

## FIN 320 Standard Formula Sheet

### TVM Formulas

$$FV_n = C \times (1 + r)^n$$

$$PV_0 = \frac{C}{(1 + r)^n}$$

$$PV = C_0 + \frac{C_1}{(1 + r)} + \frac{C_2}{(1 + r)^2} + \dots + \frac{C_N}{(1 + r)^N}$$

$$PV(C \text{ in Perpetuity}) = \frac{C}{r}$$

$$PV(\text{Annuity}) = C \times \frac{1}{r} \times \left(1 - \frac{1}{(1 + r)^N}\right)$$

$$FV(\text{Annuity}) = C \times \frac{1}{r} \times ((1 + r)^N - 1)$$

$$PV(\text{Growing Perpetuity}) = \frac{C}{r - g}$$

$$PV(\text{Growing Annuity}) = C \times \frac{1}{r - g} \left(1 - \left(\frac{1 + g}{1 + r}\right)^N\right)$$

$$\text{Equivalent } n - \text{period Discount Rate} = (1 + r)^n - 1$$

$$\text{EAR to periodic rate: } \frac{r}{m} = (1 + \text{EAR})^{\frac{1}{m}} - 1$$

$$\text{EAR} = \left(1 + \frac{\text{APR}}{m}\right)^m - 1$$

$$\text{Real rate} = \frac{\text{Nominal rate} - \text{Inflation Rate}}{1 + \text{Inflation Rate}}$$

### Stocks, Bonds, & Capital Budgeting Formulas

Coupon payment

$$= \frac{\text{Coupon Rate} \times \text{Face Value}}{\text{Number of Coupon Payments per Year}}$$

$$\text{Bond } P_0 = \frac{CPN_1}{(1 + y)} + \frac{CPN_2}{(1 + y)^2} + \dots + \frac{CPN_N + FV}{(1 + y)^N}$$

$$\text{Bond } P_0 = CPN \times \frac{1}{y} \left(1 - \frac{1}{(1 + y)^N}\right) + \frac{FV}{(1 + y)^N}$$

$$\text{Stock } P_0 = \frac{\text{Div}_1}{(1 + r_E)} + \frac{\text{Div}_2}{(1 + r_E)^2} + \dots + \frac{\text{Div}_N}{(1 + r_E)^N} + \frac{P_N}{(1 + r_E)^N}$$

$$\text{Stock } P_0(\text{Constant Growth}) = \frac{\text{Div}_1}{r_E - g}$$

$$\text{Cost of Equity Capital} = r_E = \frac{\text{Div}_1}{P_0} + g$$

$$R_{t+1} = \frac{\text{Div}_{t+1} + P_{t+1} - P_t}{P_t}$$

$g$  = Retention Rate

$$NPV = -I_0 + \frac{CF_1}{(1 + r)} + \frac{CF_2}{(1 + r)^2} + \dots + \frac{CF_N}{(1 + r)^N}$$

Annual Realized Return:

$$R_{\text{Annual}} = (1 + R_1)(1 + R_2)(1 + R_3)(1 + R_4) - 1$$

Average Annual Return:

$$\bar{R} = \frac{1}{T}(R_1 + R_2 + \dots + R_T)$$

CAPM or SML:

$$E[R_i] = r_f + \beta_i(E[R_{Mkt}] - r_f)$$

$$WACC = r_E E\% + r_{pfd} P\% + r_D(1 - T_c) D\%$$

$$FCF = \text{Cash flow from operations} - \text{CapEx} - \text{Change in NWC}$$

### Financial Ratios

$$\begin{aligned} \text{Market value of equity (or Market Capitalization)} \\ &= \text{Number of shares outstanding} \\ &\times \text{price per share} \end{aligned}$$

$$\begin{aligned} \text{Market - to - Book Ratio} \\ &= \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}} \end{aligned}$$

$$\begin{aligned} \text{Book Debt - to - Equity Ratio} \\ &= \frac{\text{LT \& ST Debt}}{\text{Book Value of Equity}} \end{aligned}$$

$$\begin{aligned} \text{Market Debt - to - Equity Ratio} \\ &= \frac{\text{LT \& ST Debt}}{\text{Market Value of Equity}} \end{aligned}$$

$$\begin{aligned} \text{Enterprise Value} \\ &= \text{Mkt Value of Equity} \\ &+ \text{LT \& ST Debt} - \text{Cash} \\ &\quad \text{Current Assets} \end{aligned}$$

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

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}}$$

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

$$\text{Interest Coverage Ratio} = \frac{\text{Operating Income}}{\text{Interest Expense}}$$

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Book Value of Equity}}$$

$$\text{Return on Assets} = \frac{\text{Net Income} + \text{Interest Expense}}{\text{Total Assets}}$$

$$\text{Price - to - Earnings Ratio} = \frac{\text{Share Price}}{\text{Earnings Per Share}}$$

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$$

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$