# FN 201 Business Finance

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# Lecture 5: Valuing stock

# Preferred stock

- Similar to bonds in that preferred stockholders receive a fixed dividend which must be paid before dividends can be paid on common stock
- However, unlike bonds, preferred stock dividends can be omitted without fear of pushing the firm into bankruptcy.
  - Cumulative preferred stock - any dividends which have been omitted in the past must be paid out to preferred shareholders first, before common shareholders can receive dividends.
  - Non-Cumulative preferred stock - does not pay the holder any unpaid or omitted dividends. If the corporation chooses to not pay dividends in a given year, the investor does not have the right to claim any of those forgone dividends in the future.

# Preferred stock

- Participating
  - A type of preferred stock that gives the holder the right to receive dividends equal to the normally specified rate that preferred dividends receive as well as an additional dividend based on some predetermined condition.

- Non-participating
  - A type of preferred stock that gives the holder the right to receive dividends equal to the normally specified rate only

# Common stock

- Common stockholders as residual claimants
  - Residual claimants are investors who have the right to receive cash flows only after all other claimants have been satisfied.
  - Majority voting system allows each shareholder to cast one vote per share on matters requiring a vote and on the election of the directors. Director determine top management.
  - Proxy statement is a document mailed to shareholders that describes the matters to decided by a shareholder vote in an upcoming annual meeting. Shareholders can sign their proxy statements and grant their voting rights to other parties.
  - Entitle rights to dividend and other distribution

# Equity section of the Balance Sheet

- Shared issued – the shares of a company's stock that have been issued/sold to the public.
- Share authorized – total of the share capital which a company is allowed to issue.
- Par value – an arbitrary value assigned to common stock on a firm's balance sheet.
- Additional paid-in capital (capital surplus) – the difference between the price the company received when it sold stock in the primary market and the par value of the stock, multiplied by the number of shares sold. This represents the amount of money the firm received from selling stock, above the stock's par value.

# Equity section of the Balance Sheet

- Treasury stock – common shares that have been issued but are no longer outstanding because the firm repurchase them.

- Market capitalization – the value of the shares of a company's stock that are owned by the stockholders = the total number of shares issued multiplied by the current price per share

# Dividend Yields, Capital Gains, and Total Returns

$$\text{Total return} = \frac{Div_1 + P_1}{P_0} - 1 = \underbrace{\frac{Div_1}{P_0}}_{\text{Dividend Yield}} + \underbrace{\frac{P_1 - P_0}{P_0}}_{\text{Capital Gain Rate}}$$

- Dividend Yield (DY)
- Capital Gain Yield (CGY)
- Total Return on stock investment
  - Dividend Yield + Capital Gain Rate
    - The expected total return of the stock should equal the expected return of other investments available in the market with equivalent risk.

# Example

- 3M is expected to pay paid dividends of $1.92 per share in the coming year. You expect the stock price to be $85 per share at the end of the year. Investments with equivalent risk have an expected return of 11%. What is the most you would pay today for 3M stock? What dividend yield and capital gain rate would you expect at this price?

# Example

## Stock Prices and Returns

### Problem

Suppose you expect Walgreen Company (a drugstore chain) to pay dividends of $0.44 per share and trade for $33 per share at the end of the year. If investments with equivalent risk to Walgreen's stock have an expected return of 8.5%, what is the most you would pay today for Walgreen's stock? What dividend yield and capital gain rate would you expect at this price?

# Different approaches for valuing common stock

1. Dividend discounted model
   - Zero growth model
   - Gordon growth model
2. Share repurchase and total payout model
3. Discounted cash flow model
4. Market-based valuation: price multiples

# 1. Dividend discounted model (DDM)

- Zero growth model
  - The simplest approach to stock valuation that assumes a constant dividend stream

$$P_0 = \frac{D}{k_e}$$

  - $P_0$ = Price of stock at time 0
  - D = Dividend
  - $K_e$ = Cost of equity

# Example – preferred stock valuation

- Picasso design Co. wishes to estimate the value of its outstanding preferred stock. The preferred issue has an $80 par value and pays an annual dividend of 8%. If investor requires 9.3% annual rate of return

  (a) What is the value of Picasso Design's preferred stock?

  (b) If an investor purchases the preferred stock at the value calculate in part (a), how much would he gain or lose per share if he sells the stock on year later when the required return rise to the point where the preferred stock now yield 10.5%

# Example – preferred stock valuation

- What will be the nominal rate of return on a preferred stock with a $100 par value, a stated dividend of 8% of par, and a current market price of (a) $60 (b) $80 (C) $100 (d) 140?

# Example

- Hamshire Products common stock will pay a dividend of $4 per share a year from now. If financial analyst believe that dividends will be constant. What is the price of this common stock, given 14% required return?

# 1. Dividend discount model

- Gordon growth model
  - Value a share of stock under the assumption that dividends grow at a constant rate forever
  - Stock value = PV of future cash flow = PV of expected dividends

$$P_0 = \frac{D_0(1+g)}{k_s} = \frac{D_1}{k_s - g}$$

# Example

- Suppose an investor is considering the purchase of a share of the Utah Mining Company. The stock will pay a $3 dividend a year form today. The dividend is expected to grow at 10% per year for the foreseeable future. The investor thinks that the required return on this stock is 15%, given Utah Mining's risk. What is the value of a share of Utah Mining Company's stock?

# Example

- For the Utah Mining Company common stock (prior example), if another investor expects to invest based on the horizon of 3-year, what is the price of a share of Utah this investor willing to pay for?

# Example – super growth

- Consider the stock of Elixir Drug Company, which has a new back-rub ointment and is enjoying rapid growth. The past dividend for a share of stock was $1.00. During the next 5 years, the dividend is expected to grow at 15% per year. After that growth will be equal to 10% per year forever. Calculate the value of this common stock if the required return is 12%

# Growth rate calculation

- Pagemaster enterprises just reported earnings of $2 million. It plans to retain 40% of its earnings. The historical return on equity has been 16%, a figure that is expected to continue into the future. How much will earnings grow over the coming year?

- Pagemaster Enterprises, has 1,000,000 shares of stock outstanding. The stock is selling at $10. What is the required return on stock?

# Limitations of the Dividend-Discount Model

- There is a tremendous amount of uncertainty associated with forecasting a firm's dividend growth rate and future dividends.
- Small changes in the assumed dividend growth rate can lead to large changes in the estimated stock price.

# 2. Share repurchases and Total Payout Model

- Share Repurchases and the Total Payout Model

$$PV_0 = \frac{PV(\text{Future Total Dividends and Repurchases})}{\text{Shares Outstanding}_0}$$

  - Values all of the firm's equity, rather than a single share. You discount total dividends and share repurchases and use the growth rate of earnings when forecasting the growth of the firm's total payouts.

# Example

## Valuation with Share Repurchases

### Problem

Titan Industries has 217 million shares outstanding and expects earnings at the end of this year of $860 million. Titan plans to pay out 50% of its earnings in total, paying 30% as a dividend and using 20% to repurchase shares. If Titan's earnings are expected to grow by 7.5% per year and these payout rates remain constant, determine Titan's share price assuming an equity cost of capital of 10%.

# 3. The discounted free cash flow model

FCF valuation is most suitable when:

- The company is not dividend paying
- Dividends differ significantly from the company's capacity to pay dividends
- Free cash flows align with profitability within reasonable forecast period with which the analyst is comfortable
- The investor takes a control perspective

# Free cash flow

- Intrinsic value is the present value of expected future cash flows
- Free cash flows are the internal cash flows available for distribution, not necessarily distributed.
  - Unlike dividend discount valuation which is based on the cash flows (dividends) which are actually distributed
  - In this sense they are a theoretical cash flow
- Analyst must calculate, the are not published
- Forecasting is more difficult than forecasting dividends

# 3. The Discounted Free Cash Flow Model

- Free Cash Flow
  - Cash flow available to pay both debt holders and equity holders

$$\text{Free Cash Flow} = \overbrace{EBIT \times (1 - \tau_c)}^{\text{Unlevered Net Income}} + \text{Depreciation} - \text{Capital Expenditures} - \text{Increases in Net Working Capital}$$

- Discounted Free Cash Flow Model
  - Discounting the Free Cash Flow with firm's cost of capital

# The discount rate for DCF model

- Since we are discounting cash flows to both equity holders and debt holders, the free cash flows should be discounted at the firm's weighted average cost of capital, $r_{wacc}$. If the firm has no debt, $r_{wacc} = r_E$.

$$r_{wacc} = \frac{E}{E + D} r_E + \frac{D}{E + D} r_D (1 - \tau_c)$$

# Example

- The firm had equity multiplier of 2
- The cost of equity of 12%,
- Cost of debt of 5%
- And average tax rate of 30%
- What is the firm WACC?

# 4. Valuation Multiples

- Method of Comparables
  - Estimate the value of the firm based on the value of other, comparable firms or investments that we expect will generate very similar cash flows in the future.
- Valuation Multiple
  - A ratio of firm's value to some measure of the firm's scale or cash flow

# Example P/E multiples

- Compute the price of a new company with the expected earnings to 2.8 baht per share

| Company | ESSO | CALTEX | Shell | PTT | BP |
|---|---|---|---|---|---|
| Price per share (baht) | 18.60 | 45.00 | 22.68 | 21.36 | 76.50 |
| Expected EPS (baht) | 3.00 | 4.50 | 1.80 | 8.90 | 5.10 |
| P/E | | | | | |

# Example

## Valuation Using the Price-Earnings Ratio

### Problem

Suppose furniture manufacturer Herman Miller, Inc., has earnings per share of $1.38. If the average P/E of comparable furniture stocks is 21.3, estimate a value for Herman Miller using the P/E as a valuation multiple. What are the assumptions underlying this estimate?

# Example

- Best Buy Co. Inc. (BBY) has earnings per share of $2.22. The average P/E of comparable companies' stocks is 19.7. Estimate a value for Best Buy using the P/E as a valuation multiple.

# Other multiples

- Price to Book Value
- Price to Sales
- Price to Cash flows
- Enterprise value to EBITDA

## Enterprise Value

$$\text{Enterprise Value} = \text{Market Value of Equity} + \text{Debt} - \text{Cash}$$

- The enterprise value can be interpreted as the net cost of acquiring the firm's equity, taking its cash, paying off all debt, and owning the unlevered business.

# Example

- Best Buy Co. Inc. (BBY) has EBITDA of $2,766 million and 410 million shares outstanding. Best Buy also has $1,963 million in debt and $509 million in cash. If the industry has an enterprise value to EBITDA multiple of 7.7, estimate the value for a share of Best Buy stock.

# Limitations of Multiples

- When valuing a firm using multiples, there is no clear guidance about how to adjust for differences in expected future growth rates, risk, or differences in accounting policies.
- Comparables only provide information regarding the value of a firm relative to other firms in the comparison set.
  - Using multiples will not help us determine if an entire industry is overvalued,

# Stock Valuation Techniques: The Final Word

- No single technique provides a final answer regarding a stock's true value. All approaches require assumptions or forecasts that are too uncertain to provide a definitive assessment of the firm's value.
- Most real-world practitioners use a combination of these approaches and gain confidence if the results are consistent across a variety of methods.

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