Equity Analysis FN 451

-Role of an equity analyst

Fundamental analysis:

- Approach of fundamental analysis & assets allocation

-Economic, industry and firm analysis and financial forecast

Valuation Technique:

- Fundamental of assets valuation

- Dividend discount model

- Discounted cash flow model

- Market multiples

- Workshop: Equity research report writing and analyst presentation technique

- Banking sector analysis

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สิรินัฏฐา เตชะศิริวรรณ

Discounted Dividend Valuation

Course lecturer: Sirinattha Techasiriwan

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Dividend discount model

- **The DDM is most suitable when:**
  - the company is dividend-paying
  - the board of directors has **a dividend policy that has an understandable relationship to profitability**
  - the investor has a non-control perspective.
- **Problems:**
  - Companies that do not pay dividends.
  - **No clear relationship between dividends and profitability**

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Dividend discount models (DDMs)

- Single-period DDM:

$$V_0 = \frac{D_1}{(1+r)^1} + \frac{P_1}{(1+r)^1} = \frac{D_1 + P_1}{(1+r)^1}$$

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Indefinite HP DDM

- For an indefinite holding period, the PV of future dividends is:

$$V_0 = \frac{D_1}{(1+r)^1} + \cdots + \frac{D_n}{(1+r)^n} + \cdots$$

$$V_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}.$$

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Gordon Growth Model

- Assumes a specifically constant growth (g)
- PV of dividend stream is:

$$V_0 = \frac{D_0(1+g)}{(1+r)} + \frac{D_0(1+g)^2}{(1+r)^2} + \cdots + \frac{D_0(1+g)^n}{(1+r)^n} + \cdots$$

- Which can be simplified to:

$$V_0 = \frac{D_0(1+g)}{r-g} = \frac{D_1}{r-g}$$

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Other Gordon Growth issues

- Generally, it is illogical to have a perpetual dividend growth rate that exceeds the growth rate of GDP
- Perpetuity value (g = 0): $$V_0 = \frac{D_1}{r}$$
- Negative growth rates are also acceptable in the model.

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Gordon growth model: model sensitive to inputs

- Valuations are very sensitive to inputs. Assuming $D_1 = 0.83$, the value of a stock is:

	g = 3.45%	**g = 3.70%**	g = 3.95%
r = 5.95%			
r = 6.20%			
r = 6.45%			

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GGM & Expected rate of return

- The expected rate of return in the Gordon growth model is:

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

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Example: Expected rate of return in Dividend Growth Model

- Suppose that your company is expected to pay a dividend of $1.50 per share next year. There has been a steady growth in dividends of 5.1% per year and the market expects that to continue. The current price is $25. What is the cost of equity?

Strengths of Gordon growth model

- Good for valuing stable-growth, dividend-paying companies
- Good for valuing indexes
- Simplicity and clarity, also helps understanding of relationships between V, r, g, and D

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Weaknesses of Gordon growth model

- Calculated values are very sensitive to assumed values of g and r
- Is not applicable to non-dividend-paying stocks
- Is not applicable to unstable-growth, dividend paying stocks

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Forecasting growth rates

- There are three basic methods for forecasting growth rates:
  - Using historical rates (use historical dividend growth rate or use a statistical forecasting model based on historical data)
  - Using analyst forecasts
  - Using company and industry fundamentals

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Example: Estimating the Dividend Growth Rate

- One method for estimating the growth rate is to use the historical average
  - Year Dividend Percent Change
  - 2005 1.23
  - 2006 1.30
  - 2007 1.36
  - 2008 1.43
  - 2009 1.50

Average = _____ = g

*Note: g = constant growth rate

Finding growth rate

- The simplest model of the dividend growth rate is:

$$g = b \times ROE$$

  - where g = Dividend growth rate
  - b = Earnings retention rate (1 – payout ratio)
  - ROE = Return on equity.

Retention ratio (b) = (1 – dividend payout ratio)

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Forecasting future dividends

- Using stylized growth patterns
  - Constant growth forever
    - the Gordon growth model
  - Two-distinct stages of growth
    - the two-stage growth model
    - the H model
  - Three distinct stages of growth
    - the three-stage growth model
- Forecast dividends for a visible time horizon, and then handle the value of the remaining future dividends either by
  - Assigning a stylized growth pattern to dividends after the terminal point
  - Estimate a stock price at the terminal point using some method such as a multiple of forecasted book value or earnings per share

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Two-stage DDM

- The two-stage DDM is based on the multiple-period model:

$$V_0 = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} + \frac{P_n}{(1+r)^n}$$

If g_S = high growth during the first stage,
g_L = low growth during the second stage

$$P_0 = \frac{D_0(1+g_S)}{r-g_S}\left(1-\frac{(1+g_S)^n}{(1+r)^n}\right)+\frac{D_0(1+g_S)^n(1+g_L)}{(1+r)^n(r-g_L)}$$

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Two-stage DDM example

- A company pays $1.00 dividend per share for the current year. The company currently enjoy a high dividend growth rate of 30%. If we assume that the high dividend growth will continue for 6 years before it will decline to a stable growth rate of 6%, what is the company's stock value at the required rate of return of 12%?

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Two-stage DDM example

Time	Value	Calculation
1	D_1	$1.00(1.30)$
2	D_2	$1.00(1.30)^2$
3	D_3	$1.00(1.30)^3$
4	D_4	$1.00(1.30)^4$
5	D_5	$1.00(1.30)^5$
6	D_6	$1.00(1.30)^6$
6	V_6	$1.00(1.30)^6(1.06) / (0.12 - 0.06)$
Total		

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The H model DDM

- The basic two-stage model assumes a constant, extraordinary rate for the super-normal growth period that is followed by a constant, normal growth rate thereafter.
- Fuller and Hsia (1984) developed a variant of the two-stage model where the **growth rate begins at a high rate and declines linearly throughout the super-normal growth period until it reaches the normal growth rate at the end.** The normal growth rate continues thereafter.

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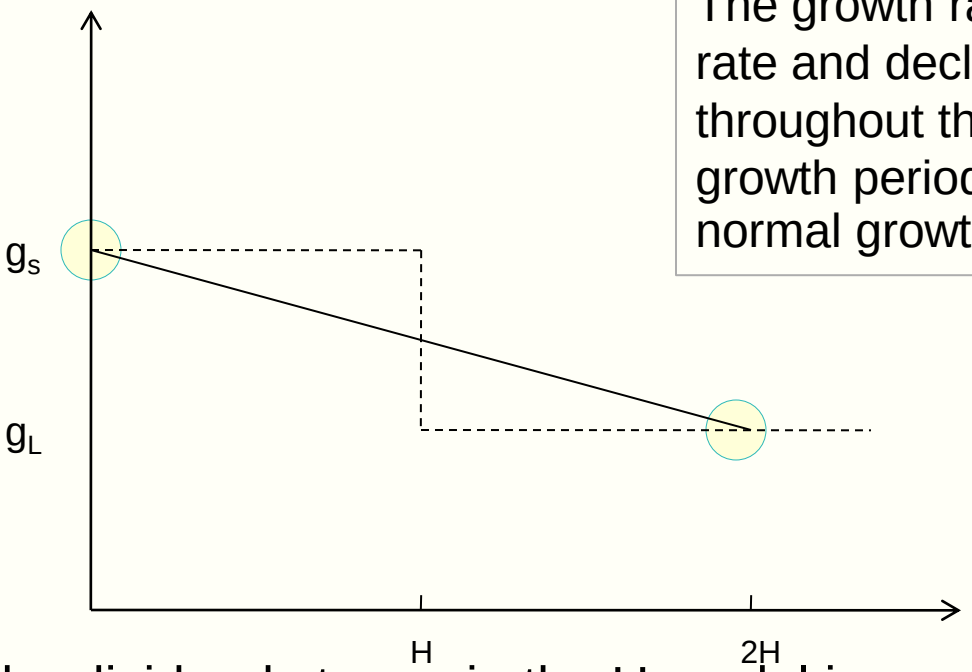
The H-Model



The growth rate begins at a high rate and declines linearly throughout the super-normal growth period until it reaches the normal growth rate at the end.

- The value of the dividend stream in the H model is:

$$P_0 = \frac{D_0(1+g_L)}{r-g_L} + \frac{D_0 H(g_S - g_L)}{r-g_L}$$

V_0 = value per share at time zero
D_0 = current dividend
r = required rate of return on equity
g_S = initial short-term dividend high growth rate during 2H years
g_L = normal long-term dividend growth rate after year 2H
H = half-life of the high growth period (i.e., high growth period = 2H years)

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Example: H model

Example Siemens:

- Current dividend is $1.00.
- The dividend growth rate is 29.28%, declining linearly over a sixteen year period to a final and perpetual growth rate of 7.26%.
- The risk-free rate is 5.34%, the market risk premium is 5.32%, and the beta, estimated against the DJIA index, is 1.37.
- The required rate of return for Siemens is:

  $r = r_f + b_i(r_m - r_f) = 5.34\% + 1.37(5.32\%) = 12.63\%$.

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H model example

- Using the H model, the value of Siemens' stock is:

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Valuing a non-dividend paying stock

- This can be viewed as a special case of the two-stage DDM where the dividend in stage one is zero.
- Forecasting the length of stage one and the dividend pattern in stage two are the challenges.

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Three-stage DDM

- There are two popular version of the three-stage DDM
  - The first version is like the two-stage model, only the firm is assumed to have a constant dividend growth rate in each of the three stages.
  - A second version of the three-stage DDM combines the two-stage DDM and the H model. In the first stage, dividends grow at a high, constant (supernormal) rate for the whole period. In the second stage, dividends decline linearly as they do in the H model. Finally, in stage three, dividends grow at a sustainable, constant rate.

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Spreadsheet DDM

- Forecast dividends for a visible time horizon, and then handle the value of the remaining future dividends either by
  - Assigning a stylized growth pattern to dividends after the terminal point
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Spreadsheet modeling

Usefulness:

- Can accommodate a variety of patterns of future dividend streams.
- **The expected rates of return can be imputed by finding the discount rate that equates the present value of the dividend stream to the current stock price.**

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Spreadsheet modeling

Weakness:

- Garbage in, garbage out. If the inputs are not economically meaningful, the outputs from the model will be of questionable value.
- Valuations are very sensitive to the inputs to the models.
- Analysts sometimes employ models that they do not understand fully.
- The choice of model should be made very carefully. There is a tendency to grab a model, put in the data, get the results, and use them without carefully justifying the logic of the underlying model and the appropriateness and realism of the values inserted into the model.

Case study: BBL

BBL reported earnings per share in 2011 of Bt14.43/share and paid dividend of Bt6.00/share. BBL has a policy to pay 40% of its annual net profit as dividend and targets to maintain ROE of 12% per year.

a) What is BBL's internal growth rate?

b) Base on BBL's target internal growth rate. The bank share price of Bt190/share reflects what level of expected return?

c) What is BBL's cost of equity given beta of 1.1, risk free rate of 3.75% and market risk premium of 7%?

d) If BBL's share price of Bt190/share is at the equilibrium level at reflected the expected return based on CAPM. What is the market's expectation on BBL future growth rate?

e) If BBL management said the bank growth rate will be in line with the target growth based on its dividend payout ratio and ROE targets, should investors buy BBL's shares? Why?

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