PRICE-TO-EARNING (P/E) RATIO

Price-to-Earnings ratio can be calculated in two way:

- One is called the actual price multiple, and
- The other is justified price multiple

If the actual multiple is greater than the justified multiple, the stock is overvalued; if the actual multiple is less than the justified multiple, the stock is undervalued (all else equal).

Actual P/E ratio

Actual P/E ratio

= Market price per share / Earnings per share

Where,

- Market price per share is the current market price prevailing in the market, and
- Earnings per share is the reported EPS is the books of account.

Justified Price Multiple

- A justified price multiple is that multiple when the stock price is fairly valued.

- There are two versions of the P/E ratio:
  - Trailing P/E
  - Leading P/E

- The difference in both is how earnings are calculated.
- Trailing P/E uses earnings over the most recent 12 months (fiscal year) in the denominator.
- Leading P/E ratio uses next year's expected earnings, which is defined as either expected earnings per share (EPS) for the next fiscal year.
- Leading P/E also called forward or prospective P/E

- Trailing P/E is not useful for forecasting and valuation if the firm’s business has changed.

- Leading P/E may not be relevant if earnings are sufficiently volatile so that next year’s earnings are not forecast able with any degree of accuracy.

Justified P/E Multiple

- In justified P/E multiple, the numerator equal to the fundamental value derived from a valuation model.
- The best way to analyze the fundamental factors that affect the P/E ratio is to use the single stage Gordon growth model

Gordon growth model

$$P_0 = D_0 (1+g) / (r-g) = D_1 / (r-g)$$

Where:

P_0 = fundamental value

D_0 = dividend just paid

D_1 = dividends expected to be received at the end of Year 1

g = growth rate

r = required rate on equity

Justified Trailing P/E

Justified Trailing P/E

$= P_0 / E_0$

$= [D_0 (1+g) / E_0] / (r-g)$

$= (1-b) (1+g) / (r-g)$

[where, D_0 / E_0 = dividend payout]

Justified Leading P/E

Justified Leading P/E

$= P_0 / E_1$
$= [D_0 (1+g) / E_1] / (r-g)$
$= [D_1 / E_1] / (r-g)$
$= (1-b) / (r-g)$

Conclusion

By examining the formulas for justified (leading and trailing) P/E, we can conclude that the fundamental factors that affect P/E are expected growth rate and required return (which is related to risk). The justified P/E ratio is:

- Positively related to the growth rate of expected cash flows, all else equal
- Inversely related to the stock's required rate of return, all else equal