Chapter 9

Stock Valuation

http://www2.gsu.edu/~fnccw/pdf/ch9jaffev3overview.pdf

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Key Concepts and Skills

- Understand how stock prices depend on future dividends and dividend growth
- Be able to compute stock prices using the dividend growth model
  - Compute Returns using the dividend growth model and CAPM
- Understand how growth opportunities affect stock values
- Understand the PE ratio
- Understand how stock markets work

Chapter Outline

9.1 The Present Value of Common Stocks
9.2 Estimates of Parameters in the Dividend Discount Model
9.3 Growth Opportunities
9.4 Price-Earnings Ratio
9.5 The Stock Markets

9.1 The PV of Common Stocks

- The value of any asset is the present value of its expected future cash flows.
- Stock ownership produces cash flows from:
  - Dividends
  - Capital Gains

Valuation of Different Types of Stocks

- Zero Growth (Preferred Stock)
- Constant Growth
- Differential Growth

Case 1: Zero Growth

- Assume that dividends will remain at the same level forever
  \[ P_0 = \frac{\text{Div}_1}{(1+R)^1} + \frac{\text{Div}_2}{(1+R)^2} + \frac{\text{Div}_3}{(1+R)^3} + \cdots \]

Case 2: Constant Growth/Gordon

Assume that dividends will grow at a constant rate, \( g \), forever, i.e.,

\[
\begin{align*}
\text{Div}_1 &= \text{Div}_0(1+g) \\
\text{Div}_2 &= \text{Div}_0(1+g)^2 \\
\text{Div}_3 &= \text{Div}_0(1+g)^3 \\
\end{align*}
\]

Since future cash flows grow at a constant rate forever, the value of a constant growth stock is the present value of a growing perpetuity:

\[
P_0 = \frac{\text{Div}_0}{R - g}
\]
Constant Growth Example

Suppose Big D, Inc., just paid a dividend of $.50. It is expected to increase its dividend by 2% per year. If the market requires a return of 15% on assets of this risk level, how much should the stock be selling for?

\[ P_0 = 0.50(1 + 0.02) / (0.15 - 0.02) = 3.92 \]

Case 3: Differential Growth

Dividends will grow at different rates in the future and then will grow at a constant rate thereafter. To value a Differential Growth Stock, we need to:
- Estimate future dividends in the foreseeable future.
- Estimate the future stock price when the stock becomes a Constant Growth Stock (case 2).
- Compute the total present value of the estimated future dividends and future stock price at the appropriate discount rate.

A Differential Growth Example

A common stock just paid a dividend of $2. The dividend is expected to grow at 8% for 3 years, then it will grow at 4% in perpetuity. What is the stock worth? The discount rate is 12%.

\[ P_0 = \frac{2(1.08)}{1.12} + \frac{2(1.08)^2}{(1.12)^2} + \frac{2(1.08)^3 + 32.75}{(1.12)^3} = 28.89 \]

Where Does \( R \) Come From?

The discount rate can be broken into two parts.
- \( R = \frac{\text{Div}_1}{P_0} + g \)
- The dividend yield
- The growth rate (in dividends)

In practice, there is a great deal of estimation error involved in estimating \( g \) and \( R \).
9.3 Growth Opportunities

- Growth opportunities are opportunities to invest in positive NPV projects.
- The value of a firm can be conceptualized as the sum of the value of a firm that pays out 100% of its earnings as dividends plus the net present value of the growth opportunities.

\[ P = \frac{EPS}{R} + NPVGO \]

9.4 Price-Earnings Ratio

- Many analysts frequently relate earnings per share to price.
- The price-earnings ratio is calculated as the current stock price divided by annual EPS.

\[ P/E \text{ ratio} = \frac{\text{Price per share}}{\text{EPS}} \]

Stock Market Reporting

- Gap Inc. (GPS) paid a dividend of 34 cents per share. Given the current price, the PE ratio is 8.34.
- 8,829,800 shares traded hands in the last day’s trading.
- Gap ended trading at $11.06, which is up 45 cents from yesterday.
Contact Information

- Office: RCOB 18, U. of West Georgia
- Office Phone and Voicemail: (770)301-8648 (cell) or (678)839-4816 (office)
- Class Webpage: Ulearn
- E-mail: Ulearn (preferred) or chodges@westga.edu or chodges@gsu.edu
- Social Networking: Facebook, LinkedIn, and Instant Messenger
  mba8622@hotmail.com