

CA INTER – FINANCIAL MANAGEMENT

FORMULA SHEET

Financial Planning and Analysis – Ratio Analysis

LIQUIDITY RATIOS

Current Ratio

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

Quick Ratio

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

Cash Ratio

$$= \frac{\text{Cash \& Bank + Marketable securities}}{\text{Current Liabilities}}$$

$$= \frac{\text{Cash \& Bank + Current investments}}{\text{Current Liabilities}}$$

Net Working Capital

$$= \text{Current Assets} - \text{Current Liabilities}$$

CAPITAL STRUCTURE RATIOS

Equity Ratio

$$= \frac{\text{Shareholder's Equity}}{\text{Net Assets}}$$

Debt Ratio

$$= \frac{\text{Total Debt}}{\text{Net Assets}}$$

Debt to Equity Ratio

$$= \frac{\text{Total Outside Liability}}{\text{Shareholder's Equity}}$$

$$= \frac{\text{Total Debt}}{\text{Shareholder's Equity}}$$

$$= \frac{\text{Long term Debt}}{\text{Shareholder's Equity}}$$

Debt to Total Assets

$$= \frac{\text{Total Outside Liability}}{\text{Total Assets}}$$

$$= \frac{\text{Total Debt}}{\text{Total Assets}}$$

Proprietary Ratio

$$= \frac{\text{Proprietary Fund}}{\text{Total Assets}}$$

COVERAGE RATIOS

Debt Service Coverage Ratio

$$= \frac{\text{Earning available for debt service}}{\text{Interest + Installments}}$$

Interest Coverage Ratio

$$= \frac{\text{EBIT}}{\text{Interest}}$$

Preference Dividend Coverage Ratio

$$= \frac{\text{Earnings after tax}}{\text{Preference Dividend}}$$

Equity Dividend Coverage Ratio

$$= \frac{\text{EAT} - \text{Preference dividend}}{\text{Equity Dividend}}$$

Fixed Charges Coverage Ratio

$$= \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest} + \text{Repayment of Loan}}$$

TURNOVER (TO) RATIOS

Total Assets TO Ratio

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

Fixed Assets TO Ratio

$$= \frac{\text{Sales} *}{\text{Fixed Assets}}$$

Capital / Net Assets TO Ratio

$$= \frac{\text{Sales} *}{\text{Net Assets}}$$

Current Assets TO Ratio

$$= \frac{\text{Sales} *}{\text{Current Assets}}$$

Working Capital TO Ratio

$$= \frac{\text{Sales} *}{\text{Working Capital}}$$

Inventory TO Ratio

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

Raw Material Inventory TO Ratio

$$= \frac{\text{Raw Material Consumed}}{\text{Average Raw Material Stock}}$$

Receivables TO Ratio

$$= \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$$

Receivables Velocity

$$= \frac{\text{Average Account Receivables}}{\text{Average Daily Credit Sales}}$$

$$= \frac{12 \text{ months} / 52 \text{ weeks} / 360 \text{ days}}{\text{Receivables TO Ratio}}$$

**Use COGS, if Sales not available*

Payable TO Ratio

$$= \frac{\text{Annual Net Credit Purchases}}{\text{Average Accounts Payables}}$$

Payable Velocity

$$= \frac{\text{Average Account Receivables}}{\text{Average Daily Credit Sales}}$$

$$= \frac{12 \text{ months} / 52 \text{ weeks} / 360 \text{ days}}{\text{Receivables TO Ratio}}$$

PROFITABILITY RATIOS

Gross Profit Ratio

$$= \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

Net Profit Ratio

$$= \frac{\text{Net Profit} / \text{EAT}}{\text{Sales}} \times 100$$

Pre-tax Profit Ratio

$$= \frac{\text{EBT}}{\text{Sales}} \times 100$$

Operating Profit Ratio

$$= \frac{\text{Operating Profit} / \text{EBIT}}{\text{Sales}} \times 100$$

Cost of Goods Sold Ratio (COGS)

$$= \frac{\text{Cost of Goods Sold}}{\text{Sales}} \times 100$$

Operating Expenses Ratio

$$= \frac{\text{Admin. exp + Selling \& Dist. OH}}{\text{Sales}} \times 100$$

Operating Ratio

$$= \frac{\text{COGS} + \text{Operating exp}}{\text{Sales}} \times 100$$

Financial Expenses Ratio

$$= \frac{\text{Financial exp}}{\text{Sales}} \times 100$$

OVERALL RETURN ON ASSETS/ INVESTMENTS

Return on Investments

$$= \frac{\text{Return} / \text{Profit} / \text{Earnings}}{\text{Investment}} \times 100$$

$$= \text{Profitability} \times \text{Investment TO Ratio}$$

Return on Assets

$$= \frac{\text{Net Profit after taxes}}{\text{Average Total Assets}^\#} \times 100$$

#Alternatively, Average Tangible Assets or Avg Fixed Assets can be used

$$\text{Basic Defense Interval} = \frac{\text{Cash and Bank balances + Net Receivables + Market Securities}}{\text{Operating Expenses} \div \text{No. of days}}$$

$$\text{Capital Gearing Ratio} = \frac{\text{Preference Share Capital + Debentures + Other Borrowed funds}}{\text{Equity Share Capital + Reserves \& Surplus - Losses}}$$

Return on Assets can also be calculated as:

$$= \frac{\text{Net Profit after taxes + Interest}}{\text{Average Total Assets}^*} \times 100$$

Return on Total Assets

$$= \frac{\text{EBIT} (1 - t)}{\text{Average Total Assets}} \times 100$$

Return on Net Assets

$$= \frac{\text{EBIT} (1 - t)}{\text{Average Net Assets}} \times 100$$

Return on Capital Employed

$$= \frac{\text{Net Profit after taxes + Interest}}{\text{Capital Employed}} \times 100$$

$$\text{Pre-tax} = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100$$

$$\text{Post-tax} = \frac{\text{EBIT} (1 - t)}{\text{Capital Employed}} \times 100$$

Return on Equity

$$= \frac{\text{PAT} - \text{Preference dividend}}{\text{Net worth}} \times 100$$

Profitability / Net Profit margin

$$= \frac{\text{Profit / Net Income}}{\text{Sales / Revenue}}$$

Investment TO Ratio

$$= \frac{\text{Sales / Reveue}}{\text{Investment}}$$

Asset TO Ratio

$$= \frac{\text{Sales / Reveue}}{\text{Assets}}$$

Capital TO Ratio

$$= \frac{\text{Sales / Reveue}}{\text{Capital}}$$

Equity Multiplier

$$= \frac{\text{Investment / Assets / Capital}}{\text{Shareholder's Equity}}$$

RATIOS FROM OWNER's POINT OF VIEW

Earnings per Share (EPS)

$$= \frac{\text{Net profit available to equity holders}}{\text{No. of equity shares outstanding}}$$

Dividend per Share (DPS)

$$= \frac{\text{Total Dividend paid to equity holders}}{\text{No. of equity shares outstanding}}$$

Dividend Pay-out Ratio (DP)

$$= \frac{\text{DPS}}{\text{EPS}}$$

Price-Earnings Ratio (P/E Ratio)

$$= \frac{\text{Market Price per Share (MPS)}}{\text{Earnings per Share (EPS)}}$$

Dividend and Earning Yield

$$= \frac{\text{Dividend} \pm \text{Change in share price}}{\text{Initial share price}}$$

$$= \frac{\text{Dividend per Share (DPS)}}{\text{Market Price per Share (MPS)}} \times 100$$

Earnings Yield or EP Ratio

$$= \frac{\text{Earnings per Share (EPS)}}{\text{Market Price per Share (MPS)}} \times 100$$

Market Value / Book Value per Share

$$= \frac{\text{Average share price}}{\text{Net worth} \div \text{No. of equity shares}}$$

$$= \frac{\text{Closing share price}}{\text{Net worth} \div \text{No. of equity shares}}$$

Q Ratio

$$= \frac{\text{Market Value of equity \& liability}}{\text{Estimated replacement cost of asset}}$$

$$= \frac{\text{Market Value of a Company}}{\text{Assets Replacement Cost}}$$

Cost of Capital

Cost of Irredeemable Debentures

$$k_d = \frac{I}{NP} (1 - t)$$

Cost of Redeemable Debentures

$$k_d = \frac{I (1 - t) + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}}$$

If discount on issue or premium on redemption is also tax deductible then,

$$k_d = \frac{I + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}} (1 - t)$$

Internal Rate of Return,

$$\text{IRR} = L + \frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} (H - L)$$

Amortised Value of a Debenture

$$V_B = \sum_{t=1}^n \frac{C_t}{(1 + k_d)^t}$$

Where, C = Cash flows

K_d = Interest rate

Cost of Irredeemable Preference Shares

$$k_p = \frac{PD}{P_0}$$

Cost of Redeemable Preference Shares

$$k_p = \frac{PD + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}}$$

Cost of Equity,

Dividend Price Approach

$$k_e = \frac{D}{P_0}$$

Earnings Price Approach

$$k_e = \frac{E}{P}$$

Growth Approach / Gordon's Model

$$k_e = \frac{D_1}{P_0} + g$$

If floatation cost is incurred

$$k_e = \frac{D_1}{P_0 - F} + g$$

Estimation of Growth rate

(i) Average Method

$$g = \sqrt[n]{\frac{D_0}{D_n}} - 1$$

(ii) Gordon's Growth Model

$$g = b \times r$$

Capital Asset Pricing Model Approach

$$K_e = R_f + \beta (R_m - R_f)$$

Cost of Retained Earnings

Dividend Price Approach

$$k_r = \frac{D}{P}$$

Earnings Price Approach

$$k_r = \frac{EPS}{P}$$

Growth Approach

$$k_r = \frac{D_1}{P_0} + g$$

$$\text{Also } K_r = K_e (1 - t_p) (1 - f)$$

Financing Decisions – Capital Structure

Value of the firm, V = S + D

Where, S = Market value of Equity

D = Market value of Debt

$$\text{Also, } V = \frac{\text{EBIT}}{K_0}$$

$$S = \frac{NI}{K_e}$$

Where, K₀ = Overall cost of capital

NI = Earnings available for equity shareholders

K_e = Equity Capitalisation Rate

Modigliani-Miller (MM) Approach

Without tax -

$$V_g = V_u$$

Where, V_g = Value of levered firm

V_u = Value of unlevered firm

$$K_e = K_0 + (K_0 - K_d) \frac{\text{Debt}}{\text{Equity}}$$

With tax -

$$V_g = V_u + TB$$

Where, TB = Tax benefit

$$K_{eg} = K_{eu} + (K_{eu} - K_d) \frac{\text{Debt} (1 - t)}{\text{Equity}}$$

Where,

K_{eg} = Cost of equity in a levered Co.

K_{eu} = Cost of equity in an unlevered Co

WACC in a levered company

$$K_{og} = K_{eu} (1 - tL)$$

Where,
 K_{eu} = Cost of equity in an unlevered Co
 t = tax rate
 $L = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$

Financial Break-even point
 $= \text{Interest} + \frac{\text{Preference dividend}}{1 - \text{tax rate}}$

Indifference point
 $\frac{(\text{EBIT} - I_1)(1 - t)}{E_1} = \frac{(\text{EBIT} - I_2)(1 - t)}{E_2}$

Financial Decisions - Leverages

Degree of Operating Leverages (DOL)

$= \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$
 $= \frac{\text{Contribution}}{\text{EBIT}}$

Break-even point
in units, $= \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$

Margin of Safety
 $= \frac{\text{Sales} - \text{BEP Sales}}{\text{Sales}} \times 100$
 $= \frac{\text{EBIT}}{\text{Contribution}}$

Degree of Financial Leverage (DFL)

$= \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$
 $= \frac{\text{EBIT}}{\text{EBT}}$

Combined Leverage

$= \text{DOL} \times \text{DFL}$
 $= \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$
 $= \frac{\text{Contribution}}{\text{EBT}}$

Investment Decisions

TRADITIONAL CAPITAL BUDGETING TECHNIQUES

Payback Period

$= \frac{\text{Total initial capital investment}}{\text{Annual expected after tax NCF}}$

Accounting Rate of Return (ARR)

$= \frac{\text{Average Annual net income}}{\text{Investment}}$

TIME ADJUSTED CAPITAL BUDGETING TECHNIQUES

Net Present Value (NPV)

$$= \sum_{t=1}^n \frac{C_t}{(1+k)^t} - I$$

Where, C = Cash flows
 k = Discount rate
 n = Life of the project
 I = Investment

Profitability Index (PI)

$= \frac{\text{Sum of discounted cash in flows}}{\text{Initial cash outlay}^*}$

*also, total discounted cash outflow

Internal Rate of Return (IRR)

$= \text{LR} + \frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} \times (\text{HR} - \text{LR})$
 $= \text{LR} + \frac{\text{PV}_L - \text{CI}}{\text{PV}_L - \text{PV}_H} \times (\text{HR} - \text{LR})$

Dividend Decisions

Growth, $g = b \times r$

Where,
 b = Retention ratio
 r = Rate of return on investment

MM Approach

Market price of Shares

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,
 P_1 = Price at the end of the period
 D_1 = Dividend at the end of the period
 K_e = Cost of equity

Value of the firm

$$V_f \text{ or } nP_0 = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$$

Where,
 n = No. of shares in the beginning
 Δn = No. of shares issued
 I = Amount required for investment
 E = Earnings during the period

Walter's Model

Market price of Shares

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

Where,
 E = Earnings per share
 D = Dividend per share
 r = Internal rate of return

Gordon's Model

Market price

$$P_0 = \frac{E_1(1 - b)}{K_e - br} = \frac{D_0(1 + g)}{K_e - g}$$

Dividend Discount Model

Intrinsic value of the stock
= Sum of PV of future cash flows

= Sum of PV of Dividends
+ PV of Stock Sale Price
 $= \frac{D_1}{(1 + K_e)^1} + \frac{D_2}{(1 + K_e)^2} + \dots + \frac{D_n}{(1 + K_e)^n} + \frac{RV_n}{(1 + K_e)^n}$

Graham & Dodd Model

Market price, $P = m[D + \frac{E}{3}]$

Where, m = multiplier

Linter's Model

$D_1 = D_0 + [(E \times \text{Target payout}) - D_0] \times \text{Af}$

Where, Af = Adjustment factor

Management of Working Capital

Unit-1: INTRODUCTION

Working Capital

= Current Assets – Current Liabilities

Operating Cycle

= $R + W + F + D - C$

Where,

R = Raw material storage period

W = Work-in-progress inventory holding period

F = Finished goods storage period

D = Debtors collection period

C = Credit period allowed by creditors

Raw Material (RM) Storage Period

$= \frac{\text{Avg stock of RM}}{\text{Avg cost of RM Consumption per day}}$

Work-in-Progress (WIP) inventory holding period

$= \frac{\text{Avg WIP inventory}}{\text{Avg cost of Production per day}}$

Finished Goods (FG) storage period

$= \frac{\text{Avg stock of FG}}{\text{Avg cost of Goods Sold per day}}$

Debtors Collection period

$= \frac{\text{Avg Receivables}}{\text{Avg Credit Sales per day}}$

Credit period allowed by creditors

$= \frac{\text{Avg Payables}}{\text{Avg Credit Purchases per day}}$

Estimation of Current Assets

Raw Materials Inventory

$= \frac{\text{Estimated production (units)}}{12 \text{ months} / 365 \text{ days}} \times \text{Estimated cost per unit} \times \text{Average RM storage period}$

Work-in-Progress Inventory

$$= \frac{\text{Estimated production (units)}}{12 \text{ months} / 365 \text{ days}} \times \text{Estimated WIP cost per unit} \times \text{Average WIP holding period}$$

Finished Goods

$$= \frac{\text{Estimated production (units)}}{12 \text{ months} / 365 \text{ days}} \times \text{Estimated cost of production per unit} \times \text{Average FG storage period}$$

Receivables (Debtors)

$$= \frac{\text{Estimated credit sales (units)}}{12 \text{ months} / 365 \text{ days}} \times \text{Estimated cost of sales per unit} \times \text{Average debtors collection period}$$

Estimation of Current Liabilities

Direct wages =

$$\frac{\text{Estimated labour hours} \times \text{Wage rate per hour}}{12 \text{ months} / 365 \text{ days}}$$

$\times \text{Average time lag in payment of wages}$

Trade Payables

$$= \frac{\text{Estimated credit purchases}}{12 \text{ months} / 365 \text{ days}} \times \text{Credit period allowed by suppliers}$$

Overheads (OH)

$$= \frac{\text{Estimated Overheads}}{12 \text{ months} / 360 \text{ days}} \times \text{Average time lag in payment of OH}$$

Unit-2: TREASURY & CASH MANAGEMENT

Optimum Cash Balance

$$= \sqrt{\frac{2U \times P}{S}}$$

Where,
 U = Annual cash disbursement
 P = Fixed cost per transaction
 S = Opportunity cost of one rupee p.a.

Unit-3: MANAGEMENT OF INVENTORY

Economic Order Quantity

$$= \sqrt{\frac{2A \times O}{C}}$$

Where,

A = Annual demand of inventory

O = Cost per Order

C = Carrying cost per unit p.a.

Unit-4: MANAGEMENT OF RECEIVABLES

Total Fixed Cost

$$= [\text{Average Cost per unit} - \text{Variable Cost per unit}] \times \text{No. of units sold on credit under Present Policy}$$

Opportunity Cost

$$= \text{Total Cost of Credit Sales} \times \frac{\text{Collection period (Days)}}{365 \text{ (or } 360\text{)}} \times \frac{\text{Required Rate of Return}}{100}$$

Unit-5: MANAGEMENT OF PAYABLES

Nominal Cost of Payables

$$= \frac{d}{100 - d} \times \frac{365 \text{ days}}{t}$$

Cost of Lost Cash Discount

$$= \left(\frac{100}{100 - d} \right)^{\frac{365}{t}} - 1$$

Where,

d = rate of discount

t = the reduction in the payment period in days



	2019-20	2020-21
Selling price per unit	₹5.10	₹5.10
Material cost per unit	₹3.2	₹3.2
Overhead per hour	20	40
Labour cost per hour	₹10.20	₹10.20
Fixed overhead per unit	₹4.10	₹4.10
Variable overhead	₹1.10	₹1.10
Working Capital	₹1,00,000	₹1,00,000
Proposed rate	20%	20%

VARSHAA M
 Thank you so much Achya sir. I used to hate FM before. But, once I took the classes, FM became my favorite subject. I never got bored listening to the classes. You made it very interesting. What I thought to be the most difficult, you made it so simple and easy. I scored 68 in FM-Eco. Thank you so much sir. Without your classes, it wouldn't have been possible.

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 Conceptual clarity, easy & simple way of understanding. Thank you so much sir! Your videos helped a lot in preparing FM.

Ajith Kumar
 Good teaching Good Mind mapping Techniques Good Quality Clarity Of Voice Quality Video.

Suresh Kumar Vishnubhatla
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Cost Sheet Specimen Format

	Particulars	Total Cost (Rs.)	Cost per Unit (Rs.)
1.	Direct Materials Consumed:		
	Opening Stock of Raw Material	XXX	
	Add: Additions/Purchases	XXX	
	Less: Closing Stock of Raw Material	(XXX)	
		XXX	XXX
2.	Direct employee (labour) cost	XXX	
3.	Direct Expenses	XXX	
4.	Prime Cost (1+2+3)	XXX	XXX
5.	Add: Works/Factory Overheads	XXX	
6.	Gross Works Cost (4+5)	XXX	
7.	Add: Opening Work In Process	XXX	
8.	Less: Closing Work in Process	(XXX)	
9.	Works/Factory Cost (6+7-8)	XXX	XXX
10.	Add: Quality Control Cost	XXX	
11.	Add: Research and Development Cost	XXX	
12.	Add: Administrative Overheads (relating to production activity)	XXX	
13.	Less: Credit for recoveries/Scrap/By-product/misc. income	(XXX)	
14.	Add: Packing Cost	XXX	
15.	Cost of Production (9+10+11+12-13+14)	XXX	XXX
16.	Add: Opening Stock of Finished Goods	XXX	
17.	Less: Closing Stock of Finished Goods	(XXX)	
18.	Cost of Goods Sold (15+16-17)	XXX	XXX
19.	Add: Administrative Overheads (General)	XXX	
20.	Add: Marketing Overheads:		
	Selling Overheads	XXX	
	Distribution Overheads	XXX	
21.	Cost of Sales (18+19+20)	XXX	XXX