Corporate Finance[1]
Quick Sheet[2]

Finance Terms and Outcomes

CAPM - Capital Asset Pricing Model : $R_E = R_F + \beta(R_M - R_F)$

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

$CFFA_1$ = OCF – NCS - ΔNWC

OCF = EBIT + Depreciation & Amortization – Taxes

NCS = FA_1 – FA_0 + Depreciation & Amortization

NWC = Current Assets – Current Liabilities = CA_i - CL_i

ΔNWC = $(CA_1-CL_1)-(CA_0-CL_0)$

$CFFA_1$ = $CFFA_2$ = CF_{CR} + CF_{SH} = Cash Flow to Creditors + Cash Flow to Shareholders

CF_{CR} = Interest Paid – Net New Borrowing = Interest Paid – (Long Term Debt$_1$ – Long Term Debt$_0$)

CF_{SH} = Dividends Paid – Net New Equity

COGS = Cost of Goods Sold = material inputs to those items the firm produces or sells

When the firm produces a tangible product COGS will include production-specific labor. When the firm provides a service COGS is sometimes thought of as that labor directly related to the provision of service, but in most cases service firms do not calculate COGS.

EBIT = Earnings before interest and taxes

EBIT is often referred to as Operating Income

EBITDA = Earnings before interest, taxes, depreciation and amortization

EPS = Earnings Per Share = (Net Income – Preferred Dividends Paid)/Common Shares Outstanding

EV = Enterprise Value = Mkt Cap Common + Mkt Cap Preferred + Mkt Value Long-Term Debt – Cash & Equivalents
when market value of long-term debt is not available, book value is often substituted

FCF = Free Cash Flow

FCF = $NOPLAT + Depreciation - \Delta NWC - NCS$

FCF = $NOPLAT - Net\ Investment$

These two versions of FCF should result in the same value

FCF = $NOPLAT \left(1 - \frac{g}{ROIC}\right)$ *Often yields a different value than those above.*

IC = Invested Capital **=** $Fixed\ Assets\ +\ Net\ Working\ Capital$ *Operations approach*

            = $Total\ Equity\ +\ Total\ Long\ Term\ Debt$ *Financing approach*

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

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

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

         $F\ =\ Face\ Value$

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

         $N = Years\ to\ Maturity\ x\ Periods\ Per\ Year$ = Periods to Maturity

NCS = Net Capital Spending **=** $FA_1\ -\ FA_0\ +\ Dep$

Net Inv = Net Investment = Δ IC = $IC_1 - IC_0$

              = Δ FA + Δ NWC

              = (FA_{1+} NWC_1) – (FA_0 + NWC_0)

              = NCS **– Dep** + Δ NWC

NI = Net Income = EBIT – Interest Paid – Taxes Paid

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

NOPLAT = Net Operating Profits Less Adjusted Taxes **=** $EBIT\ *\ (1 - T)$ *In this case T is equal to the tax rate on the firm's EBIT were it to be subjected to*

PPS = Price Per Share = Market Price Per Share

RE = Retained Earnings = Net Income – Dividends Paid   *Retained Earnings are found on the Income Statement, while Accumulated Retained Earnings are found on the Balance Sheet*

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

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

    $E + P + D = V$ 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.

<u>Opportunity cost of Debt (R_D)</u>
1) R_D = YTM or Current Yield for a similar type (maturity, risk, etc) of long term debt to that held by the subject firm
2) $R_D = \frac{Interest_t}{Debt_{t-1}}$: this may reflect market or book value of debt depending on the data available

<u>Opportunity cost of Preferred Equity (R_P)</u>
1) $R_P = \frac{Preferred\ Dividends\ Paid_t}{Value\ of\ Preferred_1}$: this may reflect market or book value or preferred depending on the data available

2) R_P = Dividend Rate of Preferred

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) $R_E = \dfrac{D_1}{P_0} + g$: this stems from the Dividend Yield equation $P_o = \dfrac{D_1}{r-g}$ in which Modigliani & Miller suggest that if D_1 is the dividend for a common stock, the P0 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 RE, is the opportunity cost of the common stock.

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

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

$$F = Face\ Value$$

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

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

Cash Burn/Build and Liquidity Ratios

Cash Build = Revenues_1 – ($\text{Accounts Receivables}_1$ – $\text{Accounts Receivables}_0$)

Cash Burn = ($\text{Operating Expenses}_1$ - Dep/Am_1 + Interest Paid_1 + Taxes Paid_1) + (Inventory_1 – Investory_0) – ($\text{Current Liabilities}_1$ – $\text{Current Liabilities}_0$) + ($\text{FA}_1$-$\text{FA}_0$+$\text{Dep\&Am}_1$)

Cash Ratio = $\dfrac{Cash}{Current\ Liabilities}$

Cash Coverage Ratio (aka Times Interest Earned) = $\dfrac{EBIT + Depreciation\ \&\ Amortization}{Interest\ Expense} = \dfrac{EBITDA}{Interest\ Expense}$

Current Ratio = $\dfrac{Current\ Assets}{Current\ Liabilities}$

Quick Ratio = $\dfrac{Cash + Accounts\ Receivaaaables}{Current\ Liabilities}$

Net Cash Burn = Cash Build – Cash Burn

Comparative Metrics and Ratios

b = Retention Ratio = $\dfrac{NI - Dividends}{NI}$; **1-b** = Payout Ratio = $\dfrac{Dividends}{NI}$

Capital Intensity Ratio = $\dfrac{TA}{Sales} = \dfrac{1}{Total\ Asset\ Turns}$

Debt-to-Equity Ratio = $\dfrac{Total\ Liabilities}{Total\ Equity}$

Debt Ratio = $\dfrac{Total\ Debt}{Total\ Assets} = 1 - \dfrac{1}{Equity\ Multiplier}$

EM = Equity Multiplier = $\dfrac{TA}{TE} = 1 + \dfrac{Total\ Debt}{Total\ Equity}$

Equity Ratio = $\dfrac{Total\ Equity}{Total\ Assets}$

Equity Turns = $\dfrac{Total\ Sales}{Total\ Equity}$

g = growth rate of the subject cash flow variable

$$g = \frac{Cash\ Flow\ Variable_{END} - Cash\ Flow\ Variable_{BEGINNING}}{Cash\ Flow\ Variable\ Year_{BEGINNING}}\ (\mathbf{100})$$

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.

IGR = Internal Growth Rate $\dfrac{ROA\ x\ b}{1-(ROA\ x\ b)}$

LTE = Liabilities to Shareholder Equity = $\dfrac{Total\ Liabilities}{Shareholder\ Equity}$

PE Ratio = Price/Earnings Ratio = PPS/EPS

PE Ratio is most commonly applied to common stock values and rarely applied to preferred stock shares

PM = Profit Margin = $\dfrac{Net\ Income}{Sales}$

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

PPS = Price Per Share = Market Price Per Share

ROA = Return on Assets = $\dfrac{NI}{TA}$

ROE = Return on Equity = $\dfrac{NI}{TE}$

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

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

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

SGR = Sustainable Growth Rate = $\dfrac{ROE\ x\ b}{1-(ROE\ x\ b)}$

TIE = Times Interest Earned (aka Cash Coverage Ratio) = $\dfrac{EBITDA}{Interest\ Expense}$

Total Assets Turns = TAT = $\dfrac{Sales}{TA}$

Total Debt Ratio = $\dfrac{Total\ Assets - Total\ Equity}{Total\ Assets} = \dfrac{Total\ Debt}{Total\ Assets}$

Conversion Cycles and Turnover Ratios (Rates)

These conversion cycles are represented on an annual basis (365 days per year), but could be easily adjusted to any accounting period

Average Daily COGS = $\dfrac{COGS}{365}$

Average Inventory = $\dfrac{INV_{beginning} + INV_{end}}{2}$

CCC = Cash Conversion Cycle = **DIO + DSO – DPO**

Days' Costs in Payables = $\dfrac{365}{Payables\ Turnover}$

Days' Sales in Inventory $= \dfrac{365}{Inventory\ Turnover}$

Days' Sales in Receivables $= \dfrac{365}{Receivables\ Turnover}$

DIO = Days Inventory Outstanding $= \dfrac{Average\ Inventory}{COGS/365}$

Same as Inventory to Sales Conversion Period

DSO = Days Sales Outstanding $= \dfrac{(AR_{beginning} + AR_{ending})/2}{Annual\ Revenue/365}$

Same as Sales to Cash Conversion Period

DPO = Days Payable Outstanding $= \dfrac{(AP_{beginning} + AP_{ending})/2}{COGS/365}$

Virtually same as Purchase to Payment Conversion Period

Inventory Turnover $= \dfrac{COGS}{Inventory}$

ISCP = Inventory-to-Sales Conversion Period $= \dfrac{Average\ Inventory}{Avereage\ Daily\ COGS}$

Payables Turnover $= \dfrac{COGS}{AP}$

PPCP = Purchase-to-Pmt Conversion Period $= \dfrac{((AP_{beginning}+Accued\ Liabilities_{beginning})+(AP_{end}+Accued\ Liabilities_{end}))/2}{COGS/365}$

Receivables Turnover $= \dfrac{Sales}{Accounts\ Receivable}$

SCCP = Sale-to-Cash Conversion Period $= \dfrac{Average\ AR}{Net\ Sales/365}$

Market Value Ratios

Price to Earnings (PE) Ratio $= \dfrac{Common\ Equity\ Price\ Per\ Share}{Earnings\ Per\ Share} = \dfrac{Market\ Cap\ of\ Common\ Equity\ Shares}{Net\ Income - Dividends\ Paid\ to\ Preferred}$

PE Ratio is typically applied to a firm's common shares after required dividends are paid to preferred shareholders

Price to Sales Ratio $= \dfrac{Common\ Equity\ Price\ Per\ Share}{Sales\ Per\ Share\ Common\ Equity}$

Market to Book Ratio $= \dfrac{Market\ Value\ Per\ Equity\ Share}{Book\ Value\ Per\ Equity\ Share}$

Market to Book Ratio may be considered for either Common or Preferred Shares separately or the two share types combined

EBITDA Ratio $= \dfrac{Enterprize\ Value}{EBITDA}$