting or advising fees or other compensation from the firm beyond that earned from serving on the board. This provision prevents a firm from providing excessive compensation to the members of an audit committee as a means of paying them off so that they do not closely oversee the audit. In addition, the act requires that the CEO and CFO of firms certify that the audited financial statements are accurate, which forces the CFO and CEO to be accountable. The act specifies major fines or imprisonment for employees who mislead investors or hide evidence.

Although the Sarbanes-Oxley Act has improved transparency, investors still have limited financial information about publicly traded firms, which can cause errors in valuations.

EXAMPLE

Lehman Brothers was ranked the highest in the *Barron's* annual survey of corporate performance for large companies. In 2007, *Fortune* magazine put Lehman Brothers at the top of its list of "Most Admired Securities Firms." In March 2007, the value of Lehman's stock was about $40 billion. Yet in September 2008, Lehman filed for bankruptcy and its stock was worthless. How does a company lose $40 billion in value in 18 months? Some critics would argue that its value should never have been as high as $40 billion because the reported market value of its assets was exaggerated. ●

Cost of Being Public Establishing a process that satisfies the Sarbanes-Oxley provisions can be very costly. For many firms, the cost of adhering to the guidelines of the act exceeds $1 million per year. Hence many small, publicly traded firms decided to revert back to private ownership as a result of the act. These firms perceived that they would have a higher value if they were private, rather than publicly held, because they could eliminate the substantial reporting costs required of publicly traded firms.

10-6d Shareholder Activism

If shareholders are displeased with the way managers are managing a firm, they have three general choices. The first is to do nothing and retain their shares in the hope that management's actions will ultimately lead to strong stock price performance. A second choice is to sell the stock. This choice is common among shareholders who do not believe that they can change the firm's management or do not wish to spend the time and money needed to bring about change. A third choice is to engage in shareholder activism. Some of the more common types of shareholder activism are examined here.

Communication with the Firm Shareholders can communicate their concerns to other investors in an effort to place more pressure on the firm's managers or its board members. Institutional investors commonly communicate with high-level corporate managers and have opportunities to offer their concerns about the firm's operations. The managers may be willing to consider changes suggested by a large institutional investor because they do not want such investors to sell their holdings of the firm's stock.

EXAMPLE

The California Public Employees' Retirement System (CALPERS) manages the pensions for employees of the state of California. It manages more than $80 billion of securities and commonly maintains large stock positions in some firms. When CALPERS believes that these firms are not being managed properly, it communicates its concerns and often proposes solutions. It might even request a seat on the board of directors, or that the corporation replace one of the board members with an outside investor. In response, some of the firms adjust their management to accommodate CALPERS.

CALPERS periodically announces a list of firms that it believes have serious agency problems. These firms may have been unwilling to respond to CALPERS's concerns about their management style. ●

Firms are especially responsive when institutional investors communicate as a team. Institutional Shareholder Services (ISS), which is part of Risk Metrics Group, organizes institutional shareholders to push for a common cause. After receiving feedback from institutional investors about a particular firm, ISS organizes a conference call with high-ranking executives so that it can obtain information from the firm. It then announces the time of the conference call to investors and allows them to listen in on the call. The questions focus on institutional shareholders' concerns about the firm's management. Unlike earnings conference calls, which are controlled by firms, ISS runs the conference call. Common questions asked by ISS include:

- Why is your CEO also the chair of the board?
- Why is your executive compensation much higher than the industry norm?
- What is your process for nominating new board members?

Transcripts of the conference calls are available shortly after they conclude.

Proxy Contest Shareholders may also engage in proxy contests in an attempt to change the composition of the board. This is a more formal effort than communicating with the firm and is normally considered only if an informal request for a change in the board (through communication with the board) is ignored. If the dissident shareholders gain enough votes, they can elect one or more directors who share their views. In this case, shareholders are truly exercising their control.

Institutional Shareholder Services may recommend that shareholders vote a certain way on specific proxy issues. As a result of these more organized efforts, institutional shareholders are having more influence on management decisions. At some firms, they have succeeded in implementing changes that can enhance shareholder value, such as:

- Limiting severance pay for executives who are fired.
- Revising the voting guidelines on the firm's executive compensation policy.
- Requiring more transparent reporting of financial information.
- Imposing ceilings on the CEO's salary and bonus.
- Removing bylaws that prevent takeovers by other firms.
- Allowing for an annual election of all directors so that ineffective directors can be quickly removed from the board.

Shareholder Lawsuits Investors may sue the board if they believe that the directors are not fulfilling their responsibilities to shareholders. This action is intended to force the board to make decisions that are aligned with the shareholders' interests. Lawsuits are often filed when corporations prevent takeovers, pursue acquisitions, or make other restructuring decisions that some shareholders believe will reduce the stock's value.

At some firms, the boards have been negligent in representing the shareholders. Nevertheless, since business performance is subject to uncertainty, directors cannot be held responsible every time a key business decision has an unsatisfactory outcome. When directors are sued, the court typically focuses on whether the directors' decisions were reasonable, not on whether they increased the firm's profitability. Thus, from the court's perspective, the directors' decision-making process is more relevant than the actual outcome.

10-6e Limited Power of Governance

Although much attention has been given in financial markets to how managers are subject to increased governance, there is some evidence that the governance is not very effective. There are numerous examples of executives who continue to receive extremely high compensation even when the performance of their firm is quite weak. In spite of

the Sarbanes-Oxley Act, shareholder activism, proxy contests, and shareholder lawsuits, the agency problems of some firms remain severe.

10-7 Market for Corporate Control

When corporate managers notice that another firm in the same industry has a low stock price as a result of poor management, they may attempt to acquire that firm. They hope to purchase the business at a low price and improve its management so that they can increase the value of the business. In addition, the combination of the two firms may reduce redundancy in some operations and allow for synergistic benefits. In this way, the managers of the acquiring firm may earn a higher return than if they used their funds for some other type of expansion. In essence, weak businesses are subject to a takeover by more efficient corporations and are thus subject to the "market for corporate control." Therefore, if a firm's stock price is relatively low because of poor performance, it may become an attractive target for other corporations.

A firm may especially benefit from acquisitions when its own stock price has risen. It can use its stock as currency to acquire the shares of a target by exchanging some of its own shares for the target's shares. Some critics claim that acquisitions of inefficient firms typically lead to layoffs and are unfair to employees. The counter to this argument is that, without the market for corporate control, firms would be allowed to be inefficient, and this is unfair to the shareholders who invested in them. Managers recognize that if their poorly performing business is taken over, they may lose their jobs. Thus, the market for corporate control can encourage managers to make decisions that maximize the stock's value so that they can better avoid takeovers.

In general, studies have found that the share prices of target firms react positively but that the share prices of acquiring firms are not favorably affected. Investors may not expect the acquiring firm to achieve its objectives. There is some evidence that firms engaging in acquisitions do not eliminate inefficient operations after the acquisitions, perhaps because of the low morale that would result from layoffs. In addition, an acquiring firm commonly has to pay a very large premium, such as 20 to 40 percent above the publicly traded target firm's prevailing stock price, in order to gain control of the target firm. It is difficult to achieve sufficient benefits from the acquisition to offset the very large cost of the acquisition.

10-7a Use of LBOs to Achieve Corporate Control

The market for corporate control is enhanced by the use of leveraged buyouts (LBOs), which are acquisitions that require substantial amounts of borrowed funds. That is, the acquisition requires a substantial amount of financial leverage. Some so-called buyout firms identify poorly managed firms, acquire them (mostly with the use of borrowed funds), improve their management, and then sell them at a higher price than they paid. Alternatively, a group of managers who work for the firm may believe that they can restructure the firm's operations to improve cash flows. These managers may attempt an LBO in the hope that they can improve the firm's performance.

The use of debt to retire a company's stock creates a highly leveraged capital structure. One favorable aspect of such a revised capital structure is that the ownership of the firm is normally reduced to a small group of people, who may be managers of the firm. Agency costs should be reduced when managers' interests are thus aligned with those of the firm. A major concern about LBOs, however, is that the firm will experience cash flow problems over time because of the high periodic debt payments that result from the high degree of financial leverage. A firm financed in this way has a high potential return but is also risky.

Some firms that engage in LBOs issue new stock after improving the firm's performance. This process is referred to as a reverse leveraged buyout (reverse LBO). Whereas an LBO may be used to purchase all the stock of a firm that has not achieved its potential performance (causing its stock to be priced low), a reverse LBO is normally desirable when the stock can be sold at a high price. In essence, the owners hope to issue new stock at a much higher price than they paid when enacting the LBO.

10-7b Barriers to the Market for Corporate Control

The power of corporate control to eliminate agency problems is limited by barriers that can make it more costly for a potential acquiring firm to acquire another firm whose managers are not serving the firm's shareholders. Some of the more common barriers to corporate control are identified next.

Antitakeover Amendments Some firms have added antitakeover amendments to their corporate charter. For example, an amendment may require that at least two-thirds of the shareholder votes approve a takeover before the firm can be acquired. Antitakeover amendments are supposed to be enacted to protect shareholders against an acquisition that will ultimately reduce the value of their investment in the firm. However, it could be argued that shareholders are adversely affected by antitakeover amendments.

Poison Pills Poison pills are special rights awarded to shareholders or specific managers on the occurrence of specified events. They can be enacted by a firm's board of directors without the approval of shareholders. Sometimes a target enacts a poison pill to defend against takeover attempts. For example, a poison pill might give all shareholders the right to be allocated an additional 30 percent of shares (based on their existing share holdings) without cost whenever a potential acquirer attempts to acquire the firm. The poison pill makes it more expensive and more difficult for a potential acquiring firm to acquire the target.

Golden Parachutes A golden parachute specifies compensation to managers in the event that they lose their jobs or there is a change in control of the firm. For example, all managers might have the right to receive 100,000 shares of the firm's stock whenever the firm is acquired. It can be argued that a golden parachute protects managers so that they may be more willing to make decisions that enhance shareholder wealth over the long run, even though the decisions adversely affect the stock price in the short run.

Golden parachutes can discourage takeover attempts by increasing the cost of the acquisition. To the extent that this (or any) defense against takeovers is effective, it disrupts the market for corporate control by allowing managers of some firms to be protected while serving their own interests rather than shareholder interests.

10-8 Globalization of Stock Markets

GLOBAL ASPECTS

Stock markets are becoming globalized in the sense that barriers between countries have been removed or reduced. Thus, firms in need of funds can tap foreign markets, and investors can purchase foreign stocks. In recent years, many firms have obtained funds from foreign markets through international stock offerings. This strategy may represent an effort by a firm to enhance its global image. Another motive is that, because the issuing firm is tapping a larger pool of potential investors, it can more easily place the entire issue of new stock.

WEB

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World market coverage, various financial instruments, financial analysis, charts, quotes, and news.

10-8a Privatization

In recent years, the governments of many countries have allowed privatization, or the sale of government-owned firms to individuals. Some of these businesses are so large that the local stock markets cannot digest the stock offerings. Consequently, investors from various countries have invested in the privatized businesses.

10-8b Emerging Stock Markets

Emerging markets enable foreign firms to raise large amounts of capital by issuing stock. These markets also provide a means for investors from the United States and other countries to invest their funds. Some emerging stock markets are relatively new and small, and they may not be as efficient as the U.S. stock market. Hence some stocks could be undervalued, which may attract investors to these markets.

However, stock markets in some developing countries are still subject to certain limitations. First, non-U.S. regulatory agencies provide little enforcement to ensure that the financial information offered by issuers is correct. Second, businesses that do not repay investors are rarely prosecuted. Third, courts in many countries do not provide an efficient system that investors can use to obtain the funds they believe they are owed.

Fourth, the smaller markets might be especially susceptible to manipulation by large traders. Furthermore, insider trading is more prevalent in many foreign markets because rules against it are not enforced. In general, large institutional investors and insiders based in the foreign markets may have some advantages.

Although international stocks can generate high returns, they may also exhibit high risk. Some of the emerging stock markets are often referred to as "casinos" because of the wide variation in prices that sometimes occur. Large price swings are common because of two characteristics of emerging markets. For stocks with very limited trading activity, large trades can jolt the equilibrium price. In addition, valid financial information about firms is sometimes lacking, causing investors to trade according to rumors. Trading patterns based on continual rumors are more volatile than trading patterns based on factual data.

10-8c Variation in Characteristics across Stock Markets

The volume of trading activity in each stock market is influenced by legal and other characteristics of the country. Shareholder rights vary among countries, and shareholders in some countries have more voting power and can have a stronger influence on corporate management.

The legal protection of shareholders also varies substantially among countries. Shareholders in some countries can more effectively sue publicly traded firms if their executives or directors commit financial fraud. In general, common law countries such as the United States, Canada, and the United Kingdom allow for more legal protection than civil law countries such as France and Italy.

The government's enforcement of securities laws also varies among countries. If a country has laws to protect shareholders but does not enforce the laws, shareholders are not protected. Some countries tend to have less corporate corruption than others; in these countries, shareholders are less exposed to major losses due to corruption.

In addition, the degree of financial information that must be provided by public companies varies among countries. The variation may be due to the accounting laws set by the government for public companies or to reporting rules enforced by local stock exchanges. Shareholders are less susceptible to losses due to a lack of information if public companies are required to be more transparent in their financial reporting.

In general, more investors are attracted to stock markets in countries that provide voting rights and legal protection for shareholders, strictly enforce the laws, do not tolerate corruption, and impose stringent accounting requirements. These conditions enable investors to have more confidence in the stock market and allow for greater pricing efficiency. In addition, companies are attracted to the stock market when there are many

investors because then the companies can easily raise funds in the market. Conversely, if a stock market does not attract investors then it will not attract companies needing to raise funds. Those companies will have to rely on stock markets in other countries or on credit markets to raise funds.

10-8d Methods Used to Invest in Foreign Stocks

Investors can obtain foreign stocks by purchasing shares directly, purchasing American depository receipts (ADRs), investing in international mutual funds, and purchasing exchange-traded funds (ETFs). Each of these methods is explained in turn.

Direct Purchases Investors can easily invest in stocks of foreign companies that are listed on the local stock exchanges. Foreign stocks not listed on local stock exchanges can be purchased through some brokerage firms.

American Depository Receipts An alternative means of investing in foreign stocks is by purchasing American depository receipts (ADRs), which are certificates representing shares of non-U.S. stock. Many non-U.S. companies establish ADRs in order to develop name recognition in the United States. In addition, some companies wish to raise funds in the United States.

American depository receipts are attractive to U.S. investors for several reasons. First, they are closely followed by U.S. investment analysts. Second, companies represented by ADRs are required by the SEC to file financial statements that are consistent with generally accepted accounting principles in the United States. These statements may not be available for other non-U.S. companies. Third, reliable quotes on ADR prices are consistently available, with existing currency values factored in to translate the price into dollars. A disadvantage, however, is that the selection of ADRs is limited. Also, the ADR market is less active than other stock markets, so ADRs are less liquid than most listed U.S. stocks.

International Mutual Funds Another way to invest in foreign stocks is to purchase shares of international mutual funds (IMFs), which are portfolios of international stocks created and managed by various financial institutions. In this way, individuals can diversify across international stocks by investing in a single IMF. Some IMFs focus on a specific foreign country, whereas others contain stocks across several countries or even several continents.

International Exchange-Traded Funds Exchange-traded funds are passive funds that track a specific index. International ETFs represent international stock indexes, and they have become popular in the last few years. By investing in an international ETF, investors can invest in a specific index representing a foreign country's stock market. An ETF trades like a stock: it is listed on an exchange, and its value changes in response to trading activity. Although ETFs are denominated in dollars, the net asset value of an international ETF is determined by translating the foreign currency value of the foreign securities into dollars.

finance.yahoo.com/indices
Click on "World" for quotations on various stock market indexes around the world.

A major difference between ETFs and IMFs is that IMFs are managed whereas ETFs simply represent an index. If investors prefer that the portfolio be rebalanced by portfolio managers over time, they may prefer an IMF. However, ETFs have lower expenses because they avoid the cost of active portfolio management. The difference in expense ratios between an IMF and an ETF may be 2 percent annually or more.

The price of a share of each international ETF is denominated in dollars, but the underlying securities that make up the index are denominated in non-U.S. currencies.

For this reason, the return on the ETF will be influenced by any movement of the foreign country's currency against the dollar. This is true also for IMFs. If the foreign currency appreciates (increases in value), that will boost the value of the index as measured in dollars. Conversely, if the foreign currency depreciates (decreases in value), that will reduce the value of the index as measured in dollars.

SUMMARY

- When businesses are created, they normally rely on private equity along with borrowed funds. Some private businesses that expand attempt to obtain additional private equity funding from venture capital firms. When venture capital firms provide financing, they commonly attempt to pull their cash out in four to seven years. Going public changes the firm's ownership structure by increasing the number of owners, and it changes the firm's capital structure by increasing the equity investment in the firm. Stock market participants include individual investors as well as institutional investors such as stock mutual funds, pension funds, and insurance companies. Upon the release of new information about a firm, some investors respond by either selling their stock holdings or buying more stock. Their actions affect the supply and demand conditions for the stock and thus influence the equilibrium stock price.
- An initial public offering (IPO) is a first-time offering of shares by a specific firm to the public. Many firms engage in an IPO to obtain funding for additional expansion and to give the founders and venture capital funds a way to cash out their investments. A firm that engages in an IPO must develop a prospectus that is filed with the SEC, and it typically uses a road show to promote its offering. The firm hires an underwriter to help with the prospectus and road show and to place the shares with investors.
- A secondary stock offering is an offering of shares by a firm that already has publicly traded stock. Firms engage in secondary offerings when they need more equity funding to support additional expansion.
- There are various ways in which publicly traded firms are monitored. Analysts monitor firms so that they can assign a rating to their stock. Investors that purchase stock of firms monitor performance and may use shareholder activism to ensure that managers make decisions that are beneficial to the firm's shareholders. The market for corporate control allows firms to acquire the control of businesses that they can improve by replacing managers or revising operations.
- Many U.S. firms issue shares in foreign countries, as well as in the United States, so that they can spread their shares among a larger set of investors and possibly enhance the firm's global name recognition. Global stock exchanges exist to facilitate the trading of stocks around the world. U.S. investors can invest in foreign stocks by making direct purchases on foreign stock exchanges, purchasing ADRs, investing in international mutual funds, and investing in international exchange-traded funds.

POINT COUNTER-POINT

Should a Stock Exchange Enforce Some Governance Standards on the Firms Listed on the Exchange?

Point No. Governance is the responsibility of the firms, not the stock exchange. The stock exchange should simply ensure that the trading rules of the exchange are enforced and should not intervene in the firms' governance issues.

Counter-Point Yes. By enforcing governance standards such as requiring a listed firm to have a majority of outside members on its board of directors, a stock exchange can enhance its own credibility.

Who Is Correct? Use the Internet to learn more about this issue and then formulate your own opinion.

QUESTIONS AND APPLICATIONS

1. Shareholder Rights Explain the rights of common stockholders that are not available to other individuals.

2. Stock Offerings What is the danger of issuing too much stock? What is the role of the securities firm that serves as the underwriter, and how can it ensure that the firm does not issue too much stock?

3. IPOs Why do firms engage in IPOs? What is the amount of the fees that the lead underwriter and its syndicate charge a firm that is going public? Why are there many IPOs in some periods and few IPOs in other periods?

4. Venture Capital Explain the difference between obtaining funds from a venture capital firm and engaging in an IPO. Explain how the IPO may serve as a means by which the venture capital firm can cash out.

5. Prospectus and Road Show Explain the use of a prospectus developed before an IPO. Why does a firm do a road show before its IPO? What factors influence the offer price of stock at the time of the IPO?

6. Bookbuilding Describe the process of bookbuilding. Why is bookbuilding sometimes criticized as a means of setting the offer price?

7. Lockups Describe a lockup provision and explain why it might be required by the lead underwriter.

8. Initial Return What is the meaning of an initial return for an IPO? Were initial returns of Internet IPOs in the late 1990s higher or lower than normal? Why?

9. Flipping What does it mean to "flip" shares? Why would investors want to flip shares?

10. Performance of IPOs How do IPOs perform over the long run?

11. Asymmetric Information Discuss the concept of asymmetric information. Explain why it may motivate firms to repurchase some of their stock.

12. Stock Repurchases Explain why the stock price of a firm may rise when the firm announces that it is repurchasing its shares.

13. Corporate Control Describe how the interaction between buyers and sellers affects the market value of a firm, and explain how that value can subject a firm to the market for corporate control.

14. ADRs Explain how ADRs enable U.S. investors to become part owners of foreign companies.

15. NYSE Explain why stocks traded on the New York Stock Exchange generally exhibit less risk than stocks that are traded on other exchanges.

16. Role of Organized Exchanges Are organized stock exchanges used to place newly issued stock? Explain.

Advanced Questions

17. Role of IMFs How have international mutual funds (IMFs) increased the international integration of capital markets among countries?

18. Spinning and Laddering Describe spinning and laddering in the IPO market. How do you think these actions influence the price of a newly issued stock? Who is adversely affected as a result of these actions?

19. Impact of Accounting Irregularities How do you think accounting irregularities affect the pricing of corporate stock in general? From an investor's viewpoint, how do you think the information used to price stocks changes in response to accounting irregularities?

20. Impact of Sarbanes-Oxley Act Briefly describe the provisions of the Sarbanes-Oxley Act. Discuss how this act affects the monitoring by shareholders.

21. IPO Dilemma Denton Company plans to engage in an IPO and will issue 4 million shares of stock. It is hoping to sell the shares for an offer price of $14. It hires a securities firm, which suggests that the offer price for the stock should be $12 per share to ensure that all the shares can easily be sold. Explain the dilemma for Denton Company. What is the advantage of following the advice of the securities firm? What is the disadvantage? Is the securities firm's incentive to place the shares aligned with that of Denton Company?

22. Variation in Investor Protection among Countries Explain how shareholder protection varies among countries. Explain how enforcement of securities laws varies among countries. Why do these characteristics affect the valuations of stocks?

23. International ETFs Describe international ETFs, and explain how ETFs are exposed to exchange rate

risk. How do you think an investor decides whether to purchase an ETF representing Japan, Spain, or some other country?

24. VC Fund Participation and Exit Strategy Explain how venture capital (VC) funds finance private businesses as well as how they exit from the participation.

25. Dilemma of Stock Analysts Explain the dilemma of stock analysts that work for securities firms and assign ratings to large corporations. Why might they prefer not to assign low ratings to weak but large corporations?

26. 26. Limitations of an IPO Businesses valued at less than $50 million or so rarely go public. Explain the limitations to such businesses if they did go public.

27. Private Equity Funds Explain the incentive for private equity funds to invest in a firm and improve its operations.

28. VCs and Lockup Expiration Following IPOs Venture capital firms commonly attempt to cash out as soon as is possible following IPOs. Describe the likely effect that would have on the stock price at the time of lockup expiration. Would the effect be different for a firm that relied more heavily on VC firms than other investors for its funds?

29. Impact of SOX on Going Private Explain why some public firms decided to go private in response to the passage of the Sarbanes-Oxley (SOX) Act.

30. Pricing Facebook's IPO Stock Price Describe the dilemma of securities firms that serve as underwriters for Facebook's IPOs, when attempting to satisfy Facebook and the institutional investors that invest in Facebook's stock. Do you think that the securities firms that served as underwriters for Facebook's IPO satisfied Facebook or its investors in the IPO? Explain.

31. Private Stock Market What are some possible disadvantages to investors who invest in stocks listed on a private stock market?

Interpreting Financial News

Interpret the following statements made by Wall Street analysts and portfolio managers.

a. "The recent wave of IPOs is an attempt by many small firms to capitalize on the recent runup in stock prices."

b. "IPOs transfer wealth from unsophisticated investors to large institutional investors who get in at the offer price and get out quickly."

c. "Firms must be more accountable to the market when making decisions because they are subject to indirect control by institutional investors."

Managing in Financial Markets

Investing in an IPO As a portfolio manager of a financial institution, you are invited to numerous road shows at which firms that are going public promote themselves and the lead underwriter invites you to invest in the IPO. Beyond any specific information about the firm, what other information would you need to decide whether to invest in the upcoming IPO?

Problem

Dividend Yield Over the last year, Calzone Corporation paid a quarterly dividend of $0.10 in each of the four quarters. The current stock price of Calzone Corporation is $39.78. What is the dividend yield for Calzone stock?

Flow of Funds Exercise

Contemplating an Initial Public Offering

Recall that if the economy continues to be strong, Carson Company may need to increase its production capacity by about 50 percent over the next few years to satisfy demand. It would need financing to expand and accommodate the increase in production. Recall that the yield curve is currently upward sloping. Also recall that Carson is concerned about a possible slowing of the economy because of potential Fed actions to reduce inflation. It is also considering issuing stock or bonds to raise funds in the next year.

a. If Carson issued stock now, it would have the flexibility to obtain more debt and would also be able to reduce its cost of financing with debt. Why?

b. Why would an IPO result in heightened concerns in financial markets about Carson Company's potential agency problems?

c. Explain why institutional investors, such as mutual funds and pension funds, that invest in stock for long-term periods (at least a year or two) might prefer to invest in IPOs rather than to purchase other stocks that have been publicly traded for several years.

d. Given that institutional investors such as insurance companies, pension funds, and mutual funds are the major investors in IPOs, explain the flow of funds that results from an IPO. That is, what is the original source of the money that is channeled through the institutional investors and provided to the firm going public?

INTERNET/EXCEL EXERCISES

Go to http://ipoportal.edgar-online.com/ipo/home.asp and review an IPO that is scheduled for the near future. Review the deal information about this IPO.

1. What is the offer amount? How much are total expenses? How much are total expenses as a percentage of the deal amount? How many shares are issued? How long is the lockup period?

2. Review some additional IPOs that are scheduled. What is the range for the offer amount? What is the range for the lockup period length?

WSJ EXERCISE

Assessing Stock Market Movements

Review a recent issue of the *Wall Street Journal.* Indicate whether the market prices increased or decreased, and explain what caused the market's movement.

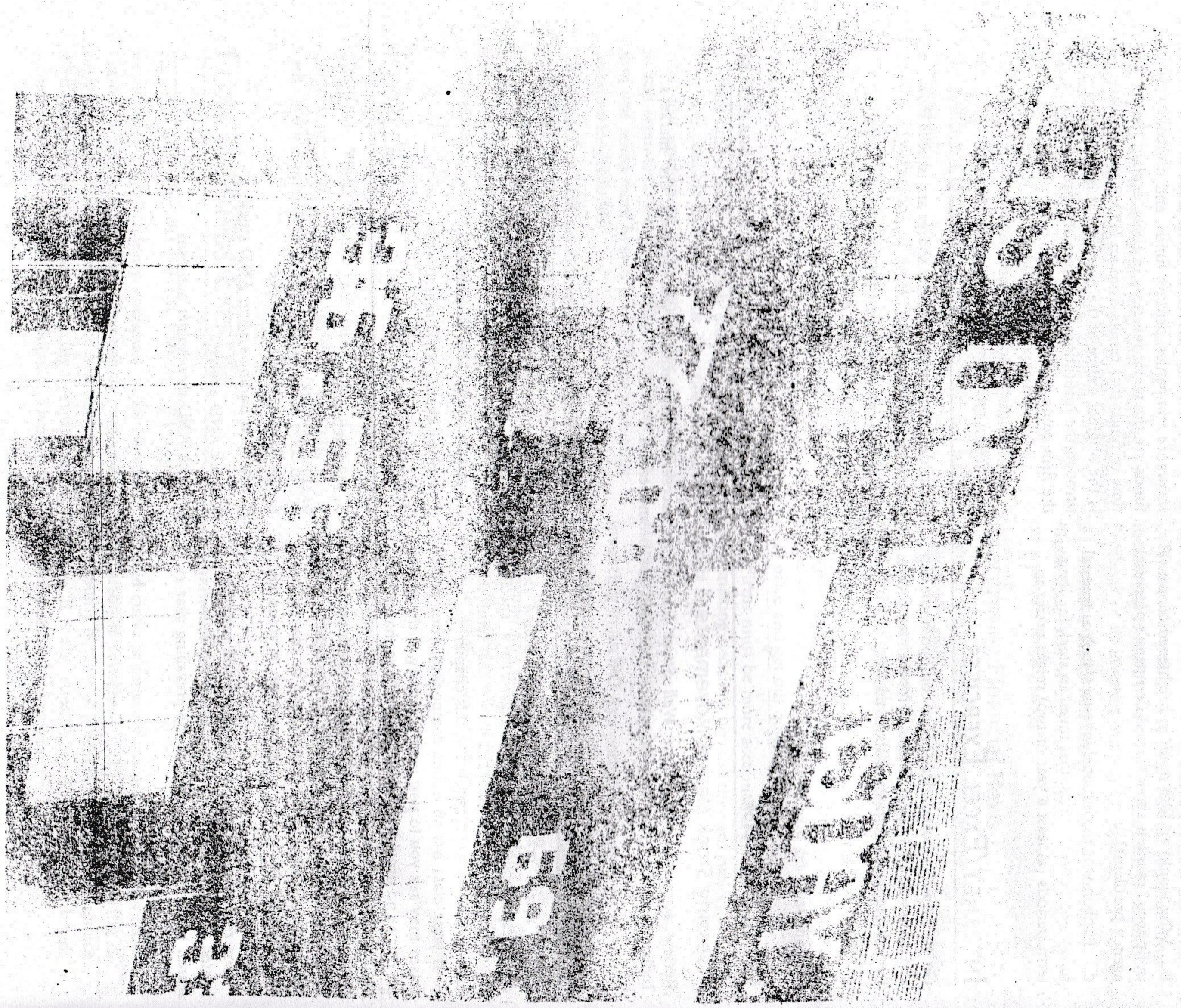
ONLINE ARTICLES WITH REAL-WORLD EXAMPLES

Find a recent practical article available online that describes a real-world example regarding a specific financial institution or financial market that reinforces one or more concepts covered in this chapter.

If your class has an online component, your professor may ask you to post your summary of the article there and provide a link to the article so that other students can access it. If your class is live, your professor may ask you to summarize your application of the article in class. Your professor may assign specific students to complete this assignment or may allow any students to do the assignment on a volunteer basis.

For recent online articles and real-world examples related to this chapter, consider using the following search terms (be sure to include the prevailing year as a search term to ensure that the online articles are recent):

1. private equity AND investment
2. venture capital AND investment
3. initial public offering
4. plans to go public
5. stock repurchase
6. stock offering
7. stock listing AND exchange
8. extended trading session AND stock
9. stock AND analyst
10. stock AND shareholder activism



11 Stock Valuation and Risk

CHAPTER OBJECTIVES

The specific objectives of this chapter are to:

- explain methods of valuing stocks,
- explain how to determine the required rate of return on stocks,
- identify the factors that affect stock prices,
- explain how to measure the risk of stocks, and
- explain the concept of stock market efficiency.

Since the values of stocks change continuously, so do stock prices. Institutional and individual investors constantly value stocks so that they can capitalize on expected changes in stock prices.

11-1 Stock Valuation Methods

Investors conduct valuations of stocks when making their investment decisions. They consider investing in **undervalued** stocks and selling their holdings of stocks that they consider to be overvalued. There are many different methods of valuing stocks. **Fundamental analysis** relies on fundamental financial characteristics (such as earnings) of the firm and its corresponding industry that are expected to influence stock values. **Technical analysis** relies on stock price trends to determine stock values. Our focus is on fundamental analysis. Investors who rely on fundamental analysis commonly use the price-earnings method, the dividend discount model, or the free cash flow model to value stocks. Each of these methods is described in turn.

11-1a Price-Earnings Method

A relatively simple method of valuing a stock is to apply the mean price-earnings (PE) ratio (based on expected rather than recent earnings) of all publicly traded competitors in the respective industry to the firm's expected earnings for the next year.

EXAMPLE

Consider a firm that is expected to generate earnings of $3 per share next year. If the mean ratio of share price to expected earnings of competitors in the same industry is 15, then the valuation of the firm's shares is

$$\begin{aligned}\text{Valuation per share} &= \text{Expected earnings of firm per share} \times \text{Mean industry PE ratio}\\ &= \$3 \times 15\\ &= \$45\end{aligned}$$

●

WEB

finance.yahoo.com
Insert ticker symbol to obtain financial data, including earnings forecasts, for a stock.

The logic of this method is that future earnings are an important determinant of a firm's value. Although earnings beyond the next year are also relevant, this method implicitly assumes that the growth in earnings in future years will be similar to that of the industry.

Reasons for Different Valuations This method has several variations, which can result in different valuations. For example, investors may use different forecasts for the firm's earnings or the mean industry earnings over the next year. The previous year's earnings are often used as a base for forecasting future earnings, but recent earnings do not always yield an accurate forecast. In fact, some firms use creative accounting

methods to exaggerate earnings in a particular period and are unable to sustain that earnings level in the future.

A second reason for different valuations when using the PE method is that investors disagree on the proper measure of earnings. Some investors prefer to use operating earnings or exclude some unusually high expenses that result from onetime events. A third reason is that investors may disagree on which firms represent the industry norm. Some investors use a narrow industry composite composed of firms that are similar (in terms of size, lines of business, etc.) to the firm being valued; other investors prefer a broader industry composite. Consequently, even if investors agree on a firm's forecasted earnings, they may still derive different values for that firm as a result of applying different PE ratios. Furthermore, even if investors agree on the firms to include in the industry composite, they may disagree on how to weight each firm.

Limitations of the PE Method The PE method may result in an inaccurate valuation of a firm if errors are made in forecasting the firm's future earnings or in choosing the industry composite used to derive the PE ratio. The PE ratio varies substantially over time, which suggests that even if investors could properly estimate next year's earnings, it is difficult to know how those earnings should convert into a stock valuation.

11-1b Dividend Discount Model

One of the first models used for pricing stocks was developed by John B. Williams in 1931. This model is still applicable today. Williams stated that the price of a stock should reflect the present value of the stock's future dividends, or

$$\text{Price} = \sum_{t=1}^{\infty} \frac{D_t}{(1+k)^t}$$

where

t = period
D_t = dividend in period t
k = discount rate

The model can account for uncertainty by allowing D_t to be revised in response to revised expectations about a firm's cash flows or by allowing k to be revised in response to changes in the required rate of return by investors.

EXAMPLE

To illustrate how the dividend discount model can be used to value a stock, consider a stock that is expected to pay a dividend of $7 per share annually forever. This constant dividend represents a perpetuity, or an annuity that lasts forever. Hence the present value of the cash flows (dividend payments) to investors in this example is the present value of a perpetuity. Assuming that the required rate of return (k) on the stock of concern is 14 percent, the present value (PV) of the future dividends is

$$\begin{aligned}\text{PV of stock} &= D/k \\ &= \$7/0.14 \\ &= \$50 \text{ per share}\end{aligned}$$

●

WEB

www.investingator.com/PEND-stock-investing.html
Information on how practitioners value stock.

Unfortunately, the valuation of most stocks is not this simple because their dividends are not expected to remain constant forever. If the dividend is expected to grow at a constant rate, however, the stock can be valued by applying the constant-growth dividend discount model:

$$\text{PV of stock} = D_1/(k - g)$$

where D_1 is the expected dividend per share to be paid over the next year, k is the required rate of return by investors, and g is the rate at which the dividend is expected to grow. For example, if a stock is expected to provide a dividend of $7 per share next year, the dividend is expected to increase by 4 percent per year, and the required rate of return is 14 percent, the stock can be valued as

$$\text{PV of stock} = \$7/(0.14 - 0.04)$$
$$= \$70 \text{ per share}$$

Relationship with PE Ratio for Valuing Firms The dividend discount model and the PE ratio may seem to be unrelated, given that the dividend discount model is highly dependent on the required rate of return and the growth rate whereas the PE ratio is driven by the mean multiple of competitors' stock prices relative to their earnings expectations and by the earnings expectations of the firm being valued. Yet the PE multiple is influenced by the required rate of return on stocks of competitors and the expected growth rate of competitor firms. When using the PE ratio for valuation, the investor implicitly assumes that the required rate of return and the growth rate for the firm being valued are similar to those of its competitors. When the required rate of return on competitor firms is relatively high, the PE multiple will be relatively low, which results in a relatively low valuation of the firm for its level of expected earnings. When the competitors' growth rate is relatively high, the PE multiple will be relatively high, which results in a relatively high valuation of the firm for its level of expected earnings. Thus, the inverse relationship between required rate of return and value exists when applying either the PE method or the dividend discount model. In addition, there is a positive relationship between a firm's growth rate and its value when applying either method.

Limitations of the Dividend Discount Model The dividend discount model may result in an inaccurate valuation of a firm if errors are made in estimating the dividend to be paid over the next year or in estimating the growth rate or the required rate of return by investors. The limitations of this model are more pronounced when valuing firms that retain most of their earnings, rather than distributing them as dividends, because the model relies on the dividend as the base for applying the growth rate. For example, many smaller publicly traded firms that are attempting to grow retain all earnings to support growth and thus are not expected to pay any dividends.

11-1c Adjusted Dividend Discount Model

The dividend discount model can be adapted to assess the value of any firm, even those that retain most or all of their earnings. From the investor's perspective, the value of the stock is equal to (1) the present value of the future dividends to be received over the investment horizon *plus* (2) the present value of the forecasted price at which the stock will be sold at the end of the investment horizon. To forecast this sales price, investors must estimate the firm's earnings per share (after removing any nonrecurring effects) in the year that they plan to sell the stock. This estimate is derived by applying an annual growth rate to the prevailing annual earnings per share. Then, the estimate can be used to derive the expected price per share at which the stock can be sold.

EXAMPLE Assume that a firm currently has earnings of $12 per share. Future earnings can be forecast by applying the expected annual growth rate to the firm's existing earnings (E):

$$\text{Forecasted earnings in } n \text{ years} = E(1 + G)^n$$

where G is the expected growth rate of earnings and n is the number of years until the stock is to be sold.

If investors expect that the earnings per share will grow by 2 percent annually and expect to sell the firm's stock in three years, the earnings per share in three years are forecast to be

$$\begin{aligned}\text{Earnings in three years} &= \$12 \times (1 + 0.02)^3 \\ &= \$12 \times 1.0612 \\ &= \$12.73\end{aligned}$$

The forecasted earnings per share can be multiplied by the PE ratio of the firm's industry to forecast the future stock price. If the mean PE ratio of all other firms in the same industry is 6, the stock price in three years can be forecast as follows:

$$\begin{aligned}\text{Stock price in three years} &= \text{Earnings in three years} \times \text{PE ratio of industry} \\ &= \$12.73 \times 6 \\ &= \$76.38\end{aligned}$$

This forecasted stock price can be used along with expected dividends and the investor's required rate of return to value the stock today. If the firm is expected to pay a dividend of $4 per share over the next three years and if the investor's required rate of return is 14 percent, then the present value of expected cash flows to be received by the investor is

$$\begin{aligned}PV &= \$4/(1.14)^1 + \$4/(1.14)^2 + \$4/(1.14)^3 + \$76.38/(1.14)^3 \\ &= \$3.51 + \$3.08 + \$2.70 + \$51.55 \\ &= \$60.84\end{aligned}$$

In this example, the present value of the cash flows is based on (1) the present value of dividends to be received over the three-year investment horizon, which is $9.29 per share ($3.51 + $3.08 + $2.70), and (2) the present value of the forecasted price at which the stock can be sold at the end of the three-year investment horizon, which is $51.55 per share.

Limitations of the Adjusted Dividend Discount Model This model may result in an inaccurate valuation if errors are made in deriving the present value of dividends over the investment horizon or the present value of the forecasted price at which the stock can be sold at the end of the investment horizon. Since the required rate of return affects both of these factors, using an improper required rate of return will lead to inaccurate valuations. Methods for determining the required rate of return are discussed later in the chapter.

11-1d Free Cash Flow Model

For firms that do not pay dividends, a more suitable valuation may be the free cash flow model, which is based on the present value of future cash flows. The first step is to estimate the free cash flows that will result from operations. Second, subtract existing liabilities to determine the value of the firm. Third, divide the value of the firm by the number of shares to derive a value per share.

Limitations The limitation of this model is the difficulty of obtaining an accurate estimate of free cash flow per period. One possibility is to start with forecasted earnings and then add a forecast of the firm's noncash expenses and capital investment and working capital investment required to support the growth in the forecasted earnings. Obtaining accurate earnings forecasts can be difficult, however. Even if earnings can be forecast accurately, the flexibility of accounting rules can cause major errors in estimating free cash flow based on earnings.

11-2 Required Rate of Return on Stocks

When investors attempt to value a firm based on discounted cash flows, they must determine the required rate of return by investors who invest in that stock. Investors require a return that reflects the risk-free interest rate plus a risk premium. Although investors generally require a higher return on firms that exhibit more risk, there is not complete agreement on the ideal measure of risk or the way risk should be used to derive the required rate of return.

11-2a Capital Asset Pricing Model

The capital asset pricing model (CAPM) is sometimes used to estimate the required rate of return for any firm with publicly traded stock. The CAPM is based on the premise that the only important risk of a firm is **systematic risk**, or the risk that results from exposure to general stock market movements. The CAPM is not concerned with so-called unsystematic risk, which is specific to an individual firm, because investors can avoid that type of risk by holding diversified portfolios. That is, any particular adverse condition (such as a labor strike) affecting one particular firm in an investor's stock portfolio should be offset in a given period by some favorable condition affecting another firm in the portfolio. In contrast, the systematic impact of general stock market movements on stocks in the portfolio cannot be diversified away because most of the stocks would be adversely affected by a general market decline.

The CAPM suggests that the return of a stock (R_j) is influenced by the prevailing risk-free rate (R_f), the market return (R_m), and the beta (B_j), as follows:

$$R_j = R_f + B_j(R_m - R_f)$$

where B_j is measured as the covariance between R_j and R_m, which reflects the asset's sensitivity to general stock market movements. The CAPM implies that, given a specific R_f and R_m, investors will require a higher return on a stock that has a higher beta. A higher beta implies a higher covariance between the stock's returns and market returns, which reflects a greater sensitivity of the stock's return to general market movements.

Estimating the Market Risk Premium The yield on newly issued Treasury bonds is commonly used as a proxy for the risk-free rate. The term within parentheses in the previous equation is the market risk premium: the return of the market in excess of the risk-free rate. Historical data for 30 or more years can be used to determine the average market risk premium over time. This serves as an estimate of the market risk premium that will exist in the future. However, in some periods, the market risk premium may be higher than in other periods.

EXAMPLE

During the financial crisis, there was much uncertainty surrounding the valuations of stocks in general. Some investors were only willing to maintain investments in the stock market if the market risk premium was sufficiently high to compensate them for the risk of investing in the stock market. That is, prices of all stocks in the market had to be sufficiently discounted in order to offer sufficient upside potential to attract investors.

In some other periods when stock market conditions are very favorable, investors may not be as concerned about the risk of the stock market in general. In these periods, investors do not require such a large market risk premium, as theydo not fear that the market is susceptible to a major decline. ●

Estimating the Firm's Beta A stock's beta is typically measured by applying regression analysis to determine the sensitivity of the asset's return to the market return based on monthly or quarterly data over the last four years or so. The stock's return is the

dependent variable, and the market's return (as measured by the S&P 500 index or some other suitable proxy) is the independent variable over those same periods. A computer spreadsheet package such as Excel can be used to run the regression analysis. This analysis focuses specifically on estimating the slope coefficient, which represents the estimate of each stock's beta (see Appendix B for more information on using regression analysis). If the slope coefficient of an individual stock is estimated to be 1.2, this means that, for a given return in the market, the stock's expected return is 1.2 times that amount.

The estimated betas for many stocks are reported on many financial websites and in investment services such as *Value Line*, and betas can be computed by the individual investor who understands how to apply regression analysis. Since a stock's sensitivity to market conditions may change over time in response to changes in the firm's operating characteristics, the stock's beta may also change over time.

Application of the CAPM Given the risk-free rate as well as estimates of the firm's beta and the market risk premium, it is possible to estimate the required rate of return from investing in the firm's stock.

EXAMPLE

The beta of the stock for Vaxon, Inc., is estimated as 1.2 according to the regression analysis just explained. The prevailing risk-free rate is 6 percent, and the market risk premium is estimated to be 7 percent based on historical data. A stock's risk premium is computed as the market risk premium multiplied by the stock's beta, so Vaxon stock's risk premium (above the risk-free rate) is $0.07 \times 1.2 = 8.4$ percent. Therefore, the required rate of return on Vaxon stock is

$$\begin{aligned} R_j &= 6\% + 1.2(7\%) \\ &= 14.4\% \end{aligned}$$

Because the required rate of return on this stock is 14.4 percent, Vaxon's estimated future cash flows can be discounted at that rate when deriving the firm's present value. ●

At any given time, the required rates of return estimated by the CAPM will vary across stocks because of differences in their risk premiums, which are due to differences in their systematic risk (as measured by beta).

11-3 Factors That Affect Stock Prices

Stock prices are driven by three types of factors: (1) economic factors, (2) market-related factors, and (3) firm-specific factors.

11-3a Economic Factors

WEB

biz.yahoo.com/ne.html
Announcements of economic conditions and other news that may affect stock prices.

A firm's value should reflect the present value of its future cash flows. Investors therefore consider various economic factors that affect a firm's cash flows when valuing a firm to determine whether its stock is over- or undervalued.

Impact of Economic Growth An increase in economic growth is expected to increase the demand for products and services produced by firms and thereby increase a firm's cash flows and valuation. Participants in the stock markets monitor economic indicators such as employment, gross domestic product, retail sales, and personal income because these indicators may signal information about economic growth and therefore affect cash flows. In general, unexpected favorable information about the economy tends to cause a favorable revision of a firm's expected cash flows and hence places upward pressure on the firm's value. Because the government's fiscal and monetary policies affect economic growth, they are also continually monitored by investors.

http://research.stlouisfed.org Economic information that can be used to value securities, including money supply information, gross domestic product, interest rates, and exchange rates.

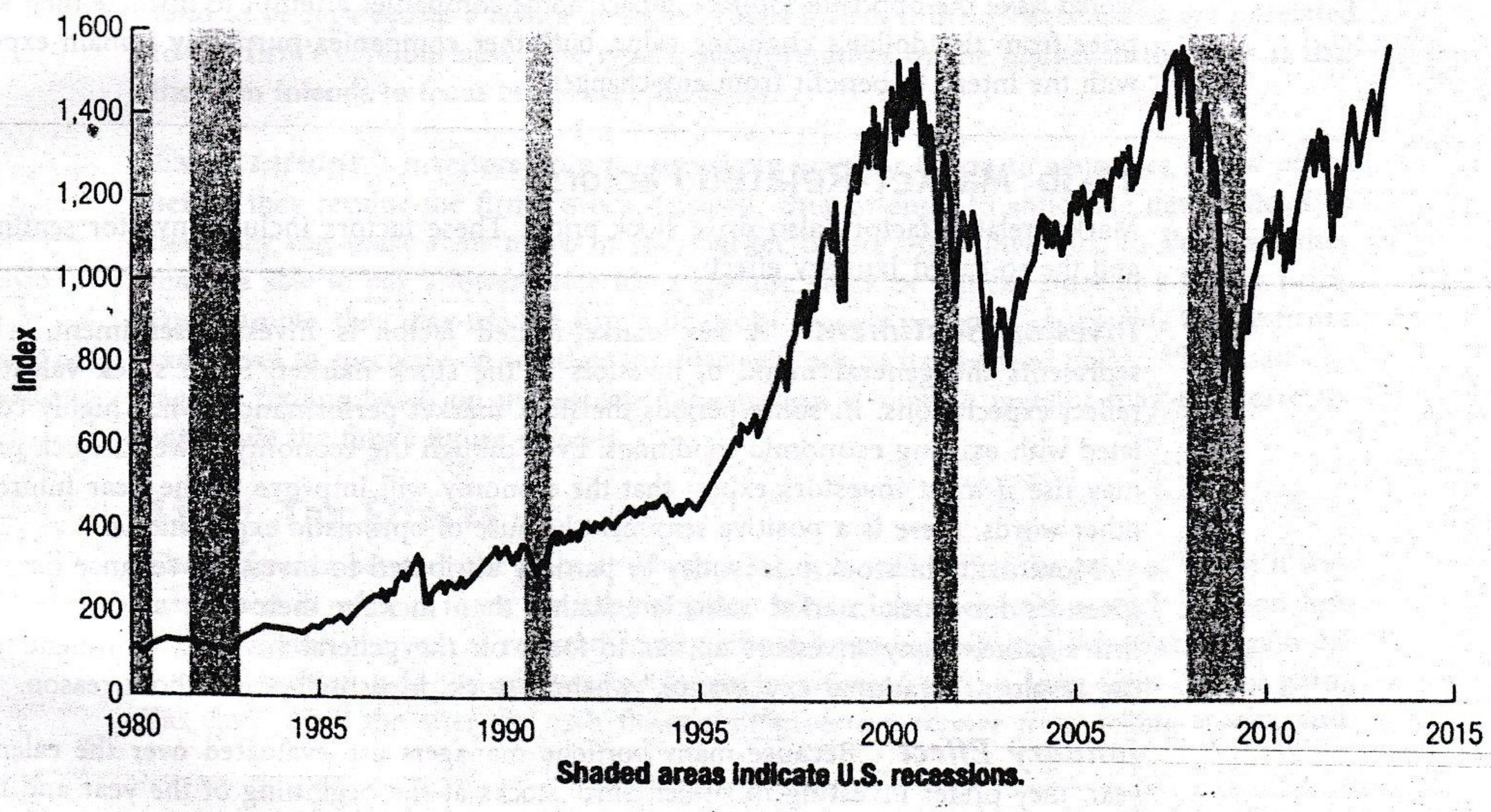
Exhibit 11.1 shows U.S. stock market performance based on the S&P 500, an index of 500 large U.S. stocks. The stock market's weak performance in 2008 was partially due to weak economic conditions, while the strong performance in the 2010–2013 period was due to an improvement in economic conditions.

However, there were many short intervals in the 2010–2013 period in which U.S. stock market prices declined. The financial media typically blamed the weakness on concerns about the federal budget deficit. The general argument is that the federal budget deficit is out of control, and that if the U.S. government continues its large level of spending, it will encounter problems similar to the governments of Greece, Spain, and Portugal. That is, at some point, creditors will no longer trust that the U.S. government is capable of repaying its debt, and this will lead to a lack of confidence in U.S. financial markets. Consequently, it could encourage investors to withdraw investments from these markets, causing a decline in prices of various securities.

Impact of Interest Rates One of the most prominent economic forces driving stock market prices is the risk-free interest rate. Investors should consider purchasing a risky asset only if they expect to be compensated with a risk premium for the risk incurred. Given a choice of risk-free Treasury securities or stocks, investors should purchase stocks only if they are appropriately priced to reflect a sufficiently high expected return *above* the risk-free rate.

The relationship between interest rates and stock prices can vary over time. In theory, a high interest rate should raise the required rate of return by investors and therefore reduce the present value of future cash flows generated by a stock. However, interest rates

Exhibit 11.1 Stock Market Trend Based on the S&P 500 Index



Source: *Federal Reserve.*

commonly rise in response to an increase in economic growth, so stock prices may rise in response to an increase in expected cash flows even if investors' required rate of return rises.

Conversely, a lower interest rate should boost the present value of cash flows and therefore boost stock prices. However, lower interest rates commonly occur in response to weak economic conditions, which tend to reduce expected cash flows of firms. Overall, the effect of interest rates should be considered along with economic growth and other factors when seeking a more complete explanation of stock price movements.

Impact of the Dollar's Exchange Rate Value The value of the dollar can affect U.S. stock prices for a variety of reasons. First, foreign investors prefer to purchase U.S. stocks when the dollar is weak and to sell them when the dollar is near its peak. Thus, the foreign demand for any given U.S. stock may be higher when the dollar is expected to strengthen, other things being equal. Stock prices are also affected by the impact of the dollar's changing value on cash flows. The stock prices of U.S. firms primarily involved in exporting could be favorably affected by a weak dollar and adversely affected by a strong dollar, whereas U.S. importing firms could be affected in the opposite manner.

Stock prices of U.S. companies may also be affected by exchange rates if stock market participants measure performance by reported earnings. A multinational corporation's consolidated reported earnings will be affected by exchange rate fluctuations even if the company's cash flows are not affected. A weaker dollar tends to inflate the reported earnings of a U.S. based company's foreign subsidiaries. Some analysts argue that any effect of exchange rate movements on financial statements is irrelevant unless cash flows are also affected.

The changing value of the dollar can also affect stock prices by affecting expectations of economic factors that influence the firm's performance. For example, if a weak dollar stimulates the U.S. economy, it may enhance the value of a U.S. firm whose sales depend on the U.S. economy. A strong dollar, however, could adversely affect this firm if it dampens U.S. economic growth. Because inflation affects some firms, a weak dollar could indirectly affect a firm's stock by putting upward pressure on inflation. A strong dollar would have the opposite indirect impact. Some companies attempt to insulate their stock price from the dollar's changing value, but other companies purposely remain exposed with the intent to benefit from any changes.

11-3b Market-Related Factors

Market-related factors also drive stock prices. These factors include investor sentiment and the so-called January effect.

Investor Sentiment A key market-related factor is investor sentiment, which represents the general mood of investors in the stock market. Since stock valuations reflect expectations, in some periods the stock market performance is not highly correlated with existing economic conditions. Even though the economy is weak, stock prices may rise if most investors expect that the economy will improve in the near future. In other words, there is a positive sentiment because of optimistic expectations.

Movements in stock prices may be partially attributed to investors' reliance on other investors for stock market valuation. Rather than making their own assessment of a firm's value, many investors appear to focus on the general investor sentiment. This can result in "irrational exuberance," whereby stock prices increase without reason.

January Effect Because many portfolio managers are evaluated over the calendar year, they prefer investing in riskier, small stocks at the beginning of the year and then shifting to larger, more stable companies near the end of the year in order to lock in

their gains. This tendency places upward pressure on small stocks in January each year, resulting in the January effect. Some studies have found that most of the annual stock market gains occur in January. Once investors discovered the January effect, they attempted to take more positions in stocks in the prior month. This has placed upward pressure on stocks in mid-December, causing the January effect to begin in December.

11-3c Firm-Specific Factors

A firm's stock price is affected not only by macroeconomic and market conditions but also by firm-specific conditions. Some firms are more exposed to conditions within their own industry than to general economic conditions, so participants monitor industry sales forecasts, entry into the industry by new competitors, and price movements of the industry's products. Stock market participants may focus on announcements by specific firms that signal information about a firm's sales growth, earnings, or other characteristics that may cause a revision in the expected cash flows to be generated by that firm.

Change in Dividend Policy An increase in dividends may reflect the firm's expectation that it can more easily afford to pay dividends. In contrast, a decrease in dividends may reflect the firm's expectation that it will not have sufficient cash flow.

Earnings Surprises Recent earnings are used to forecast future earnings and thus to forecast a firm's future cash flows. When a firm's announced earnings are higher than expected, some investors raise their estimates of the firm's future cash flows and hence revalue its stock upward. However, an announcement of lower-than-expected earnings can cause investors to reduce their valuation of a firm's future cash flows and its stock.

Acquisitions and Divestitures The expected acquisition of a firm typically results in an increased demand for the target's stock, which raises its price. Investors recognize that the target's stock price will be bid up once the acquiring firm attempts to acquire the target's stock. The effect on the acquiring firm's stock is less clear, as it depends on the perceived synergies that could result from the acquisition. Divestitures tend to be regarded as a favorable signal about a firm if the divested assets are unrelated to the firm's core business. The typical interpretation by the market in this case is that the firm intends to focus on its core business.

Expectations Investors do not necessarily wait for a firm to announce a new policy before they revalue the firm's stock. Instead, they attempt to anticipate new policies so that they can make their move in the market before other investors. In this way, they may be able to pay a lower price for a specific stock or sell the stock at a higher price. For example, they may use the firm's financial reports or recent statements by the firm's executives to speculate on whether the firm will adjust its dividend policy. The disadvantage of trading based on incomplete information is that an investor may not correctly anticipate the firm's future policies.

WEB

http://screen.yahoo.com/stocks.html
Screens stocks based on various possible valuation indicators.

11-3d Tax Effects

The difference between the price at which a stock is sold versus the price at which it was purchased is referred to as the **capital gain**. When investors hold a stock position less than one year, the gain is referred to as a **short-term capital gain**, whereas the gain on a stock position held for one year or longer is referred to as a **long-term capital gain**. Tax laws affect the after-tax cash flows that investors receive from selling stocks, and

USING THE WALL STREET JOURNAL

Biggest Stock Gains and Losses

The *Wall Street Journal* identifies the stocks that experienced the largest percentage gains and losses since the previous day, as shown here. It also discloses the percentage change in those stocks over the last 52 weeks and the range of the stock price over that period.

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Percentage Gainers...

Company	Symbol	Volume (in 000s)	LATEST SESSION Close	Net chg	% chg	52-WEEK High	Low	% chg
Old Second Bancorp	OSBC	114	3.75	0.76	25.41	3.75	1.10	212.5
Uni-Pixel	UNXL	2,748	22.80	4.00	21.28	24.93	4.83	321.4
Meru Networks	MERU	2,837	4.91	0.81	19.76	5.43	1.42	4.8
Innotrac	INOC	3	3.18	0.48	17.78	3.60	1.16	171.8
Emclaire Financial Corp	EMCF	3	27.50	3.92	16.62	30.14	16.75	63.7
Guidewire Software	GWRE	4,057	36.75	5.22	16.56	38.43	20.04	62.5
Spherix	SPEX	123	11.67	1.60	15.89	26.20	5.51	-28.8
IMPAC Mortgage Holdings	IMH	260	15.17	1.78	13.29	18.00	1.93	451.6
Optimer Pharm	OPTR	4,173	12.13	1.41	13.35	16.49	8.64	-5.2
Vicon Indus	VII	23	2.95	0.34	13.03	3.70	2.33	-16.7
BlueLinx Holdings	BXC	440	3.14	0.35	12.54	3.48	1.83	34.2
Xinyuan Real Estate	XIN	2,107	5.02	0.55	12.30	5.12	2.31	104.9
Sinopec Shanghai Petro	SHI	61	44.37	4.63	11.65	44.44	24.64	1.7
Endeavour Intl	END	1,721	2.72	0.26	11.48	13.48	2.38	-76.5
U.S. Silica Holdings	SLCA	1,529	23.97	2.35	10.87	24.63	9.02	41.7
iGo	IGOI	15	3.45	0.34	10.80	15.00	2.76	-58.9
Research Frontiers	REFR	94	3.42	0.33	10.68	5.17	2.79	-2.3
Dollar Tree	DLTR	10,535	45.39	4.31	10.49	56.82	37.12	2.6

Percentage Losers

Company	Symbol	Volume (in 000s)	LATEST SESSION Close	Net chg	% chg	52-WEEK High	Low	% chg
CombiMatrix	CBMX	1,174	3.56	-1.34	-27.35	17.50	1.40	-76.9
Cincinnati Bell	CBB	60,307	3.23	-0.92	-22.17	5.89	3.15	-13.9
Accretive Health	AH	13,171	9.57	-2.54	-20.97	27.88	7.75	-63.2
ProPhase Labs	PRPH	76	1.80	-0.45	-20.00	2.25	0.53	78.2
Orbital Corp ADS	OBT	6	4.61	-1.04	-18.41	7.00	2.59	-4.8
Wireless Ronin Techs	RNIN	45	2.05	-0.35	-14.58	5.65	1.70	-54.4
ProShares UltVIXST	UVXY	31,770	10.31	-1.68	-14.01	373.80	8.71	-96.9
World Energy Sols	XWES	95	4.00	-0.65	-13.98	5.49	2.55	-18.0
First Solar	FSLR	22,082	27.04	-4.32	-13.78	36.98	11.43	-16.3
China Mobile Games ADS	CMGE	451	8.30	-1.29	-13.45	16.50	3.00	--
VS 2x VIX Short Term	TVIX	13,473	4.69	-0.70	-12.99	176.40	4.00	-97.2
Globus Maritime	GLBS	18	1.80	-0.25	-12.20	6.00	1.41	-63.7
China Digital TV Hldg ADS	STV	434	1.93	-0.26	-11.87	4.38	1.67	-51.5
Novogen ADS	NVGN	269	6.68	-0.86	-11.41	10.49	0.48	778.8
C-TRACKS ETN on CVOL	CVOL	3	16.78	-2.06	-10.93	200.00	15.02	-90.8
GrafTech Intl	GTI	7,172	7.15	-0.77	-9.72	13.00	6.90	-43.7
Kadant Inc	KAI	69	24.37	-2.62	-9.71	28.74	20.50	11.6
IFM Investments ADS	CTC	33	2.42	-0.25	-9.36	4.35	0.88	13.6

therefore can affect the demand for stocks. Holding other factors constant, stocks should be valued higher when capital gains tax rates are relatively low.

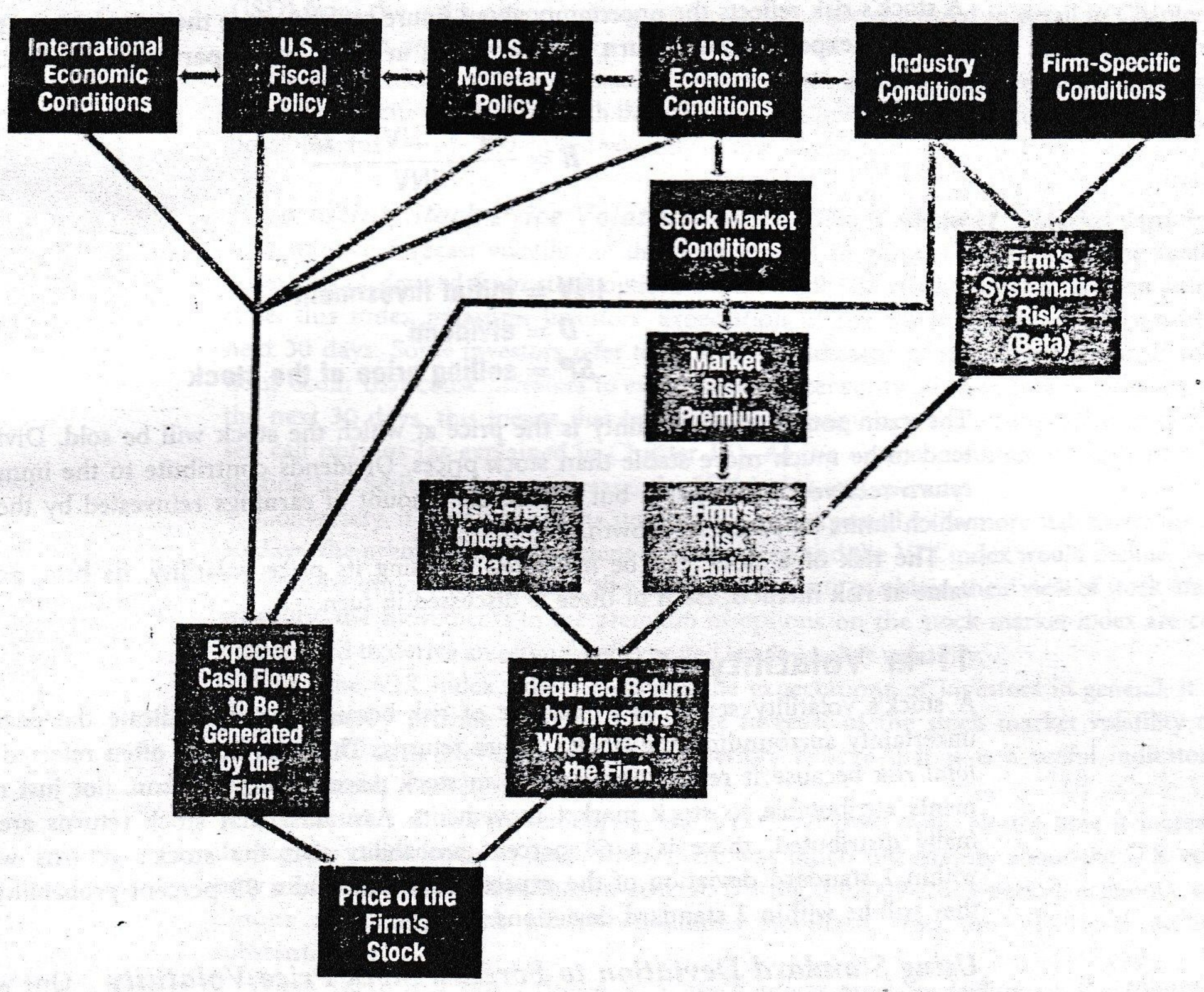
Tax laws can also cause some stocks to be more desirable than others. Some stocks have more potential for large capital gains, and therefore may be more sensitive to the tax laws on capital gains. Conversely, other stocks that pay steady dividends typically have smaller capital gains and therefore may not be affected as much by tax laws on capital gains. However, stocks that pay dividends are affected by dividend tax laws. A low tax rate imposed on dividends will cause dividend-paying stocks to be more desirable, and will increase the valuation of these stocks. A high tax rate imposed on dividends will cause these stocks to be less desirable, and will reduce the valuation of these stocks.

In 2013, tax rates on dividends increased from 15% to 20% for investors in high personal income tax brackets. Some politicians were recommending that dividends should be taxed at the personal income tax rate, which is almost 40% in the highest personal income tax bracket. If such a change in tax rates had occurred, it might have caused a major decline in the demand for stocks that pay dividends.

11-3e Integration of Factors Affecting Stock Prices

Exhibit 11.2 illustrates the underlying forces that cause a stock's price to change over time. As with the pricing of debt securities, the required rate of return is relevant, as are the economic factors that affect the risk-free interest rate. Stock market

Exhibit 11.2 Framework for Explaining Changes in a Firm's Stock Price over Time



participants also monitor indicators that can affect the risk-free interest rate, which in turn affects the required return by investors who invest in stocks. Indicators of inflation (such as the consumer price index and producer price index) and of government borrowing (such as the budget deficit and the volume of funds borrowed at upcoming Treasury bond auctions) also affect the risk-free rate and thereby the required return of investors. In general, whenever these indicators signal the expectation of higher interest rates, there is upward pressure on the required rate of return by investors and downward pressure on a firm's value.

In addition, it is common to estimate expected future cash flows when deriving a firm's value, and these cash flows are influenced by economic conditions, industry conditions, and firm-specific conditions. Exhibit 11.2 provides an overview of what stock market participants monitor when attempting to anticipate future stock price movements.

11-4 Stock Risk

A stock's risk reflects the uncertainty about future returns, since the actual return may be less than expected. The return from investing in stock over a particular period is measured as

$$R = \frac{(SP - INV) + D}{INV}$$

where

INV = initial investment
D = dividend
SP = selling price of the stock

The main source of uncertainty is the price at which the stock will be sold. Dividends tend to be much more stable than stock prices. Dividends contribute to the immediate return received by investors but reduce the amount of earnings reinvested by the firm, which limits its potential growth.

The risk of a stock can be measured by using its price volatility, its beta, and the value-at-risk method. Each of these is discussed in turn.

11-4a Volatility of a Stock

A stock's volatility serves as a measure of risk because it may indicate the degree of uncertainty surrounding the stock's future returns. The volatility is often referred to as *total risk* because it reflects movements in stock prices for any reason, not just movements attributable to stock market movements. Assuming that stock returns are normally distributed, there is a 68 percent probability that the stock's returns will be within 1 standard deviation of the expected outcome and a 95 percent probability that they will be within 2 standard deviations.

Using Standard Deviation to Forecast Stock Price Volatility One way to forecast stock price volatility is by using a historical period to derive a stock's standard deviation of returns, and then using that estimate as the forecast over the future. Although a stock price's level of volatility may change over time, this method can be useful when there is no obvious trend in volatility.

Using Volatility Patterns to Forecast Stock Price Volatility A second method for forecasting stock price volatility is to use volatility patterns in previous periods.

EXAMPLE

The standard deviation of daily stock returns is determined for each of the last three months. Then, a time-series trend of these standard deviation levels is used to form an estimate for the standard deviation of daily stock returns over the next month. This method differs from the historical method in that it uses information beyond that contained in the previous month. For example, the forecast for September might be based on the following weighting scheme: 50 percent of the standard deviation in the most recent month (August) plus 30 percent of the standard deviation in the month before that (July) plus 20 percent of the standard deviation in the month before that (June). ●

Normally the weights and the number of previous periods (lags) that were most accurate (i.e., had the lowest forecast error) in previous periods are used. However, various economic and political factors can cause stock price volatility to change abruptly, so even a sophisticated time-series model does not necessarily generate accurate forecasts of stock price volatility.

Using Implied Volatility to Forecast Stock Price Volatility A third method for forecasting stock price volatility is to derive the stock's implied standard deviation (ISD) from the stock option pricing model (options are discussed in detail in Chapter 14). The premium on a call option for a stock depends on various factors, including the stock's volatility as anticipated by investors. By considering the actual option premium paid by investors for a specific stock along with the values of all other factors that affect the premium, it is possible to derive the anticipated volatility of that stock.

Forecasting Stock Price Volatility of the Stock Market Market participants who want to forecast volatility of the stock market in general can monitor the volatility index (VIX) derived from stock options on the S&P 500 stock index. At a given point in time, this index measures investors' expectation of the stock market volatility over the next 30 days. Some investors refer to VIX as an indicator of stock market fear. If conditions occur that cause investors to expect more uncertainty surrounding stock prices over the next 30 days, this means that investors would require a higher premium in order to sell call options (as explained in Chapter 14). As the option premium on options representing the S&P 500 index increase, the VIX index will increase.

Conversely, if conditions in the stock market are expected to be more stable over the next 30 days, the premium on call options would decline and the VIX index would decline. While it would be impossible to survey all market participants to obtain their view of stock market volatility, the movements in the premium of options on the stock market index are commonly used to derive an estimate of expected stock market volatility.

Since the VIX index simply measures the expectations of investors in general, it will not necessarily provide a perfectly accurate forecast of the stock market volatility over the next 30 days. Nevertheless, many investors believe that it is a useful indicator of expected stock market volatility.

Exhibit 11.3 shows movements in the VIX level over time. Notice how it increased during the credit crisis in 2008, when there was much uncertainty about the U.S. economy and about stock valuations in general. During the2009–2013 period, economic conditions stabilized, stock market conditions stabilized, and the VIX level declined substantially.

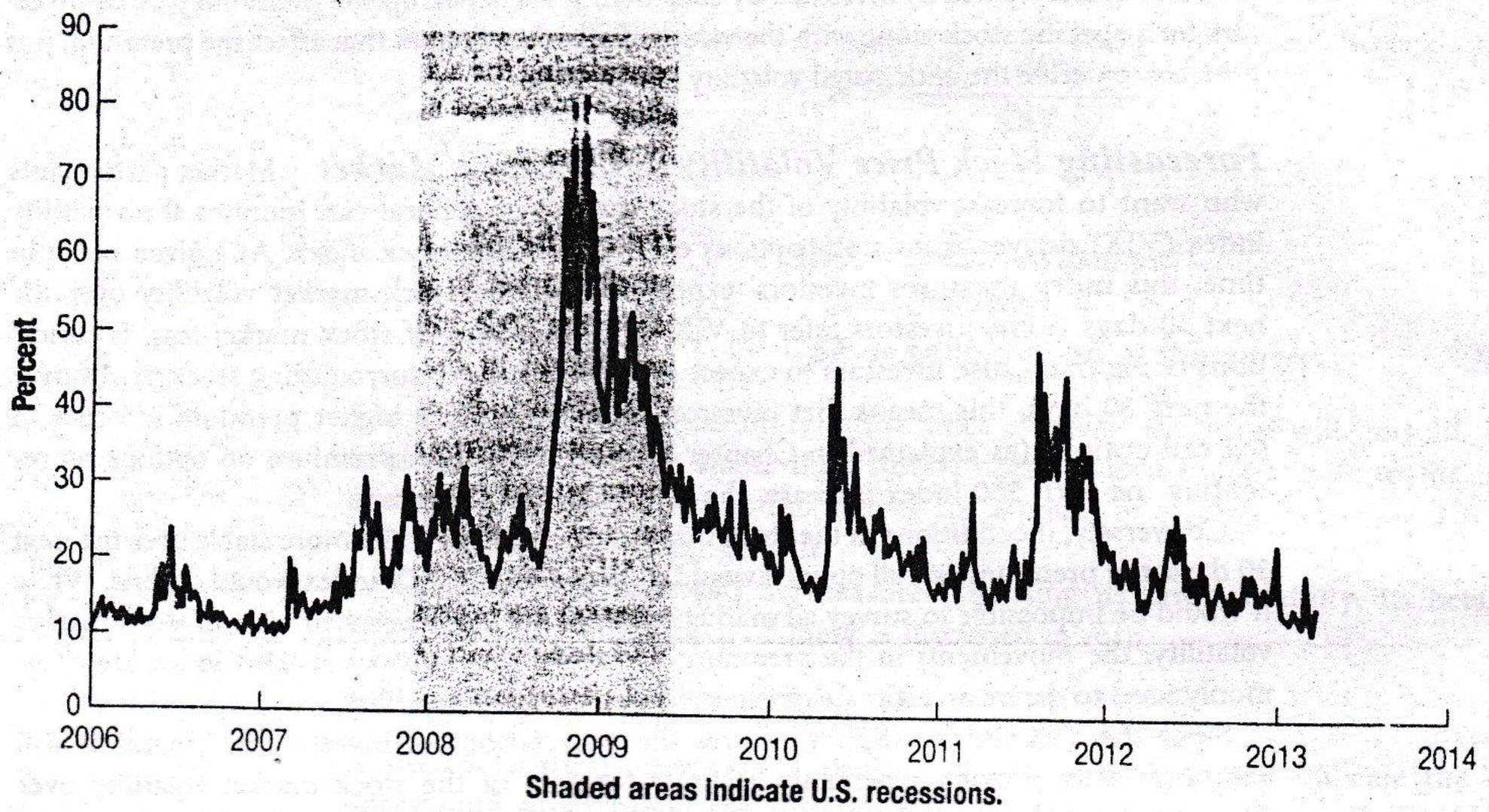
When there is a sharp rise in VIX, stock prices tend to decline, as the conditions that cause more stock market fear also cause investors to sell their stocks, which results in lower stock prices. Conversely, when there is a sharp decline in VIX, stock prices tend to rise, as the conditions that make investors believe that stock prices will be more stable also encourage investors to purchase stocks, which results in higher stock prices.

Volatility of a Stock Portfolio Participants in the stock market tend to invest in a portfolio of stocks rather than a single stock, so they are more concerned with the risk of a portfolio than with the risk of an individual stock. A portfolio's volatility depends on the volatility of the individual stocks in the portfolio, on the correlations between returns of the stocks in the portfolio, and on the proportion of total funds invested in each stock. The portfolio's volatility can be measured by the standard deviation:

$$\sigma_p = \sqrt{w_i^2\sigma_i^2 + w_j^2\sigma_j^2 + \sum_{i=1}^{n}\sum_{j=1}^{n} w_i w_j \sigma_i \sigma_j \mathbf{CORR}_{ij}}$$

where

Exhibit 11.3 Implied Volatility Index for U.S. Stocks over Time



Source: *Federal Reserve and Chicago Board Options Exchange.*

σ_i = standard deviation of returns of the *i*th stock
σ_j = standard deviation of returns of the *j*th stock
$CORR_{ij}$ = correlation coefficient between the *i*th and *j*th stocks
w_i = proportion of funds invested in the *i*th stock
w_j = proportion of funds invested in the *j*th stock

For portfolios containing more securities, the formula for the standard deviation contains the standard deviation of each stock and the correlation coefficients between all pairs of stocks in the portfolio, weighted by the proportion of funds invested in each stock. The equation for a two-stock portfolio is sufficient to demonstrate that, when other factors are held constant, a stock portfolio has more volatility when its individual stock volatilities are high and when its individual stock returns are highly correlated. As an extreme example, if the returns of the stocks are all perfectly positively correlated (correlation coefficients = 1.0), the portfolio will have a relatively high degree of volatility because all stocks will experience peaks or troughs simultaneously. Conversely, a stock portfolio containing some stocks with low or negative correlation will have less volatility because the stocks will not experience peaks and troughs at the same time. Some offsetting effects will occur, smoothing the returns of the portfolio over time.

Because the volatilities and correlations of a portfolio's individual stocks can change over time, so can the volatility of the portfolio. A method of forecasting portfolio volatility starts with deriving forecasts of individual stock volatility levels (as described previously) and the correlations between stocks in the portfolio. A forecast

by estimating the correlation in recent periods. Finally, the forecasted volatilities of individual correlation coefficients are used to estimate the portfolio's future volatility.

11-4b Beta of a Stock

As explained earlier, a stock's beta measures the sensitivity of its returns to market returns. This measure of risk is used by many investors who have a diversified portfolio of stocks and believe that the unsystematic risk of the portfolio is therefore diversified away (because favorable firm-specific characteristics will offset unfavorable firm-specific characteristics).

EXAMPLE

Exhibit 11.4 shows how the probability distribution of a stock's returns depends on its beta. At one extreme, Stock A (with a very low beta) is less responsive to market movements in either direction, so its possible returns range only from −4.8 percent under poor market conditions to 6 percent under the most favorable market conditions. At the other extreme, Stock D (with a very high beta) has possible returns that range from −11.2 percent under poor market conditions to 14 percent under the most favorable market conditions. This stock is perceived to be risky because it experiences large losses when stock market conditions decline. ●

Beta of a Stock Portfolio Portfolio risk is commonly measured by beta or volatility (standard deviation), just as the risk of individual stocks is.

The beta of a stock portfolio can be measured as

$$\beta_p = \sum w_i \beta_i$$

That is, the portfolio beta is a weighted average of the betas of stocks that make up the portfolio, where the weights reflect the proportion of funds invested in each stock. The equation is intuitive because it simply suggests that a portfolio consisting of high-beta stocks will have a relatively high beta. This type of portfolio normally performs poorly relative to other stock portfolios in a period when the market return is negative.

The beta of each individual stock may be forecast in a subjective manner; for example, a portfolio manager may forecast that a stock's beta will increase from its existing level of 0.8 to 0.9 because the firm has initiated a more aggressive growth strategy. Alternatively, the manager can assess a set of historical periods to determine whether there is a trend in the beta over those periods and then apply the trend.

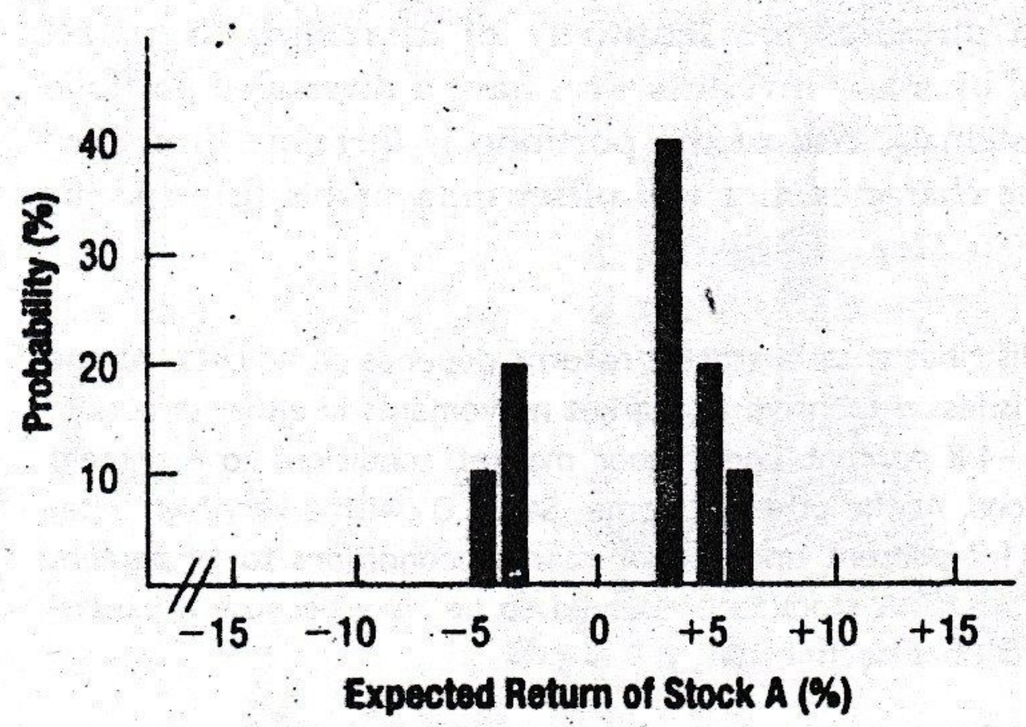
The beta of a stock and its volatility are typically related. High-beta stocks are expected to be relatively volatile because they are more sensitive to market returns over time. Likewise, low-beta stocks are expected to be less volatile because they are less responsive to market returns.

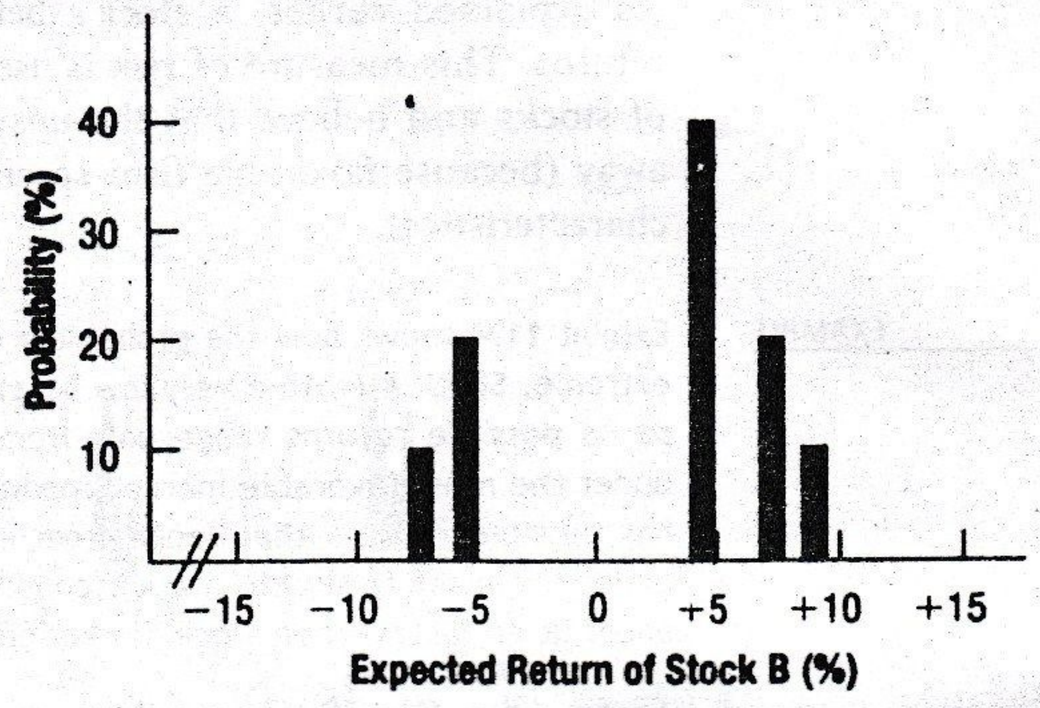
11-4c Value at Risk

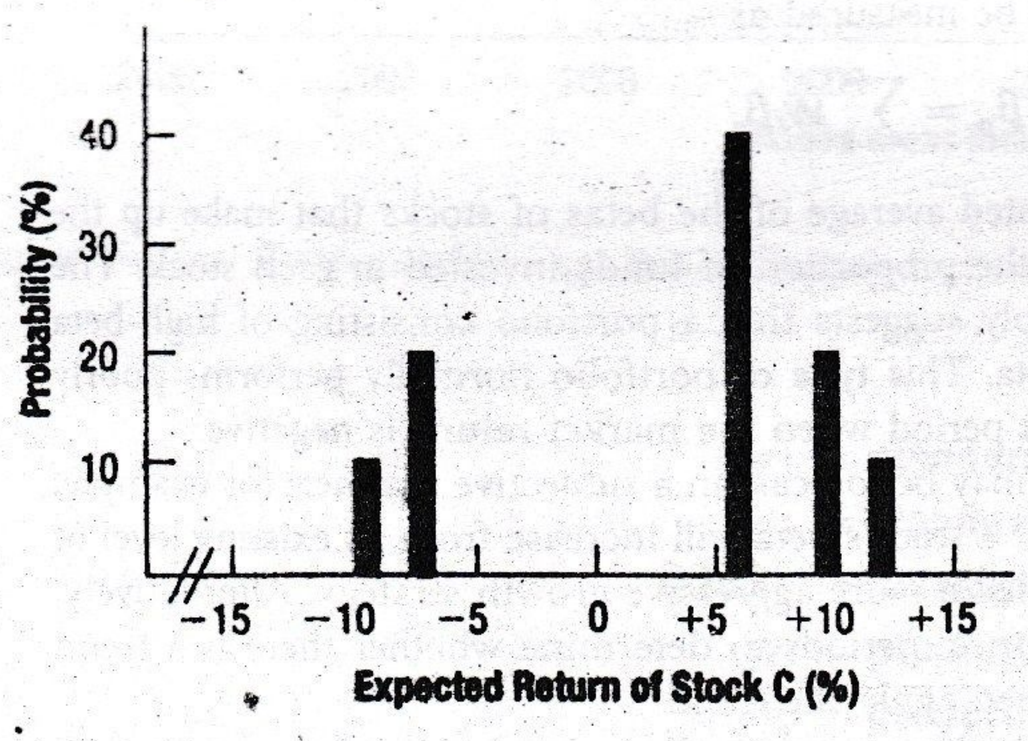
Value at risk is a measurement that estimates the largest expected loss to a particular investment position for a specified confidence level. It is intended to warn investors about the potential maximum loss that could occur. If the investors are uncomfortable with the potential loss that could occur in a day or a week, they can revise their investment portfolio to make it less risky.

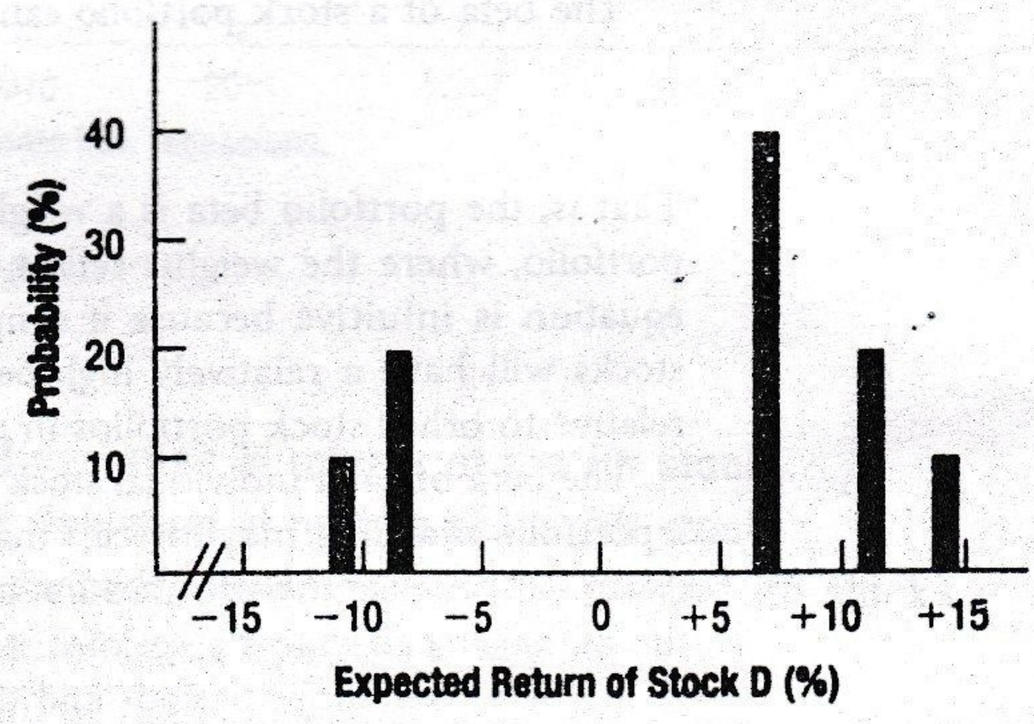
The value-at-risk measurement focuses on the pessimistic portion of the probability distribution of returns from the investment of concern. For example, a portfolio manager might use a confidence level of 90 percent, which estimates the maximum daily expected

Exhibit 11.4 How Beta Influences Probability Distributions









R_m	STOCK A'S EXPECTED RETURNS, $E(R)$, if $B_i = 0.6$	STOCK B'S EXPECTED RETURNS, $E(R)$, if $B_i = 0.8$	STOCK C'S EXPECTED RETURNS, $E(R)$, if $B_i = 1.2$	STOCK D'S EXPECTED RETURNS, $E(R)$, if $B_i = 1.4$
−8%	−4.8%	−7.2%	−9.6%	−11.2%
−6	−3.6	−5.4	−7.2	−8.4
5	3	4.5	6	7
8	4.8	7.2	9.6	11.2
10	6	9	12	14

for a given type of investment. That is, one may expect that the daily loss from holding a particular stock will be no worse than −5 percent when using a 90 percent confidence level but as much as −8 percent when using a 99 percent confidence level. In essence, the more confidence investors have that the actual loss will be no greater than the expected maximum loss, the further they move into the left tail of the probability distribution.

Application Using Historical Returns An obvious way of using value at risk is to assess historical data. For example, an investor may determine that, out of the last 100 trading days, a stock experienced a decline of greater than 7 percent on 5 different days, or 5 percent of the days assessed. This information could be used to infer a maximum daily loss of no more than 7 percent for that stock based on a 95 percent confidence level for an upcoming period.

Application Using the Standard Deviation An alternative approach is to measure the standard deviation of daily returns over the previous period and then apply it to derive boundaries for a specific confidence level.

EXAMPLE

Assume that the standard deviation of daily returns for a particular stock in a recent historical period is 2 percent. Also assume that the 95 percent confidence level is desired for the maximum loss. If the daily returns are normally distributed, the lower boundary (the left tail of the probability distribution) is about 1.65 standard deviations away from the expected outcome. For an expected daily return of 0.1 percent, the lower boundary is

$$0.1\% - [1.65 \times (2\%)] = -3.2\%$$

The expected daily return of 0.1 percent may reflect subjective information, or it could be the average daily return during the recent historical period assessed. The lower boundary for a given confidence level can easily be derived for any expected daily return. For example, if the expected daily return is 0.14 percent, the lower boundary is

$$0.14\% - [1.65 \times (2\%)] = -3.16\%$$ ●

Application Using Beta A third method of estimating the maximum expected loss for a given confidence level is to apply the stock's beta.

EXAMPLE

Assume that a stock's beta over the last 100 days is 1.2. Also assume that the stock market is expected to perform no worse than −2.5 percent on a daily basis based on a 95 percent confidence level. Given the stock's beta of 1.2 and a maximum market loss of −2.5 percent, the maximum loss to the stock over a given day is estimated to be

$$1.2 \times (-2.5\%) = -3\%$$

The maximum expected market loss for the 95 percent confidence level can be derived subjectively or by assessing the last 100 days or so (in the same manner described for the two previous methods that can be used to derive the maximum expected loss for an individual stock). ●

Deriving the Maximum Dollar Loss Once the maximum percentage loss for a given confidence level is determined, it can be applied to derive the maximum dollar loss of a particular investment.

EXAMPLE

Assume that an investor has a $20 million investment in a stock. The maximum dollar loss is determined by applying the maximum percentage loss to the value of the investment. If the investor used beta to measure the maximum expected loss as explained previously, the maximum percentage loss over one day would be −3 percent. Hence the maximum daily loss in dollars is

$$(-3\%) \times \$20{,}000{,}000 = \$600{,}000$$ ●

Application to a Stock Portfolio Value at risk is also commonly used to measure the risk of a stock portfolio. The same three methods used to derive the maximum expected loss of one stock can be applied to derive the maximum expected loss of a stock portfolio for a given confidence level. For instance, the returns of a stock portfolio over the past 100 days or so can be assessed to derive the maximum expected loss. Alternatively, the standard deviation of the portfolio's returns can be estimated over the past 100 days to derive a lower boundary at a specified confidence level. Still another alternative is to estimate the beta of the portfolio's returns over the past 100 days and then apply that beta to a maximum expected daily loss in the stock market to derive a maximum expected loss in the stock portfolio over a given day.

Adjusting the Investment Horizon Desired An investor who wants to assess the maximum loss over a week or a month can apply the same methods. However, it is important in this case to use a historical series that matches the investment horizon. In order to assess the maximum loss over a given week in the near future, a historical series of weekly returns of that stock (or stock portfolio) can be used.

Adjusting the Length of the Historical Period The previous examples used a historical series of 100 trading days, but if conditions have changed such that only the most recent 70 days reflect the general state of market conditions, then those 70 days should be used. However, a sub period of weak market performance should not be discarded because a similar one could occur again.

Limitations of the Value-at-Risk Method A common criticism of using historical periods to measure value at risk is that portfolio managers may be using a relatively calm historical period when assessing possible future risk. If, for example, the distribution of returns has been narrow because the economy was unusually stable in the previous period, the maximum loss expected in a future period (when the economy is not as stable) may be underestimated. In the language of portfolio managers, the distribution of possible returns used to estimate value at risk may have short tails (edge of the distribution) whereas the distribution of returns over the future period may have long tails. This implies that the actual loss of a portfolio may be more pronounced than the expected maximum loss. For instance, estimating the maximum loss during the stable period just prior to the credit crisis would have underestimated the risk of a stock portfolio during the credit crisis, when stocks actually experienced major losses.

11-5 Risk-Adjusted Stock Performance

The performance of a stock or a stock portfolio over a particular period can be measured b its excess return (return above the risk-free rate) for that period divided by its risk. Tw common methods of measuring performance are the Sharpe index and the Treynor inde

11-5a Sharpe Index

If total variability is thought to be the appropriate measure of risk, a stock's risk-adjus returns can be determined by the reward-to-variability ratio (also called the **Sharpe ind**

$$\textbf{Sharpe index} = \frac{\bar{R} - \bar{R}_f}{\sigma}$$

$\overline{R}$ = **average return on the stock**
$\overline{R}_f$ = **average risk-free rate**
σ = **standard deviation of the stock's return**

The higher the stock's mean return relative to the mean risk-free rate and the lower the standard deviation, the higher the Sharpe index. This index measures the excess return above the risk-free rate per unit of risk.

EXAMPLE

Assume the following information for two stocks:

- Average return for Sooner stock = 16%
- Average return for Longhorn stock = 14%
- Average risk-free rate = 10%
- Standard deviation of Sooner stock returns = 15%
- Standard deviation of Longhorn stock returns = 8%

Then

$$\text{Sharpe index for Sooner stock} = \frac{16\% - 10\%}{15\%} = 0.40$$

$$\text{Sharpe index for Longhorn stock} = \frac{14\% - 10\%}{8\%} = 0.50$$

Even though Sooner stock had a higher average percentage return, Longhorn stock had a higher performance because of its lower risk. If a stock's average return is less than the average risk-free rate, the Sharpe index for that stock will be negative. ●

11-5b Treynor Index

If beta is thought to be the most appropriate type of risk, a stock's risk-adjusted returns can be determined by the Treynor index, computed as

$$\text{Treynor index} = \frac{\overline{R} - \overline{R}_f}{B}$$

where B is the stock's beta. The Treynor index differs from the Sharpe index only in that it uses beta rather than the standard deviation to measure the stock's risk. The higher the Treynor index, the higher the return (per unit of risk) relative to the risk-free rate.

EXAMPLE

Using the information provided earlier on Sooner and Longhorn stock and assuming that Sooner's stock beta is 1.2 and Longhorn's beta is 1.0, the Treynor index is computed for each stock as follows:

$$\text{Treynor index for Sooner stock} = \frac{16\% - 10\%}{1.2} = 0.05$$

$$\text{Treynor index for Longhorn stock} = \frac{14\% - 10\%}{1.0} = 0.04$$

Based on the Treynor index, Sooner stock experienced higher performance. ●

A comparison of this example and the previous one shows that which stock performs better depends on the measure of risk and thus on the index used. In some cases,

different indexes will lead to the same conclusions. Like the Sharpe index, the Treynor index is negative for a stock whose average return is less than the average risk-free rate.

11-6 Stock Market Efficiency

If stock markets are efficient, the prices of stocks at any point in time should fully reflect all available information. As investors attempt to capitalize on new information that is not already accounted for, stock prices should adjust immediately. Investors commonly over- or underreact to information. This does not mean that markets are inefficient unless the reaction is biased (i.e., consistently over- or underreacting). Investors who can recognize such bias will be able to earn abnormally high risk-adjusted returns.

11-6a Forms of Efficiency

Efficient markets can be classified into three forms: weak, semistrong, and strong.

Weak-Form Efficiency **Weak-form efficiency** suggests that security prices reflect all market-related information, such as historical security price movements and volume of securities trades. Thus investors will not be able to earn abnormal returns on a trading strategy that is based solely on past price movements.

Semistrong-Form Efficiency **Semistrong-form efficiency** suggests that security prices fully reflect all public information. The difference between public information and market-related information is that public information also includes announcements by firms, economic news or events, and political news or events. Market-related information is a subset of public information. Therefore, if semistrong-form efficiency holds, weak-form efficiency must also hold. It is possible, however, for weak-form efficiency to hold even though semistrong-form efficiency does not. In this case, investors could earn abnormal returns by using the relevant information that was not immediately accounted for by the market.

Strong-Form Efficiency **Strong-form efficiency** suggests that security prices fully reflect all information, including private or insider information. If strong-form efficiency holds, semistrong-form efficiency must hold as well. If insider information leads to abnormal returns, however, semistrong-form efficiency could hold even though strong-form efficiency does not.

Inside information gives insiders (such as some employees or board members) an unfair advantage over other investors. For example, if employees of a firm are aware of favorable news about the firm that has not yet been disclosed to the public, they may consider purchasing shares or advising their friends to purchase the firm's shares. Although such actions are illegal, they do occur and can create market inefficiencies.

11-6b Tests of the Efficient Market Hypothesis

Tests of market efficiency are segmented into three categories, as discussed next.

Test of Weak-Form Efficiency Weak-form efficiency has been tested by searching for a nonrandom pattern in security prices. If the future change in price is related to recent changes, historical price movements could be used to earn abnormal returns. In general, studies have found that historical price changes are independent over time. This means that historical information is already reflected by today's price and cannot be used to earn abnormal profits. Even when some dependence was detected, the transaction costs offset any excess return earned.

There is some evidence that stocks have performed better in certain time periods. For example, as mentioned earlier, small stocks have performed unusually well in the month

of January (the "January effect"). Second, stocks have historically performed better on Fridays than on Mondays (the "weekend effect"). Third, stocks have historically performed well on the trading days just before holidays (the "holiday effect"). To the extent that a given pattern continues and can be used by investors to earn abnormal returns, market inefficiencies exist. In most cases, there is no clear evidence that such patterns persist once they are recognized by the investment community.

One could use the number of market corrections to evaluate stock market inefficiency. During the twentieth century, there were more than 100 days on which the market (as measured by the Dow Jones Industrial Average) declined by 10 percent or more. On more than 300 days, the market declined by more than 5 percent. These abrupt declines frequently followed a market runup, which suggests that the runup might have been excessive. In other words, a market correction was necessary to counteract the excessive runup.

Test of Semistrong-Form Efficiency Semistrong-form efficiency has been tested by assessing how security returns adjust to particular announcements. Some announcements are specific to a firm, such as an announced dividend increase, an acquisition, or a stock split. Other announcements are related to the economy, such as an announced decline in the federal funds rate. In general, it was found that security prices immediately reflected the information from the announcements. Hence the securities were not consistently over- or undervalued, so abnormal returns could not consistently be achieved. This is especially true when transaction costs are accounted for.

There is evidence of unusual profits from investing in initial public offerings (IPOs). In particular, the return over the first day following the IPO tends to be abnormally high. One reason for this underpricing is that the securities firms underwriting an IPO intentionally underprice to ensure that the entire issue can be placed. Underwriters also are required to exercise due diligence in ensuring the accuracy of the information they provide to investors about the corporation. For this reason, underwriters tend to err on the low side when setting a price for IPOs.

Some analysts contend that, given the imperfect information associated with IPOs, investors would not participate unless prices are low. In other words, the potential return must be high enough to compensate not only for the risk incurred but also for the lack of information about these corporations. From this perspective, IPO underpricing does not imply market inefficiencies but rather reflects the high degree of uncertainty involved.

Test of Strong-Form Efficiency Tests of strong-form efficiency are difficult because the inside information used is not publicly available and cannot be properly tested. Nevertheless, many forms of insider trading could easily result in abnormally high returns. For example, there is clear evidence that share prices of target firms rise substantially when the acquisition is announced. If insiders purchased stock of targets prior to other investors, they would normally achieve abnormally high returns. Insiders are discouraged from using this information because it is illegal, not because markets are strong-form efficient.



GLOBAL ASPECTS

11-7 Foreign Stock Valuation and Performance

Some of the key concepts in this chapter can be adjusted so that they apply on a global basis, as explained next.

11-7a Valuation of Foreign Stocks

Foreign stocks can be valued by using the price–earnings method or the dividend discount model with an adjustment to reflect international conditions.

Price-Earnings Method The expected earnings per share of the foreign firm are multiplied by the appropriate PE ratio (based on the firm's risk and local industry) to determine the appropriate price of the firm's stock. Though easy to use, this method is subject to some limitations when valuing foreign stocks. The PE ratio for a given industry may change continuously in some foreign markets, especially when the industry consists of just a few firms. It is therefore difficult to determine what ratio should be applied to a specific foreign firm. In addition, the PE ratio for any particular industry may need to be adjusted for the firm's country because reported earnings can be influenced by national accounting guidelines and tax laws.

Furthermore, even if U.S. investors are comfortable with their estimate of the proper PE ratio, the value derived by this method is denominated in the local foreign currency (since the estimated earnings are denominated in that currency). Therefore, U.S. investors must also consider exchange rate effects. Even if the stock is undervalued in the foreign country, it may not generate a reasonable return for U.S. investors if the foreign currency depreciates against the dollar.

Dividend Discount Model The dividend discount model can be applied to the valuation of foreign stocks by discounting the stream of expected dividends while adjusting to account for expected exchange rate movements. Foreign stocks pay dividends in the currency of their denomination. Thus the cash flow per period to U.S. investors is the dividend (denominated in the foreign currency) multiplied by the value of that foreign currency in dollars. An expected appreciation of the currency denominating the foreign stocks will result in higher expected dollar cash flows and a higher present value. The dividend can normally be forecast with more accuracy than can the value of the foreign currency. Because of exchange rate uncertainty, the value of foreign stock from a U.S. investor's perspective is subject to more uncertainty than the value of that stock from a local investor's perspective.

11-7b International Market Efficiency

Some foreign markets are likely to be inefficient because of the relatively small number of analysts and portfolio managers who monitor stocks in those markets. It is easier to find undervalued stocks when a smaller number of market participants monitor the market. Research has documented that some foreign markets are inefficient, basing these conclusions on slow price responses to new information (e.g., earnings announcements) about specific firms. Such inefficiencies are more common in smaller foreign stock markets. Some emerging stock markets are relatively new and small, so they are unlikely to be as efficient as the U.S. stock market. Hence some stocks may be undervalued, a possibility that has attracted investors to these markets. Yet precisely because some of these markets are small, they may be susceptible to manipulation by large traders. Furthermore, insider trading is more prevalent in many foreign markets because rules against it are not enforced. In general, large institutional investors and insiders based in the foreign markets may have some advantages.

11-7c Measuring Performance from Investing in Foreign Stocks

The returns from investing in foreign stocks is most properly measured in terms of the investor's objectives. For example, if portfolio managers are assigned to select stocks in Europe, their performance should be compared to that of a European index measured in U.S. dollars. In this way, the performance measurement controls for general market

movements and exchange rate movements in the region where the portfolio manager has been assigned to invest funds. Thus, if the entire European market experiences poor performance over a particular quarter, or if the main European currency (the euro) depreciates against the dollar over the period, the portfolio managers assigned to Europe are not automatically penalized. Conversely, if the entire European market experiences strong performance over a particular quarter or the euro appreciates against the dollar, managers are not automatically rewarded. Instead, the performance of portfolio managers is measured relative to the general market conditions of the region to which they are assigned.

11-7d Performance from Global Diversification

A substantial amount of research has demonstrated that investors in stocks can benefit by diversifying internationally. Most stocks are strongly influenced by the country in which their firms are located (although some firms are more vulnerable to local economic conditions than others).

Since a stock market partially reflects the current and/or forecasted state of its country's economy and since economies do not generally move in tandem, particular stocks of the various markets are not highly correlated. This contrasts with the case of a purely domestic portfolio (e.g., one consisting entirely of U.S. stocks), in which most stocks often move in the same direction and by a similar magnitude.

Nevertheless, stock price movements among international stock markets are correlated to some degree because some underlying economic factors reflecting the world's general financial condition may systematically affect all markets. One country's economy can influence the economies of other countries, so expectations about economies across countries may be similar. Thus stock markets across countries may respond to some of the same expectations. *Integration* is an important concept because of what it implies about the potential benefits of international diversification. A high degree of international economic integration implies that stock returns of different countries are affected by common factors. In that case, the returns of stocks from various countries would move in concert and therefore allow only modest benefits from international diversification.

In general, correlations between stock indexes have been higher in recent years than they were several years ago. One reason for the increased correlations is the increased integration of business between countries. This results in more inter country trade flows and capital flows, which causes each country to have more influence on other countries. In particular, many European countries have become more integrated because of the movement to standardize regulations throughout Europe and the use of a single currency (the euro) to facilitate trade between countries.

Diversification among Emerging Stock Markets Emerging markets provide an alternative outlet for investors from the United States and other countries to invest their funds. The potential economic growth rate is relatively high. In addition, investors may achieve extra diversification benefits from investing in emerging markets because their respective economies may not move in tandem with those of the more developed countries. Hence the correlation between these stocks and those of other countries is low, so investors can reduce risk by including some stocks from these markets in their portfolios.

However, emerging market stocks tend to exhibit a high degree of volatility, which partially offsets the advantage of their low correlations with stocks of other countries. Stocks in emerging markets are more exposed to major government turnovers and other forms of political risk. They also expose U.S. investors to a high degree of exchange rate risk because the local currencies involved are typically volatile.

SUMMARY

- Stocks are commonly valued using the price–earnings (PE) method, the dividend discount model, or the free cash flow model. The PE method applies the industry PE ratio to the firm's earnings to derive its value. The dividend discount model estimates the value as the present value of expected future dividends. The free cash flow model is based on the present value of future cash flows.
- When applying the free cash flow model to value a stock, a required rate of return must be estimated. One method of estimating the required rate of return is to apply the capital asset pricing model, in which the required return depends on the risk-free interest rate and the firm's beta.
- Stock prices are affected by those factors that affect future cash flows or the required rate of return by investors. Economic conditions, market conditions, and firm-specific conditions can affect a firm's cash flows or the required rate of return.
- The risk of a stock is measured by its volatility, its beta, or its value-at-risk estimate. Investors are giving more attention to risk measurement in light of abrupt downturns in the prices of some stocks in recent years.
- Stock market efficiency implies that stock prices reflect all available information. Weak-form efficiency suggests that security prices reflect all trade-related information, such as historical security price movements and the volume of securities trades. Semistrong-form efficiency suggests that security prices fully reflect all public information. Strong-form efficiency suggests that security prices fully reflect all information, including private or insider information. Evidence supports weak-form efficiency to a degree, but there is less support for semistrong- or strong-form efficiency.

POINT COUNTER-POINT

Is the Stock Market Efficient?

Point Yes. Investors fully incorporate all available information when trading stocks. Thus, the prices of stocks fully reflect all information.

Counter-Point No. The high degree of stock price volatility offers evidence of how much disagreement there is among stock prices. The fact that many stocks declined by more than 40 percent during the end of 2008 and beginning of 2009 suggests that stock prices are not always properly valued to reflect available information.

Who Is Correct? Use the Internet to learn more about this issue and then formulate your own opinion.

QUESTIONS AND APPLICATIONS

1. **Price-Earnings Model** Explain the use of the price–earnings ratio for valuing a stock. Why might investors derive different valuations for a stock when using the PE method? Why might investors derive an inaccurate valuation of a firm when using the PE method?

2. **Dividend Discount Model** Describe the dividend discount valuation model. What are some limitations of the dividend discount model?

3. **Impact of Economic Growth** Explain how economic growth affects the valuation of a stock.

4. **Impact of Interest Rates** How are the interest rate, the required rate of return on a stock, and the valuation of a stock related?

5. **Impact of Inflation** Assume that the expected inflation rate has just been revised upward by the market. Would the required return by investors who invest in stocks be affected? Explain.

6. **Impact of Exchange Rates** Explain how the value of the dollar affects stock valuations.

7. **Investor Sentiment** Explain why investor sentiment can affect stock prices.

8. January Effect Describe the January effect.

9. Earnings Surprises How do earnings surprises affect valuations of stocks?

10. Impact of Takeover Rumors Why can expectations of an acquisition affect the value of the target's stock?

11. Emerging Markets What are the risks of investing in stocks in emerging markets?

12. Stock Volatility during the Credit Crisis Explain how stock volatility changed during the credit crisis.

13. Stock Portfolio Volatility Identify the factors that affect a stock portfolio's volatility and explain their effects.

14. Beta Explain how to estimate the beta of a stock. Explain why beta serves as a measure of the stock's risk.

15. Wall Street In the movie *Wall Street*, Bud Fox is a broker who conducts trades for Gordon Gekko's firm. Gekko purchases shares of firms he believes are undervalued. Various scenes in the movie offer excellent examples of concepts discussed in this chapter.

a. Bud Fox comments to Gordon Gekko that a firm's breakup value is twice its market price. What is Bud suggesting in this statement? How would employees of the firm respond to Bud's statement?

b. When Bud informs Gekko that another investor, Mr. Wildman, is secretly planning to acquire a target firm in Pennsylvania, Gekko tells Bud to buy a large amount of this stock. Why?

c. Gekko says, "Wonder why fund managers can't beat the S&P 500? Because they are sheep." What is Gekko's point? How does it relate to market efficiency?

16. Market Efficiency Explain the difference between weak-form, semistrong-form, and strong-form efficiency. Which of these forms of efficiency is most difficult to test? Which is most likely to be refuted? Explain how to test weak-form efficiency in the stock market.

17. Market Efficiency A consulting firm was hired to determine whether a particular trading strategy could generate abnormal returns. The strategy involved taking positions based on recent historical movements in stock prices. The strategy did not achieve abnormal returns. Consequently, the consulting firm concluded that the stock market is weak-form efficient. Do you agree? Explain.

Advanced Questions

18. Value at Risk Describe the value-at-risk method for measuring risk.

19. Implied Volatility Explain the meaning and use of implied volatility.

20. Leveraged Buyout At the time a management group of RJR Nabisco initially considered engaging in a leveraged buyout, RJR's stock price was less than $70 per share. Ultimately, RJR was acquired by the firm Kohlberg Kravis Roberts (KKR) for about $108 per share. Does the large discrepancy between the stock price before an acquisition was considered and after the acquisition mean that RJR's price was initially undervalued? If so, does this imply that the market was inefficient?

21. How Stock Prices May Respond to Prevailing Conditions Consider the prevailing conditions that could affect the demand for stocks, including inflation, the economy, the budget deficit, the Fed's monetary policy, political conditions, and the general mood of investors. Based on these conditions, do you think stock prices will increase or decrease during this semester? Offer some logic to support your answer. Which factor do you think will have the biggest impact on stock prices?

22. Application of CAPM to Stock Pricing Explain (using intuition instead of math) why stock prices may decrease in response to a higher risk-free rate according to the CAPM. Explain (using intuition instead of math) why stock prices may increase in this situation even though the risk-free rate increases.

23. Impact of SOX on Stock Valuations Use a stock valuation framework to explain why the Sarbanes-Oxley Act (SOX) could improve the valuation of a stock. Why might SOX cause a reduction in the valuation of a stock? (See the Appendix.)

24. Interpretation of the VIX Index Explain why participants in the stock market monitor the VIX index. What does a decline in the VIX index imply about a change in expected volatility by market participants?

Interpreting Financial News

Interpret the following statements made by Wall Street analysts and portfolio managers.

a. "The stock market's recent climb has been driven by falling interest rates."

b. "Future stock prices are dependent on the Fed's policy meeting next week."

c. "Given the recent climb in stocks that cannot be explained by fundamentals, a correction is inevitable."

Managing in Financial Markets

Stock Portfolio Dilemma As an investment manager, you frequently make decisions about investing in stocks versus other types of investments and about types of stocks to purchase.

a. You have noticed that investors tend to invest more heavily in stocks after interest rates have declined. You are considering this strategy as well. Is it rational to invest more heavily in stocks once interest rates have declined?

b. Assume that you are about to select a specific stock that will perform well in response to an expected runup in the stock market. You are very confident that the stock market will perform well in the near future. Recently, a friend recommended that you consider purchasing stock of a specific firm because it had decent earnings over the last few years, it has a low beta (reflecting a low degree of systematic risk), and its beta is expected to remain low. You normally rely on beta as a measurement of a firm's systematic risk. Should you seriously consider buying that stock? Explain.

c. You are considering an investment in an initial public offering by Marx Company, which has performed very well recently, according to its financial statements. The firm will use some of the proceeds from selling stock to pay off some of its bank loans. How can you apply stock valuation models to estimate this firm's value when its stock is not yet publicly traded? Once you estimate the value of the firm, how can you use this information to determine whether to invest in it? What are some limitations in estimating the value of this firm?

d. In the past, your boss assessed your performance based on the actual return on the portfolio of U.S. stocks that you manage. For each quarter in which your portfolio generated an annualized return of at least 20 percent, you received a bonus. Now your boss wants you to develop a method for measuring your performance from managing the portfolio. Offer a method that accurately measures your performance.

e. Assume that you were also asked to manage a portfolio of European stocks. How would your method for measuring your performance in managing this portfolio differ from the method you devised for the U.S. stock portfolio in the previous question?

PROBLEMS

1. Risk-Adjusted Return Measurements Assume the following information over a five-year period:

- Average risk-free rate = 6%
- Average return for Crane stock = 11%
- Average return for Load stock = 14%
- Standard deviation of Crane stock returns = 2%
- Standard deviation of Load stock returns = 4%
- Beta of Crane stock = 0.8
- Beta of Load stock = 1.1

Determine which stock has higher risk-adjusted returns according to the Sharpe index. Which stock has higher risk-adjusted returns according to the Treynor index? Show your work.

2. Measuring Expected Return Assume Mess stock has a beta of 1.2. If the risk-free rate is 7 percent and the market return is 10 percent, what is the expected return of Mess stock?

3. Using the PE Method You found that Verto stock is expected to generate earnings of $4.38 per share this year and that the mean PE ratio for its industry is 27.195. Use the PE valuation method to determine the value of Verto shares.

4. Using the Dividend Discount Model Suppose that you are interested in buying the stock of a company that has a policy of paying a $6 per share dividend every year. Assuming no changes in the firm's policies, what is the value of a share of stock if the required rate of return is 11 percent?

5. Using the Dividend Discount Model Micro, Inc., will pay a dividend of $2.30 per share next year. If the company plans to increase its dividend by 9 percent per year indefinitely, and you require a 12 percent

return on your investment, what should you pay for the company's stock?

6. Using the Dividend Discount Model Suppose you know that a company *just paid* an annual dividend of $1.75 per share on its stock and that the dividend will continue to grow at a rate of 8 percent per year. If the required return on this stock is 10 percent, what is the current share price?

7. Deriving the Required Rate of Return The next expected annual dividend for Sun, Inc., will be $1.20 per share, and analysts expect the dividend to grow at an annual rate of 7 percent indefinitely. If Sun stock currently sells for $22 per share, what is the required rate of return?

8. Deriving the Required Rate of Return A share of common stock currently sells for $110. Current dividends are $8 per share annually and are expected to grow at 6 percent per year indefinitely. What is the rate of return required by investors in the stock?

9. Deriving the Required Rate of Return A stock has a beta of 2.2, the risk-free rate is 6 percent, and the expected return on the market is 12 percent. Using the CAPM, what would you expect the required rate of return on this stock to be? What is the market risk premium?

10. Deriving a Stock's Beta You are considering investing in a stock that has an expected return of 13 percent. If the risk-free rate is 5 percent and the market risk premium is 7 percent, what must the beta of this stock be?

11. Measuring Stock Returns Suppose you bought a stock at the beginning of the year for $76.50. During the year, the stock paid a dividend of $0.70 per share and had an ending share price of $99.25. What is the total percentage return from investing in that stock over the year?

12. Measuring the Portfolio Beta Assume the following information:

- Beta of IBM = 1.31
- Beta of LUV = 0.85
- Beta of ODP = 0.94

If you invest 40 percent of your money in IBM, 30 percent in LUV, and 30 percent in ODP, what is your portfolio's beta?

13. Measuring the Portfolio Beta Using the information from Problem 12, suppose that you instead decide to invest $20,000 in IBM, $30,000 in LUV, and $50,000 in ODP. What is the beta of your portfolio now?

14. Value at Risk Assume that Quitar Co. has a beta of 1.31.

a. If you assume that the stock market has a maximum expected loss of −3.2 percent on a daily basis (based on a 95 percent confidence level), what is the maximum daily loss for the Quitar Co. stock?

b. If you have $19,000 invested in Quitar Co. stock, what is your maximum daily dollar loss?

15. Value at Risk If your portfolio beta is 0.89 and the stock market has a maximum expected loss of −2.5 percent on a daily basis, what is the maximum daily loss to your portfolio?

16. Dividend Model Relationships

a. When computing the price of a stock with the dividend discount model, how would the price be affected if the required rate of return is increased? Explain the logic of this relationship.

b. When computing the price of a stock using the constant-growth dividend discount model, how would the price be affected if the growth rate is reduced? Explain the logic of this relationship.

17. CAPM Relationships

a. When using the CAPM, how would the required rate of return on a stock be affected if the risk-free rate were lower?

b. When using the CAPM, how would the required rate of return on a stock be affected if the market return were lower?

c. When using the CAPM, how would the required rate of return on a stock be affected if the beta were higher?

18. Value at Risk

a. How is the maximum expected loss on a stock affected by an increase in the volatility (standard deviation), based on a 95 percent confidence interval?

b. Determine how the maximum expected loss on a stock would be affected by an increase in the expected return of the stock, based on a 95 percent confidence interval.

FLOW OF FUNDS EXERCISE

Valuing Stocks

Recall that if the economy continues to be strong, Carson Company may need to increase its production capacity by about 50 percent over the next few years to satisfy demand. It would need financing to expand and accommodate the increase in production. Recall that the yield curve is currently upward sloping. Also recall that Carson is concerned about a possible slowing of the economy because of potential Fed actions to reduce inflation. It is also considering issuing stock or bonds to raise funds in the next year. If Carson goes public, it might even consider using its stock as a means of acquiring some target firms. It would also consider engaging in a secondary offering at a future point in time if the IPO is successful and if its growth continues over time. It would also change its compensation system so that most of its managers would receive about 30 percent of their compensation in shares of Carson stock and the remainder as salary.

a. At the present time, the price–earnings ratio (stock price per share divided by earnings per share) of other firms in Carson's industry is relatively low but should rise in the future. Why might this information affect the time at which Carson issues its stock?

b. Assume that Carson Company believes that issuing stock is an efficient means of circumventing the potential for high interest rates. Even if long-term interest rates have increased by the time it issues stock, Carson thinks that it would be insulated by issuing stock instead of bonds. Is this view correct?

c. Carson Company recognizes the importance of a high stock price at the time it engages in an IPO (if it goes public). But why would its stock price be important to Carson Company even after the IPO?

d. If Carson Company goes public, it may be able to motivate its managers by granting them stock as part of their compensation. Explain why the stock may motivate them to perform well. Then explain why the use of stock as compensation may motivate them to focus on short-term goals even though they are supposed to focus on maximizing shareholder wealth over the long run. How can a firm provide stock as motivation but prevent its managers from using a short-term focus?

INTERNET/EXCEL EXERCISES

1. Go to finance.yahoo.com/indices?. Compare the performance of the Dow, Nasdaq, and S&P 500 indexes. Click on each of these indexes and describe the trend for that index since January. Which index has had the best performance?

2. Go to finance.yahoo.com, type in the symbol DELL (for Dell, Inc.), and click on "Get Quotes." Then go to the bottom of the stock price chart and retrieve the end-of-month stock price of Dell over the last 12 months. Record this information on an Excel spreadsheet and estimate the standard deviation of the stock's price movements. (See Appendix B for guidance on how to estimate the standard deviation of a stock's price movements.) Repeat the process for Oracle Corporation (its symbol is ORCL). Which stock does your analysis show to be riskier?

3. Assume that the expected return on Dell stock and Oracle stock is 0 percent for the next month. Use the value-at-risk method to determine the maximum expected loss of Dell and Oracle for the next month, based on a 95 percent confidence level.

WSJ EXERCISE

Reviewing Abrupt Shifts in Stock Valuation

Review Section C of a recent issue of the *Wall Street Journal*. Notice that the stocks with the largest one-day gains and losses are shown. Do an Internet search for news about the stock with the biggest gain. What is the reason for the gain? Repeat the exercise for the stock with the biggest loss.

Online Articles with Real-World Examples

Find a recent practical article available online that describes a real-world example regarding a specific financial institution or financial market that reinforces one or more concepts covered in this chapter.

If your class has an online component, your professor may ask you to post your summary of the article there and provide a link to the article so that other students can access it. If your class is live, your professor may ask you to summarize your application of the article in class. Your professor may assign specific students to complete this assignment or may allow any students to do the assignment on a volunteer basis.

For recent online articles and real-world examples related to this chapter, consider using the following search terms (be sure to include the prevailing year as a search term to ensure that the online articles are recent):

1. stock AND valuation
2. price-earnings AND valuation
3. free cash flow AND valuation
4. stock AND investor sentiment
5. stock AND risk
6. stock valuation AND uncertainty
7. stock valuation AND beta
8. stock AND value at risk
9. stock AND volatility
10. stock market AND efficient

APPENDIX 11

The Link Between Accounting and Stock Valuation

In a publicly traded firm, the managers who run the firm are separate from the investors who own it. Managers are hired to serve as agents of the corporation and are expected to serve the interests of the firm's shareholders by making decisions that maximize the value of the firm. The firm's management is required to provide substantial information about the firm's financial condition and performance. Shareholders and other investors use this information to monitor management and to value the firm. For example, if investors use the price–earnings method to derive a valuation, they rely on the reported earnings. If they use the dividend discount model, they may derive an expected growth rate from recently reported earnings or revenue figures. If they use the adjusted dividend discount model, they may rely on financial statements to estimate future cash flows.

If firms provide inaccurate financial information, investors will derive inaccurate valuations and money will flow to the wrong sources in the stock markets. In addition, inaccurate financial information creates more risk for stocks because investors must worry about the uncertainty surrounding the reported financial statement numbers. If financial statement data are questionable, stock values may decline whenever investors recognize that the earnings or some other proxy used to estimate cash flows is overstated. Investors will require a higher rate of return to hold stocks subject to downside risk because of distorted accounting. Thus, deceptive accounting practices disrupt the stock market and increase the cost of capital raised by issuing stock.

To ensure that managers serve shareholder interests, firms commonly tie managerial compensation to the stock price. For example, managers may be granted stock options that allow them to buy the firm's stock at a specified price over a specified time period (such as the next five years). In this way, the managers benefit directly from a high stock price just like other shareholders and thus should make decisions that result in a high stock price.

Unfortunately, some managers recognize that it may be easier to increase their stock's price by manipulating the financial statements than by improving the firm's operations. When the firm's reported earnings are inflated, investors will likely overestimate the value of its stock, regardless of the method they use to value stocks.

Managers may be tempted to temporarily inflate reported earnings because doing so may temporarily inflate the stock's price. If no limits are imposed on the stock options granted, managers may be able to exercise their options (buying the stock at the price specified in the option contracts) during this period of a temporarily inflated price and

immediately sell the stock in the secondary market. Thus they can capitalize on the inflated stock price before other investors realize that the earnings and stock price are inflated.

Problems with Creative Accounting

Managers would not be able to manipulate a firm's financial information if accounting rules did not allow them to be creative. The accounting for a firm's financial statement items is guided by generally accepted accounting principles (GAAP) set by the Financial Accounting Standards Board (FASB). However, these guidelines allow for substantial flexibility in accounting, which means that there is no standard formula for converting accounting numbers into cash flows. The accounting confusion is compounded by the desire of some managers to inflate their firm's earnings in particular periods when they wish to sell their holdings of the firm's stock. Specifically, the accounting can inflate revenue in a particular period without inflating expenses or defer the reporting of some expenses until a future quarter. Investors who do not recognize that some of the accounting numbers are distorted may overestimate the value of the firm.

Creative accounting can also be used to distort expenses. When a firm discontinues one of its business projects, it commonly records this as a write-off, or a onetime charge against earnings. Investors tend to ignore write-offs when estimating future expenses because they do not expect them to occur again. Some firms, however, shift a portion of their normal operating expenses into the write-off even though those expenses will occur again in the future. Investors who do not recognize this accounting gimmick will underestimate the future expenses.

As a classic example of shifting expenses, WorldCom attempted to write off more than $7 billion following its acquisition of MCI in 1998. When the Securities and Exchange Commission (SEC) questioned this accounting, WorldCom changed the amount to about $3 billion. If it had succeeded in including the extra $4 billion in the write-off, WorldCom could have reduced its reported operating expenses by $4 billion. Thus investors who trusted WorldCom's income statement would have underestimated its future expenses by about $4 billion per year and therefore would have grossly overestimated the value of the stock.

When firms go beyond the loose accounting guidelines, the SEC may require them to restate their earnings and provide a corrected set of financial statements. The SEC has forced hundreds of firms to restate their earnings in recent years, but the investors who lost money because they trusted a firm's distorted accounting were not reimbursed.

Governance of Accounting

Several types of governance can be used to attempt to prevent firms from using distorted accounting, as explained next.

Auditing

Firms are required to hire auditors to audit their financial statements and verify that the statements are within the accounting guidelines. The auditors, however, rely on these firms for their future business. Many large firms pay auditors more than $1 million per year for their auditing services and also for nonauditing services. Thus auditors may be tempted to sign off on distorted accounting so that they will be rehired by their clients in the future. If the auditors uphold proper standards that force their clients to revise their reported earnings, they may not be hired again. The temptation to sign off on creative

accounting used by client firms is especially strong given the subjectivity allowed by the accounting rules. Auditors may be more willing to sign off on financial statements that are somewhat confusing but do not directly violate accounting rules.

Board of Directors

A firm's board of directors is expected to represent the firm's shareholders. The directors oversee the firm's financial reporting process and should attempt to ensure that the financial information provided by the firm is accurate. However, some boards have not forced managers to accurately disclose the firm's financial condition. A board can be ineffective if it is run by insiders who are the same managers that the board is supposed to monitor. Board members who are managers of the firm (insiders) are less likely to scrutinize the firm's management. In recent years, many firms have increased the proportion of independent board members (outsiders), who are not subject to pressure from the firm's executives. Even some independent board members, however, have strong ties to the firm's executives or receive substantial consulting income beyond their compensation for serving on the board. Thus they may be willing to overlook distorted accounting or other unethical behavior in order to maintain their existing income stream from the firm.

Several proposals have been made to try to increase the independence of board members. For example, the Commission on Public Trust and Private Enterprise has recommended that corporations consider separating the offices of chair of the board and CEO and that the board chair should be an independent director.

Compensation of Board Members Some boards are ineffective because of the way the board members are compensated. If board members receive stock options from the firm as compensation, the options' value is tied to the firm's stock price. Consequently, some board members may be tempted to ignore their oversight duties because they may benefit from selling their shares of the stock (received as compensation) while the price is temporarily inflated. Meanwhile, shareholders who hold their stock for a longer time period will be adversely affected once the market recognizes that the financial statements are distorted.

Board members are more likely to serve the long-term interests of shareholders if they are compensated in a manner that encourages them to maximize the long-term value of the firm. If they are provided stock that they cannot sell for a long time, they are more likely to focus on maximizing the long-term value of the firm.

Several regulations have been issued to address the potential abuses resulting from granting stock options to managers and board members. In 2003, the SEC ruled that corporations listed on the New York Stock Exchange (NYSE) or the Nasdaq market must have shareholder approval before giving executives company stock or options. The rules were drafted and approved by the NYSE and Nasdaq. In addition, FASB recently required that corporations expense their executive stock options on their income statements. This increases transparency in financial reporting and might improve corporate governance.

Board's Independent Audit Committee Some board members may serve on an independent audit committee, which is responsible for monitoring the firm's auditor. The committee is expected to ensure that the audit is completed without conflicts of interest so that the auditors will provide an unbiased audit. Some boards have not prevented distorted audits, however, either because they did not recognize the conflicts of interest or because they were unwilling to acknowledge them.

Role of Credit Rating Agencies

Investors may also rely on credit rating agencies such as Standard & Poor's and Moody's to assess a firm's risk level. However, these agencies do not always detect a firm's financial problems in advance. They normally focus on assessing a firm's risk level based on the financial statements provided and not on determining whether the financial statements are accurate. The agencies may simply assume that the financial statements are accurate because they were verified by an auditor.

Role of the Market for Corporate Control

In the market for corporate control, firms that perform poorly should be acquired and reorganized by other more efficient firms (called raiders). The raiders have an incentive to seek out inefficient firms because they can buy them at a low price (reflecting their poor performance) and remove their inefficient management. Nevertheless, the market for corporate control does not necessarily prevent faulty accounting. First, raiders may not be able to identify firms that inflated their earnings. Second, firms that have inflated their earnings are probably overvalued, and raiders will not want to acquire them at their inflated price. Third, an acquisition involves substantial costs of integrating businesses, and there is the risk that these costs will offset any potential benefits.

The Enron Scandal

The most famous recent example of the use of creative accounting occurred at Enron Corporation. Enron was formed in 1985 from the merger of two natural gas pipeline companies. It grew relatively slowly until the 1990s, when the deregulation of the utilities industry presented new opportunities. Enron began to expand in several directions. It acquired power plants in the United States and also expanded internationally, acquiring a power distributor in Brazil, a power plant in India, and a water company in the United Kingdom, among others. Perhaps most importantly, it took advantage of the new deregulated environment to pioneer the trading of natural gas and electricity. Soon it had branched out beyond simple energy trading to trade such instruments as weather derivatives. In 1999 it introduced Enron Online, an Internet-based trading platform that gave the company the appeal of an "Internet stock" at a time when such stocks were highly desired. The company introduced online trading of metals, wood products, and even broadband capacity as well as energy. By 2000, Enron was the seventh largest firm (in terms of gross revenues) in the United States.

Most investors were caught by surprise when Enron began to experience financial problems in October 2001 and then filed for bankruptcy on December 2, 2001. At the time, it was the largest U.S. firm to go bankrupt. In retrospect, Enron's stock may have been overvalued for many years, but some investors and creditors were fooled by its financial statements. The Enron fiasco received much publicity because it demonstrated how a firm could manipulate its financial statements, and therefore manipulate its valuation, in spite of various controls designed to prevent that type of behavior. This section offers some insight into why investor valuations and risk assessments of Enron were so poor.

Enron's Letter to Its Shareholders

If investors trusted the claims made by Enron in its annual report, it is understandable that they would value the stock highly. The letter to shareholders in Enron's 2000 annual report included the following statements.

- "Enron's performance in 2000 was a success by any measure, as we continued to outdistance the competition and solidify our leadership in each of our businesses.
- Enron has built unique and strong businesses that have limitless opportunities for growth.
- At a minimum, we see our market opportunities company-wide tripling over the next five years.
- Enron is laser-focused on earnings per share, and we expect to continue strong performance.
- Enron is increasing earnings per share and continuing our strong return to shareholders.
- The company's total return to shareholders was 89% in 2000, compared with a −9% return by the S&P 500.
- The 10-year return to Enron shareholders was 1,415%, compared with 383% for the S&P 500.
- We plan to...create significant shareholder value for our shareholders."

Enron's Stock Valuation

Normally, the valuation of a firm is obtained by using the firm's financial statements to derive cash flows and to derive a required rate of return that is used to discount those cash flows. Enron's valuation was excessive because of various irregularities in its financial statements.

Estimating Cash Flows Since Enron's earnings were distorted, the estimates of its cash flows derived from those earnings were also distorted. Moreover, Enron's earnings were manipulated to create the perception of consistent earnings growth, which tempted investors to apply a high growth rate when estimating future cash flows.

Estimating the Required Rate of Return Investors can derive a required rate of return as the prevailing long-term, risk-free interest rate plus the firm's risk premium. The risk premium can be measured by the firm's existing degree of financial leverage, its ability to cover interest payments with operating earnings, and its sensitivity to market movements.

Until the accounting distortions were publicized, Enron's risk was underestimated. The company concealed much of its debt by keeping it off its consolidated financial statements, as will be explained shortly. Consequently, investors who estimated Enron's sensitivity to market movements using historical data were unable to detect Enron's potential for failure. As a result, they used a lower risk premium than was appropriate. The financial statements therefore caused investors both to overestimate Enron's future cash flows and to underestimate its risk. Both effects led to a superficially high stock price.

Applying Market Multiples Given the difficulty of estimating cash flows and the required rate of return, some investors may have tried to value Enron's stock by using market multiples. Determining the appropriate PE multiple for Enron was also difficult, however, because its reported earnings did not represent its real earnings.

Another problem with applying the industry PE method to Enron was the difficulty of identifying the proper industry. One of the company's main businesses was trading various types of energy derivative contracts. Yet Enron did not want to be known as a trading company because the valuations of companies (e.g., securities firms) that engage in trading are generally lower for a given level of earnings per share.

Motives of Enron's Management

One of the main reasons for Enron's problems was its management. Managers are expected to maximize the value of the firm's stock. Like many firms, Enron granted stock options to some of its managers as a means of motivating them to make decisions that would maximize the value of its stock. However, Enron's management seemed to focus more on creating the perception of strong business performance than on improving the firm's actual performance. By manipulating the financial statements, Enron consistently met its earnings forecasts and increased its earnings over 20 consecutive quarters leading up to 2001. In this way, it created a false sense of security about its performance, thereby increasing the demand for its stock. This resulted in a superficially high stock price over a period in which some managers sold their stock holdings. Twenty-nine Enron executives or board members sold their holdings of Enron stock for more than $1 billion in total before the stock price plummeted.

Internal Monitoring Some firms use internal monitoring to ensure some degree of control over managers and encourage them to make decisions that benefit shareholders. Unfortunately, Enron's internal monitoring was also susceptible to manipulation. For example, managers were periodically required to measure the market value of various energy contracts that the company held. Since there was not an active market for some of these contracts, the prevailing valuations of the contracts were arbitrary. Managers used estimates that resulted in favorable valuations, which in turn led to a higher level of reported performance and higher managerial compensation.

Monitoring by the Board of Directors Board members serve as representatives of the firm's shareholders and are responsible for ensuring that the managers serve shareholder interests. In fact, board members are commonly compensated with stock so that they have an incentive to ensure that the stock price is maximized. In the case of Enron, some board members followed executives in selling their shares while the stock price was superficially high.

Enron's Financial Statement Manipulation

Some of the methods Enron used to report its financial conditions were inconsistent with accounting guidelines. Other methods were within the rules but were misleading. Consequently, many investors invested in Enron without recognizing the financial problems that were hidden from the financial statements. Some of these investors lost most or all of their investment.

Accounting for Partnerships One of the most common methods used by Enron to manipulate its financial statements involved the transfer of assets to partnerships it owned called special-purpose entities (SPEs). It found outside investors to invest at least 3 percent of each partnership's capital. Under accounting guidelines, a partnership with this minimum level of investment from an outside investor does not have to be classified as a subsidiary. Since Enron thus did not classify its SPEs as subsidiaries, it was not required to include any financial information about them in its consolidated financial statements. For this reason, none of the debt incurred by the SPEs appeared on Enron's consolidated financial statements. Since most investors focused on the consolidated financial statements, they did not detect Enron's financial problems.

In addition, whenever Enron created a partnership that would buy one of its business segments, it would book a gain on its consolidated financial statements from the sale of the asset to the partnership. Yet losses from a partnership were booked on the

partnership's financial statements. Thus Enron was booking gains from its partnerships on its consolidated financial statements while hiding its losses. On November 8, 2001, Enron announced that it was restating its earnings for the previous five years because three of its partnerships should have been included in the consolidated financial statements. This announcement confirmed the suspicion of some investors that previous earnings figures were exaggerated. Enron's previously reported earnings were reduced by about $600 million over the preceding five years, but the correction came too late for many investors who had purchased Enron stock when the reported earnings (and share price) were much higher.

Financing of Partnerships Enron's partnerships were financed by various creditors, such as banks. The loans were to be paid off either from the cash flow generated by the assets transferred to the partnership or from the ultimate sale of the assets. When the partnerships performed poorly, they could not cover their debt payments. In some cases, Enron backed the debt with its stock. But as its stock price plummeted, this collateral no longer covered the debt, setting in motion the downward spiral that ultimately led to the company's bankruptcy.

Arthur Andersen's Audit

Investors and creditors commonly presume that financial statements used to value a firm are accurate when they have been audited by an independent accounting firm. In reality, however, the auditor and the firm do not always have an arm's-length relationship. The accounting firm that conducts an audit is paid for the audit and recognizes the potential annuity from repeating this audit every year. In addition, accounting firms that provide auditing services also provide consulting services. Enron hired Arthur Andersen both to serve as its auditor and to provide substantial consulting services. In 2000, Arthur Andersen received $25 million in auditing fees from Enron and an additional $27 million in consulting fees.

Although Arthur Andersen was supposed to be completely independent, the auditing firm recognized that if it did not sign off on the audit it would lose this lucrative audit and consulting business. Furthermore, the annual bonus an accounting firm pays to its employees assigned to audit a client may be partially based on their billable hours, which would have been reduced if the firm's relationship with such a large client were severed.

Oversight by Investment Analysts

Even if financial statements are contrived, some investors may presume that investment analysts will detect discrepancies. Yet if analysts simply accept a financial statement without questioning its accuracy, they will fail to serve as a control mechanism. The difficulties analysts faced in interpreting Enron's financial statements are highlighted by a humorous list created by some Enron employees of why the company restructured its operations so frequently. Reason number 7 was "Because the basic business model is to keep the outside investment analysts so confused that they will not be able to figure out that we do not know what we are doing." The humor now escapes some analysts, as well as most creditors and investors.

Another problem is that, like the supposedly independent auditors who hope to generate more business for their accounting firm, investment analysts may encounter a conflict of interest when they attempt to rate firms. As explained in Chapter 10, analysts employed by securities firms have been criticized for assigning high ratings to firms they cover so that their employer may later receive some consulting business from those firms.

As an example of what can happen to analysts who are "too critical," consider the experience of an analyst at BNP Paribus who downgraded Enron in August 2001, a few months before the company's financial problems became public. At the time, BNP Paribus was providing some consulting services for Enron. Shortly after his downgrade of Enron, the analyst was demoted and then fired. To the extent that many other analysts were subjected to a similar conflict of interest, it may explain why they did not downgrade Enron until after its financial problems were publicized. Even if analysts had detected financial problems at Enron, they might have been reluctant to lower their rating.

Market for Corporate Control

As explained earlier, if a firm's managers are running a firm into the ground, a raider has an incentive to purchase that firm at a low price and improve it so that someday it can be sold for a much higher price. Yet this theory presumes that a firm's stock price properly reflects its actual business performance. If the firm's financial statements reflect strong performance, a raider may not realize that the firm is experiencing financial problems. Moreover, even if the raider is able to detect the problems, it will not be willing to pursue a firm whose value is overpriced by the market because of its contrived financial statements.

When Enron's stock price was high, few raiders could have afforded to acquire it. Once the stock price plummeted, Dynegy considered acquiring Enron. Dynegy quickly backed off, however, even though the stock price had fallen 90 percent from its high. Dynegy was concerned about problems it found when trying to reconcile Enron's financial statements.

Monitoring by Creditors

Enron relied heavily on creditors for its financing. Because Enron's consolidated financial statements showed a superficially high level of earnings and a low level of debt, it had easy access to credit from a wide variety of creditors. Enron maintained a low cost of capital by using contrived statements that concealed its risk. Its balance sheet showed debt of $13 billion, but by some accounts the true amount was closer to $20 billion. The hidden debt concealed Enron's actual degree of financial leverage.

Bank of America and J.P. Morgan Chase each had exposure estimated at $500 million. Many other banks had exposure estimated at more than $100 million. They would not have provided so much credit if they had fully understood Enron's financial situation.

Even the debt rating agencies had difficulty understanding Enron's financial situation. On October 16, 2001, Enron announced $2 billion in write-offs that would reduce its earnings. At this time, Standard & Poor's affirmed Enron's rating of BBB+ and stated that Enron's balance sheet should improve in the future. Over the next 45 days, S&P became more aware of Enron's financial condition and lowered its rating to junk status.

Many of Enron's creditors attempted to sue Enron once it became clear that the financial statements were misrepresented. By that time, however, Enron's value was depleted because its price had already fallen to less than $1 per share.

Prevention of Accounting Fraud

In response to the accounting fraud at Enron and other firms, regulators attempted to ensure more accurate financial disclosure by firms. Stock exchanges have instituted new regulations for listed firms. The SEC has been given more resources and power to monitor financial reporting. Perhaps the most important regulatory changes occurred as a

result of the Sarbanes-Oxley Act of 2002. Some of the act's more important provisions were summarized in Chapter 10.

Alleged Accounting Fraud at Lehman Brothers

Despite the Sarbanes-Oxley Act, there remain some cases of accounting irregularities. For example, the financial statements of Lehman Brothers did not fully disclose its level of debt prior to filing for bankruptcy in September 2008. An external bankruptcy report on Lehman in March 2010 concluded that Lehman manipulated its accounting to reduce its degree of reported financial leverage so that it would receive higher credit ratings. During the 2001–2008 period, Lehman employed an accounting procedure called "Repo 105" whereby it engaged in repurchase transactions that would temporarily delete up to $50 billion of its debt just before the time to report its financial position. The report also suggested that Lehman inflated the value of its real estate investments and did not properly adjust its controls to deal with its increased exposure to risk.

Discussion Questions

The following discussion questions focus on the use of financial statements in the valuation of firms. They should generate much discussion, especially when accounting and finance students are present. These questions can be used in several ways. They may serve as an assignment on a day that the professor is unable to attend class. They are also useful for small group exercises. For each issue, one group could be randomly selected and asked to present its solution. Then, other students not in that group may suggest alternative answers if they feel that the solution can be improved. Each issue does not necessarily have a perfect solution, so students should be able to present different points of view.

1. Should an accounting firm be prohibited from providing both auditing and consulting services to the same client? Explain your answer. If an accounting firm is allowed to offer only one service, could there still be conflicts of interest due to referrals (and finder's fees)?

2. Should members of Congress be allowed to set regulations on accounting and financial matters while receiving donations from related lobbying groups?

3. What alternative sources of information about a firm should investors rely on if they cannot rely on financial statements?

4. Should investors have confidence in ratings by analysts who are affiliated with securities firms that provide consulting services to firms? Explain.

5. Does an analyst employed by a securities firm to rate firms face a conflict of interest? If so, can the conflict be resolved?

6. How might a firm's board of directors discourage its managers from attempting to manipulate financial statements to create a temporarily high stock price?

7. How can the compensation of a firm's board of directors be structured so that board members will not be tempted to allow accounting or other managerial decisions that could cause a superficially high price over a short period?

12 Market Microstructure and Strategies

CHAPTER OBJECTIVES

The specific objectives of this chapter are to:

- describe the common types of stock transactions,
- explain how stock transactions are executed,
- describe the regulation of stock transactions, and
- explain how barriers to international stock transactions have been reduced.

Recently, much attention has been given to **market microstructure**, which is the process by which securities such as stocks are traded. For a stock market to function properly, a structure is needed to facilitate the placing of orders, speed the execution of the trades ordered, and provide equal access to information for all investors.

12-1 Stock Market Transactions

Some of the more common stock market transactions desired by investors are market and limit orders, margin trades, and short sales. Each of these types of transactions is discussed next.

12-1a Placing an Order

To place an order to buy or sell a specific stock, an investor contacts a brokerage firm. Brokerage firms serve as financial intermediaries between buyers and sellers of stock in the secondary market. They receive orders from customers and pass the orders on to the exchange through a telecommunications network. The orders are frequently executed a few seconds later. Full-service brokers offer advice to customers on stocks to buy or sell; discount brokers only execute the transactions desired by customers. The larger the transaction amount, the lower the percentage charged by many brokers. Some discount brokers charge a fixed price per trade, such as $10 to $30 for any trade that is less than 500 shares.

Investors can contact their brokers to determine the prevailing price of a stock. The broker may provide a *bid* quote if the investor wants to sell a stock or an *ask* quote if the investor wants to buy a stock. The investor communicates the order to the broker by specifying (1) the name of the stock, (2) whether to buy or sell that stock, (3) the number of shares to be bought or sold, and (4) whether the order is a market or a limit order. A **market order** to buy or sell a stock means to execute the transaction at the best possible price. A **limit order** differs from a market order in that a limit is placed on the price at which a stock can be purchased or sold.

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t performance.

EXAMPLE

Creo stock is currently selling for $55 per share. If an investor places a market order to purchase (or sell) the stock, the transaction will be executed at the prevailing price at the time the transaction takes place. For example, the price may have risen to $55.25 per share or declined to $54.75 by the time the transaction occurs.

Alternatively, the investor could place a limit order to purchase Creo stock only at a price of $54.50 or less. The limit order can be placed either for the day only or for a longer period. Other

investors who wish to sell Creo stock may place limit orders to sell the stock only if it can be sold for $55.25 or more. The advantage of a limit order is that it may enable an investor to obtain the stock at a lower price. The disadvantage is that there is no guarantee the market price will ever reach the limit price established by the investor. ●

Stop-Loss Order A stop-loss order is a particular type of limit order. The investor specifies a selling price that is below the current market price of the stock. When the stock price drops to the specified level, the stop-loss order becomes a market order. If the stock price does not reach the specified minimum, the stop-loss order will not be executed. Investors generally place stop-loss orders either to protect gains or to limit losses.

EXAMPLE

Paul bought 100 shares of Bostner Corporation one year ago at a price of $50 per share. Today, Bostner stock trades for $60 per share. Paul believes that Bostner stock has additional upside potential and does not want to liquidate his position. Nonetheless, he would like to make sure that he realizes at least a 10 percent gain from the stock transaction. He therefore places a stop-loss order with a price of $55. If the stock price drops to $55, the stop-loss order will convert to a market order and Paul will receive the prevailing market price at that time, which will be about $55. If Paul receives exactly $55, his gain from the transaction would be 100 shares × ($55 − $50) = $500. If the price of Bostner stock continues to increase, the stop-loss order will never be executed. ●

Stop-Buy Order A stop-buy order is another type of limit order. In this case, the investor specifies a purchase price that is above the current market price. When the stock price rises to the specified level, the stop-buy order becomes a market order. If the stock price does not reach the specified maximum, the stop-buy order will not be executed.

EXAMPLE

Karen would like to invest in the stock of Quan Company, but only if there is some evidence that stock market participants are demanding that stock. The stock is currently priced at $12. She places a stop-buy order at $14 per share, so if demand for Quan stock is sufficient to push the price to $14, she will purchase the stock. If the price remains below $14, her order will not be executed. ●

Placing an Order Online Many Internet brokers accept orders online, provide real-time quotes, and provide access to information about stocks. Some of the more popular online brokerage firms include TD Ameritrade (www.tdameritrade.com), Charles Schwab (www.schwab.com), and E*Trade (www.etrade.com).

Some online brokerage services offer zero-commission trades. However, investors must maintain a certain amount of funds in their brokerage accounts. Brokerage firms can still profit from these no-commission trades because they can use the funds in the accounts to earn a higher return than they pay the investors as interest.

12-1b Margin Trading

When investors place an order, they may consider purchasing the stock on margin; in that case, they use cash along with funds borrowed from their broker to make the purchase. The Federal Reserve imposes **margin requirements**, which represent the minimum proportion of funds that must be covered with cash. This limits the proportion of funds that may be borrowed from the brokerage firm to make the investment. Margin requirements were first imposed in 1934, following a period of volatile market swings, to discourage excessive speculation and ensure greater stability. Currently, at least 50 percent of an investor's invested funds must be paid in cash. Margin requirements are intended to ensure that investors can cover their position if the value of their investment declines over time. Thus, with margin requirements, a major decline in stock prices is

less likely to cause defaults on loans from brokers and therefore will be less damaging to the financial system.

To purchase stock on margin, investors must establish an account (called a **margin account**) with their broker. Their initial deposit of cash is referred to as the **initial margin**. To meet the requirements imposed by the Federal Reserve, the initial margin must be at least 50 percent of the total investment (although some brokerage firms impose a higher minimum). The brokerage firm can provide financing for the remainder of the stock investment, and the stock serves as collateral. Over time, the market value of the stock will change. Investors are subject to **a maintenance margin**, which is the minimum proportion of equity that an investor must maintain in the account as a proportion of the market value of the stock. The investor's equity position represents what the stock is worth to the investor after paying off the loan from the broker. The New York Stock Exchange (NYSE, which is now part of the company NYSE Euronext following its merger with the European electronic stock exchange, Euronext) and Nasdaq have set the minimum maintenance margin at 25 percent, but some brokerage firms require a higher minimum. If the investor's equity position falls below the maintenance margin, the investor will receive a **margin call** from the brokerage firm and will have to deposit cash to the account in order to boost the equity.

EXAMPLE

Five days ago, Trish purchased 100 shares of Rimax stock at $60 per share through Ohio Brokerage Firm, thus the shares were valued at $6,000. Ohio Brokerage required an initial margin of 50 percent. Trish used $3,000 cash as her equity investment and borrowed the remaining $3,000 from Ohio Brokerage to purchase the stock. Ohio Brokerage requires a maintenance margin of 30 percent. Two days later, the price of Rimax stock declined to $50 per share, so the total value of her shares was $5,000. Since Trish still owed the brokerage firm $3,000, her equity position was equal to $2,000 (computed as the market value of the stock minus the $3,000 that is still owed to the broker). The equity position represented 40 percent of the market value of the stock (computed as $2,000/$5,000), which was still above the maintenance margin of 30 percent. Today, the stock price declined to $40 per share, so the market value of the stock is $4,000. Now Trish's equity position is $1,000 (computed as $4,000 minus $3,000). This position represents 25 percent of the market value of the stock (computed as $1,000/$4,000). Now this position is below the 30 percent maintenance margin required by Ohio Brokerage. Consequently, Trish receives a margin call from Ohio Brokerage, in which she is informed that she must deposit sufficient cash to her account to raise her equity position to at least 30 percent of the market value of the stock. ●

Margin Calls Because of the potential for margin calls, a large volume of margin lending exposes the stock markets to a potential crisis. A major downturn in the market could result in many margin calls, some of which may force investors to sell their stock holdings if they do not have the cash to build their maintenance margin. Such a response results in more sales of stocks, additional downward pressure on stock prices, and additional margin calls. When the stock market plummeted during the credit crisis in 2008, investors who did not have cash available to respond to margin calls sold their stock, putting additional downward pressure on stock prices.

WEB

www.bloomberg.com
Discloses today's return for stocks contained in major stock indexes.

Impact on Returns The return on a stock is affected by the proportion of the investment that is from borrowed funds. Over short-term periods, the return (R) on stocks purchased on margin can be estimated as follows:

$$R = \frac{SP - INV - LOAN + D}{INV}$$

where

$$SP = \text{selling price of stock}$$
$$INV = \text{initial investment by investor, not including borrowed funds}$$
$$LOAN = \text{loan payments on borrowed funds, including principal and interest}$$
$$D = \text{dividend payments}$$

EXAMPLE

Consider a stock priced at \$40 that pays an annual dividend of \$1 per share. An investor purchases the stock on margin, paying \$20 per share and borrowing the remainder from the brokerage firm at 10 percent annual interest. If, after one year, the stock is sold at a price of \$60 per share, the return on the stock is

$$R = \frac{\$60 - \$20 - \$22 + \$1}{\$20}$$
$$= \frac{\$19}{\$20}$$
$$= 95\%$$

In this example, the stock return (including the dividend) would have been 52.5 percent if the investor had used only personal funds rather than borrowing funds. This illustrates how the use of borrowed funds can magnify the returns on an investment.

Any losses are also magnified, however, when borrowed funds are used to invest in stocks. Reconsider the previous example and assume that the stock is sold at a price of \$30 per share (instead of \$60) at the end of the year. If the investor did not use any borrowed funds when purchasing the stock for \$40 per share at the beginning of the year, the return on this investment would be

$$R = \frac{\$30 - \$40 - \$0 + \$1}{\$40}$$
$$= -22.5\%$$

However, if the investor had purchased the stock on margin at the beginning of the year, paying \$20 per share and borrowing the remainder from the brokerage firm at 10 percent annual interest, the return over the year would be

$$R = \frac{\$30 - \$20 - \$22 + \$1}{\$20}$$
$$= -55\%$$

As these examples illustrate, purchasing stock on margin not only increases the potential return from investing in stock but also magnifies the potential losses.

12-1c Short Selling

In a **short sale**, investors place an order to sell a stock that they do not own. They sell a stock short (or "short the stock") when they anticipate that its price will decline. When they sell short, they are essentially borrowing the stock from another investor and will ultimately have to return that stock to the investor from whom they borrowed it. The short-sellers borrow the stock through a brokerage firm, which facilitates the process. The investors who own the stock are not affected when their shares are borrowed and, in fact, are not even aware of it.

If the price of the stock declines by the time the short-sellers purchase it in the market (to return to the investor from whom they borrowed), the short-sellers earn the difference between the price at which they initially sold the stock and the price they paid to obtain the stock. Short-sellers must make payments to the investor from whom the stock was borrowed to cover the dividend payments that the investor would have received if the stock

had not been borrowed. After subtracting any dividend payments made, the short-seller's profit is the difference between the original selling price and the price paid for the stock. The risk of a short sale is that the stock price may increase over time, forcing the short-seller to pay a higher price for the stock than the price at which it was initially sold.

EXAMPLE

On May 5, the market value of Vizer Company stock was $70 per share. Ed conducted an analysis of Vizer stock and concluded that the price should be much lower. He called his broker and placed an order to sell 100 shares of Vizer stock. Since he did not have shares of Vizer to sell, this transaction was a short sale. Vizer stock does not pay dividends, so Ed did not have to cover dividend payments for the stock that his brokerage firm borrowed and sold for him. The sale of the stock resulted in proceeds of $7,000, which he placed in his account at the brokerage firm. During the next two months, the price of Vizer stock declined. On July 18, Ed placed an order through his brokerage firm to purchase 100 shares of Vizer stock and offset his short position. The market value at the time was $60, so he paid $6,000 for the shares. Thus Ed earned $1,000 from his short position. This example ignores transaction costs associated with the short sale.

The risk from taking a short position is that the stock's price may rise instead of decline as expected. If the price had increased after Ed created the short position, his purchase price would have been higher than his selling price. In this case, Ed would have incurred a loss on the short position. ●

Measuring the Short Position of a Stock One measure of the degree of short positions is the ratio of the number of shares that are currently sold short divided by the total number of shares outstanding. For many stocks, this measure is between 0.5 and 2 percent. A higher percentage (such as 3 percent) suggests a large amount of short positions in the market, which implies that a relatively large number of investors expect the stock's price to decline.

Some financial publications disclose the level of short sales for stocks with the short interest ratio, which is the number of shares that are currently sold short divided by the average daily trading volume over a recent period. The higher the ratio, the higher the level of short sales. A short interest ratio of 2 for a particular stock indicates that the number of shares currently sold short is two times the number of shares traded per day, on average. A short interest ratio of 20 or more reflects an unusually high level of short sales, indicating that many investors believe that the stock price is currently overvalued. Some stocks have had short interest ratios exceeding 100 at certain times.

The short interest ratio is also measured for the market to determine the level of short sales for the market overall. A high short interest ratio for the market indicates a high level of short-selling activity in the market. The largest short positions are periodically disclosed in The Wall Street Journal. For each firm with a large short position, the number of shares sold short is disclosed and compared to the corresponding number a month earlier. The change in the overall short position by investors from the previous month is also shown.

Using a Stop-Buy Order to Offset Short Selling Investors who have established a short position commonly use a stop-buy order to limit their losses.

EXAMPLE

A year ago, Mary sold short 200 shares of Patronum Corporation stock for $70 per share. Patronum's stock currently trades for $80 a share. Consequently, Mary currently has an unrealized loss on the short sale, but she believes that Patronum stock will drop below $70 in the near future. She is unwilling to accept a loss of more than $15 per share on the transaction. Consequently, she places a stop-buy order for 200 shares with a specified purchase price of $85 per share. If Patronum stock increases to $85 per share, the stop-buy order becomes a market order and Mary will pay approximately $85 per share. If Patronum stock does not increase to $85 per share, the stop-buy order will never be executed. ●

USING THE WALL STREET JOURNAL

Short Selling

The *Wall Street Journal* provides information on short selling, as shown here. Specifically, it discloses the stocks that have the biggest short positions. For these stocks, it discloses the market valuation, final closing (close) price over the previous trading day, and 52-week range (high and low).

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Biggest short positions

Companies with the biggest number of shares that are shorted

Shares shorted (000s)	% float	Days to cover	Avg daily volume (000s)	Name	Symbol	Close	Market value, in millions ($)	52-WEEK RANGE ($) Low	Close(●)	High
406,288.2	21.3	7	58,658	Sirius XM Radio	SIRI	3.08	20,108.80	1.78		3.25
330,970.7	8.8	8	39,559	Nokia	NOK	3.77	13,326.30	1.63		5.57
221,337.2	n.a.	2	120,554	SPDR S&P 500	SPY	151.91	n.a.	127.14		153.28
211,698.6	21.3	15	14,271	Frontier Communications	FTR	4.12	4,063.67	3.06		5.15
208,197.8	4.2	7	30,642	Intel	INTC	20.93	101,789.00	19.23		29.27
166,002.6	1.5	1	164,707	Bank Of America	BAC	11.30	119,964.00	6.72		12.42
151,176.5	n.a.	6	25,182	iShrs Russell 2000	IWM	90.31	n.a.	72.94		92.68
136,511.7	27.6	2	81,221	Research In Motion	BBRY	13.25	7,055.19	6.22		18.32
116,663.4	n.a.	3	45,430	Select Sector SPDR-Finl	XLF	17.62	n.a.	13.30		17.94
102,096.1	3.7	11	9,183	Johnson & Johnson	JNJ	76.32	213,143.00	61.71		77.02

Two Measures

One way to evaluate the significance of a short position is to measure the number of shares shorted as a percentage of freely trading shares outstanding, or float. A second is to count how many days of trading at the average daily volume it would take to cover or equal the number of shares shorted.

Shorts as a percentage of float

Selected companies where shares shorted represent large percentages of float

Shares shorted (000s)	% float	Days to cover	Avg daily volume (000s)	Name	Symbol	Close	Market value, in millions ($)	52-WEEK RANGE ($) Low	Close(●)	High
5,128.7	97.5	4	1,259	Yelp Inc	YELP	21.86	1,484.38	14.10		31.96
6,486.8	65.6	19	351	Blyth	BTH	14.65	253.82	12.66		46.15
4,189.0	57.4	11	377	USANA Health Sciences	USNA	43.86	633.01	30.51		50.23
8,308.3	56.3	13	659	ITT Educational Svcs	ESI	14.44	339.73	11.69		71.76
10,586.0	52.7	33	319	Vera Bradley	VRA	25.92	1,048.53	18.91		39.48
4,791.2	49.4	18	273	magicJack VocalTec	CALL	11.19	220.24	11.19		28.22
6,391.6	48.1	14	471	HHGregg Inc	HGG	9.31	304.96	5.84		12.87
14,255.6	47.9	9	1,654	Coinstar	CSTR	52.60	1,396.21	40.50		71.82
27,230.3	47.7	47	585	Spectrum Pharmaceuticals	SPPI	11.39	669.86	9.31		17.48
26,533.8	46.0	18	1,468	Questcor Pharma	QCOR	33.00	1,909.01	17.25		58.91

More days to cover

It would take these firms the most days, trading at their average daily volume, to "cover" the shorts, based on minimum average daily volume of 100,000 shares.

Shares shorted (000s)	% float	Days to cover	Avg daily volume (000s)	Name	Symbol	Close	Market value, in millions ($)	52-WEEK RANGE ($) Low	Close(●)	High
11,254.3	44.0	98	115	Amer Greetings A	AM	16.50	545.84	12.53		17.49
10,108.4	2.4	78	130	Lake Shore Gold	LSG	0.56	241.08	0.56		1.71
6,699.8	33.7	61	109	Quad/Graphics	QUAD	21.48	1,002.86	11.83		22.31
19,251.1	21.3	61	315	Ritchie Bros	RBA	22.54	2,414.28	17.81		24.79
9,232.4	12.6	61	151	Stewart Enterprs Cl A	STEI	8.44	714.56	4.92		8.65
10,089.5	33.6	55	182	Miller Energy Resources	MILL	4.00	183.46	3.34		5.59
10,081.7	22.4	55	182	Dex One	DEXO	1.85	92.36	0.66		2.17
18,570.6	35.8	53	352	Sealy Corp	ZZ	2.19	228.97	1.52		2.45
26,478.2	18.2	50	524	Logitech Intl SA	LOGI	6.93	1,191.21	6.59		11.47
4,979.5	n.a.	49	102	Grupo Galicia	GGAL	5.75	1,094.32	4.14		7.40

Sources: FactSet Research Systems; WSJ Market Data Group

Concerns about Short Selling When the credit crisis intensified in 2008, hedge funds and other investors took large short positions on many stocks, especially those of financial institutions. Some critics argued that the large short sales placed additional downward pressure on prices and created paranoia in the stock market. Such fear could make stock prices decline to a greater degree, which would be beneficial to the short-sellers.

EXAMPLE

Just after the failure of the securities firm Lehman Brothers in September 2008, there were rumors that Morgan Stanley (another securities firm) was unable to obtain financing and was about to fail. During the three-day period from September 15 to 17, 2008, the number of Morgan Stanley shares sold short increased from fewer than 5 million shares to about 39 million shares. Many of these short sales may be attributable to this unfounded rumor. During this three-day period, the stock price of Morgan Stanley declined by a third. Arguably, much of the decline in the stock price was due to the massive short selling, which was likely triggered by the rumor. ●

Restrictions on Short Selling Following the massive short sales of Morgan Stanley, the Securities and Exchange Commission (SEC) temporarily protected more than 800 firms from short sales. For the most part, the protected firms were financial institutions and other companies that were exposed to the credit crisis; the SEC was attempting to limit the adverse effect that short sales might have on the stock prices of these firms. The SEC also mandated that traders had to borrow the stock before they could execute a short sale. In some cases, traders were using loopholes in the short sale rules to short stock without borrowing it. The SEC delegated authority to the stock exchanges to identify other firms that should be protected from short sales. Some other countries including Australia, Taiwan, and the Netherlands subsequently instituted their own short-selling regulations.

Many critics argued that these restrictions did not affect the general behavior of the speculators who were engaging in short sales. Some short-sellers were focused on financial institutions that had very little equity and used mostly borrowed funds (financial leverage) to generate large returns on their equity. These short-sellers might argue that the stock prices of the target financial institutions were declining not because of the short selling but rather because regulators failed to ensure that these institutions would have sufficient capital back .g their business. Furthermore, even though short sales were banned, speculators have other methods (e.g., put options) of betting against a stock that might place downward pressure on a stock's price. In October 2008, the ban on short selling was eliminated in the United States because regulators determined that the ban was not stabilizing stock values.

However, in 2008 and 2009, the Securities and Exchange Commission imposed new restrictions on short selling. In October 2008, it required that short-sellers borrow and deliver the shares to the buyers within three days. This rule is important because there were many cases in which brokerage firms were allowing speculators to engage in naked shorting, in which they sell a stock short without first borrowing the stock. Therefore, speculators were able to take larger short positions than would have been possible if they were required to first borrow the shares that they were selling, which resulted in more downward pressure on the stock's prices. This new rule by the SEC was a stronger version of an SEC rule implemented to prevent naked short selling in 2005 (called Regulation SHO), which applied only to specific stocks and was not strictly enforced.

In 2009, the SEC also reinstated the uptick rule (previously eliminated in 2007), which prohibits speculators from taking a short position in stocks that experienced a decline of at least 10 percent for the day, except when the most recent trade resulted in an increase in the stock price. This rule is intended to prevent short selling in response to a stock's continuous downward price momentum.

WEB

www.nyse.com
Information about how trading is conducted on the NYSE.

12-2 How Stock Transactions Are Executed

Transactions on the stock exchanges and the Nasdaq are facilitated by floor brokers and market-makers.

12-2a Floor Brokers

Floor brokers are situated on the floor of a stock exchange. There are hundreds of computer booths along the perimeter of the trading floor, where floor brokers receive orders from brokerage firms. The floor brokers then fulfill and execute those orders.

EXAMPLE

Bryan Adams calls his broker at Zepellin Securities, where he has a brokerage account, and requests the purchase of 1,000 shares of stock in Clapton, Inc., which is traded on the NYSE. The broker at Zepellin communicates this information to the NYSE trading floor. A floor broker (who may be an employee of Zepellin or of some other brokerage firm) receives the order at a booth and goes to a specific trading post where Clapton stock is traded. There are 20 trading posts on the NYSE, and a different set of stocks is traded at each trading post. The floor broker communicates the desire to purchase 1,000 shares of Clapton stock at a specific price. Other floor brokers who have orders to sell Clapton stock either communicate their willingness to accept the bid or signal the "ask" price at which they would be willing to sell the shares. If the floor brokers can agree on a price, a transaction is executed. The transaction is recorded and transmitted to the tape display. Bryan will likely receive a message from the broker indicating that the trade was executed, and he will receive confirmation in the mail within three days. Bryan provides payment to his brokerage firm within three days. ●

12-2b Market-Makers

Market-makers (previously referred to as "specialists" on the NYSE) can serve a broker function by matching up buy and sell orders on the New York Stock Exchange. They gain from accommodating these orders because their bid and ask prices differ. In addition, they also take positions in specific stocks. Market-makers facilitate trading on the NYSE. The role of the market maker has been subject to much controversy. In the past, this role was described as "making a market" in particular stocks. Making a market implies that they stand ready to buy or sell certain stocks even if no other investors are willing to participate. However, it does not mean that such specialists are offsetting all orders by taking the opposite side of every transaction. In fact, many transactions on the NYSE are executed electronically and do not require participation by market-makers.

Transactions in the Nasdaq market are also facilitated by market-makers. They benefit from the difference (spread) between the bid and ask prices and can also take positions in stocks. Some market-makers make a market in a few stocks, while others make a market for many stocks. However, stocks that are more actively traded tend to have a larger number of market-makers.

Market-makers take positions to capitalize on the discrepancy between the prevailing stock price and their own valuation of the stock. When many uninformed investors take buy or sell positions that push a stock's price away from its fundamental value, the stock price is distorted as a result of the "noise" caused by the uninformed investors (called **"noise traders"**). Market-makers may take the opposite position of the uninformed investors and therefore stand to benefit if their expectations are correct.

Brokers choose the route by which an order is executed, which means that they determine whether the order will be filled by a specific market-maker. The spread quoted for a given stock may vary among market-makers. Therefore, the manner by which the trade is routed by the broker can affect the size of the spread. Some market-makers compensate brokers for orders routed to them. So, while a brokerage firm may charge a customer

only $10 for a trade, it may also receive a payment from the market-maker. The market-maker may use a wider spread so that it can offer such a payment to the broker. The point is that some customers may pay only $10 for a buy order to be executed, but the order is executed at a price that is relatively high because the market-maker charged a large spread. Customers should attempt to compare not only the fee brokers charge for a trade, but also the spread quoted by the market-maker selected by the brokerage firm. Investors do not have direct control over the routing process, but they can at least select a broker that uses their preferred type of process. The market is not sufficiently transparent for the routing process to be monitored, but technology may soon allow customers to more easily monitor the routing and the quoted spreads.

12-2c The Spread on Stock Transactions

When investors place an order, they are quoted an ask price, or the price that the broker is asking for that stock. There is also a bid price, or the price at which the broker would purchase the stock. The *spread* is the difference between the ask price and the bid price, and it is commonly measured as a percentage of the ask price.

EXAMPLE Boletto Company stock is quoted by a broker as bid $39.80, ask $40.00. The bid-ask spread is

$$\text{Spread} = \frac{\$40.00 - \$39.80}{\$40.00} = 0.5\%$$

This spread of 0.5 percent implies that if investors purchased the stock and then immediately sold it back before market prices changed, they would incur a cost of 0.5 percent of their investment for the round-trip transaction. ●

The transaction cost due to the spread is separate from the commission charged by the broker. The spread has declined substantially over time in response to more efficient methods of executing orders and increased competition from electronic communications networks. The spread is influenced by the following factors:

$$\text{Spread} = f(\underbrace{\text{Order costs}}_{+}, \underbrace{\text{Inventory costs}}_{+}, \underbrace{\text{Competition}}_{-}, \underbrace{\text{Volume}}_{-}, \underbrace{\text{Risk}}_{+})$$

Order Costs Order costs are the costs of processing orders, including clearing costs and the costs of recording transactions.

Inventory Costs Inventory costs include the cost of maintaining an inventory of a particular stock. There is an opportunity cost because the funds could have been used for some other purpose. If interest rates are relatively high, the opportunity cost of holding an inventory should be relatively high. The higher the inventory costs, the larger the spread that will be established to cover these costs.

Competition For stocks traded on the NYSE or the Nasdaq market, having multiple market-makers promotes competition. When more market-makers are competing to sell a particular stock, the spread is likely to be smaller.

Volume Stocks that are more liquid have less chance of experiencing an abrupt change in price, and stocks that have a large trading volume are more liquid because there is a sufficient number of buyers and sellers at any time. This liquidity makes it easier to sell a stock at any point in time and therefore reduces the risk of a sudden decline in the stock's price.

Risk If the firm represented by a stock has relatively risky operations, its stock price is normally more volatile. Thus a market-maker is subject to more risk when holding inventory in this type of stock and will therefore set a higher spread.

At any particular moment, the spread can vary among stocks. Those who make a market for a particular stock are exposed to the risk that the stock's price could change abruptly in the secondary market and reduce the value of their position in that stock. Thus any factors that affect this type of risk to a stock's market-maker can affect the spread of that stock.

12-2d Electronic Communication Networks

Electronic communication networks (ECNs) are automated systems for disclosing and sometimes executing stock trades. The SEC requires that any quote provided by a market-maker be made available to all market participants. This requirement eliminated the practice of providing more favorable quotes exclusively to proprietary clients. It also resulted in significantly lower spreads between quoted bid and ask prices. Electronic communication networks are appealing to investors because they may allow for more efficient execution of trades.

Some ECNs focus on market orders. They receive orders and route them through various networks searching for the best price. Other ECNs receive limit orders and electronically match them up with other orders that are still not fulfilled. Exhibit 12.1 shows an example of an ECN book at a given moment in time. The book lists the limit buy orders and limit sell orders that are currently not fulfilled. When a new limit order matches an existing order, the transaction is immediately executed and the matching order is removed from the book. If the new limit order cannot immediately be matched to an existing order on the ECN book, it is added to the book.

EXAMPLE Assume that the ECN book shown in Exhibit 12.1 is the book for a particular stock and that a new limit order is placed to sell 300 shares of that stock at a price of no less than $32.68. This order

Exhibit 12.1 Example of an ECN Book at a Given Point in Time

BID OR ASK?	SHARES	PRICE
Bid	500	$32.50
Bid	300	$32.50
Bid	400	$32.56
Bid	1,000	$32.60
Bid	400	$32.64
Bid	1,200	$32.64
Bid	300	$32.68
Ask	400	$32.78
Ask	1,000	$32.80
Ask	300	$32.84
Ask	500	$32.84
Ask	600	$32.88

can be matched by the order to buy 300 shares at a bid price of $32.68. Upon the execution of this trade, the order on the ECN book to buy 300 shares at a bid price of $32.68 is removed. Assume now that a new limit order is placed to purchase 1,400 shares at a price of no more than $32.80. This order is matched up with the order to sell 400 shares at an ask price of $32.78 and the order to sell 1,000 shares at $32.80. Then those orders are removed from the ECN book because they have been fulfilled. ●

In order to improve execution of orders, both the NYSE and Nasdaq have acquired companies that developed ECNs.

Interaction between Direct Access Brokers and ECNs A direct access broker is a trading platform on a computer website that allows investors to trade stocks without the use of a broker. The website itself serves as the broker and interacts with ECNs that can execute the trade. Some of the more popular direct access brokers include a division of Charles Schwab (www.schwab.com), Interactive Brokers (www.interactivebrokers.com), and NobleTrading (www.nobletrading.com). Each of these websites offers a variety of trading platforms, which range from those that are easier to use and offer less information to those that are more complex but provide more information. A monthly fee is usually charged for access to a trading platform; the fee is higher for platforms that offer more information.

The advantage of a direct access broker is that investors interested in trading a particular stock can monitor the supply and prices of shares for sale and the demand for shares at various prices on different ECNs. Thus the market becomes more transparent because investors can visualize the overall supply and demand conditions at various possible prices. Investors can use this information to determine how stock prices may change in the near future.

The use of direct access brokers and ECNs allows computers to match buyers and sellers without relying on the floor brokers or traders on stock exchanges. The trend is toward a "floorless" exchange in which all trades are executed in cyberspace and orders are submitted and confirmed through automated systems. As this technology is implemented across countries, it may ultimately create a single global floorless exchange where investors can easily trade any security in any country by submitting requests from a personal computer.

Dark Pools Dark pools are platforms that use software to connect buyers and sellers of stocks. They represent private stock markets that can be used by institutional investors, and were established since electronic trading became popular. The trades executed in dark pools are not immediately disclosed to the public. Some investors prefer to trade in dark pools so they may more easily accumulate a large amount of shares of a particular stock without the public's knowledge of these trades. Thus an investor may be more able to accumulate all the shares without placing excessive upward pressure on the stock price. Conversely, if the investor executed these trades to accumulate the shares on a public stock exchange, other investors who see the trades might attempt to buy shares of that stock as well, thereby hoping to free ride while the accumulation of shares pushes the stock price up. In this case, the cost to the original investor of accumulating shares might be higher.

Dark pools also attract other types of traders, such as high-frequency traders who use computer algorithms to catch price discrepancies in stocks. Dark pools also offer bid or ask prices that are slightly more favorable for specific institutional traders than what is available in the public stock markets.

Dark pools are increasing in popularity. Some estimates suggest that dark pools might account for 40 percent of all trading of stocks. There are about 30 popular dark pools, including Cross-Finder (operated by Credit Suisse), Liquidnet, Posit, Pipeline, and Sigma

X (operated by Goldman Sachs). Public stock exchanges are losing business as a result of the popularity of dark pools.

One concern about dark pools is that they could reduce the transparency in the stock market because the supply and demand for each given stock is fragmented across several markets. The public stock markets such as the NYSE and Nasdaq have criticized dark pools for reducing transparency, thereby making it more difficult for investors to asses existing demand and supply conditions for a particular stock.

In August 2012, the NYSE initiated a trading program called Retail Liquidity Program. It is similar to a dark pool and allows its members to offer stock price improvements (better prices than the prevailing quotes) for retail customers. The trades are not visible to the public. This program enables the NYSE to be more competitive with the dark pools offered by private stock markets. The Nasdaq market followed with a similar type of program.

12-2e Program Trading

A common form of computerized trading is program trading, which the NYSE defines as the simultaneous buying and selling of a portfolio comprising at least 15 different stocks with a combined value of more than $1 million. This is a narrow definition, and the term is often used in other contexts. More generally, program trading represents a computerized response by institutional investors to either buy or sell a large basket of stocks in response to movements in a particular stock index.

For example, in one form of program trading, numerous stocks that have become "overpriced" (based on a particular model used to value those stocks) are sold. In other words, program trading may reflect the sale of a large basket of stocks because a stock index just reached an unusually high level, indicating a likely decline in stock prices in the near future. Likewise, the program might call for the purchase of a large basket of stocks because a stock index just reached an unusually low level, indicating a likely increase in stock prices in the near future.

Institutional investors establish their own unique program trading strategies. In fact, the trigger that leads one institutional investor to buy a large basket of stocks might lead another to sell a large basket of stocks. The most common program traders are large securities firms. They conduct the trades for their own accounts or for other institutional investors such as pension funds, mutual funds, and insurance companies.

Program trading can be combined with the trading of stock index futures to create **portfolio insurance**. With this strategy, the investor uses futures or options contracts on a stock index. Thus, a decline in the market would result in a gain on the futures or options position, which can offset the reduced market value of the stock portfolio.

Impact of Program Trading on Stock Volatility Program trading is often cited as the cause of a decline or rise in the stock market. The underlying reason for a large amount of program trading, however, is that institutional investors believe that numerous stocks are over- or undervalued. Although program trading can cause share prices to reach a new equilibrium more rapidly, this does not imply that it causes more volatility in the stock market.

Yet on May 6, 2010, stock prices declined abruptly in what is now referred to as the "flash crash." Overall, stocks declined by more than 9 percent on average before reversing and recovering most of those losses on that same day, when more than 19 billion shares were traded. It appears that the flash crash was triggered by computerized trading. Computers were programmed to trade based on specific trigger points, for example, automatically selling shares if a stock index declined by a certain percentage. These automated sales

of shares pushed the stock levels lower, which triggered additional sales by computers. Finally, the stock index levels reached such low levels that the computer programs were triggered to start purchasing shares. Most of this activity occurred in a 30-minute period, the most volatile half hour in the history of the New York Stock Exchange.

12-3 Regulation of Stock Trading

WEB
www.nyse.com
Describes regulations imposed on firms that are listed on the NYSE.

Regulation of stock markets is necessary to ensure that investors are treated fairly. Without regulation, there would be more trading abuses that would discourage many investors from participating in the market. Stock trading is regulated by the individual exchanges and by the SEC. The **Securities Act of 1933** and the **Securities Exchange Act of 1934** were enacted to prevent unfair or unethical trading practices on the security exchanges. As a result of the 1934 act, stock exchanges were empowered and expected to discipline individuals or firms that violate regulations imposed by the exchange. The NYSE states that every transaction made at the exchange is under surveillance. The NYSE uses a computerized system to detect unusual trading of any particular stock that is traded on the exchange. It also employs personnel who investigate any abnormal price or trading volume of a particular stock or unusual trading practices of individuals.

In 2002, the NYSE issued a regulation requiring its listed firms to have a majority of independent directors (not employees of the firm) on their respective boards of directors. This requirement was intended to reduce directors' potential conflicts of interests so that they will concentrate on ensuring that the firm's management is focused on maximizing the stock's value for shareholders.

12-3a Circuit Breakers

Stock exchanges can impose circuit breakers, which are restrictions on trading when stock prices or a stock index reaches a specified threshold level. In general, circuit breakers are intended to temporarily stop the trading of stocks in response to a large decline in stock prices within a single day. They may prevent an initial pronounced stock market decline from causing panic selling in the market. See www.nyse.com/press/circuit_breakers.html for more information on circuit breakers.

12-3b Trading Halts

Stock exchanges may impose trading halts on particular stocks when they believe market participants need more time to receive and absorb material information that could affect the stock's value. They have imposed trading halts on stocks that are associated with mergers, earnings reports, lawsuits, and other news. A trading halt does not prevent a stock from experiencing a loss in response to news. Instead, the purpose of the halt is to ensure that the market has complete information before trading on the news. A trading halt may last for just a few minutes or for several hours or even for several days. Once the stock exchange believes that the market has complete information, it will allow trading to resume.

Trading halts are intended to reduce stock price volatility, as the market price is adjusted by market forces in response to news. Thus the halts can prevent excessive optimism or pessimism about a stock by restricting trading until the news about the firm is completely and widely disseminated to the market. However, some critics believe that the trading halts slow the inevitable adjustment in the stock's price to the news. In general, research has found that stock volatility is relatively high after a halt is lifted but that the volatility subsides over the next few days.

WEB
www.sec.gov
Information about the SEC's role and its regulatory actions.

12-3c Taxes Imposed on Stock Transactions

In 2012, long-term capital gains were taxed at 15 percent. Conversely, short-term capital gains were taxed at the investor's marginal tax rate on ordinary income. Investors subject to high marginal tax brackets on ordinary income commonly attempt to reduce their taxes by holding their stocks for at least one year. The tax rate on dividend income from stocks was increased from 15 percent to 20 percent in 2013 for investors in high tax brackets.

12-3d Securities and Exchange Commission

The Securities Act of 1933 and the Securities Exchange Act of 1934 gave the Securities and Exchange Commission authority to monitor the exchanges and required listed companies to file a registration statement and financial reports with the SEC and the exchanges. In general, the SEC attempts to protect investors by ensuring full disclosure of pertinent information that could affect the values of securities. In particular, some of the more relevant SEC regulations involve the following requirements:

- Firms must publicly disclose all information about themselves that could affect the value of their securities.
- Employees of firms may take positions in their own firm's securities only during periods when they do not know of inside information that will affect the value of the firm once the information becomes public.
- Participants in security markets who facilitate trades must work in a fair and orderly manner.

These regulations are meant to prevent abuses that would give someone an unfair advantage over other investors, reducing the willingness of investors to participate in security markets. The SEC regulations allow all investors to have the same access to public information. Note that the SEC's focus is on sufficient disclosure, not on accuracy; it relies on auditors to certify that the financial statements are accurate.

Structure of the SEC The SEC consists of five commissioners appointed by the President of the United States and confirmed by the Senate. Each commissioner serves a five-year term. The terms are staggered so that, each year, one commissioner's term ends and a new appointee is added. The president also selects one of the five commissioners to chair the commission.

The commissioners meet to assess whether existing regulations are successfully preventing abuses and to revise the regulations as needed. Specific staff members of the SEC may be assigned to develop a proposal for a new regulation to prevent a particular abuse that is occurring. When the commission adopts new regulations, they are distributed to the public for feedback before final approval. Some of the more important proposals are subject to congressional review before final approval.

Key Divisions of the SEC The SEC has several important divisions that attempt to ensure a fair and orderly stock market. The Division of Corporate Finance reviews the registration statement filed when a firm goes public, corporate filings for annual and quarterly reports, and proxy statements that involve voting for board members or other corporate issues. The Division of Market Regulation requires the orderly disclosure of securities trades by various organizations that facilitate the trading of securities. The Division of Enforcement assesses possible violations of the SEC's regulations and can take action against individuals or firms. An investigation can involve the examination of securities data or transactions, and the SEC has subpoena power to obtain information

from specific individuals. When the SEC finds that action is warranted, it may negotiate a settlement with the individuals or firms that are cited for violations, file a case against them in federal court, or even work with law enforcement agencies if the violations involve criminal activity. Such actions are normally intended to prevent the violations from continuing and to discourage other individuals or firms from engaging in illegal securities activities.

SEC Oversight of Corporate Disclosure In October 2000, the SEC issued Regulation Fair Disclosure (FD), which requires firms to disclose relevant information broadly to investors at the same time. One of the most important results of Regulation FD is that a firm may no longer provide analysts with information that they could use before the market was aware of the information. Before Regulation FD, some firms would commonly hint to analysts that their earnings would be higher than initially anticipated. Thus, analysts could advise their preferred clients to purchase the stocks before the price was pushed up by the increased demand for shares by other investors who received the information later.

Since the implementation of Regulation FD, a firm must announce a change in expected earnings to all investors and other interested parties (such as analysts) at the same time. The firm may disclose the information on its website, through a filing of a document (8-K form) with the SEC, and through a news release. The firm may hold a conference call with analysts after the news is announced, but is expected to include all material information in the announcement. Thus the conference call will not give analysts an unfair advantage because the key information has already been disclosed. In addition, most firms have now opened up their conference calls to investors, who can listen in by phone or online through a website. Analysts who always relied on their own analytical abilities to develop their recommendations are continuing business as usual, but analysts who relied on what might be considered inside information from firms have had to modify their methods of forming opinions about the firms they cover.

Some analysts suggest that the regulation has caused firms to disclose less information to them and to the public than before. To ensure that they do not violate Regulation FD, some firms may offer less information so that no parties have an unfair advantage. In particular, smaller firms find it expensive to issue a press release every time they have relevant information. The SEC is reviewing Regulation FD, which may be altered to continue allowing for a flow of information from firms while ensuring that investors receive this information at the same time as analysts.

SEC Oversight of Insider Trading Insiders of a publicly traded company (such as managers or board members) sometimes have inside information about the company that has not yet been publicized. For example, they might know that a company has just invented a patent that will be very valuable. It is illegal for insiders to take positions in the stock based on their inside information, because this would give them an unfair advantage over other investors. It is also illegal for insiders to pass the information on to other investors, or for those investors to take positions in the stock based on that information.

However, there is evidence to suggest that insider trading commonly occurs. Numerous studies have shown that a public company's stock price commonly increases a few weeks before an announcement that the company will be acquired. Bidders often pay a large premium to buy targets, such as 30 percent or more above the prevailing stock price. Thus investors who can obtain the stock before the bid is announced can sometimes earn

a return of 30 percent or more in just a few weeks. In many cases, the stock price of a public company that is targeted for an acquisition experiences an abnormal increase in stock price a few weeks before the acquisition announcement. Such an abnormal increase in price for many targeted companies suggests that some traders have inside information that the company will be acquired. Such insider trading is not restricted to mergers but can occur in advance of many different events that will likely push up the stock price once the information is publicized.

A recent concern is that so-called expert networks leak information to institutional investors. Some managers or executives of publicly traded companies are hired as consultants ("experts") by a hedge fund, whereby they provide the hedge fund with insight about their company. Such a relationship can be completely legitimate if the consultants divulge only information about the company that is already public. Yet some of these consultants are paid more than $100,000 to have phone conversations with the hedge fund. Some regulators have suggested that a hedge fund would only be willing to incur such a high expense for information if it expects to receive inside information from the consultants.

The SEC attempts to prevent investors from trading based on inside information. In October 2009, it (along with other government agencies such as the Justice Department and FBI) charged many defendants connected with the Galleon Fund (a hedge fund) with trading based on inside information. Over the next three years, more than 60 defendants charged with insider trading (or related charges) either pled guilty or were convicted within the court system.

The Galleon case received special attention because the government effectively used wiretap evidence to prosecute insider trading cases. In addition, the government exposed the illegal activities of some insiders that were hired on the side as consultants or experts by hedge funds. Furthermore, the penalties to defendants who were found guilty of insider trading (or related charges) were much more severe than in previous years.

12-4 Trading International Stocks

GLOBAL ASPECTS

Although the international trading of stocks has grown over time, until recently it was limited by three barriers: transaction costs, information costs, and exchange rate risk. Now, however, these barriers have been reduced, as explained next.

12-4a Reduction in Transaction Costs

Most countries have their own stock exchanges where the stocks of local, publicly held companies are traded. In recent years, countries have consolidated their exchanges, increasing efficiency and reducing transaction costs. Some European stock exchanges use an extensive cross-listing system (called Eurolist) so that investors in a given European country can easily purchase stocks of companies based in other European countries.

Many international stock exchanges (such as that used in Switzerland and in Belgium) are now fully computerized, so a trading floor is not needed to execute orders. The details of the orders (including the stock's name, the number of shares to be bought or sold, and the price at which the investor is willing to buy or sell) are fed into a computer system. The system matches buyers and sellers and then sends information confirming the transaction to the financial institution, which informs the investor that the transaction has been completed.

When there are many more buy orders than sell orders for a given stock, the computer will not be able to accommodate all orders. Some buyers will then increase the price they are willing to pay for the stock. Thus the price adjusts in response to the demand

(buy orders) for the stock and the supply (sell orders) of the stock for sale, as recorded by the computer system. Furthermore, the Internet allows investors to use their computers to place orders (through the website of a member of the stock exchange) that will then be executed and confirmed by the computer system back through the Internet to the investor. Thus all parts of the trading process, from the placement of orders to the confirmations that transactions have been executed, will be conducted by computers. The ease of placing such orders regardless of the investor's location and that of the stock exchange will likely increase the volume of international stock transactions in the future.

12-4b Reduction in Information Costs

Information about foreign stocks is now available on the Internet, enabling investors to make more informed decisions without having to purchase information about these stocks. Consequently, investors should be more comfortable assessing foreign stocks. Differences in accounting rules may still limit the degree to which financial data about foreign companies can be interpreted or compared to data about firms in other countries, but there has been some progress in making accounting standards uniform across countries.

12-4c Reduction in Exchange Rate Risk

When investing in a foreign stock denominated in a foreign currency, investors are subject to the possibility that the currency denominating the stock will depreciate against the investor's currency over time. The potential for a major decline in a stock's value simply because of a large degree of depreciation is greater in emerging markets, such as Indonesia or Russia, where the local currency can change by 10 percent or more on a single day.

The ongoing conversion of European countries to a single currency (the euro) should lead to more stock offerings in Europe by U.S.- and European-based firms. Previously, a European firm needed a different currency in every European country in which it conducted business, so the firm would borrow currency from local banks in each country. Now that firm can use the euro to finance its operations across several European countries and may be able to obtain all the financing it needs with one stock offering denominated in euros. The firm can then use a portion of the revenue (in euros) to pay dividends to shareholders who have purchased the stock. In addition, European investors based in countries where the euro serves as the local currency can now invest in euro-denominated stocks in other European countries without being exposed to exchange rate risk.

JMMARY

- Investors engage in various types of stock transactions. They can place an order by phone or online. They can request that a transaction be executed at the prevailing price or only if the stock price reaches a specified level. They can finance a portion of their stock purchase with borrowed funds as a means of increasing the potential return on their investment. They can also sell stocks short.
- Organized stock exchanges such as the NYSE and the Nasdaq market facilitate secondary stock market transactions. Members of the exchanges trade stock for their own accounts or for their clients. The exchanges are served by floor brokers and market-makers, who execute transactions. An over-the-counter exchange also exists, where stock transactions are executed through a telecommunications network. Electronic communication networks (ECNs) facilitate the execution of orders. ECNs can interact with a trading platform on a website that allows investors to trade stocks without the use of a broker.
- Stock markets are regulated to ensure that investors are treated fairly. Stock trading is regulated by the

individual exchanges and by the SEC. Many of the regulations are intended to prevent unfair or unethical trading practices on the security exchanges. The stock exchanges and the SEC attempt to prevent the use of inside information by investors.

- As various stock markets have removed their barriers to foreign investors, they have become more globally integrated. Transaction costs, information costs, and exchange rate risk have all been reduced, making it easier for investors to engage in international stock trading.

Point Counter-Point

Is a Market-Maker Needed?

Point Yes. A market-maker can make a market by serving as the counterparty on a transaction. Without market-makers, stock orders might be heavily weighted toward buys or sells, and price movements would be more volatile.

Counter-Point No. Market-makers do not prevent stock prices from declining. A stock that has more selling pressure than buying pressure will experience a decline in price, as it should. The electronic communication networks can serve as the intermediary between buyer and seller.

Who Is Correct? Use the Internet to learn more about this issue and then formulate your own opinion.

Questions and Applications

1. Orders Explain the difference between a market order and a limit order.

2. Margins Explain how margin requirements can affect the potential return and risk from investing in a stock. What is the maintenance margin?

3. Short Selling Under what conditions might investors consider short selling a specific stock?

4. Short Selling Describe the short-selling process. Explain the short interest ratio.

5. Market-Makers Describe the roles of market-makers.

6. ECNs What are electronic communication networks (ECNs)?

7. SEC Structure and Role Briefly describe the structure and role of the Securities and Exchange Commission (SEC).

8. SEC Enforcement Explain how the Securities and Exchange Commission attempts to prevent violations of SEC regulations.

9. Circuit Breakers Explain how circuit breakers are used to reduce the likelihood of a large stock market crash.

10. Trading Halts Why are trading halts sometimes imposed on particular stocks?

Advanced Questions

11. Regulation FD What are the implications of Regulation FD?

12. Stock Exchange Transaction Costs Explain how foreign stock exchanges such as the Swiss stock exchange have reduced transaction costs.

13. Bid-Ask Spread of Penny Stocks Your friend just told you about a penny stock he purchased, which increased in price from $0.10 to $0.50 per share. You start investigating penny stocks and, after conducting a large amount of research, you find a stock with a quoted price of $0.05. Upon further investigation, you notice that the ask price for the stock is $0.08 and that the bid price is $0.01. Discuss the possible reasons for this wide bid–ask spread.

14. Ban on Short Selling Why did the SEC impose a temporary ban on short sales of specific stocks in 2008? Do you think a ban on short selling is effective?

15. Dark Pools What are dark pools? How can they help investors accumulate shares without other investors knowing about the trades? Why are dark pools criticized by public stock exchanges? Explain the strategy used by public stock exchanges to compete with dark pools.

16. Inside Information Describe inside information as applied to the trading of stocks. Why is it illegal to trade based on inside information? Describe the evidence that suggests some investors use inside information.

17. Expert Networks Explain expert networks. How can expert networks affect the trading of specific stocks?

18. Galleon Insider Trading Case Explain how the Galleon case led to stronger enforcement against insider trading.

Interpreting Financial News

Interpret the following statements made by Wall Street analysts and portfolio managers.

a. "Individual investors who purchase stock on margin might as well go to Vegas."

b. "During a major stock market downturn, market-makers suddenly are not available."

c. "The trading floor may become extinct due to ECNs."

Managing in Financial Markets

Focus on Heavily Shorted Stocks As a portfolio manager, you commonly take short positions in stocks that have a high short interest ratio. What is the advantage of focusing on these types of firms? What is a possible disadvantage?

PROBLEMS

1. Buying on Margin Assume that Vogl stock is priced at $50 per share and pays a dividend of $1 per share. An investor purchases the stock on margin, paying $30 per share and borrowing the remainder from the brokerage firm at 10 percent annualized interest. If, after one year, the stock is sold at a price of $60 per share, what is the return to the investor?

2. Buying on Margin Assume that Duever stock is priced at $80 per share and pays a dividend of $2 per share. An investor purchases the stock on margin, paying $50 per share and borrowing the remainder from the brokerage firm at 12 percent annualized interest. If, after one year, the stock is sold at a price of $90 per share, what is the return to the investor?

3. Buying on Margin Suppose that you buy a stock for $48 by paying $25 and borrowing the remaining $23 from a brokerage firm at 8 percent annualized interest. The stock pays an annual dividend of $0.80 per share, and after one year you are able to sell it for $65. Calculate your return on the stock. Then, calculate the return on the stock if you had used only personal funds to make the purchase. Repeat the problem assuming that only personal funds are used and that you are able to sell the stock at $40 at the end of one year.

4. Buying on Margin How would the return on a stock be affected by a lower initial investment (and higher loan amount)? Explain the relationship between the proportion of funds borrowed and the return.

FLOW OF FUNDS EXERCISE

Shorting Stocks

Recall that if the economy continues to be strong, Carson Company may need to increase its production capacity by about 50 percent over the next few years to satisfy demand. It would need financing to expand and accommodate the increase in production. Recall that the yield curve is currently upward sloping. Also recall that Carson is concerned about a possible slowing of the economy because of potential Fed actions to reduce inflation. It is also considering issuing stock or bonds to raise funds in the next year.

a. In some cases, a stock's price is too high or too low because of asymmetric information (information known by the firm but not by investors). How can Carson attempt to minimize asymmetric information?

b. Carson Company is concerned that if it issues stock, its stock price over time could be adversely affected by certain institutional investors that take large short positions in a stock. When this happens, the stock's price may be undervalued because of the pressure on the price caused by the large short positions.

What can Carson do to counter major short positions taken by institutional investors if it really believes that its stock price should be higher? What is the potential risk involved in this strategy?

INTERNET/EXCEL EXERCISES

1. Go to finance.yahoo.com and insert the ticker symbol of the firm of your choice in the "Get Quotes" section. Review the statistics provided. What is the average daily trading volume (Avg Vol)? What is the market capitalization of the firm? What is its price–earnings ratio (P/E)? What is the amount of dividends paid, if any, and what is the dividend yield (Div & Yield)?

2. For the same firm, click on "Key Statistics." What is the firm's beta? What are its return on assets (ROA) and return on equity (ROE)? What is its short ratio?

ONLINE ARTICLES WITH REAL-WORLD EXAMPLES

Find a recent practical article available online that describes a real-world example regarding a specific financial institution or financial market that reinforces one or more concepts covered in this chapter.

If your class has an online component, your professor may ask you to post your summary of the article there and provide a link to the article so that other students can access it. If your class is live, your professor may ask you to summarize your application of the article in class. Your professor may assign specific students to complete this assignment or may allow any students to do the assignment on a volunteer basis.

For recent online articles and real-world examples related to this chapter, consider using the following search terms (be sure to include the prevailing year as a search term to ensure that the online articles are recent):

1. stock AND transaction cost
2. stock loss AND margin requirement
3. buying on margin AND risk
4. short selling AND gains
5. short selling AND risk
6. stock AND bid/ask spread
7. stock AND market-makers
8. stock AND ECNs
9. stock regulations AND conflict
10. international stock AND transaction cost

PART 4 INTEGRATIVE PROBLEM

Stock Market Analysis

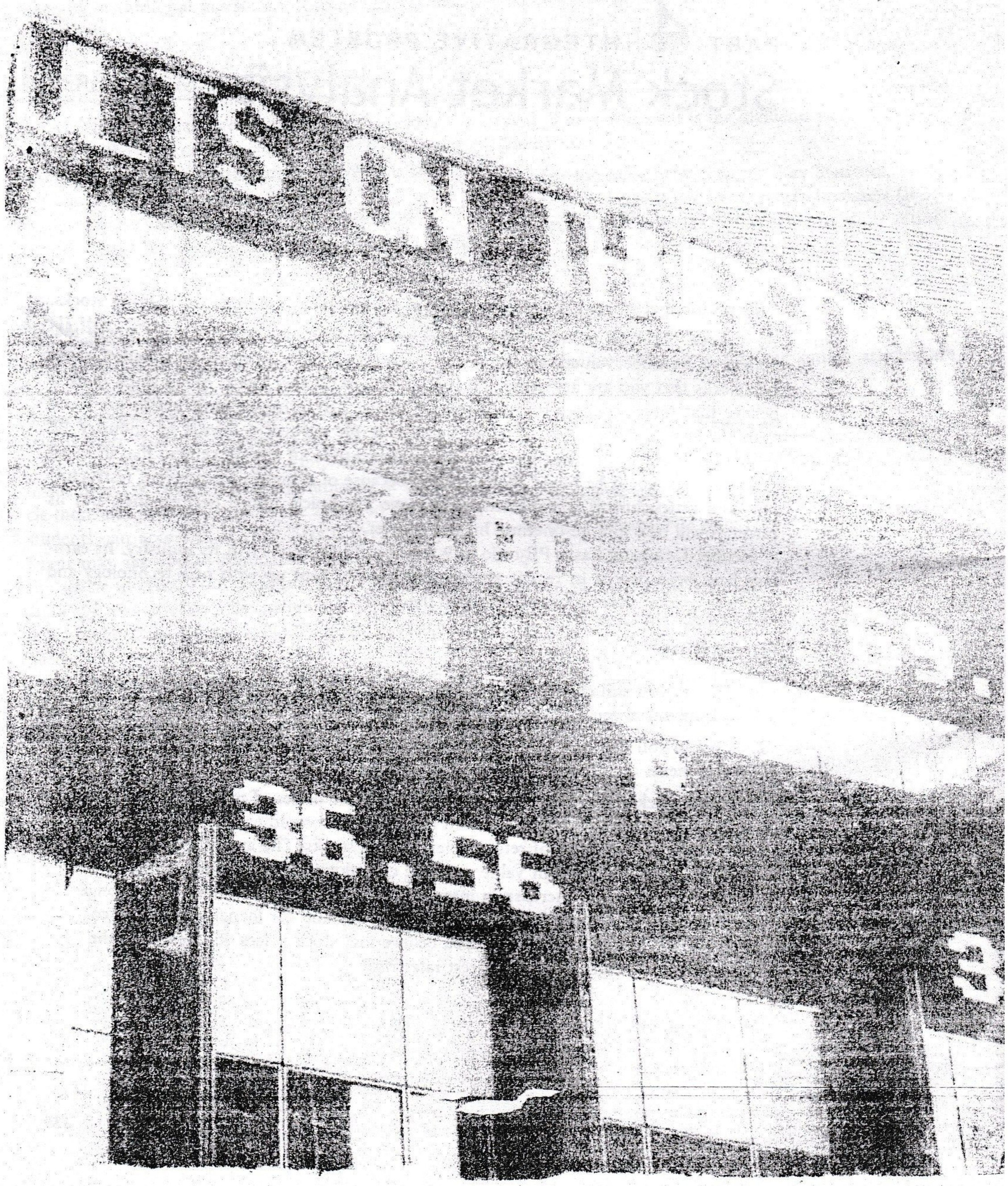
This problem requires an understanding of the different methods for valuing stocks.

As a stock portfolio manager, you spend most of your day searching for stocks that appear to be undervalued. In the last few days, you have received information about two stocks that you are assessing, Olympic stock and Kenner stock. Many stock analysts believe that these stocks are undervalued because their price–earnings ratios are lower than the industry average. Olympic, Inc., has a PE ratio of 6 versus an industry PE ratio of 8. Its stock price declined recently in response to an announcement that its quarterly earnings would be lower than expected because of expenses from recent restructuring. The restructuring is expected to improve Olympic's future performance, but its earnings will take a large onetime hit this quarter.

Kenner Company has a PE ratio of 9 versus a PE ratio of 11 in its industry. Its earnings have been decent in recent years, but it has not kept up with new technology and may lose market share to competitors in the future.

Questions

1. Should you still consider purchasing Olympic stock in light of the analysts' arguments about why it may be undervalued?
2. Should you still consider purchasing Kenner stock in light of the analysts' arguments about why it may be undervalued?
3. Some stock analysts have just predicted that the prices of most stocks will fall because interest rates are expected to rise, which would cause investors to use higher required rates of return when valuing stocks. The analysts used this logic to suggest that the present value of future cash flows would decline if interest rates rise. The expected increase in interest rates is due to expectations of a stronger economy, which will result in an increased demand for loanable funds by corporations and individuals. Do you believe that stock prices will decline if the economy strengthens and interest rates rise?


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