

Chapter 7: Valuation of Stock

Stock basis

A common stock is a share of ownership in the corporation, which confers rights to any common dividends as well as rights to vote on election of directors, mergers or other major events. Shares trade at the public market under a ticker symbol; a unique abbreviation assigned to each publicly traded company. It is used when its trades are reported on the ticker (a real time electronic display of trading activity).

We will now take a look at the rights of common stock holders.

- A company can have straight voting; voting for directors where shareholders must vote for each director separately, with each shareholder having as many votes as shares held.
- Another voting form a company can have is cumulative voting. That is voting for directors where each shareholder is allocated votes equal to the number of open spots multiplied by his or her number of shares. With this voting even shareholders with minority blocks have a change at representation on the board.
- Some companies have different types of common stock, called classes. The different classes of common stock carry different voting rights.

Directors and other proposals as well as ask managers questions. All shareholders have the right to attend this meeting. But in practice most allow the board to vote for them or direct that their shares be voted for them via a proxy. A proxy is a written authorization for someone else to vote your shares. A proxy contest is when two or more groups are competing to collect proxies to prevail in a matter up for shareholder vote (such as election of directors).

Some companies have an additional issue of stock called preferred stock. Preferred stock is stock with preference over common shares in payment of dividends and liquidation. Dividends are periodic payments that are made to shareholders as a partial return on their investment in the corporation. The firm must pay this dividend to preferred shareholders before common shareholders can receive a dividend.

There are two types of preferred stock:

- Cumulative preferred stock: preferred stock where all missed preferred dividends must be paid before any common dividends may be paid.
- Non-cumulative preferred stock: preferred stock where missed dividends do not accumulate. Only the current dividend is owed before common dividends can be paid.

The mechanics of stock trades

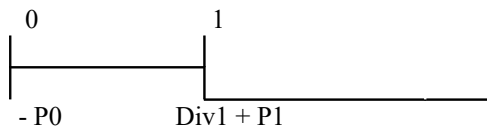
If you make a large share trade at a physical stock market such as the NSYE, your trade would be transmitted electronically to the exchange but it would be sent to the wireless handheld of a terminal of a floor broker. A floor broker is a person at the NSYE with a trading license who represents orders on the floor, balancing speed and price to get the best execution.

Dividend-discount model

A shareholder has got two cash flow possibilities from owning a stock:

1. Payout cash in form of dividends
2. Generating cash by selling the shares

The investment horizon of the investor determines the total amount of the cash flows. Consider an investment horizon of one year. The timeline for this investment will be:



When an investor buys a stock, the investor has to pay the current market price: P_0 . Div_1 are the total dividends paid per share during the year. If the investor sells the share at the end of the year, the investor receives the new market price: P_1 .

The dividend payments and new market price at the end of the year are not known with certainty. Hence, we cannot discount the cash flows using a risk-free interest rate. You must use the cost of capital for the firm equity. The equity cost of capital (r_E) is the expected rate of return available in the market on other investments that have equivalent risk to the risk associated with the firm's shares.

If you use the equity cost of capital, you can calculate the stock price with the following formula:

$$P_0 = \frac{Div_1 + P_1}{1 + r_E}$$

We can rewrite this equation into:

$$r_E = \frac{Div_1}{P_0} + \frac{P_1 - P_0}{P_0}$$

The first part of this equation is the dividend yield: the percentage return an investor expects to earn from the dividend paid by the stock: the expected annual dividend divided by its current market price. The second part is the capital gain rate: an expression of capital gain as a percentage of the initial price of the asset. The capital gain is the amount by which the selling price of an asset exceeds its initial purchase price. The total return is the sum of a stock's dividend yield and its capital gain rate.

The NPV of this investment is positive when the P_0 exceeds the current stock price. If the NPV is positive, investors will buy stocks and the stock price will rise. Otherwise, if the P_0 is less than the stock price, the NPV of selling the stock will be positive and the stock price will fall.

Suppose the time horizon is two years. The investor pays the same current market price P_0 , but will receive dividends two times. The investor will sell the share at the new market price in year 2: P_2 . In this case:

$$P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2 + P_2}{(1 + r_E)^2}$$

Continuing this for any number of years results in the dividend-discount model: a model that values shares of a firm according to the present value of the future dividends the firm will pay.

$$P_0 = \frac{Div_1}{1+rE} + \frac{Div_2}{(1+rE)^2} + \dots + \frac{Div_N}{(1+rE)^N} + \frac{PN}{(1+rE)^N}$$

This equation is applicable to investors who collect dividends for N year and sell the share after N years, and to a series of investor reselling the share after shorter periods.

If the time horizon of the investment isn't limited (in this case it is possible to hold the shares forever) the price of a stock will be equal to the present value of all the expected future dividends.

Estimating dividends with the dividend-discount model

In the long run, we assume dividends will grow at a constant rate: growth rate g . If the time horizon isn't limited, the dividends are a constant growth perpetuity. Then the following model is used; *Constant*

$$P_0 = \frac{Div_1}{rE - g}$$

dividend growth model:

According to this model, the value of the firm depends on the dividend level next year, divided by the equity cost of capital adjusted by the growth rate. The constant dividend growth model provides insight into an important tradeoff: a firm tries to maximize the current dividend level and the expected growth rate, because maximizing these quantities is equal to maximizing the share price. But, increasing growth may require investment, and if a firm spends money to investment there is less money to pay dividends.

The total dividend each year is the earnings per share multiplied by the dividend payout rate:

$$Div_t = \frac{Earnings_t}{Shares_{outstanding}_t} \times Dividend\ payout\ rate$$

The dividend payout rate is the fraction of a firm's earnings that the firm pays out as dividends each year. This formula shows that a firm can increase the dividends by:

1. increasing earnings (net income)
2. increasing the dividend payout rate and
3. decreasing the number of shares outstanding

Change in earnings = New investment x Return on new investment

New investment = Earnings x Retention rate

Assume the number of shares is fixed and the firm decides to keep the dividend payout rate constant, the growth rate will be: $g = Retention\ rate \times Return\ on\ new\ investment$

The retention rate is the fraction of a firm's current earnings that the firm retains.

Only if the new investment of the firm has got a positive NPV, cutting the dividends to increase investment will raise the stock price.

Note: the constant dividend growth model is only applicable when growth rates are constant. It is not possible for a discount cash flow (dividends) with a changing growth rate.

Limitations of the model

The dividend-discount model has two fundamental limitations:

1. Reliance on dividend forecasts. The model values a stock based on a forecast of the future dividends paid to shareholders. But a firm's future dividends carry a high amount of uncertainty.
2. Lack of applicability to non-dividend-paying stocks. Often companies do not pay dividends. When this is the case it is hard to value the stocks.

Total payout model

In the constant dividend growth model we assumed the only cash an investor receives was dividend. However, firms replace these dividends with share repurchases: a situation in which a firm uses cash to buy back its own stock. There are two consequences for our previous model:

- There is less cash available to pay dividends because the firm spend more cash to repurchase and
- The earnings and dividend per share will increase because the share count decreases.

In the case of share repurchases, the total payout model is more reliable: this is a method that values shares of a firm by discounting the firm's total payouts to equity holders (dividends and share repurchases) and then dividing by the current number of shares outstanding:

$$P_0 = \frac{PV(\text{future total dividends and repurchases})}{\text{shares outstanding}}$$