What is a Company Worth?

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Session 4 - GEC Academy

Multiples Valuation

Roadmap

- **Multiples Valuation:**
  - Estimating value by comparison.
  - How to identify comparables?
  - What multiples to use?
  - Example: Apple's Price / Earnings multiple (P/E).
- **Dividend Discount Model (DDM):**
  - Value as the sum of discounted cash-flows.
  - Link between P/E multiples and DDM.
  - Growth rates and opportunities.

Relative Valuation Techniques

- How much something worth?
  - One approach we saw is based on the PV of expected cash flows.
  - Another is to use the price of similar things to value what we want.
- **Multiples Valuation** (or comparables valuation) does just that.
- **Main Idea:** Companies with similar attributes should have similar values.
  - **Implication:** We can use similar peers to value our company.
  - The formula for a certain characteristic X and the comparable's multiple is:

$$\mathbf{V_{Firm}} = \mathbf{M_X^{Peers}} * \mathbf{X_{Firm}}$$

- **Example:** Suppose the rent of a 2-bedroom is 10,000 RMB/month. Is this fair?
  - Look at properties on the same neighborhood.
  - Find similar properties (rent, size, no. of rooms, etc.). Take $(Rent/Size)$ for example.
  - The average $(Rent/Size) * Size(Our\ Flat)$ provides a good estimate of the fair value.

Step-by-step procedure:

- General Formula: $\mathbf{V_{Firm}} = \overline{\left(\frac{Value}{X}\right)}_{Peers} * X(Company)$, where X is the measure used to compute the multiple and V is the value used on the numerator.
- Most common firm valuation multiples are price-earnings ratio (P/E) and EV/EBITDA.
- Take the P/E as an example:
  1. Identify firms in the same business as the firm you want to value.
  2. Compute P/E ratios for each comparable and average them as you find appropriate (e.g. mean or median value).
  3. Multiple the average P/E by the earnings of the firm you want to value.
- Usually a measure of value is in the numerator (stock price, enterprize value, etc.).
- Usually a cash-flow measure in the denominator (Earnings, Sales, etc.).
- P/E is the most common multiple out there. Learn its drawbacks!

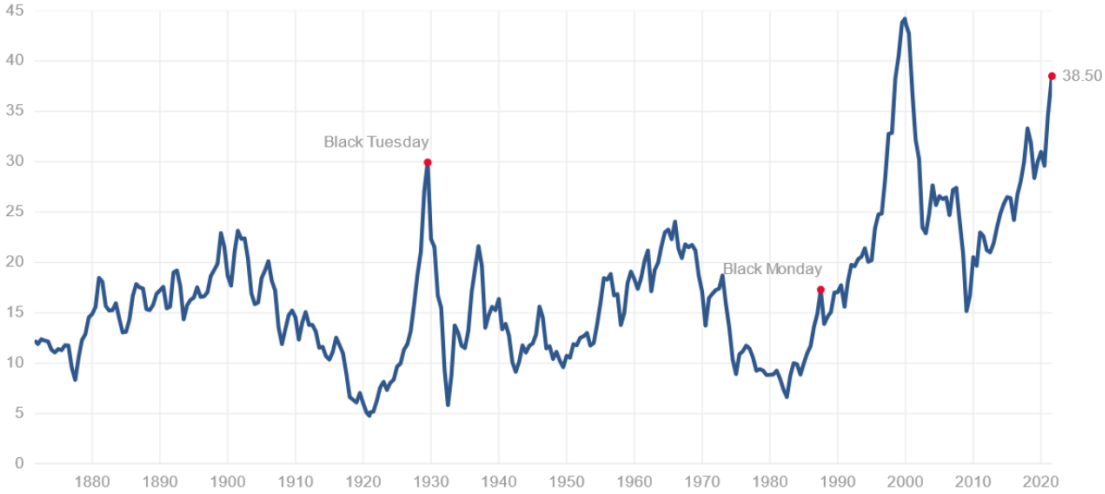
Example: Valuing Apple with P/E

- Mar-2008 data for Apple from Yahoo! Finance:

	Apple	Dell	HP	MSFT	Industry
Mkt. Cap.(bi)	109.50	43.77	124.47	263.67	44.69
Price	124.59	20.04	48.62	28.32	-
EPS	4.56	1.31	2.93	1.76	1.33
P/E	27.33	15.27	16.58	16.11	26.70

- Comps P/E: $15.99 = P_{Apple}/4.56 \Rightarrow P_{Apple} = 15.99 * 4.56 \Rightarrow P_{Apple} = 72.88$
- Industry P/E: $26.70 = P_{Apple}/4.56 \Rightarrow P_{Apple} = 26.70 * 4.56 \Rightarrow P_{Apple} = 121.33$
- Are Dell, HP and Microsoft really the best set of comparables to Apple?
- "Industry" here is Personal Computers. Does it make sense in 2008 (pre-IPhone)?
- Is Apple overvalued? What could explain these differences?

US Historical P/E Ratios: 1880-2021



- Periods of extremely high P/Es have usually preceded stock market crashes.

Multiples: Pros and Cons

- **Pros**:
  - Incorporates loads of information in a simple way.
  - Embodies market consensus about discount rate and growth rate.
  - Free-ride on market's information.
  - Disciplines valuation process.
- **Cons**:
  - Hard to find true comparable companies (e.g., Facebook, Alibaba, Didi).
  - Implicitly assumes competitors' strategies, growth rates, costs of capital are all similar.
  - What to do if major operational changes are going to be implemented soon?
  - Accounting differences across countries may be different, particularly with earnings and equity-based measures. Multiples of FCF and EBITDA are preferable for this reason.
- Different ratios are often used to "triangulate" reasonable answers.

Discounted Cash-Flow Valuation

- The price of any security should be given by the sum of its *expected* cash-flows.
- For stocks, we usually think about dividends or earnings.
  - If we use dividends or earnings we obtain *equity* value.
  - I.e., if we use cash-flows going to shareholders we get share price.
- Price today depends on next period's dividend and sale price:

$$P_0 = \frac{D_1}{1 + r_E} + \frac{P_1}{1 + r_E}$$

- **Main inputs:**
  - Numerator: Dividend Payments, price estimate.
  - Denominator: Expected rate of return (R).
- Careful with your assumptions: GIGO principle!

Dividend Growth Model

$$P_0 = \frac{D_1}{1+r_E} + \frac{P_1}{1+r_E} = \frac{D_1}{1+r_E} + \frac{D_2}{(1+r_E)^2} + \frac{P_2}{(1+r_E)^2}$$

$$P_0 = \frac{D_1}{1+r_E} + \frac{D_2}{(1+r_E)^2} + \ldots = \sum_{t=1}^{\infty} \frac{D_t}{(1+r_E)^t}$$

- Take a firm with constant growth rate of dividends and payout.

$$P_0 = \frac{D_1}{1+r_E} + \frac{(1+g)*D_1}{(1+r_E)^2} + \ldots$$

$$P_0 = \frac{D_1}{r_E - g} = \frac{E_1 * \text{Payout Ratio}}{r_E - g}$$

$$r_E = \frac{D_1}{P} + g = \frac{E_1}{P} * \text{Payout Ratio} + g$$

- All else equal, firms with better growth opportunities also have lower E/P ratios.

P/E Ratios of selected US Industries: 2007

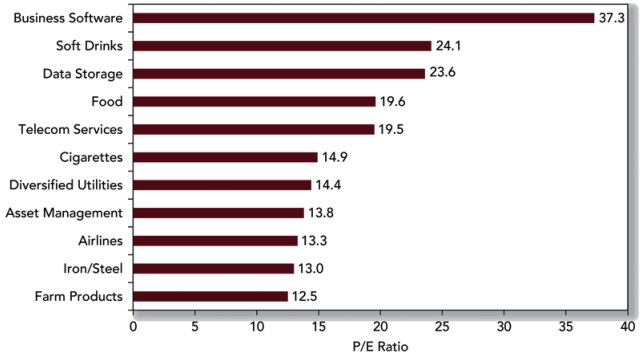


FIGURE 18.6 P/E ratios for different industries, 2007

Source: Data collected from Yahoo! Finance, November 5, 2007.

- Comparison should only be made for firms with similar LT growth.
- Although higher risk should mean lower P/E, high growth firms usually have high P/E.

Wrap Up

- Multiples are great for a quick estimate of value. . .
  IF we are careful with how we compute it
  and know what we will use it for.
- Link to DCF models: Where does value come from?
- Don't forget that multiples give a relative measure of value.
- Great as a reality check versus more complex DCF calculations.
- Know it well! Everybody uses it.