

## ACCOUNTING RATIO

### I. Short Term Liquidity ratio

$$① \text{ Current} = \frac{\text{Current Asset}}{\text{Current Liability}}$$

$$② \text{ Quick Ratio / Acid Test} = \frac{\text{Quick Asset}}{\text{Current Liability}}$$

$$\left( \text{Quick Asset} = \text{Current Asset} - \text{stock} - \text{Prepaid exp} \right)$$

$$③ \text{ Cash Ratio / Absolute liquidity} = \frac{\text{Cash / Cash Equivalent}}{\text{Current Liability}}$$

$$④ \text{ Basic defense Interval Measure} = \frac{\text{Cash \& Cash Equivalent}}{\text{Day Cash Operating Cost}}$$

$$⑤ \text{ Stock to Working Capital} = \frac{\text{Closing stock}}{\text{Working Capital}}$$

### II. Long term Solvency Ratio / Capital Structure

$$① \text{ Debt-Equity} = \frac{\text{Borrowed fund (BF)}}{\text{Shareholder fund}}$$

$$② \text{ Capital Gear ratio} = \frac{\text{BF + Pref. Sh. Capital}}{\text{Eq. Sh. Capital}}$$

$$③ \text{ Proprietary} = \frac{\text{Shareholders Fund}}{\text{Total Asset}} \times 100$$

$$④ \text{ Total Debt to Total Asset} = \frac{\text{Total Debt} \times 100}{\text{Total Asset}}$$

### III Profitability Ratio

#### A) w.r.t Sales

$$① \text{ Gross Profit} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$② \text{ Operating Profit} = \frac{\text{EBIT}}{\text{Sales}} \times 100$$

$$③ \text{ Net Profit} = \frac{\text{NPAT}}{\text{Sales}} \times 100$$

$$④ \text{ Operating (cost)} = \frac{\text{Operating cost}}{\text{Sales}} \times 100$$

(Operating cost = COGS + Operating Exp)

$$⑤ \text{ Expense ratio} = \frac{\text{Expense}}{\text{Sales}} \times 100$$

#### B) w.r.t Investment

$$① \text{ ROCE} = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100$$

$$② \text{ Return on Shareholder Fund}$$

$$\text{ROSF} = \frac{\text{NPAT}}{\text{SF}} \times 100$$

### ③ Return on Equity

$$\text{ROE} = \frac{\text{Equity Earning}}{\text{Equity Share}} \times 100$$

### ④ Return on Asset

$$\text{ROA} = \frac{\text{NPAT}}{\text{Total Asset}} \times 100 \quad (\text{or})$$

$$\frac{\text{EBIT}}{\text{Total Asset}} \times 100 \quad (\text{or})$$

$$\frac{\text{EBIT}(1-t)}{\text{Total Asset}} \times 100$$

$$⑤ \text{ EPS} = \frac{\text{NPAT} - \text{Pref div}}{\text{No of Eq shares}}$$

$$⑥ \text{ P/E Ratio} = \frac{\text{MPS}}{\text{EPS}}$$

### IV Turnover Ratio

#### ① Stock Turnover Ratio - FG

$$\text{ST/O} = \frac{\text{COGS}}{\text{Avg. Receivable Stock}}$$

#### ② Debtor Turnover Ratio

$$\text{DT/O} = \frac{\text{Cr Sales}}{\text{Avg Receivable}}$$

$$\text{Debtor velocity} = \frac{\text{Avg Receivable} \times 12/360}{\text{Cr Sales}} \quad (\text{Collection Period})$$

#### ③ Creditor Turnover Ratio

$$\text{CT/O} = \frac{\text{Cr Purchase}}{\text{Avg Payable}}$$

$$\text{Creditor velocity} = \frac{\text{Avg Payable} \times 12 \times 360}{\text{Cr Purchase}}$$

#### ④ Asset Turnover Ratio

$$\text{AT/O} = \frac{\text{Sales}}{\text{Total Asset}}$$

#### ⑤ Capital Turnover Ratio

$$\text{CT/O} = \frac{\text{Sales}}{\text{Capital Employed}}$$

### V Miscellaneous Ratios

$$① \text{ Interest Coverage} = \frac{\text{EBIT}}{\text{Interest}}$$

② Pref Div Coverage =  $\frac{NPAT}{\text{Pref div}}$

③ Eq Div Coverage =  $\frac{\text{Equity Earning}}{\text{Equity Dividend}}$

④ Earning yield =  $\frac{EPS}{MPS} \times 100$

⑤ Dividend yield =  $\frac{DPS}{MPS} \times 100$

(Note: Fictitious Asset are deducted from shareholders fund)

SF + BF = FA + WC

Total Asset = Capital Employed + CL

Balance sheet

Income statement

Sources of fund	Am+	Application of fund	Am+
<u>SF</u>		F.A	xx
PPSC	xx	W.C	
(+) Reserve	xx	CA	xx
<u>BF</u>		(-) CL	xx
LTB/	xx		
LTD	xx		
	xxx		xxx

In come statement/Particular	Am+
Sales	xxx
(-) COGS	(+)
GP	xxx
(-) Operating Exp	
Admin	xx
Selling	xx
<u>EBIT</u>	xx

Du Pont Model

Return on Equity  
 $\frac{NPAT - \text{Pref Div}}{ESHF (ES + R\&S = ME)}$

N.P Ratio  
 $\frac{NPAT - \text{Pref Div}}{\text{Sales or Revenue}}$

Asset T/O Ratio  
 $\frac{\text{Sales}}{\text{Asset}}$

Equity Multiplier  
 $\frac{\text{Asset}}{ESHF}$

∴ ROE = NPR \* ATO \* Eq. Multiplier

=  $\frac{NPA - \text{Pref Div}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Asset}} \times \frac{\text{Asset}}{ESHF}$

## Cost of Capital

### ① Cost of Debt ( $K_d$ )

$$K_d = \left( \frac{\text{Interest} (1 - \text{Tax})}{N.P} \right) \left\{ \text{Irredeemable} \right.$$

$K_d$  when life is given

$$K_d = \frac{\text{Int} (1 - \text{tax}) + \left[ \frac{(RV - NP)}{n} \right]}{\left( \frac{RV + NP}{2} \right)} \times 100$$

(NP = Net proceeds = Issue Price - Floating cost)

### ② Cost of Pref Shares ( $K_p$ )

Irredeemable.

$$K_p = \frac{\text{Pref Div}}{N.P} \times 100$$

Redeemable

$$K_p = \frac{\text{Pref Div} + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100$$

### ③ Cost of Equity ( $K_e$ )

(a) Expected Dividend theory

$$K_e = \frac{D_1}{NP} \times 100$$

( $D_1$  = Dividend of current year)

(b) Realised Dividend approach

$$K_e = \frac{D_0}{NP} \times 100$$

( $D_0$  = Dividend of previous year)

(c) Expected Earning approach

$$K_e = \frac{E_1}{NP} \times 100$$

( $E_1$  = Earnings of current year)

(d) Realised Earning approach

$$K_e = \frac{E_0}{NP} \times 100$$

( $E_0$  = Earning of previous year)

### ④ Constant Dividend Growth / Model of Gordon

$$K_e = \left( \frac{D_1}{NP/P_0} + g \right) \times 100$$

( $P_0$  = Current Market price)

### ⑤ CAPM = Capital Asset Pricing Model

$$K_e = I.R.F. (R.M. - I.R.F.) \beta$$

( I.R.F. = Interest on Risk Free Securities  
R.M. = Return of Market  
 $\beta$  = Beta Factor

(Market Risk Premium =  $R.M. - I.R.F.$ )

### ⑥ WACC / $K_0$

Type	(Mv) Amt	% Cost	Cost
Equity	10L	$K_e = 18\%$	180K
Pref	5L	$K_p = 12\%$	60K
Debt	2L	$K_d = 9\%$	18K
	<u>17L</u>		<u>258K</u>

$$K_0 = \frac{258K}{17L} \times 100 = 15.18\%$$

$$g = b \times r$$

= retention ratio  $\times$  ROI

$$= \frac{(EPS - DPS)}{BVPS / PO / NP} \times 100$$

$$P_0 = EPS \times P/E$$

# Capital Budgeting

① Payback Period =  $\frac{\text{Investment}}{\text{Constant Annual Cash Flow}}$

year before recovery +  $\frac{\text{bal amt to be recovered}}{\text{Cash inflow of recovery year}}$

② Average Accounting Rate of Return

ARR =  $\frac{\text{Average NPAT}}{\text{Average Investment}} \times 100$

$$\frac{\left\{ \frac{\text{OPFA} + \text{Clg FA (Scrap value)}}{2} \right\} + \left\{ \frac{\text{OPWC} + \text{Clg WC}}{2} \right\}}{\text{Avg FA} + \text{W.C.}}$$

③ NPV

- Sales
- (-) V.C
- Contribution
- (-) F.C
- (-) Depri
- NPBT
- (-) Tax
- NPAT
- (+) Depri
- CIAT
- (+) W.C
- (+) Scrap
- (+) Saving on Depri
- Cash inflow
- (x) Df @
- PVCI
- (-) PVCO
- NPV

(-) STCL  
(+) STCG

(+) STCL  
(-) STCG

④ IRR (Internal Rate of Return)

- If IRR > Df (COC/OC) ⇒ accept
- If IRR < Df (COC/OC) ⇒ Reject
- If IRR = Df (COC/OC) ⇒ Accept/Reject logically accept

As per IRR Method

PVCI @ IRR = PVCO (COC/OC/Df)

At IRR, NPV = 0

IRR = Low rate +  $\frac{\text{NPV @ LR}}{\text{NPV @ LR} - \text{MR}} \times (\text{HR} - \text{LR})$

⑤ Payback Reciprocal =  $\frac{1}{\text{Payback Period}}$

OR  
=  $\frac{\text{Constant Annual Cash inflow} \times 100}{\text{Investment}}$

⑥ Modified IRR Method

Year	Cash inflow	Balance <sup>(n)</sup> life	Amount
1	10000	4	100K × (1+Int) <sup>n</sup>
2		3	-  -
3		2	-  -
4		1	-  -
5		0	-  -

⑦ PI (Profitability Index)  
(Desirability factor)

=  $\frac{\text{PVCI}}{\text{PVCO}}$

⑧ NPV Index

=  $\frac{\text{NPV}}{\text{PVCO}}$

## Leverage.

### Income Statement.

Sales
(-) V.C
Contribution
(-) F.C
EBIT
(-) Interest
EBT
(-) Taxes
NPAT
(-) Pref dividend
Equity Earning
← No of Equity Shares
EPS

### I. Operating Leverage (OL)

$$OL = \frac{\% \Delta \text{ in EBIT}}{\% \Delta \text{ in Sales}} \quad \text{or} \quad \frac{\text{Contribution}}{\text{EBIT}}$$

### II. Financial Leverage (FL)

$$FL = \frac{\% \Delta \text{ in EPS/NPAT/EBT}}{\% \Delta \text{ in EBIT}} \quad \text{or} \quad \frac{\text{EBIT}}{\text{EBT}}$$

### III. Combined leverage (CL)

$$CL = \frac{\% \Delta \text{ in EPS}}{\% \Delta \text{ in Sales}} \quad \text{or} \quad \frac{\text{Contribution}}{\text{Sales}}$$

If company has Pref Share Capital in its Capital stocks

$$FL = \frac{\text{EBIT}}{\text{EBT} - \text{Pref div} (1-t)}$$

## Capital Structure

I. Indifference Point (IP)  
(EBIT level at which EPS of Two financial plan is same)

### Decisions

- ① If Expected EBIT < IP  
(Select the plan with ~~higher~~ leverage)
- ② If Expected EBIT > IP  
(Select the plan with higher leverage)
- ③ If Expected EBIT = IP  
(Select any financial plan)

$$EPS = \frac{[(EBIT - Int)(1-t) - \text{Pref div}]}{\text{No of Eq Shares}}$$

Debt Equity mix (i.e. Financial leverage) does not affect operating Income (EBIT)

### Financial BEP

(EBIT level at which EPS = 0)

Case 1: All Equity Firm  
BEP = 0

Case 2: Equity + Debt  
BEP = Interest

Case 3: Equity + Debt + Pref. sh  
BEP = Interest +  $\frac{\text{Pref div}}{(1-t)}$

# Cash Budget

Opening Balance

(+) Receipt

(a) Cash Sales

(b) Collection from Debtors

(c) Other Inflows

Total 1

(-) Payment

(a) Payment to Creditor

(b) Payment of Interest

(c) Other Outflows

Total 2

Closing Balance

(+) Borrowing

(-) Repayment

(+) Investment in Stock

(-) Sale of Stock

Net Sales.

## Working Capital Management

### Classification

A] On basis of Time

(1) Permanent Working Capital

(2) Temporary W.C.

B] On the basis of Value

(1) Gross Working Capital = CA

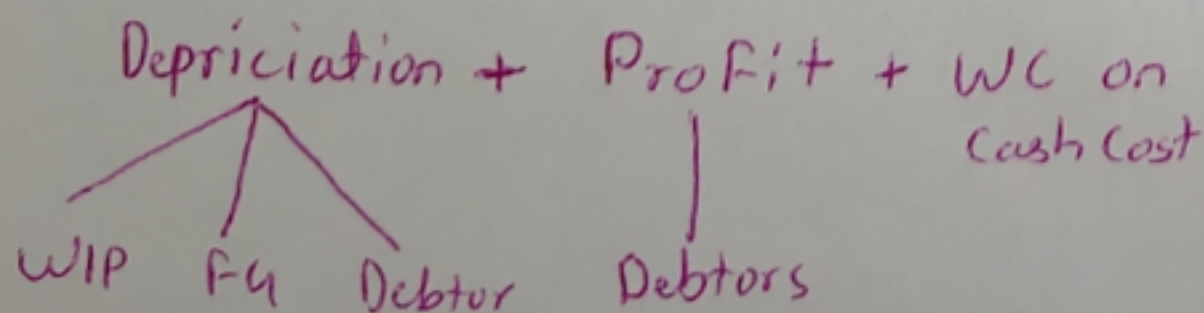
(2) Net Working Capital = CA - CL

### Purposes

(1) Balance Sheet - Total method

(2) Loan from Bank - Cash Cost

W.C on total Basis =



## Total Method / Cash Cost Method.

I. Current Asset

(a) Stock

(1) RM

(2) FG

(3) WIP

(b) Debtor

(c) Prepaid Expense

(d) Cash & Bank

Gross W.C (CA)

II Current Liabilities

(a) Creditors

(b) Outstanding expense

(c) Bank OD.

Current Liabilities

CA - CL

(+) Safety Margin

Net Working Capital

Net Duration of W.C Cycle

$$= RM + WIP + FG + Debtors - Creditors$$

MPBF (Maximum Permissible Bank

Finance - By Tandon Committee

Stage I - 75% of (CA - CL)

Stage II - (75% of CA) - CL

Stage III - [75% of (CA - CCA)] - CL

# Capital Structure Theories

## Assumptions

- ① No Tax
- ② No Pref Share
- ③ 100% Dividend P/O Ratio
- ④ No Market for Debt

## # Income Statement

Capital Structure

EBIT
(-) Intrest
EBT
(-) Tax
NPAT
(-) Pref Dividend
Equity Earning
÷ No of Eq Shares
EPS

## Capital Structure Theories

EBIT
(-) Intrest
EBT/NPAT/Earning/Dividend
∴ EBIT
(-) Intrest
Dividend.

## # Cost of Capital

COC chapter

$$K_d = \frac{Int(1-Tax) + \left(\frac{RV-NP}{2}\right)}{\left(\frac{RV+NP}{2}\right)}$$

$$K_p = \frac{Pref Div + \left(\frac{RV-NP}{2}\right)}{\left(\frac{RV+NP}{2}\right)}$$

$$K_e = \left(\frac{D_1}{P_0/NP} + g\right) \times 100$$

$$K_r = \left(\frac{D_1}{P_0} + g\right) \times 100$$

## Capital Structure Theories

$$K_d = \frac{Intrest}{NP/FV} \times 100$$

$$K_p = \text{Not Relevant}$$

$$K_e = \frac{D_1}{P_0} \times 100$$

$$K_r = \text{Not There.}$$

## Calculation of M.V weights

Capital Structure Theory

Type	Amt (M.V)	% Cost	Cost
Equity	$\frac{P_0 \text{ of all shares}}{P_0 \times \text{No of shares}}$	$\frac{Div}{P_0}$	Div
Debt	F.V	$\frac{Int}{FV}$	Intrest
			EBIT

## WACC Based on Theory

$$\text{Value of Firm / Capital Employed} = EBIT$$

$$ROCE = \frac{EBIT}{Cap Emp} \times 100$$

$$K_0 = \frac{EBIT}{\text{Value of Firm}} \times 100$$

## Assumption of MM Approach

- ① Net worth of Shareholder remain same
- ② All investor have complete info of Market
- ③ All investor have same borrowing cost
- ④ Corporate leverage and personal leverage are perfect substitute.
- ⑤ There is NO STT.

$$V_L = V_U \text{ (No tax)}$$

## Arbitrage Process

### Logics

- ① Shareholder realise it is better to shift from overvalued company and earn some return and save on investment.
- ② Shareholder will start selling the share of overvalued share till the time value of share of two companies become same.
- ③  $K_0$  was termed as ROI by MM and it remains same irrespective of debt Equity Mix

## MM Approach without Taxes.

## Income Statement

EBIT
(-) Intrest
EBT
(-) Tax
Dividend.

## Cost of Capital.

$$K_d = \frac{Int(1-Tax)}{F.V} \times 100$$

$$K_e = \frac{Div}{VOE/P_0} \times 100$$

## Calcn of WACC using MV weights

Type	Amt	Cost	Cost
Equity	Pool of all Shares ( $P_0 \times \text{No of shares}$ )	$\frac{\text{Div}}{P_0}$	Div
Debt	F.V	$\text{Int}(1-\text{Tax})$	$\text{Int}(1-\text{Tax})$
		F.V	
$K_0$	$\frac{\text{EBIT}(1-\text{Tax}) \times 100}{\text{VOP}}$	$\text{EBIT}(1-\text{Tax})$	

$$V_L = V_{UL} + \text{PV of Tax Saving on Interest due to Net Capital.}$$

$$\therefore V_L = V_{UL} + \text{Debt} \times \text{Tax Rate}$$

### Net Income Approach

$K_d$  &  $K_e$  remain constant

$\uparrow \text{FL} \Rightarrow \downarrow \text{COC} \uparrow \text{VOP} \uparrow \text{M.P.}$

$\downarrow \text{FL} \Rightarrow \uparrow \text{COC} \downarrow \text{VOP} \downarrow \text{M.P.}$

### Net Operating Income Approach

$K_d$  - remain constant

$K_e$  - will change

~~$\uparrow \text{FL} \Rightarrow \uparrow \text{COC}$~~

$\uparrow \text{FL} \Rightarrow \uparrow K_e$  (No change in  $K_0$  &  $\text{VOP}$ )

$\downarrow \text{FL} \Rightarrow \downarrow K_e$  (No change in  $K_0$  &  $\text{VOP}$ )

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

### Traditional Approach

Refs: T.B pg no 45

Always go from

Overvalued to Undervalued firm

## Dividend Policy

### Dividend Relevant Theory

1) Gordon

$$P_0 = \frac{D_1}{K_e - g}$$

$$D_1 = \text{EPS} \times \text{DPR}$$

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

2) Walter

$$P_0 = \frac{\text{Dividend} + (\text{EPS} - \text{DPS}) \times \left(\frac{x}{K_e}\right)}{K_e}$$

3) Graham & Dodd

$$P_0 = M \left( D + \frac{E}{3} \right)$$

4) Linter

$$D_1 = D_0 + \{ \text{EPS} \times \text{TPR} \} - \text{Adjustment Ratio}$$

### Dividend Irrelevant Theory = MM Approach

$$P_0 = \frac{D_1 + (P_1 - P_0)}{K_e}$$

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