Stock Valuation: A Second Look

Gestão Financeira I
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Corporate Finance I
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Outline

- Free Cash Flow Valuation Models;
- Valuation based on Comparable Firms.
- Information, Competition, and Stock Prices
- Individual Biases and Trading

The Discounted Free Cash Flow Model

- The Discounted Free Cash Flow Model determines the value of the firm to all investors, including both equity and debt holders (Enterprise Value):

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

- The model starts by forecasting the Free Cash Flows for the whole company (in total, for equity-holders and debt-holders):

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

- This could be re-written as:

$$FCF = EBIT(1 - Tc) - \text{Net Investment in Fixed Assets} - \text{Increases in NWC}$$

The Discounted Free Cash Flow Model (cont.)

- After estimating the FCFs of the firm they will be discounted at a rate that reflects both the cost of equity (r_E) and the cost of debt.
  - The rate most widely used is the Weighted Average Cost of Capital, r_{wacc}
  - The Enterprise Value is computed as:

$$V_0 = \frac{FCF_1}{1 + r_{\text{wacc}}} + \frac{FCF_2}{(1 + r_{\text{wacc}})^2} + \cdots + \frac{FCF_N}{(1 + r_{\text{wacc}})^N} + \frac{V_N}{(1 + r_{\text{wacc}})^N}$$

  - with the Terminal Value V_N estimated by assuming a constant long-run growth rate g_{FCF} for free cash flows beyond year N, so that:

$$V_N = \frac{FCF_{N+1}}{r_{wacc} - g_{FCF}} = \frac{FCF_N \times (1 + g_{FCF})}{r_{wacc} - g_{FCF}}$$

The Discounted Free Cash Flow Model (cont.)

- Example: Assume we are at the end of year 2005. Consider the following forecasted FCFs for company KCP. The long-run growth rate for the FCF is 4%, from 2011 onwards. The cost of capital (r_{wacc}) is 11%.

Year	2005	2006	2007	2008	2009	2010	2011
1. Sales	518	564,6	609,8	652,5	691,6	726,2	755,3
2. Annual growth sales (vs previous yr)		9%	8%	7%	6%	5%	4%
3. EBIT (9%Sales)		50,82	54,88	58,72	62,25	65,36	67,97
4. Income Tax (37%)		18,8	20,31	21,73	23,03	24,18	25,15
5. Net Investment (8% Change in Sales)		3,73	3,614	3,415	3,132	2,766	2,324
6. Increases in NWC (10% Change Sales)		4,662	4,517	4,269	3,915	3,458	2,905
7. Free Cash Flow (3-4-5-6)		**23,62**	**26,44**	**29,31**	**32,17**	**34,95**	**37,59**

- To compute the Terminal Value: $V_{2011} = \frac{37.6 \times (1+0.04)}{0.11-0.04} = \$558.6 \text{million}$
- Enterprise Value is: $V_0 = V_{2005} = \frac{23.6}{1.11} + \frac{26.4}{1.11^2} + \frac{29.3}{1.11^3} + \frac{32.2}{1.11^4} + \frac{35.0}{1.11^5} + \frac{37.6+558.6}{1.11^6} = \$424.8 \text{million}$
- Assuming **Total Cash of $100 million**, **$3 million of debt**, and a total number of shares outstanding of 21 million, the share price should be:

$$P_{2005} = \frac{424.8+100-3}{21} = \$24.85$$

The Discounted Free Cash Flow Model (cont.)

- It's absolutely crucial to perform sensitivity analysis!
- Connection to Capital Budgeting:
  - The firm's FCFs is equal to the sum of the FCFs from the firm's current and future investments.
  - We can interpret the firm's enterprise value as the total NPV that the firm will earn from continuing its existing projects and initiating new ones.
  - To maximize the firm's share price, we should accept projects that have a positive NPV.

The Method of Comparables (Comps)

- With the Method of Valuation based on Comparable Firms we 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.
- For chosen comparable firms we compute ratios (multiples) of their market valuations to some performance indicators.
- We then apply those multiples to our firm.

The Method of Comparables (cont.)

- **Valuation Multiples**: A ratio of firm's value to some measure of the firm's scale or cash flow.
  - The Price-Earnings Ratio: P/E Ratio
    - Share price divided by current earnings per share
    - Other versions:
      - Trailing P/E:
        - » Trailing Earnings (Earnings over the last 12 months)
      - Forward P/E:
        - » Forward Earnings (Expected earnings over the next 12 months)

The Method of Comparables (cont.)

- 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.**

The share price for Best Buy is estimated by multiplying its earnings per share by the P/E of comparable firms.

$$P_0 = \$2.22 \times 19.7 = \$43.73$$

The Method of Comparables (cont.)

- Enterprise Value Multiples, such as: $\frac{\text{Enterprise Value}_0}{EBITDA_1}$
- Example:
  - Best Buy Co. Inc. (BBY) has EBITDA of $2,766,000,000 and 410 million shares outstanding.
  - Best Buy also has $1,963,000,000 in debt and $509,000,000 in cash.
  - **If Best Buy has an enterprise value to EBITDA multiple of 7.7, estimate the value for a share of Best Buy stock.**

$$\text{Enterprise Value} = 7.7 \times \$2{,}766{,}000{,}000 = \$21{,}298{,}200{,}000$$

$$P_0 = \frac{21{,}298{,}200{,}000 - 1{,}963{,}000{,}000 + 509{,}000{,}000}{410{,}000{,}000} = \$48.40$$

The Method of Comparables (cont.)

- Examples of Other Multiples
  - Multiple of sales
  - Price to book value of equity per share
  - Enterprise value per subscriber
    - Used in cable TV industry

Comparing the Valuation Methods

- The Dividend Discount Models are hard to implement because it's difficult to estimate dividends – estimating a value for the share price requires detailed knowlegde of financing an payout policies.
- The Method of Comparables is based only on the performance of other firms in the industry. Does not help if our firm has different expectations, or if there is mispricing in the industry.
- **The Discounted Free Cash Flow Method is the most reliable:** based on estimating the fundamentals of the firm, determining total Enterprise Value. Financing choices and payout policy can be taken into account separately.

Information, Competition, and Stock Prices

- Information in Stock Prices
  - For a publicly traded firm, market price should already provide very accurate information regarding the true value of its shares
  - A valuation model is best applied to tell us something about future cash flows or cost of capital, based on current stock price
    - Only in the relatively rare case in which we have some superior information that other investors lack would it make sense to second-guess the stock price

Information, Competition, and Stock Prices

- Competition and Efficient Markets
  - Efficient markets hypothesis:
    - Implies that securities will be fairly priced, based on their future cash flows, given all information that is available to investors
  - Public, Easily Available Information:
    - Information available to all investors includes information in news reports, financial statements, corporate press releases, or other public data sources
  - Private or Difficult-to-Interpret Information

Lessons for Investors and Corporate Managers

- The Efficient Markets Hypothesis implies that securities will be fairly priced, based on their future cash flows, given all information that is available to investors.

- If stocks are fairly priced, then investors who buy stocks can expect to receive future cash flows that fairly compensate them for the risk of their investment.

- If our estimate of stock price differs strongly from the market price, we must go back and revise the assumptions of our valuation model. We need to know more than other investors in order to disagree with the market valuation