

Corporate Finance¹
Quick Sheet²

EBIT = Earnings before interest and taxes

EBIT is often referred to as Operating Income

EBITDA = Earnings before interest, taxes, depreciation and amortization

CFFA₁ = **OCF** – **NCS** - **ΔNWC**

OCF = **EBIT + Depreciation & Amortization – Taxes**

NCS = **FA₁ – FA₀ + Depreciation & Amortization**

ΔNWC = **(CA₁-CL₁)-(CA₀-CL₀)**

CFFA₁ = **CFFA₂** = **CF_{CR}** + **CF_{SH}**

CF_{CR} = **Interest Paid – Net New Borrowing**

CF_{SH} = **Dividends Paid – Net New Equity**

NOPAT = Net Operating Profit Less Taxes = **EBIT – Taxes Paid**

NOPLAT = Net Operating Profits Less Adjusted Taxes = **EBIT * (1 – T)**

T is equal to the tax rate on the firm's EBIT were it to be subjected to tax

NI = **EBIT – Interest - Taxes**

RE = Retained Earnings = **Net Income – Dividends Paid**

PM = Profit Margin = $\frac{\text{Net Income}}{\text{Sales}}$

The term "Sales" in finance is often used to represent total income or total revenue

TIE = Times Interest Earned = $\frac{\text{EBIT}}{\text{Interest Expense}}$

CR = Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

QR = Quick Ratio = $\frac{\text{Cash and Equivalents}}{\text{Current Liabilities}}$

LTE = Liabilities to Shareholder Equity = $\frac{\text{Total Liabilities}}{\text{Shareholder Equity}}$

TA = Total Assets = **Current Assets + Fixed Assets** (*the entirety of the left hand side of the balance sheet*)

TE = Total Equity = **Book Value of All Outstanding Equity Shares + Retained Earnings**

TAT = Total Asset Turns = $\frac{\text{Sales}}{\text{TA}}$

EM = Equity Multiplier = $\frac{\text{TA}}{\text{TE}}$

DE = Debt to Equity ratio = $\frac{\text{TD}}{\text{TE}} = 1 - \text{EM}$

¹ The Corporate Finance Quick Sheet is intended to present an abbreviated presentation of the included concepts in corporate finance and is not intended to be a full or complete representation of the concepts, models, metrics or the underlying foundations from which they are built.

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$$\text{ROA} = \text{Return on Assets} = \frac{NI}{TA}$$

$$\text{ROE} = \text{Return on Equity} = \frac{NI}{TE}$$

$$\text{Equity Turns} = \frac{\text{Sales}}{TE}$$

$$\text{Equity Ratio} = \frac{TE}{TA}$$

$$\text{ROE}_{\text{DUPONT}} = \text{Dupont Identity} = \text{PM} * \text{TAT} * \text{EM} = \frac{NI}{\text{Sales}} * \frac{\text{Sales}}{TA} * \frac{TA}{TE}$$

$$\text{ROA}_{\text{DUPONT}} = \text{Dupont Identity} = \text{PM} * \text{Equity Turns} * \text{Equity Ratio} = \frac{NI}{\text{Sales}} * \frac{\text{Sales}}{TE} * \frac{TE}{TA}$$

$$\mathbf{b} = \text{Retention Ratio} = \frac{NI - \text{Dividends}}{NI} = \frac{\text{EPS} - \text{DPS}}{\text{EPS}}$$

$$\mathbf{1-b} = \text{Payout Ratio} = \frac{\text{Dividends}}{NI} = \frac{\text{DPS}}{\text{EPS}}$$

$$\text{SGR} = \text{Sustainable Growth Rate} = \frac{ROE * b}{1 - (ROE * b)}$$

$$\text{IGR} = \frac{ROA * b}{1 - (ROA * b)}$$

$$\text{Net Inv} = \text{Net Investment} = \Delta IC = IC_1 - IC_0$$

$$= \Delta FA + \Delta NWC$$

$$= \text{NCS} + \Delta NWC - \text{Dep}$$

$$\text{NCS} = \text{Net Capital Spending} = FA_1 - FA_0 + \text{Dep}$$

$$\text{IR} = \text{Investment Rate} = \frac{\text{Net Investment}}{\text{NOPLAT}}$$

$$\text{IC} = \text{Invested Capital} = \text{Fixed Assets} + \text{Net Working Capital} \quad \text{Operations approach}$$

$$= \text{Total Equity} + \text{Total Long Term Debt} \quad \text{Financing approach}$$

$$\text{ROIC} = \text{Return on Invested Capital} = \frac{\text{NOPLAT}}{\text{IC}}$$

g = growth rate of the subject cash flow variable

$$g = \frac{\text{Cash Flow Variable}_{\text{END}} - \text{Cash Flow Variable}_{\text{BEGINNING}}}{\text{Year}_{\text{END}} - \text{Year}_{\text{BEGINNING}}}$$

g = IR x ROIC - when g is calculated in this manner it is not likely to be the same as the g calculated above. This form of g is the level of growth the firm should be able to sustain given its current level of ROIC, investment rate, and capitalization.

$$\text{WACC} = \text{Weighted Average Cost of Capital} = \left(\frac{E}{V} \times R_E\right) + \left(\frac{P}{V} \times R_P\right) + \left(\frac{D}{V} \times R_D\right) (1 - T_C)$$

$E + P + D = V$ Values of firm's capital structure. Depending on the perspective of the analysis you're conducting, this might be book value based or market value based.

Opportunity cost of Debt (R_D)

- 1) $R_D = \text{YTM or Current Yield}$ for a similar type (maturity, risk, etc) of long term debt to that held by the subject firm
- 2) $R_D = \frac{\text{Interest}_t}{\text{Debt}_{t-1}}$ is a next best alternative if YTM is unavailable

Opportunity cost of Preferred Equity (R_P)

- 1) $R_P = \text{YTM or Current Yield}$ for a similar type preferred stock as that held by the firm (voting rights, callability, convertibility, etc.) if available
- 2) $R_P = R_F + \beta(R_M - R_F)$ if data is available
- 3) $R_P = \frac{\text{Preferred Dividends Paid}_t}{\text{Value of Preferred}_{t-1}}$ – this may reflect market value or book value depending on the perspective from which WACC is being calculated and the data available.

Opportunity cost of Common Equity (R_E)

- 1) $R_E = R_F + \beta(R_M - R_F)$ This is the CAPM construction and is preferred if the data is available
- 2) $R_E = \frac{D_1}{P_0} + g$ – this stems from the Dividend Yield equation $P_0 = \frac{D_1}{r-g}$ in which Modigliani & Miller suggest that if D_1 is the dividend for a common stock, the P_0 is the current price of that stock based on the stock's expected return (r) and long run growth rate of the dividend (g) – as such r , or R_E , is the opportunity cost of the common stock.

CAPM - Capital Asset Pricing Model

R_F = risk free market return; this value may be a current 2 or 10 year US Treasury rate

R_M = average market return for equity for industry in which the subject firm resides

β = risk adjustment for firm compared to the industry average for the firm such that $\beta = 1$ indicates firm risk/volatility level is equal to that of the average firm in the industry

FCF = Free Cash Flow

$$\text{FCF} = \text{NOPLAT} + \text{Depreciation} - \Delta\text{NWC} - \text{NCS}$$

$$\text{FCF} = \text{NOPLAT} - \text{Net Investment}$$

$$\text{FCF} = \text{NOPLAT} \left(1 - \frac{g}{\text{ROIC}}\right)$$

These two versions of FCF should result in the same value

Often yields a different value than those above.

$$\text{Market Value Bonds} = C \frac{\left[1 - \frac{1}{(1+YTM)^N}\right]}{YTM} + \frac{F}{(1+YTM)^N}$$

$$C = \frac{F * \text{Coupon Rate}}{\text{Periods per year}}$$

$$F = \text{Face Value}$$

$$YTM = \frac{\text{Current Market Yield}}{\text{Periods per year}}$$

$$N = \text{Years to Maturity} \times \text{Periods Per Year} = \text{Periods to Maturity}$$