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CHAPTER 10

EQUITY SECURITIES

by Lee M. Dunham, PhD, CFA, and Vijay Singal, PhD, CFA



LEARNING OUTCOMES

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

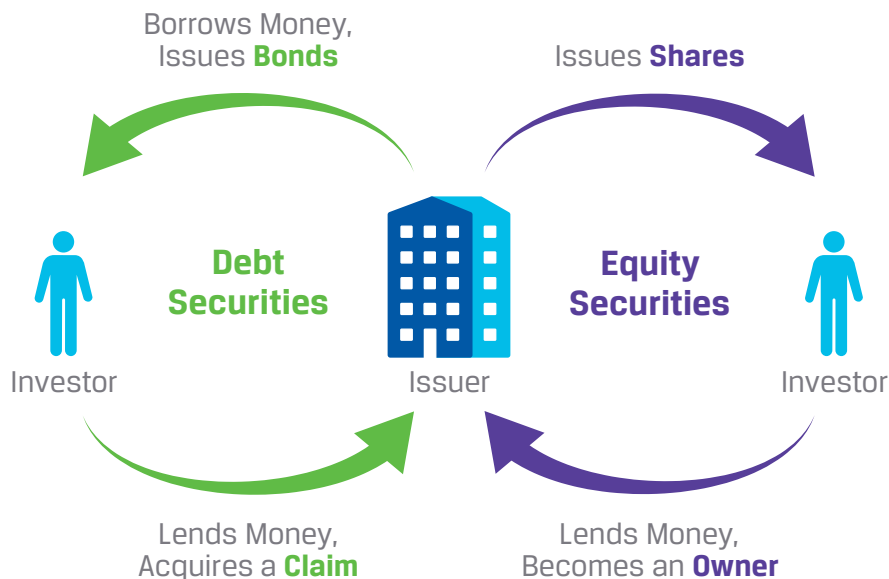
- a** Describe features of equity securities;
- b** Describe types of equity securities;
- c** Compare risk and return of equity and debt securities;
- d** Describe approaches to valuing common shares;
- e** Describe company actions that affect the company's shares outstanding.

INTRODUCTION

1

At some point in their lives, many people participate in the stock market either directly, such as by buying shares, or indirectly, perhaps by contributing to a retirement plan or by investing through a mutual fund.¹ Whether or not they participate in the stock market, most people tend to be aware of shares and stock markets because stock market information, such as stock market indices, is widely reported. As discussed in the Macroeconomics chapter, stock market indices, which represent the performance of a group of shares, are useful indicators of the state of the economy.

In addition to borrowing funds, companies may raise external capital to finance their operations by issuing (selling) equity securities. Issuing shares (also called stock and shares of stock) is a company's main way of raising equity capital and shares are the primary equity securities discussed in this chapter.²



This chapter also describes other basic types of equity securities available in the market and features of these securities. There is some discussion of debt securities in order to make some basic comparisons between debt securities and equity securities.

Given the importance of equity securities in the investment industry, an understanding of what they are and how they are valued is likely to help you in your role. Some approaches that investment professionals use to value common shares are discussed.

¹ Recall from the Investment Industry: A Top-Down View chapter that a mutual fund is a professionally managed investment vehicle that has investments in a variety of securities. Mutual funds are discussed further in the Investment Vehicles chapter.

² Security market indices are discussed further in the Investment Vehicles chapter.

Some company actions that affect a company's number of shares are also described. Examples intended to enhance your understanding are included. Some of these examples include calculations but, as always, you are not responsible for calculations.

2

FEATURES OF EQUITY SECURITIES

Companies may issue different types of equity securities. The types of equity securities, or equity-like securities, that companies typically issue are common stock (or common shares), preferred stock (or preferred shares), convertible bonds, and warrants. Each of these types is discussed more extensively in the next section. Each type of equity security has different features attached to it. These features affect a security's expected return, risk, and value.

There are four features that characterise and vary among equity securities:

- Life
- Par value
- Voting rights
- Cash flow rights

Life. Many equity securities are issued with an infinite life. In other words, they are issued without maturity dates. Some equity securities are issued with a maturity date.

Par Value. Equity securities may or may not be issued with a par value. The **par value** of a share is the stated value, or face value, of the equity security. In some jurisdictions, issuing companies are required to assign a par value when issuing shares.

Voting Rights. Some shares give their holders the right to vote on certain matters. Shareholders do not typically participate in the day-to-day business decisions of large companies. Instead, shareholders with voting rights collectively elect a group of people, called the **board of directors**, whose job it is to monitor the company's business activities on behalf of its shareholders. The board of directors is responsible for appointing the company's senior management (e.g., chief executive officer and chief operating officer), who manage the company's day-to-day business operations. But decisions of high importance, such as the decision to acquire another company, usually require the approval of shareholders with voting rights.

Cash Flow Rights. Cash flow rights are the rights of shareholders to distributions, such as dividends, made by the company. In the event of the company being liquidated, assets are distributed following a priority of claims, or **seniority ranking**. This priority of claims can affect the amount that an investor will receive upon liquidation.

TYPES OF EQUITY SECURITIES

3

Companies may issue different types and classes of equity securities. The two main types of equity securities are common shares (also called common stock or ordinary shares) and preferred shares (also known as preferred stock or preference shares). In addition, companies may issue convertible bonds and warrants. Depositary receipts are not issued by a company, but they give the holder an equity interest in the company.

3.1 Common Stock

Common stock (also known as common shares, ordinary shares, or voting shares) is the main type of equity security issued by companies. A common share represents an ownership interest in a company. Common shares have an infinite life; in other words, they are issued without maturity dates. Common stock may or may not be issued with a par value. When common shares are issued with par values, companies typically set their par value extremely low, such as 1 cent per share in the United States. It is important to note that the par value of a common share may have no connection to its market value, even at the time of issue. For instance, a common share with a par value of 1 cent may be issued to a shareholder for \$50.

Common shares represent the largest proportion of equity securities by market value. Large companies often have many common shareholders, each of whom owns a portion of the company's total shares. Investors may own common stock of public or private companies. Shares of public companies typically trade on stock exchanges that facilitate trading of shares between buyers and sellers. Private companies are typically much smaller than public companies, and their shares do not trade on stock exchanges. The ability to sell common shares of public companies on stock exchanges offers potential shareholders the ability to trade when they want to trade and at a fair price.

Common stock typically provides its owners with **voting rights** and **cash flow rights** in proportion to the size of their ownership stake. Common shareholders usually have the right to vote on certain matters. Companies often pay out a portion of their profits each year to their shareholders as dividends; the rights to such distributions are the shareholders' cash flow rights. Dividends are typically declared by the board of directors and vary according to the company's performance, its reinvestment needs, and the management's view on paying dividends. As owners of the underlying company, common shareholders participate in the performance of the company and have a residual claim on the company's liquidated assets after all liabilities (debts) and other claims with higher seniority have been paid.

Many companies have a single class of common stock and follow the rule of "one share, one vote". But some companies may issue different classes of common stock that provide different cash flow and voting rights. In general, an arrangement in which a company offers two classes of common stock (e.g., Class A and Class B) typically provides one class of shareholders with superior voting and/or cash flow rights.

Example 1 describes the two classes of common stock of Berkshire Hathaway and their cash flow and voting rights.

EXAMPLE 1. DIFFERENT SHARE CLASSES

As of May 2012, Berkshire Hathaway, a US company, has two classes of common stock: Class A (NYSE: BRK.A)³ and Class B (NYSE: BRK.B). In terms of cash flow rights, one Class A share is equivalent to 1,500 Class B shares. But the ratio of the voting rights of Class A shares to the voting rights of Class B shares is not 1,500:1. Voting rights for 1 Class A share are equivalent to the voting rights of 10,000 Class B shares.

	BRK.A	=	BRK.B
Cash flow rights	1	=	1,500
Voting rights	1	=	10,000

The reason for having multiple share classes is usually that the company's original owner wants to maintain control, as measured by voting power, while still offering cash flow rights to attract shareholders. In general, for large public companies in which nearly all shareholders hold small ownership positions, the difference in voting rights may not be important to shareholders.

3.2 Preferred Stock

Companies may also issue **preferred stock** (also known as preferred shares or preference shares). These shares are called preferred because owners of preferred stock will receive dividends before common shareholders. They also have a higher claim on the company's assets compared with common shareholders if the company ceases operations. In other words, preferred shareholders receive preferential treatment in some respects. Generally, preferred shareholders are not entitled to voting rights and have no ownership or residual claim on the company.

Preferred shares are typically issued with an assigned par value. Along with a stated dividend rate, this par value defines the amount of the annual dividend promised to preferred shareholders. Preferred share terms may provide the issuing company with the right to buy back the preferred stock from shareholders at a pre-specified price, referred to as the redemption price. In general, the pre-specified redemption price equals the par value for a preferred share. The par value of a preferred share also typically represents the amount the shareholder would be entitled to receive in a liquidation, as long as there are sufficient assets to cover the claim.

Preferred shareholders usually receive a fixed dividend, although it is not a legal obligation of the company. The preferred dividend will not increase if the company does well. If the company is performing poorly, the board of directors is often reluctant to reduce preferred dividends.

³ These are ticker symbols, which are used to identify a particular stock, share class, or issue on a particular stock exchange.

Preferred shares differ with respect to the policy on missed dividends, depending on whether the preferred stock is cumulative or non-cumulative. Cumulative preferred stock requires that the company pay in full any missed dividends (dividends promised, but not paid) before paying dividends to common shareholders. In comparison, non-cumulative preferred stock does not require that missed dividends be paid before dividends are paid to common shareholders. In a liquidation, preferred shareholder may have a claim for any unpaid dividends before distributions are made to common shareholders.

Example 2 provides a variety of the features that can characterise a preferred share issue. It shows the features of two different issues of Canadian preferred stock.

EXAMPLE 2. PREFERRED STOCK

Issue	Cumulative/ Non-Cumulative	Par Value (Canadian dollars)	Annual Dividend Rate	Redeemable
Royal Bank of Canada, Series B	Non-cumulative	C\$25.00	6.25%, reset after five years and every five years there- after to 3.50% over the five- year Government of Canada bond yield	Yes, redeemable on or after 24 February 2014 at par
Canadian Utilities Limited, Series AA	Cumulative	C\$25.00	4.90%	Yes, redeemable after 1 September 2017, redemption price begins at C\$26.00 and declines over time to C\$25.00

Some companies have more than a single issue of preferred stock. Multiple preferred stock issues (or rounds) are referred to by series. Each preferred stock issue by a company usually carries its own dividend, based on stated par value and dividend rate, and may differ with respect to other features as well.

3.3 Convertible Bonds

To raise capital, companies may issue convertible bonds. A **convertible bond** is a bond issued by a company that offers the bondholder the right to convert the bond into a pre-specified number of common shares. Although a convertible bond is actually a debt security prior to conversion, the fact that it can be converted to common shares makes its value somewhat dependant on the price of common shares. Thus, convertible bonds are known as hybrid securities. Hybrid securities have features of and relationships with both equity and debt securities.

The number of common shares that the bondholder will receive from converting the bond is known as the conversion ratio. The conversion ratio may be constant for the security's life, or it may change over time. The conversion value (or parity value) of a convertible bond is the value of the bond if it is converted to common shares. The conversion value is equal to the conversion ratio times the share price. At conversion, the bonds are retired (cease to exist) and common shares are issued.

Because the conversion feature is a benefit to the bondholder, a convertible bond typically offers the bondholder a lower fixed annual coupon rate than that of a comparable bond without a conversion feature (a straight bond). Convertible bonds have a maturity date. If the bonds are not converted to common stock prior to maturity, they will be paid off like any other bond and retired at the maturity date.

When a convertible bond is issued, the conversion ratio is set so that its value as a straight bond (i.e., the value of the bond if it were not convertible) is higher than its conversion value. If the share price of the company significantly increases, the conversion value of the bond will rise and may become greater than the value of the convertible bond as a straight bond. If this happens, converting the bond becomes attractive. In general, if the conversion value is low relative to the straight bond value, the convertible bond will trade at a price close to its straight bond value. But if the conversion value is greater than the straight bond value, the convertible bond will trade at a value closer to its conversion value.

Because a convertible bond should not trade below its conversion value, bondholders may choose not to convert into common shares even if the conversion value is higher than the par (principal) value of the bond. Often, a convertible bond includes a redemption (buyback) option. The redemption (buyback) option gives the issuing company the right to buy back (redeem) the convertible bonds, usually at a pre-specified redemption price and only after a certain amount of time. Convertible bond issues typically include redemption options so that the issuing company can force conversion into common shares.

Example 3 describes a convertible bond issue of Navistar International Corp. The Navistar bond issue illustrates the typical features of a convertible bond.

EXAMPLE 3. CONVERTIBLE BONDS

On 22 October 2009, Navistar, a US company, issued convertible bonds. The bond issue pays interest semiannually (twice a year) at a rate of 3.0% per year and has a maturity date of 15 October 2014. Owners of this convertible bond issue may convert each \$1,000 bond into 19.891 common shares. The owners may unconditionally convert at any time on or after 15 April 2014 up to the maturity date and may convert the bond prior to that date under certain conditions. No redemption right is included as part of the bond issue. On 9 October 2012, the company's common shares closed at \$22.26 and, therefore, each \$1,000 bond's conversion value was \$442.77 ($= \22.26×19.891). The bond price in the market was \$912. In this case, the bond is trading at close to its straight bond value, rather than at its conversion value.

Similar to convertible bonds, some preferred shares include a convertible feature. The convertible feature provides the shareholder with the option to convert the preferred share into a specified number of common shares. With this option, a preferred shareholder may be able to participate in the performance of the company. That is, if the company is doing well, it may be to a preferred shareholder's advantage to convert the preferred share into the specified number of common shares. Also, similar to convertible bonds, convertible preferred shares typically include a redemption option.

3.4 Warrants

A **warrant** is an equity-like security that entitles the holder to buy a pre-specified amount of common stock of the issuing company at a pre-specified per share price (called the exercise price or strike price) prior to a pre-specified expiration date. A company may issue warrants to investors to raise capital or to employees as a form of compensation. The holders of warrants may choose to exercise the rights prior to the expiration date. A warrant holder will exercise the right only when the exercise price is equal to or lower than the price of a common share. Otherwise, it would be cheaper to buy the stock in the market. When a warrant holder exercises the right, the company issues the pre-specified number of new shares and sells them to the warrant holder at the exercise price.

Warrants typically have expiration dates several years into the future. In some cases, companies may attach warrants to a bond issue or a preferred stock issue in an effort to make the bond or preferred stock more attractive. When issued in this manner, warrants are known as sweeteners because the inclusion of the warrants typically allows the issuer to offer a lower coupon rate (interest rate) on a bond issue or a lower annual fixed dividend on a preferred stock issue.

Companies may also issue warrants to employees as a form of compensation, in which case they are referred to as employee stock options. When warrants are used as employee compensation, the goal is to align the objectives of the employees with those of the shareholders. Many companies compensate their senior management with salaries and some form of equity-based compensation, which may include employee stock options.

Example 4 describes the use of warrants to make a deal more attractive to an investor.

EXAMPLE 4. WARRANTS

On 25 August 2011, Bank of America, a US company, announced it had reached an agreement with Berkshire Hathaway, another US company; Berkshire Hathaway would invest \$5 billion in Bank of America in exchange for preferred stock and warrants. Berkshire Hathaway received \$5 billion in preferred stock, offering a fixed dividend of 6% per year, redeemable by Bank of America at any time at a 5% premium to the \$5 billion par value. In addition to the preferred stock, Berkshire Hathaway received warrants to purchase 700 million shares of Bank of America common stock at an exercise price of \$7.142857 per share. The warrants can be exercised at any time during the 10 years following the closing date of the transaction. In this example, the warrants served as a sweetener to the preferred stock issue. It is likely that the annual dividend of 6% on the preferred stock would have been higher in the absence of the warrants.

3.5 Depositary Receipts

A **depositary receipt** is a security representing an economic interest in a foreign company that trades like a common share on a domestic stock exchange. For investors buying shares of foreign companies, the transaction costs associated with purchasing depositary receipts are significantly lower than the costs of directly purchasing the stock on a foreign country's stock exchange.

Depositary receipts are not issued by the company and do not raise capital for the company, but rather, they are issued by financial institutions. Depositary receipts facilitate trading of a company's stock in countries other than the country where the company is located. Depositary receipts are often referred to as global depositary receipts (GDRs), but may be called by different names in different countries. In the United States, GDRs are known as American Depositary Receipts (ADRs) or American depositary shares. Depositary receipts are generally similar globally but may vary slightly because of different laws.

Now we will consider how depositary receipts are created and work, using the example of Sony and Mexican investors. Mexican investors may want to invest in the stock of Sony, a Japanese company, but Sony's stock is not listed on the Mexican Stock Exchange. Buying Sony stock on the Tokyo Stock Exchange is expensive and inconvenient for Mexican investors. To make this process easier, a financial institution in Mexico, such as a bank, can buy Sony's stock on the Tokyo Stock Exchange and make it available to Mexican investors. Rather than making the shares directly available for trading on the Mexican Stock Exchange, the bank holds the shares in custody and issues GDRs against the shares held. The Sony GDRs issued by the custodian bank are listed on the Mexican Stock Exchange for trading. In essence, the Sony GDRs trade like the stock of a domestic company on the Mexican Stock Exchange in the local currency (Mexican peso).

Depositary receipts, like the shares they are based on, have no maturity date (i.e., they have an infinite life). Depositary receipts typically do not offer their owners any voting rights even though they essentially represent common stock ownership; the custodian financial institution usually retains the voting rights associated with the stock.

Example 5 describes the depositary receipt of Vodafone Group in the United States.

EXAMPLE 5. DEPOSITARY RECEIPTS

The ordinary shares (common stock) of Vodafone, a UK company, trade on the London Stock Exchange. The company's stock trades on the NASDAQ exchange in the United States in the form of an American Depositary Receipt (ADR). The Bank of New York Mellon (BNY Mellon) is the financial institution that holds the ordinary shares in custody and issues ADRs of Vodafone against the ordinary shares of Vodafone held in custody. The ADRs of Vodafone are available for US and international investors. The ADRs are quoted in US dollars, and each one is equivalent to 10 ordinary shares. Unusually, BNY Mellon does not retain the voting rights associated with the shares, and ADR shareholders can instruct BNY Mellon on the exercise of voting rights relative to the number of ordinary shares represented by their holding of ADRs.

RISK AND RETURN OF EQUITY AND DEBT SECURITIES

4

There are significant risk and return differences between debt and equity securities because of differences in cash flow, voting rights, and priority of claims.

Exhibit 1 shows the three main types of securities and their typical cash flow and voting rights.

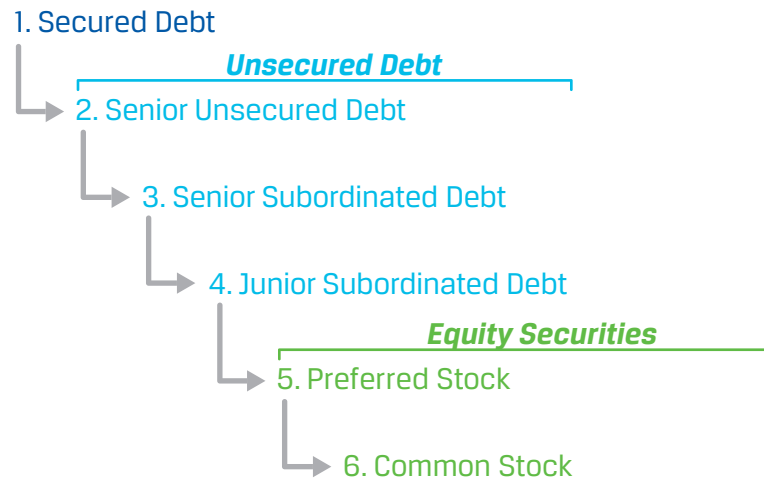
Exhibit 1 Cash Flow and Voting Rights by Security Type

Type of Security	Cash Flow Rights	Voting Rights
Common stock	Right to dividends if declared by the board of directors	Proportional to ownership
Preferred stock	Right to promised dividends if declared by the board of directors; board does not have a legal obligation to declare the dividends	None
Debt security	Legal right to promised cash flows	None

The return potential for both debt securities and preferred stock is limited because the cash flows (interest, dividends, and repayment of par value) do not increase if the company performs well. The return potential to common shareholders is higher because the share price rises if the company performs well. Relative to holders of debt securities and preferred stock, common shareholders expect a higher return but must accept greater risk. The voting rights of common shareholders may give them some influence over the company's business decisions and thereby somewhat reduce risk.

Debt securities are the least risky because the cash flows are contractually obligated. Preferred stock is less risky than common stock because it ranks higher than common stock with respect to the payment of dividends. The risk of preferred stock is also reduced to some degree by the expectation of a dividend each year. Although the dividend is not a contractual obligation, companies are reluctant to omit dividends on preferred shares. Common stock is considered the riskiest of the three because it ranks last with respect to the payment of dividends and distribution of net assets if the company is liquidated.

In the event of the company being liquidated, assets are distributed following a priority of claims, or **seniority ranking**. This priority of claims can affect the amount that an investor will receive upon liquidation. Exhibit 2 illustrates the priority of claims.

Exhibit 2 Priority of Claims


Debt capital is borrowed money and represents a contractual liability of the company. Debt investors thus have a higher claim on the company's assets than equity investors.⁴ After the claims of debt investors have been satisfied, preferred stock investors are next in line to receive what they are due. Common shareholders are last in line and known as the **residual claimants** in a company. Common shareholders share proportionately in the remaining assets after all other claims have been satisfied. If funds are insufficient to pay off all claims, equity investors will likely receive only a fraction of their investment back or may even lose their entire investment. Accordingly, investing in equity securities is riskier than investing in corporate debt securities.

Equity investors are at least protected by **limited liability**, which means that higher claimants, particularly debt investors, cannot recover money from other assets belonging to the shareholders if the company's assets are insufficient to fully cover their claims.⁵ Because a company is a legal entity separate from its shareholders, it is responsible, at the corporate level, for all company liabilities. By legally separating the shareholders from the company, an individual shareholder's liability is limited to the amount he or she invested. So, shareholders cannot lose more money than they have invested in the company.

It is important to note that limited liability of shareholders can actually increase the losses of debt investors as the company approaches bankruptcy. As a company moves closer to a bankruptcy filing, shareholders do not have any incentive to maintain or upgrade the assets of the company because doing so might require additional capital, which they might be unwilling to invest. The consequent deterioration in asset quality hurts debt investors because the liquidation value of the company decreases. Debt investors are thus motivated to closely monitor the company's actions to ensure that the company operates in accordance with the debt contract.

⁴ The priority of claims of debtholders is discussed in the Debt Securities chapter.

⁵ An exception is cases of fraud and wilful negligence; in such situations, management and the board of directors may be held personally liable.

Given the fact that equity securities are riskier than debt securities, shareholders expect to earn higher returns on equity securities over the long term. Because equity is riskier than debt, risk-averse investors may prefer debt securities to equity securities. However, although debt is safer than equity for a given entity, debt securities are not risk-free; they are subject to many risk factors, which are discussed in the Debt Securities chapter.

Exhibit 3 shows annualised historical return and risk data on various equity and debt indices for the 1980–2010 period. Recall from the Quantitative Concepts chapter that the standard deviation of returns is often used as a measure of risk. The shaded rows in Exhibit 3 present return and risk data (based on standard deviation of returns) for six equity indices. The non-shaded rows present return and risk data for three bond indices.

Exhibit 3 Historical Annual Returns on Equity and Debt Securities, 1980–2010

Index	Annual Return	Standard Deviation of Returns	
S&P 500	10.80%	15.60%	} Equity
Russell 2000	10.35	19.94	
MSCI Europe	10.81	17.80	
MSCI Pacific Basin	7.89	21.13	
FTSE All World	7.26	15.98	
MSCI EAFE	7.09	17.71	
Lehman Brothers Corporate Bond	8.82	7.23	} Debt
Barclays Capital Government Bond	8.15	5.51	
Merrill Lynch World Government Bond	7.88	7.04	

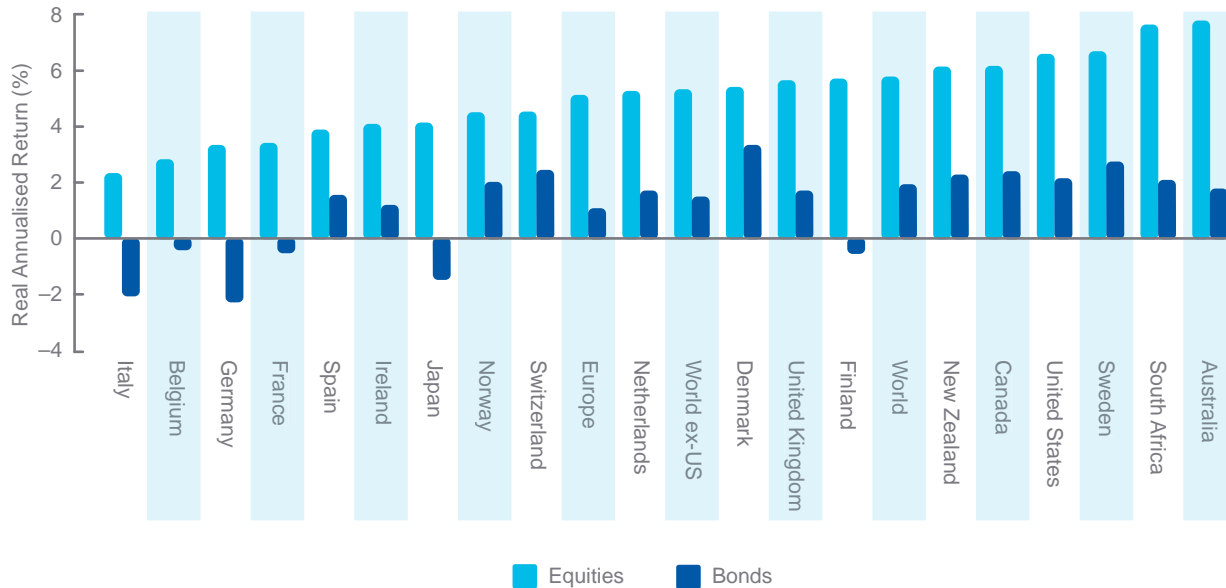
Source: Frank K. Reilly and Keith C. Brown, *Investment Analysis and Portfolio Management*, 10th ed. (Mason, OH: South-Western Cengage Learning, 2012).

The data are generally consistent with the expectation that riskier investments should generate higher returns over the long term. For the United States and Europe, annual equity returns (first three shaded indices) were higher than annual bond returns (non-shaded indices). Annual equity returns exhibited higher risk than annual debt returns. Note that for the three indices that include emerging economies (the last three shaded indices), however, annual equity returns were marginally lower than annual bond returns but more risky.

Exhibit 4 presents annual real returns (returns adjusted for inflation) on equity securities and government long-term bonds for 19 countries, Europe, the world, and the world excluding the United States (ex-US) for 1900–2010. Equity returns over the period are higher than government bond returns within every country and region. The real return (return adjusted for inflation) of equity securities ranged from approximately 2% to 7%. The real returns of government bonds ranged from approximately –2% (that is, they failed to cover inflation) to +3%. On average, government bonds have

beaten inflation, earning a modest positive real return per year. But in some countries, the return to bondholders was not sufficient to cover inflation, so bondholders lost purchasing power.

Exhibit 4 Real Annualised Returns on Equities vs. Bonds Internationally, 1900–2010



Source: E. Dimson, P. Marsh, and M. Staunton, *Credit Suisse Global Investment Returns Sourcebook 2011* (Zurich: Credit Suisse Research Institute, 2011).

5

VALUATION OF COMMON SHARES

Valuing common shares is a complex process because of their infinite life and the difficulty of estimating future company performance. There are three basic approaches to valuing common shares:

- Discounted cash flow valuation
- Relative valuation
- Asset-based valuation

Analysts frequently use more than one approach to estimate the value of a common share. Once an estimate of value has been determined, it can be compared with the current price of the share, assuming that the share is publicly traded, to determine whether the share is overvalued, undervalued, or fairly valued.

5.1 Discounted Cash Flow Valuation

The discounted cash flow (DCF) valuation approach takes into account the time value of money. This approach estimates the value of a security as the present value of all future cash flows that the investor expects to receive from the security. This valuation approach applied to common shares relies on an analysis of the characteristics of the company issuing the shares, such as the company's ability to generate earnings, the expected growth rate of earnings, and the level of risk associated with the company's business environment.

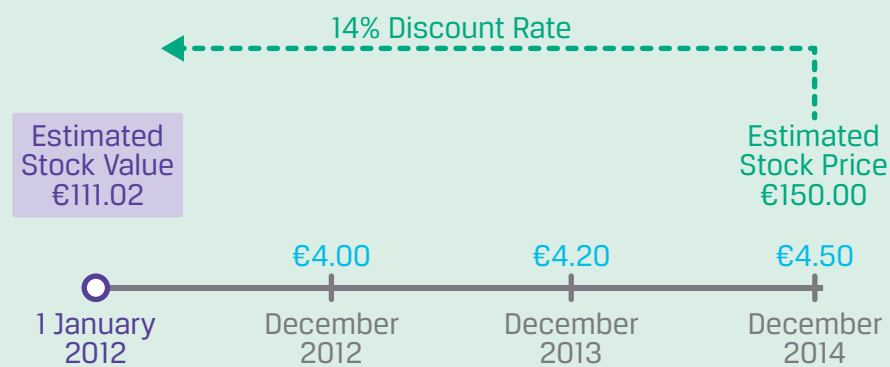
Common shareholders expect to receive two types of cash flows from investing in equity securities: dividends and the proceeds from selling their shares. Example 6 illustrates the application of the DCF approach, using estimates of dividends and selling price, for a common share of Volkswagen.

EXAMPLE 6. DISCOUNTED CASH FLOW APPROACH

On 1 January 2012, an investor expects Volkswagen, a German company, to generate dividends of €4.00 per share at the end of 2012, €4.20 per share at the end of 2013, and €4.50 per share at the end of 2014. Furthermore, the investor estimates that the stock price of Volkswagen will trade at €150.00 per share at the end of 2014. Note that, under the DCF valuation approach, the expected price of Volkswagen stock at the end of 2014 (€150.00 per share) represents the present value of cash flows to investors expected to be generated by the company beyond 2014. The investor considers all risks and concludes that a discount rate of 14% is appropriate. In other words, the investor wants to earn at least an annual rate of return of 14% by investing in Volkswagen.

The estimated value of a Volkswagen share using the DCF valuation approach is equal to the present value of the cash flows the investor expects to receive from the equity investment. The investor computes the present value of the expected cash flows as follows:

$$\text{Value} = \frac{4.00}{(1 + 0.14)^1} + \frac{4.20}{(1 + 0.14)^2} + \frac{4.50}{(1 + 0.14)^3} + \frac{150.00}{(1 + 0.14)^3} = €111.02$$



So, the investor's estimated value of Volkswagen on a per share basis is €111.02. If shares of Volkswagen are priced at less than €111.02 on 1 January 2012, the investor may conclude that the stock is undervalued and decide to buy it. Alternatively, if the stock is priced at more than €111.02, the investor may conclude that the stock is overvalued and decide not to buy.

The DCF valuation approach can also be used to value preferred shares. Valuing preferred shares is typically easier than for common shares because the expected dividends are specified and do not change over time. The value of a preferred share, with a fixed dividend and no maturity date, is the discounted value of the future dividends, which is equal to the dividend divided by the discount rate.

5.2 Relative Valuation

The relative valuation approach estimates the value of a common share as the multiple of some measure, such as earnings per share (EPS) or revenue per share. The multiple is determined based on price and the relevant measure for publicly traded, comparable equity securities. The key assumption of the relative valuation approach is that common shares of companies with similar risk and return characteristics should have similar values. Relative valuation relies on the use of price multiples of comparable, publicly traded companies or an industry average.

One multiple commonly used in relative valuation is the **price-to-earnings ratio** (P/E), which is the ratio of a company's stock price to its EPS. For instance, a publicly traded company that generates annual earnings per share of \$1.00 and is trading at \$12 per share has a P/E (or price-to-earnings multiple) of 12. Example 7 illustrates two applications of the relative valuation approach.

EXAMPLE 7. RELATIVE VALUATION

- 1 An investor is estimating the value of an airline's common stock on a per share basis. The airline in question generates annual EPS of €2.00. The investor finds that the average price-to-earnings multiple or P/E for the industry is 9. Using relative valuation, the investor estimates that the value of the airline's stock, on a per share basis, is €18.00 ($= €2.00 \times 9$).
- 2 An investor is estimating the value of the common stock of Ford Motor Company, a US automobile manufacturing company, on a per share basis. Analysts estimate that Ford will generate EPS of \$1.60 next year. The investor gathers information, shown in the second and third columns of the following table, on three competing automobile makers: General Motors, Toyota, and Honda. The investor calculates the P/E (shown in the fourth column) for each of the three companies. The investor then calculates the average P/E for the three companies as 9 [$= (8 + 10 + 9)/3$].

Company	Current Stock Price	Next Year's Estimated EPS	P/E
General Motors	\$40.00	\$5.00	$\$40.00/\$5.00 = 8$
Toyota	\$85.00	\$8.50	$\$85.00/\$8.50 = 10$
Honda	\$36.00	\$4.00	$\$36.00/\$4.00 = 9$
Average			$(8 + 10 + 9)/3 = 9$

The investor estimates the value of Ford common stock, on a per share basis, is \$14.40 ($= \1.60×9). It is important to note that even though the P/E is 9 in both examples, this does not mean that 9 is a typical P/E.

One issue with the use of the relative valuation approach is that price multiples change with investor sentiment. Companies trade at higher multiples and as a result of higher market prices when investors are optimistic and at lower multiples and prices when investors are pessimistic.

5.3 Asset-Based Valuation

The asset-based valuation approach estimates the value of common stock by calculating the difference between the value of a company's total assets and its outstanding liabilities. In other words, the asset-based valuation approach estimates the value of common equity by calculating a company's net asset value. The asset-based valuation approach implicitly assumes that the company is liquidated, sells all its assets, and then pays off all its liabilities. The residual value after paying off all liabilities is the value to the shareholders.

The difference between total assets and total liabilities on a company's balance sheet represents shareholders' equity, or the book value of equity. But the values of some assets on the balance sheet are based on historical cost (the cost when they were purchased), and the actual market value of these assets may be very different. For instance, the value of land on a company's balance sheet, typically carried at historical cost, may be quite different from its current market value. As a result, estimating the value of the equity of a company using asset values taken directly from the balance sheet may provide a misleading estimate. To improve the accuracy of the value estimate, current market values can be estimated instead.

Also, some assets may not be included on the balance sheet because of financial reporting rules. For instance, some internally developed intangible assets, such as a brand or reputation, are not listed in the financial reports. It is important that analysts using asset-based valuation estimate reasonable values for *all* of a company's assets, which can be very challenging to do.

5.4 Implicit Assumptions of Valuation Approaches

The DCF valuation approach relies solely on estimates of a company's future cash flows and implicitly assumes that the company will continue to operate forever. In contrast, the asset-based valuation approach implicitly assumes that the company will stop operating and essentially provides a liquidation value.

The relative valuation approach does not estimate future cash flows but instead uses price multiples of other comparable, publicly traded companies to arrive at an estimate of equity value. These price multiples rely on performance measures, such as EPS or revenue per share, to estimate value. The relative valuation approach implicitly assumes that common shares of companies with similar risk and return characteristics should have similar price multiples.

6

COMPANY ACTIONS THAT AFFECT EQUITY OUTSTANDING

Companies undertake major changes as they grow, evolve, mature, or merge with another company. Some of these changes result in changes to the number of common shares outstanding—the number of common shares currently held by shareholders. Various corporate actions can affect equity outstanding:

- Selling shares to the public for the first time (when a private company becomes a public company), referred to as an **initial public offering** (IPO)
- Selling shares to the public in an offering subsequent to the initial public offering, referred to as a **seasoned equity offering** or **secondary equity offering**
- Buying back existing shares from shareholders, referred to as a **share repurchase** or **share buyback**
- Issuing a **stock dividend** or conducting a **stock split**
- Issuing new stock after the exercise of warrants
- Issuing new stock to finance an acquisition
- Creating a new company from a subsidiary in a process referred to as a spinoff

Each of these actions and their effects are discussed in the following sections.

6.1 Initial Public Offering

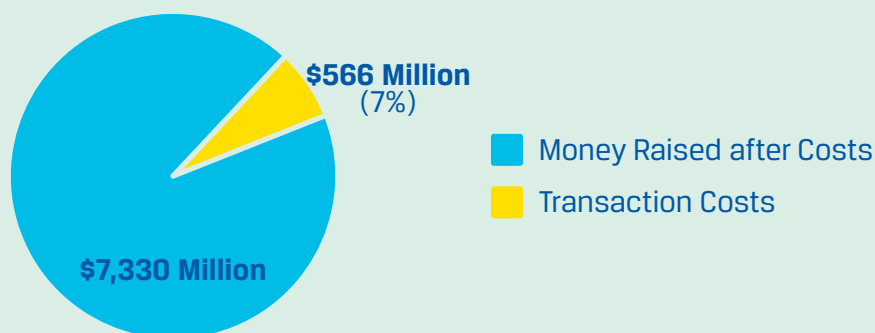
The main difference between a private company and a publicly traded company is that the shares of a private company are available only to select investors and are not traded on a public market. A private company becomes a publicly traded company through an IPO, which is the first time that it sells new shares to investors in a public market.

Private companies become publicly traded companies for a number of reasons. First, it gives the company more visibility, which makes it easier to raise capital to fund growth opportunities. It also helps attract talented staff, raise brand awareness, and gain credibility with trading partners. In addition, it provides greater liquidity for shareholders who want to sell their shares or buy additional shares. At or after the IPO, some of the original shareholders may choose to sell some of their shares. The fact that the shares now trade in a public market makes the shares more liquid and thus easier to sell.

A disadvantage to becoming a public company is increased regulatory and disclosure requirements. IPOs are also expensive; their cost can be as much as 10% of the proceeds. Example 8 gives an example of how costly an IPO can be.

EXAMPLE 8. INITIAL PUBLIC OFFERING

Glencore International, a Swiss company founded in 1974, announced in April 2011 its intention to become a publicly traded company. The shares were to trade on both the London Stock Exchange and the Hong Kong Stock Exchange. The company raised \$7,896 million, but had to pay transaction costs of \$566 million (about 7% of the entire proceeds of the IPO).



6.2 Seasoned Equity Offering

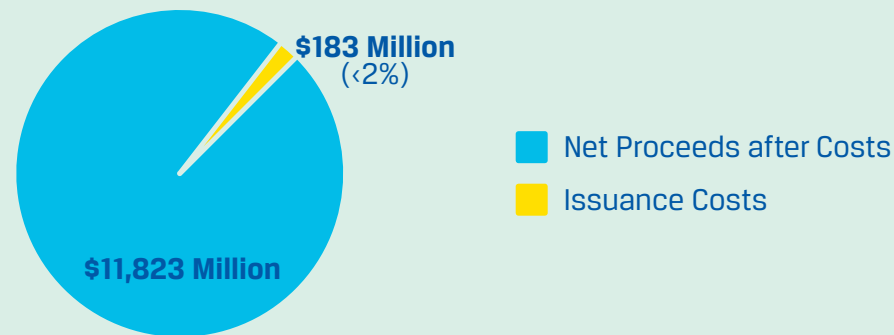
After an IPO, publicly traded companies may sell additional shares to raise more capital. The selling of new shares by a publicly traded company after an IPO is referred to as a seasoned or secondary equity offering. A seasoned equity offering typically has far lower costs associated with it compared with an IPO.

A typical seasoned equity offering increases the number of shares outstanding by 5%–20%. For an existing investor who does not buy additional shares in the seasoned equity offering, the increase in shares outstanding dilutes the investor's ownership percentage.

Example 9 gives an example of a seasoned equity offering and the associated costs.

EXAMPLE 9. SEASONED EQUITY OFFERING

On 1 October 2008, General Electric, a US company that has traded publicly since 1896, announced it would sell additional shares to the public in a seasoned equity offering. According to the 2008 annual report, 547.8 million shares were issued at \$22.25 share (= \$12,189 million = 547.8 million × \$22.25). The net proceeds were \$12,006 million, which implies issuance costs of \$183 million (= \$12,189 million – \$12,006 million, less than 2% of the proceeds). The issuance costs for this seasoned offering are much lower than the costs of the IPO in Example 8.

**6.3 Share Repurchases**

Companies may choose to return cash to shareholders by repurchasing shares rather than paying dividends. Assuming that the company's net income is unaffected by the repurchase, the share repurchase will increase the company's earnings per share because net income will be divided by a smaller number of shares. Repurchased shares are either cancelled or kept and reported as treasury stock in the shareholders' equity account on the company's balance sheet. Treasury shares are not included in the number of shares outstanding.

To buy back shares, a company can buy shares on the open market just like other investors or it can make a formal offer for repurchase directly to shareholders. Shareholders may choose to sell their shares or to remain invested in the company. For an existing investor who does not sell shares, the decrease in the number of shares outstanding effectively increases that investor's ownership percentage.

Example 10 compares a share repurchase and a dividend distribution.

EXAMPLE 10. SHARE REPURCHASE

A company with 2 million common shares outstanding and a current stock price of \$50 wants to distribute \$1 million to its shareholders. The company could pay a dividend of 50 cents per share (\$1 million/2 million shares) or buy back 20,000 shares from shareholders willing to sell their shares (20,000 shares

$\times \$50 = \$1,000,000$), assuming that the company can buy the shares at their current market value. After the repurchase, the number of shares outstanding would decrease to 1.98 million (2 million $-$ 20,000).

6.4 Stock Splits and Stock Dividends

Companies may, on occasion, conduct stock splits or issue stock dividends. A stock split is when a company replaces one existing common share with a specified number of common shares. A stock dividend is a dividend in which a company distributes additional shares to its common shareholders. Stock splits and stock dividends both *increase* the number of shares outstanding, but they do not change any single shareholder's proportion of ownership.

When a company splits its stock or issues a stock dividend, the number of shares outstanding increases and additional shares are issued proportionally to existing shareholders based on their current ownership percentages. The overall value of the company should not change, so the price of each share should decrease. But the value of any single shareholder's total shares should not change in value. Example 11 illustrates the effects of a stock split and a stock dividend on the stock price, number of shares, and total shareholder value.

EXAMPLE 11. EFFECTS OF A STOCK SPLIT AND A STOCK DIVIDEND

A company has 24,000 shares outstanding and each share trades at €75.00. An investor owns 900 shares.

Stock Split

The company announces a three-for-two stock split. This means for every two shares the investor currently owns, she will receive three shares in replacement. So, she will have 1,350 shares after the stock split.

$$(900/2) \times 3 = 1,350 \text{ shares}$$

Stock Dividend

The company declares a 50% stock dividend—that is, for every share the investor currently owns, she will receive an additional 0.5 shares. In other words, she will have 1,350 shares.

$$900 \times 1.5 = 1,350 \text{ shares}$$

The effects of the stock split and stock dividend are shown in the following table.

	Stock Price	Number of Shares Outstanding	Total Value
<i>Before Stock Split</i>			
Company	€75.00	24,000	€1,800,000
Investor	75.00	900	67,500
<i>After Stock Split</i>			
Company	€50.00	36,000	€1,800,000
Investor	50.00	1,350	67,500
<i>Before Stock Dividend</i>			
Company	€75.00	24,000	€1,800,000
Investor	75.00	900	67,500
<i>After Stock Dividend</i>			
Company	€50.00	36,000	€1,800,000
Investor	50.00	1,350	67,500

As Example 11 illustrates, a stock split or stock dividend does not change each shareholder's proportional ownership of the company. Shareholders do not invest any additional money for the increased number of shares, and the stock split or stock dividend does not have any effect on the company's operations. The total value of the company's shares and an investor's shares are unchanged by the stock split or stock dividend.

Given that stock splits and stock dividends do not have any effect on company operations or value, why do you think companies take these actions? One explanation is that as a company does well and its assets and profits increase, the stock price is likely to increase. At some point, the stock price may get so high that shares become unaffordable to some investors and liquidity decreases. A stock split or stock dividend will have the effect of lowering a company's stock price, making the stock more affordable to investors, and thereby improving liquidity.

It is important to note that the affordability of a company's stock is different from whether the stock is undervalued or overvalued. That is, a company with a stock price of \$500 per share may be unaffordable to some investors, but may still be considered undervalued when the price per share is compared with the estimated value per share. Similarly, a company with a stock price of \$5 per share may be affordable to most investors yet still be overvalued.

Companies with very *low* stock prices may conduct a reverse stock split to increase their stock price. In this case, the company *reduces* the number of shares outstanding. The primary reason for a reverse stock split is that a company may face the risk of having its shares delisted from a public exchange if its stock price falls below a minimum level dictated by the exchange. After the reverse stock split, shareholders will still own the same proportion of the shares they originally owned. In other words, a reverse stock split reduces the number of shares outstanding but does not affect a shareholder's proportional ownership of the company. After a reverse stock split, the stock price should increase by the same multiple as the reverse stock split. Example 12 describes a 1-for-10 reverse stock split by Citigroup.

EXAMPLE 12. REVERSE STOCK SPLIT

On 21 March 2011, Citigroup, a US company, announced a 1-for-10 reverse stock split effective after the close of trading on 6 May 2011. Before the split, Citigroup had approximately 29 billion shares outstanding. The closing stock price of Citigroup on 6 May was \$4.52. After the reverse split, the number of shares outstanding decreased to approximately 2.9 billion. On the next trading day after the reverse stock split took effect, which was 9 May, the opening stock price was \$44.89; this price is about ten times the pre-split price of \$4.52.

6.5 Exercise of Warrants

Companies that issue warrants as a form of additional or bonus compensation to employees may have to increase shares outstanding if the warrants are exercised. If an investor exercises warrants, the issuing company's number of shares outstanding increases and all other existing shareholders of the company's stock will see their ownership percentage decrease. Given that there may be numerous employees who exercise warrants on a recurring basis, companies that issue warrants to employees as a form of compensation will typically experience an increase in shares outstanding every year. To mitigate the dilution effect on existing shareholders, these companies may repurchase a small amount of shares each year to offset the additional shares issued when warrants are exercised.

6.6 Acquisitions

One company may acquire another by agreeing to buy all of its shares outstanding. All of the outstanding shares of the acquired company are redeemed for cash, for stock in the acquiring company, or for a combination of cash and stock of the acquiring company. Shareholders of the acquiring company and the target company (the company to be acquired) are typically asked to vote on a proposed acquisition. If the company being acquired is small and the acquirer has sufficient cash, there is no need to issue new shares.

For larger acquisitions, the acquiring company may pay for the purchase by issuing new shares. The amount of new shares issued depends on the purchase price and the ratio of the two companies' stock prices. An acquisition in which the company uses its stock to finance the transaction results in an increase in the acquiring company's shares outstanding. For existing shareholders in the acquiring company, the increased shares outstanding effectively dilutes their ownership percentage.

6.7 Spinoffs

A company may create a new company from an existing subsidiary in a process referred to as a **spinoff**. Shares of the new entity are distributed to the parent company's existing shareholders. After the spinoff, the value of the shares of the parent company initially declines as the assets of the parent company are reduced by the amount allocated to the new company. But shareholders receive the shares of the newly formed company to compensate them for the decrease in value.

A company's management may conduct a spinoff in an effort to create value for its shareholders by splitting the company into two separate businesses. The rationale behind a spinoff is that the market may assign a higher valuation to two separate but more specialised companies compared with the value assigned to these entities when they were part of the parent company.

SUMMARY

Equity securities are an important way for companies to raise financing to fund their activities. They are also popular assets among investors, who are attracted by their potential returns. However, equities are riskier than debt securities and must be analysed with care and skill.

The following points recap what you have learned in this chapter about equity securities:

- Companies often issue different types or classes of equity securities. The types of equity securities, or equity-like securities, that companies may issue include common shares, preferred shares, convertible bonds, and warrants.
- Equity securities are typically characterised by four main features: specified life (infinite or with a maturity date), par value, voting rights, and cash flow rights.
- Debt securities include contractual obligations to pay a return to the debt providers. Equity securities, however, contain no such contractual obligations. A company does not have to repay the amounts contributed by the shareholders or pay a dividend.
- The board of directors, elected by the common shareholders, plays an important role in monitoring the company's business activities and management on behalf of its shareholders. The board is also responsible for declaring dividends on shares of the company.
- Common stock is the main type of equity security issued by a company. Common shares have an infinite life and may or may not have a par value. A common share represents an ownership interest in a company. Common shareholders have a residual claim on the net assets of the company and typically have voting rights.
- Preferred shares typically offer fixed dividends, based on stated par values and dividend rates. Generally, preferred shareholders have no voting rights or ownership claim on the company.
- A convertible bond is a bond issued by a company that offers the bondholder the right to convert the bond into a specified number of common shares. It has features of and relationships with both equity and debt securities.
- A warrant is an equity-like security that entitles the holder to buy a specified amount of common stock of the issuing company at a specified price per share prior to the warrant's expiration date.

- A depositary receipt is a security representing an interest in a foreign company that trades like a common share on a domestic stock exchange. It is not issued by the foreign company.
- In the event of liquidation, priority of claims states that debt investors rank higher than preferred shareholders and preferred shareholders rank higher than common shareholders.
- Relative to preferred stock, common stocks offer the potential for a higher return but with greater investment risk.
- Equity securities are riskier than debt securities, and empirical data suggest that equity securities earn higher returns than debt securities, thereby compensating investors for the higher risk.
- Common approaches used to value common shares include discounted cash flow valuation, relative valuation, and asset-based valuation approaches.
- The discounted cash flow approach estimates the value of a security as the present value of its expected future cash flows to its holder.
- The relative valuation approach estimates the value of a common share as the multiple of some measure, such as earnings per share. This approach implicitly assumes that common shares of companies with similar risk and return characteristics should have similar price multiples.
- The asset-backed valuation approach estimates the value of common stock of a company as the difference between the value of its total assets and liabilities, in other words, as its net asset value.
- Some corporate actions result in changes to the number of common shares outstanding. Such actions include initial public offerings, seasoned equity offerings, share repurchases, stock splits, stock dividends, acquisitions, and spinoffs.