

Important Formulae: Financial Management (CA - IPCC)

Ratio Analysis

Current Ratio = $\frac{CA}{CL}$		
Quick Ratio = $\frac{QA}{CL}$ or $\frac{QA}{CL}$ (QA = CA – Stock – Prapaid Exp.) or Liquid Ratio $\frac{QL}{CL}$ (QL = CL – Bank OD - CC) or Acid Test Ratio		
Absolute Liquidity or Cash Ratio = $\frac{(Cash \& Bank + Mkt. Sec.)}{CL}$		
Basic Defense Interval = $\frac{Quick Assets}{Cash Expenses per Day}$ Cash Expense per day = $\frac{(Operating Cash Expense + Interest + Tax)}{365}$		
Debt Equity Ratio = $\frac{Debt}{Equity}$ (Debt = Long Term Funds & Debentures)) (Equity = (ESC+PSC+R&S))		
Equity Ratio = $\frac{Equity}{Equity + Total Debt}$		
Capital Gearing Ratio = $\frac{Long Term Funds + PSC}{Equity Shareholder's Fund}$		
Debt Ratio = $\frac{Total Debt or TOL}{Equity + Total Debt (TOL)}$		
Proprietary Ratio = $\frac{Equity}{Total Assets}$ or $\frac{Equity}{Equity + TOL}$		
OP Ratio = $\frac{Operating Profit}{Sales}$	NP Ratio = $\frac{Net Profit}{Sales}$	PV Ratio = $\frac{Contribution}{Sales}$
EPS = $\frac{(PAT - Preference Dividend)}{No of Equity Shares}$		
Yield = $\frac{DPS}{MPPS} \times 100$ (Dividend Per Share) (Market Price Per Share)		
MV / BV Ratio = $\frac{Market Value per Share}{Book Value per Share}$		
PE Ratio or Price Earning Ratio = $\frac{Market Price Per Share}{Earning Per Share}$		
Du Pont Chart ROE = $\frac{PAT}{Sales} \times \frac{Sales}{Net Assets} \times \frac{Net Assets}{Net Worth (NW)}$ ROE = Profit Margin * Assets Turnover * Equity Multiplier Alternative Formula, ROE = $\frac{EBIT}{Sales} \times \frac{Sales}{Net Assets} \times \frac{PAT}{EBIT}$ ROE = Profit Margin * Assets Turnover * Financial Leverage Note: (Fin. Leverage Formula in Du Pont Chart is different.)		

Ratio Analysis

ROI or ROCE = $\frac{PBIT}{Capital Employed}$	ROE = $\frac{PAT}{Equity or NW}$	ROA = $\frac{PBIT or PAT}{Total Assets}$
CE = Equity + LTL – Non Trade Invt. Or CE = FA + Trade Invt. + WC		
*PBIT = PBIT + Non Trade Expense – Non Trade Income		

Ratio Analysis

Dividend Coverage Ratio (CR)		
Pref. Div. CR	Div CR	Eq. Div. CR
=	=	=
$\frac{PAT}{Pref. Div}$	$\frac{PAT}{Pref. Div \& Eq. Div}$	$\frac{PAT - Pref. Div.}{Equity Div.}$

Interest Coverage Ratio =	$\frac{PBIT}{Interest}$
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Debt Service Coverage Ratio (DSCR)	
$\frac{Earnings Available for Debt Service}{Debt Service Commitments}$	or $\frac{PAT + Dep^n + Interest}{(Interest + Installment)}$

Turnover Ratios (TR)		
RM TR =	WIP TR =	FG TR =
$\frac{Material Consumed}{Avg Stock of RM}$	$\frac{Factory Cost}{Avg Cost of WIP}$	$\frac{COGS}{Avg. Stock of FG}$
Capital TR =	Fixed Assets TR =	WC TR =
$\frac{Sales}{Avg. CE}$	$\frac{Sales}{Avg. Fixed Assets}$	$\frac{Sales}{Avg. WC}$
Debtors TR =	Creditors TR =	
$\frac{Sales}{Avg. Debtors}$	$\frac{Raw Material Purchase or COGS}{Avg. Creditors}$	

Earning Yield =	$\frac{EPS*100}{Market Value per Share}$
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Book Value Per Share =	$\frac{Net Worth-Pref Sh.Cap}{No. of Equity Shares}$
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Calculation Steps through Calculator:	
Discounting of Rs. 1:	
PV@10% for 5th yrs (PV₅)	→ 1.1 “÷” 5 times “=”
AV @ 10% for 5 yrs (AV₅) (Assumption: The Cash Flow is at the end of year)	→ 1.1 “÷” 5times “=” “GT”
Compounding of Rs 1:	
Future Value @ 10% for 5th yr (FV₅) (Assumption: The Cash Flow is at the beginning of year)	→ 1.1 “*” 4 times “=”
Future Annuity Value @ 10% for 5 years (FAV ₅) (Assumption: The Cash Flow is at the end of Year)	→ $\frac{1.1+1*1.1+1*1.1+1*1.1+1}{1}$

Time Value of Money

Future Value of Annuity	=	$R \times \frac{(1+i)^n - 1}{i}$ R = Equal Amt to be received / paid for n period i = Interest Rate per period
Present Value of Growing Perpetuity	=	$\frac{Amount}{k - g}$ k = Discounting Rate g = Growth Rate
EMI	=	$\frac{Total Principal Amt}{AV Factor of the period}$

Working Capital Management

Financing Decision

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Cost of Irredeemable Debentures/Debt: $K_d = \frac{I(1-t)}{NP}$ <i>K_d = Cost of Debt</i> <i>I = Interest amt</i> <i>t = Tax rate</i> <i>NP = Net proceeds/market price</i>	
Cost of Redeemable Debentures: $K_d = \frac{I(1-t) + \frac{RV-NP}{2}}{\frac{RV+NP}{2}}$ <i>NP = Net proceeds</i> <i>RV = Redemption Value</i> <i>N = No. of Yrs of Redemption</i>	
Cost of Irredeemable Preference Shares: $K_p = \frac{PD}{NP}$ <i>K_p = Cost of Pref. Shares</i> <i>PD = Preference Dividend</i> <i>NP = Net proceeds/Mkt. Price</i>	
Cost of Redeemable Preference Shares: $K_e = \frac{PD + \frac{RV-NP}{2}}{\frac{RV+NP}{2}}$ <i>K_p = Cost of capital</i> <i>PD = Pref. Dividend</i> <i>NP = Net Proceeds</i> <i>RV = Redn Value</i>	
Cost of Equity / Retained Earnings: (a) Dividend Price Approach: $K_e = \frac{D_1}{P_0}$ <i>Ke = Cost of equity</i> <i>D1 = Dividend of year 1</i> <i>P0 = Price of year 0</i> (b) Earning Price Approach: $K_e = \frac{E_1}{P_0}$ <i>E1 = Earnings of year 1</i> (c) Realized Yield Approach: $K_e = \frac{D_1 + (P_1 - P_0)}{P_0}$ <i>P1 = Price of year 1</i> (d) Capital Asset Pricing Model Approach (CAPM): $K_e = R_f + b (R_m - R_f)$ <i>R_m = Rate of return of Mkt</i> <i>R_f = Risk free return</i> <i>b = Beta</i> (e) DCF (Discounted Cash Flow Method) / Growth Method: $K_e = \frac{D_1}{P_0} + G$ <i>D₁ = D₀ (1+G)</i> (f) Modigillani Miller Approach (Assuming no PSC): $K_e = K_0 + \frac{D}{E} (K_0 - K_d)$ <i>D = Debt or Loan</i> <i>E = Equity</i>	
Indifference point: (Where EPS of 2 Alternatives are Same) $\frac{(EBIT - I_1)(1-t)}{E_1} = \frac{(EBIT - I_2)(1-t)}{E_2}$ EBIT = Indifference point E ₁ & E ₂ = Number of Equity Shares in Alternative 1 & 2 I ₁ & I ₂ = Interest in Alternative 1 & 2 t = Tax-rate	
Overall Cost of Capital $K_o = \frac{(K_d * D) + (K_p * P) + (K_e * E)}{D+P+E}$ E = Equity D = Debt P = PSC	
Tandon Committee: Maximum Permissible Bank Finance= 75% of (CA-CL) or (75% of CA) – CL or {75% of (CA- CCA)} – CL Method 1 Method 2 Method 3 Where, CCA is Core / Permanent Current Assets	
Baumol’s Economic Order Quantity Model $Cash = \frac{2AO}{C}$ Cash Deposit = Optimum cash balance A = Annual cash disbursement O = Fixed cost per transaction.	

Working Capital Management

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Investment Decision

Leverages

RM Storage Period (In Days)	=	$\frac{365}{Raw Material Turnover Ratio}$
WIP Holding Period (In Days)	=	$\frac{365}{WIP Turnover Ratio}$
FG Holding Period (In Months)	=	$\frac{12}{FG Turnover Ratio}$
Debtor Collection Period (In Weeks)	=	$\frac{52}{Debtor Turnover Ratio}$
Creditor Payment Period (In Months)	=	$\frac{12}{CreditorsTurnover Ratio}$
Operating Cycle	=	(RM+WIP+FG) Storage Period (+) Debtors Collection Period (-) Creditors Payment Period
RM storage Period	=	$\frac{Average stock of RM}{Avg. cost of RM Consumption/day}$
Creditors Payment Period	=	$\frac{Average A/c Payables}{Avg. credit purchase/ day}$
Debtors Collection Period	=	$\frac{Average A/c Receivables}{Avg. Credit Sales per day}$
Finished Goods Storage Period	=	$\frac{Average stock of Finished goods}{Avg. cost of goods sold per day}$
Effective Cost of Factoring	=	$\frac{(Factoring Commission + Interest) - (Savings on Factoring)}{Net amount Received from Factor}$
IRR	=	Base Rate _(Min) + $\frac{\Delta in Rate * \Delta Desired_{(Amt)}}{\Delta in Amount}$ (This is simple unitary method formula, practice IRR Calculation)
ARR (Accounting rate of Return)	=	$\frac{Average Annual Net Income}{Initial Investment or Average Investment}$
NPV	=	PV of Inflow (-) PV of Outflow
Payback period	=	$\frac{Total initial capital investment}{Annual CFAT and other Annual Inflows}$
PI	=	$\frac{PV of Inflow}{PV of Outflow}$
Financial Leverage: (FL)	=	$\frac{EBIT}{EBT}$ or $\frac{EBIT}{EBIT - Interest}$
Alternative Formula: OL	=	$\frac{\% Change in EBIT}{\% Change in Sales or Contribution}$
FL	=	$\frac{\% Change in EBT}{\% Change in EBIT}$
CL	=	$\frac{\% Change in EBT or PAT or EPS}{Change in Sales \%}$
Operating Leverage: (OL)	=	$\frac{Cont. or EBIT}{Cont. - Fixed Cost}$
Combined Leverage: (CL)	=	$\frac{Contribution}{EBT}$ or (OL * FL)