Common Stock Valuation

Chapter 10
Charles P. Jones, Investments: Analysis and Management,
Ninth Edition, John Wiley & Sons
Fundamental Analysis

• Present value approach
  – Capitalization of expected income
  – Intrinsic value based on the discounted value of the expected stream of cash flows

• Multiple of earnings approach
  – Valuation relative to a financial performance measure
  – Justified P/E ratio
Present Value Approach

• Intrinsic value of a security is

\[
\text{Value of security} = \sum_{t=1}^{n} \frac{\text{Cash Flows}}{(1 + k)^t}
\]

• Estimated intrinsic value compared to the current market price
  – What if market price is different than estimated intrinsic value?
Required Inputs

• Discount rate
  – Required rate of return: minimum expected rate to induce purchase
  – The opportunity cost of dollars used for investment

• Expected cash flows
  – Stream of dividends or other cash payouts over the life of the investment
Required Inputs

• Expected cash flows
  – Dividends paid out of earnings
    • Earnings important in valuing stocks
  – Retained earnings enhance future earnings and ultimately dividends
    • Retained earnings imply growth and future dividends
    • Produces similar results as current dividends in valuation of common shares
Dividend Discount Model

- Current value of a share of stock is the discounted value of all future dividends

\[ P_{cs} = \frac{D_1}{(1 + k_{cs})^1} + \frac{D_2}{(1 + k_{cs})^2} + \ldots + \frac{D_{\infty}}{(1 + k_{cs})^{\infty}} \]

\[ = \sum_{t=1}^{\infty} \frac{D_t}{(1 + k_{cs})^t} \]
Dividend Discount Model

• Problems:
  – Need infinite stream of dividends
  – Dividend stream is uncertain
    • Must estimate future dividends
  – Dividends may be expected to grow over time
    • Must model expected growth rate of dividends and need not be constant
Dividend Discount Model

• Assume no growth in dividends
  – Fixed dollar amount of dividends reduces the security to a perpetuity

  \[ P_0 = \frac{D_0}{k_{cs}} \]

  – Similar to preferred stock because dividend remains unchanged
Dividend Discount Model

• Assume a constant growth in dividends
  – Dividends expected to grow at a constant rate, \( g \), over time
    \[
    D_1 = D_0 \times (1+g)
    \]
    \[
    P_0 = \frac{D_1}{k - g}
    \]
  – \( D_1 \) is the expected dividend at end of the first period
  – \( D_1 = D_0 \times (1+g) \)
Dividend Discount Model

- Implications of constant growth
  - Stock prices grow at the same rate as the dividends
  - Stock total returns grow at the required rate of return
    - Growth rate in price plus growth rate in dividends equals k, the required rate of return
  - A lower required return or a higher expected growth in dividends raises prices
Dividend Discount Model

- Multiple growth rates: two or more expected growth rates in dividends
  - Ultimately, growth rate must equal that of the economy as a whole
  - Assume growth at a rapid rate for $n$ periods followed by steady growth

\[
P_0 = \sum_{t=1}^{n} \frac{D_0(1+g_1)^t}{(1+k)^t} + \frac{D_n(1+g_c)}{k-g} \frac{1}{(1+k)^n}
\]
Dividend Discount Model

• Multiple growth rates
  – First present value covers the period of super-normal (or sub-normal) growth
  – Second present value covers the period of stable growth
    • Expected price uses constant-growth model as of the end of super- (sub-) normal period
    • Value at n must be discounted to time period zero
Example: Valuing equity with growth of 30% for 3 years, then a long-run constant growth of 6%

\[ D_0 = 4.00 \quad 5.20 \quad 6.76 \quad 8.788 \quad 9.315 \]

\[ P_0 = 4.48 \quad 5.02 \quad 5.63 \quad 59.68 \]

\[ P_3 = 9.315 \]

\[ 74.81 = P_0 \]
What About Capital Gains?

• Is the dividend discount model only capable of handling dividends?
  – Capital gains are also important

• Price received in future reflects expectations of dividends from that point forward
  – Discounting dividends or a combination of dividends and price produces same results
Intrinsic Value

• “Fair” value based on the capitalization of income process
  – The objective of fundamental analysis

• If intrinsic value $>($<) current market price, hold or purchase (avoid or sell) because the asset is undervalued (overvalued)
  – Decision will always involve estimates
P/E Ratio or Earnings Multiplier Approach

• Alternative approach often used by security analysts
• P/E ratio is the strength with which investors value earnings as expressed in stock price
  – Divide the current market price of the stock by the latest 12-month earnings
  – Price paid for each $1 of earnings
P/E Ratio Approach

• To estimate share value

\[ P_o = \text{estimated earnings} \times \text{justified P/E ratio} = E_1 \times P_o/E_1 \]

• P/E ratio can be derived from

\[ P_o = \frac{D_1}{k - g} \text{ or } P_o/E_1 = \frac{D_1/E_1}{k - g} \]

– Indicates the factors that affect the estimated P/E ratio
P/E Ratio Approach

• The higher the payout ratio, the higher the justified P/E
  – Payout ratio is the proportion of earnings that are paid out as dividends

• The higher the expected growth rate, g, the higher the justified P/E

• The higher the required rate of return, k, the lower the justified P/E
Understanding the P/E Ratio

• Can firms increase payout ratio to increase market price?
  – Will future growth prospects be affected?
• Does rapid growth affect the riskiness of earnings?
  – Will the required return be affected?
  – Are some growth factors more desirable than others?
• P/E ratios reflect expected growth and risk
P/E Ratios and Interest Rates

• A P/E ratio reflects investor optimism and pessimism
  – Related to the required rate of return

• As interest rates increase, required rates of return on all securities generally increase

• P/E ratios and interest rates are indirectly related
Which Approach Is Best?

• Best estimate is probably the present value of the (estimated) dividends
  – Can future dividends be estimated with accuracy?
  – Investors like to focus on capital gains not dividends

• P/E multiplier remains popular for its ease in use and the objections to the dividend discount model
Which Approach Is Best?

• Complementary approaches?
  – P/E ratio can be derived from the constant-growth version of the dividend discount model
  – Dividends are paid out of earnings
  – Using both increases the likelihood of obtaining reasonable results

• Dealing with uncertain future is always subject to error
Other Multiples

- **Price-to-book value ratio**
  - Ratio of share price to stockholder equity as measured on the balance sheet
  - Price paid for each $1 of equity
- **Price-to-sales ratio**
  - Ratio of a company’s total market value (price times number of shares) divided by sales
  - Market valuation of a firm’s revenues
END