

# Equity Valuation<sup>1</sup>

## Quick Sheet<sup>2</sup>

Sophisticated investors rarely rely on others to estimate the value of a stock they might be considering. They prefer to estimate the stock's value themselves and then compare that estimated value to the value reflected in the market (price) for that same stock. If the estimated value is less than the price, the investor may consider selling the stock if they own it, take a pass on purchasing the stock, or possibly consider selling the stock short – a risky, but sometimes lucrative strategy that should only be considered by savvy, experienced investors. If the price is less than the value, an interested and objective investor may choose to purchase the firm's shares – also known as taking a “long” position in the firm.

To understand how to value a firm and its stock we need to begin with the premise that a firm's value to its investors has little to do with what it produces for its consumers and everything to do with what it produces for its investors. For an objective investor the firm produces one thing and one thing only: cash flow or profits. What is a firm worth to its investors? That's harder to answer than one might suppose, but it invariably include identifying how the investor might value the firm's expected future cash flows. That's what the firm's investors actually own, the rights to the firm's future expected cash flows.

Estimating a stock's value often begins with estimating the value of the entire firm – the firm's enterprise value. One approach to this valuation is through the use of a discounted cash flow model (DCF); another is by using an Enterprise Multiple, either are credible methods, but recall that the firm's equity (stock) is only one of its capital components and we can't simply take the value of the entire firm and divide it by the number of equity shares outstanding to reach the value of each equity share – to do this we need to find the value of the equity firm's Equity through the use of the Enterprise Value (EV) equation and then find the value of each equity share.

Some investors seek to estimate a stock's value based on its dividend, or the amount the firm may pay equity shareholders. Since many firms do not offer dividends this is an incomplete valuation method and must be updated to include the firm's future cash flows rather than the dividends alone. However, a stock valuation model form using dividends as a proxy for those cash flows is often considered

### Concepts & Terms

**Asked:** the price a seller is “asking” in exchange for an equity share

**Bid:** the price at which a buyer is prepared to purchase an equity share

**Capital Gain:** this is the change in value of the stock from the point of purchased and can be expressed in nominal terms, as an overall percentage rate, or as an average annual percentage rate:

- **Nominal:**  $(\text{Current Price per Share} - \text{Purchase Price per Share}) \times \text{Shares Purchased}$
- **Overall Percentage Rate:**  $\frac{(\text{Current Price per Share} - \text{Purchase Price per Share})}{\text{Purchase Price Per Share}} \times 100$
- **Average Annual Percentage Rate:**  $\frac{\text{Overall Percentage Rate}}{\text{Period Held}}$

**Dividend:** some portion of the firm's *cash flow* the board of directors chooses to distribute out to investors as income. *Dividends* to preferred shareholders are established by the contract between the firm and its

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<sup>1</sup> The Stock Valuation QuickSheet is intended to present an abbreviated presentation of the included concepts in corporate finance and is not intended to be a full or complete representation of the concepts, models, metrics or the underlying foundations from which they are built.

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investor, commonly referred to as a prospectus. *Dividends* to common shareholders are the discretionary purview of the firm's Board of Directors. When a firm's board elects to distribute a dividend to shareholders it declares the dividend as of a specific date: shareholders owning the stock on that date receive the dividend but those purchasing the shares after the date do not, even if they buy the shares before the dividend is paid.

**Dividends vs Cash Flows:** many stocks pay *dividends* to investors while others do not. A *dividend* is some portion of the firm's *cash flow* the board of directors chooses to distribute out to investors as income. It is rarely 100% of that *cash flow* – any *cash flow* not distributed to investors is reinvested in the firm and accounts for some of the firm's expected growth. The firm's *cash flow* is that part of its earnings the firm has available to either pay investors and income or reinvest in the firm.

**Dividend Yield:** an investor's return on stock ownership as a function of the dividend it pays. This can be thought of in nominal terms as an average or as an internal rate of return resulting from a Net Present Value calculation.

- **Average Dividend Yield in Nominal Terms** = 
$$\frac{\sum \text{Dividends Received Per Share}}{\text{Purchase Price Per Share}} \times 100$$
  

$$\text{Period Held}$$
- **Net Present Value Calculation solving for IRR** – this is not a simple equation but an iterative process and best calculated using the Time Value Functions of a calculator or Excel.

**Earnings:** generally thought of as Net Income, but earnings attributed to Common Shareholders is Net Income – Dividends Paid to Preferred Shareholders

**Earnings per Share:** most often calculated for Common Shareholders as 
$$\frac{\text{Net Income} - \text{Preferred Dividends Paid}}{\text{Common Shares Outstanding}}$$

**Enterprise Value equation (EV):** EV = Common + Preferred + Debt – Cash.

**Price vs Value:** The *Price* of an equity share (stock) is its current market price, or the price for which it was last exchanged between two economic agents: a buyer and a seller. The *Value* of an equity share is an estimated which may or may not be reflected in the stock's current price.

**Price/Earnings Multiple (PE Ratio):** Most often calculated for common shares only 
$$\frac{\text{Price per Share: Common}}{\text{Earnings per Share: Common}}$$

**Shares Outstanding:** Equity shares in the hands of investors. This is often noted as “diluted” and “recurring”

- **Recurring:** Includes only those shares that have been sold and issued to investors
- **Diluted:** Includes recurring shares plus shares that may be issued as the result of investors exercising stock options and warrants issued by the firm

**Total Return to Shareholders:** the dividend yield (return) to an investor plus the capital gains resulting from the change in per share price in the market.

### Using the Dividend Growth Model & Gordon Growth Model

Valuing stocks based on their dividends alone grossly understate their value as most firms do not pay dividends. However, a variety of models are presented in most Finance texts based on the use of dividends as a form of cash flow to investors. Each model form works on the premise that a firm's dividend will be paid to shareholders for an indefinite period, which must be interpreted as perpetual or infinite. Each model form includes the following variables:

- **P<sub>0</sub>** : the estimated current price or value of the stock
- **D<sub>1</sub>** : the next expected dividend to be paid

- **r** : the expected or required rate of return; this is most commonly referred to as the *discount rate*
- **g** : the expected growth rate of the dividend

These models consider three separate scenarios: no growth, constant growth and non-constant growth.

- **No Growth:**  $P_0 = \frac{D_1}{r}$
- **Constant Growth:**  $P_0 = \sum \frac{D_0 \times (1+g)^t}{(1+r)^t} = \frac{D_0 \times (1+g)^1}{r-g} = \frac{D_1}{r-g}$  - also referred to as the **Gordon Growth Model**
- **Non-Constant Growth:**  $P_0 = \sum \frac{D_i}{(1+r)^t}$

### Using the firm's cash flow to estimate the value of the firm and its equity shares

Each of forms of the dividend models may be extended to include the firm's cash flow rather than using a dividend that may or may not be declared or paid by the firm's board. The use of the firm's cash flow provides for a more robust and holistic valuation of the firm and its stock with the aid of the Enterprise Value equation in which  $EV = \text{Common} + \text{Preferred} + \text{Debt} - \text{Cash}$ .

When we use the firm's Cash Flow and accept that *r* is the opportunity cost of capital investment in a firm, aka the discount rate, the result is the dividend models become Discounted Cash Flow models and  $P_0$  becomes the estimated present value of the firm and is synonymous with the firm's estimated Enterprise Value. We can then use the estimated Enterprise Value in the EV equation and substitute in the values of the firm's debt and cash based on data found in the Balance Sheet and debt value calculations such that we're left with an estimated value of the firm's equity as follows:

$$EV = \text{Common} + \text{Preferred} + \text{Debt} - \text{Cash} \tag{1}$$

$$\text{Common} + \text{Preferred} = \text{Equity} \tag{2}$$

$$EV = \text{Equity} + \text{Debt} - \text{Cash} \tag{3}$$

*Substitute into (3) known and estimated values for EV, Debt and Cash and solve for Equity*

$$\text{Equity} = EV - \text{Debt} + \text{Cash} \tag{4}$$

If we know the number of equity shares outstanding and the relationship between common and preferred equity, often expressed as a conversion ratio, we can then calculate the value of the firm's common stock as shown in the following example.

#### **Assumptions:**

Estimated Enterprise Value	= \$1,000	Outstanding Common Shares	= 1,000
Debt (Balance Sheet)	= \$200	Outstanding Preferred Shares	= 100
Cash (Balance Sheet)	= \$50	Conversion Ratio (Pref to Common)	2:1

This results in the preferred shares being equivalent to 50 shares of common (2 preferred shares can convert to 1 common share) and the total number of equivalent shares of common after the conversion is 1,050.

*Substitute into (4) the given values*

$$\text{Equity} = \$1,000 - \$200 + \$50 = \$850$$

*Divide by number of equivalent common shares*

$$\text{Common Equity per Share} = \frac{\$850}{1,050} = \$0.8095 \text{ rounded to four places}$$

*Multiply by Common shares outstanding*

$$\text{Total value of Common Equity} = \$0.8095 \times 1,000 = \$809.50$$

*Divide Common Equity per Share by Preferred to Common Conversion Ratio*

$$\text{Preferred Equity per Share} = \frac{\$0.8095}{2} = \$0.4048$$

*Multiply by Preferred Shares Outstanding*

$$\text{Total Value of Preferred Equity} = 100 \times \$0.4048 = \$40.48$$

*Reconstruct EV equation to confirm (difference stems from rounding method)*

$$\text{EV} = \text{Estimated Value of Firm} = \$1,000 \approx \$809.50 + \$40.48 + \$200 - \$50 = \$999.98$$