

recession \Rightarrow sell short, buy long

<p>Yield Curve: \rightarrow Inverted: Short term \rightarrow longer term \rightarrow longer term</p>	<p>Top Down: $OCF = \text{Sales} - \text{Cash Costs} - \text{Taxes}$, Bottom up: $OCF = \text{Net Income} + \text{Depreciation}$</p> <p>Tax Shield: $OCF = (\text{Sales} - \text{Cash Costs}) * (1 - t) + t * \text{Dep.}$ ΔNWC</p> <p>Salvage Value = Market Value - t (Market Value - Book Value)</p>
<p>Bond Value</p> <p>Promised: PV with current bonds.</p> <p>YTM = Current + Cap. Gains</p>	<p>Bond Value = $C \left[\frac{1 - \frac{1}{(1+r)^T}}{r} \right] + \frac{F}{(1+r)^T}$</p> <p>Annotations: C = Coupon, F = Face Value, r = Market Rate, T = Time to Maturity</p> <p>Nominal Return = $\frac{\text{Total Return}}{P_0}$</p> <p>Expected = $\text{Prob}(u_{1D}) + \text{Prob}(u_{1D} + 1) + \dots$</p>
<p>Fisher Formula</p>	<p>$(1 + \text{Nominal Interest Rate}) = (1 + \text{Real Interest Rate}) * (1 + \text{Inflation Rate})$</p> <p>Risk Premium = Real Return - Real Risk Free Rate</p>
<p>Stock Valuation</p> <p>No Divs</p> <p>$P = \frac{EPS + \frac{NPV_{GO}}{\# \text{Shares}}}{r}$</p> <p>ronidh = market</p> <p>idiv = indiv.</p>	<p>Zero Growth: $P_0 = \frac{\text{Div}}{R}$</p> <p>Constant Growth: $P_0 = \frac{\text{Div}_1}{R - g}$ (next period!!)</p> <p>Differential Growth: $P = \frac{C}{R - g_1} \left[1 - \frac{(1 + g_1)^T}{(1 + R)^T} \right] + \frac{\left(\frac{\text{Div}_{T+1}}{R - g_2} \right)}{(1 + R)^T}$</p>
<p>Stock Returns</p>	<p>Holding Period Return: $HPR = (1 + R_1) \times (1 + R_2) \times \dots \times (1 + R_T) - 1$</p> <p>Arithmetic Average Return: $\bar{R} = \frac{(R_1 + \dots + R_T)}{T}$</p> <p>Geometric Average Return: $R = \sqrt[T]{(1 + R_1)(1 + R_2) \dots (1 + R_T)} - 1$</p> <p>Annotations: $R_1 = R_2 = \dots = R_T$</p>
<p>Sample Statistics</p> <p>$\bar{R} = \frac{\text{Sum of Returns}}{T}$</p> <p>$SD = \sqrt{VAR} = \sqrt{\frac{(R_1 - \bar{R})^2 + (R_2 - \bar{R})^2 + \dots + (R_T - \bar{R})^2}{T - 1}}$</p> <p>$Cov(A, B) = \sigma_{AB} = \frac{\sum (a_i - \bar{a})(b_i - \bar{b})}{T - 1}$</p> <p>$Corr(A, B) = \rho_{A, B} = \frac{\sigma_{AB}}{\sigma_A \sigma_B}$</p>	<p>Annotations: use calculators</p>
<p>Portfolio Analysis</p> <p>Bonds \rightarrow use promised value to discount price?</p>	<p>Expected Return on Portfolio: $E(r_p) = x_A E(r_A) + x_B E(r_B)$</p> <p>Variance of a portfolio: $\sigma^2 = x_A^2 \sigma_A^2 + 2x_A x_B \sigma_{AB} + x_B^2 \sigma_B^2$</p> <p>$\beta_i = \frac{Cov(R_i, R_M)}{\sigma^2(R_M)}$</p> <p>CAPM: $R_i = R_f + \beta_i(R_M - R_f)$</p> <p>Annotations: $\sigma_{MVP} = \frac{\partial \sigma}{\partial K}$, $\frac{\partial P}{\partial b} = \sum + \text{if } ROE > R, - \text{if } ROE < R$, $\text{return} \approx b * ROE$</p>

Market Value Measures	Market Capitalization = Price per share * # Shares Outstanding P/E Ratio = Price Per Share / Earnings Per Share Market to Book Ratio = Market Value per Share / Book Value per Share
External Financing Formulas	$EFN = \left(\frac{\text{Assets}}{\text{Sales}} \right) \times \Delta \text{Sales} - \frac{\text{Spn Liab}}{\text{Sales}} \times \Delta \text{Sales} - (PM \times \text{Projected Sales}) \times (1 - d) \leftarrow \text{Use projected for All}$ $\text{Internal Growth Rate} = \frac{ROA \times b}{1 - ROA \times b}$ $\text{Sustainable Growth Rate} = \frac{ROE \times b}{1 - ROE \times b}$ $g = \beta \cdot ROE$
Present Value Formulas	$FV = C_0 \times \left(1 + \frac{r}{m} \right)^{m \times T}$ $FV = C_0 e^{rT}$ $PV = C / r$ $PV = \frac{C}{r - g}$ $PV = \frac{C}{r} \left[1 - \frac{1}{(1 + r)^T} \right]$ $PV = \frac{C}{r - g} \left[1 - \left(\frac{1 + g}{(1 + r)} \right)^T \right]$ $EAR = \left[1 + \frac{r}{n} \right]^n$ $\max(EAR) = e^r - 1$
Accounting Ratios	Current Ratio = Current Assets / Current Liabilities Quick Ratio = (Current Assets - Inventory) / Current Liabilities Cash Ratio = Cash / Current Liabilities Total Debt Ratio = (Total Assets - Total Equity) / Total Assets Debt/Equity = Total Debt / Total Equities Equity Multiplier = Total Assets / Total Equity Times Interest Earned = (Earnings Before Interest And Taxes) / Interest Cash Coverage = (EBIT + Depreciation + Amortization) / Interest Inventory Turnover = Cost of Goods Sold / Inventory Days' Sales in Inventory = 365 / (Inventory Turnover) Receivables Turnover = Sales / Accounts Receivable Days' Sales in Receivables = 365 / Receivables Turnover Total Asset Turnover = Sales / Total Assets Profit Margin = Net Income / Sales Return on Assets = Net Income / Total Assets Return on Equity = Net Income / Total Equity EBITDA Margin = EBITDA / Sales Capital Intensity = Total Assets / Sales
Financial Cash Flow, Break Even Point, OCF Formulas, Salvage Value	$C(A) = C(B) + C(S)$ $C(A) = \text{OCF} - \text{Change in NWC} - \text{Cash Flow to Fixed Assets}$ $\text{OCF} = \text{EBIT} + \text{Depreciation} - \text{Tax}$ $\text{Change in NWC} = \text{Ending NWC} - \text{Beginning NWC}$ $\text{Cash Flow to Fixed Assets} = \text{Ending NFA} - \text{Beginning NFA} + \text{Depreciation (if we use the gross fixed assets, then = Ending Gross Fixed Assets - Beginning Gross Fixed Assets)}$ $C(B) = \text{Interest} - (\text{Ending Long Term Debt} - \text{Beginning Long Term Debt})$ $C(S) = \text{Dividends} - (\text{Stocks sold} - \text{Stocks purchased})$ $\text{Accounting: } (\text{Fixed Costs} + \text{Depr.}) / (\text{Sales Price} - \text{Variable Cost})$ $\text{Financial (Pres. Value): } (\text{EAC} + \text{Fixed Costs} \times (1 - t) - t \times \text{Depr.}) / (\text{Sales Price} - \text{Var. Cost}) \times (1 - t)$

BEP \rightarrow

$$FPC = \frac{\text{Cost Rate}}{1 - (1 + \text{Rate})^{-T}}$$