Index :-

Financial Statement Analysis.

* Meaning and purpose.

Financial Statement Analysis = Study of FS to understand profitability, liquidity, solvency, efficiently.

Helps Stakeholder [investor, lender management] make informed decision.

* Characteristics of Good FS:

- Relevant
- Reliable
- Comparable
- Understandable
- Timely.

* Objective.

- Understand Financial Health.
- Help decision - making.
- Aid investors / creditors
- Ensure Compliance.

* Tools of Analysis

- Comparative Statement = year on year analysis
- Common Size Statement = Express items as % of base [Like Sale or Assets]
- Trend Analysis = Movement over time [in %]

* Ratio Analysis = Numerical relationship b/w two figures
  - 1) liquidity Ratio
  - 2) leverage Ratio
  - 3) Turnover Ratio
  - 4) Profitability Ratio.

* DuPont Analysis = Break ROE into Components.

* Limitation

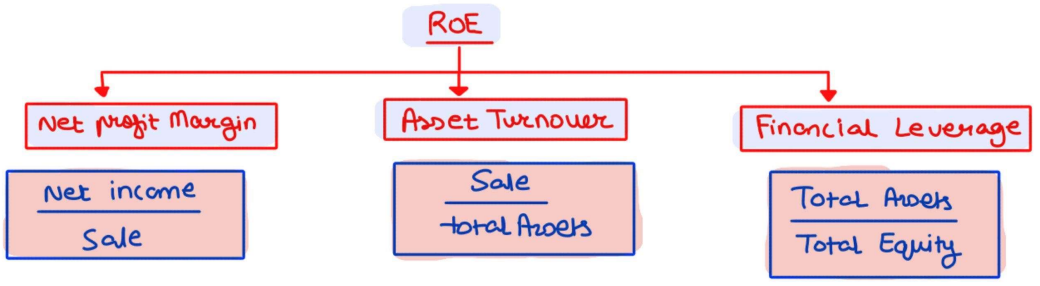
- window Dressing
- Different Accounting policies
- Ignores Inflation
- Doesn't include non-financial info.

* Dupont Analysis:

Means, To calculate Return on Equity [ROE] and Break it into three Components: Net profit Margin, Asset Turnover, and financial leverage - to Understand the exact reason behind a Company's ROE performance

In Dimple; Dupont helps identify wheather ROE is increase due to:

- Profitability [Net Profit Margin]
- operational Efficiency [Asset turnover]
- Capital Structure [leverage]



ROE = Net profit Margin x Assets Turnover Ratio x Financial leverage.

* Liquidity Ratio :

Ratio	Formula	Components	Meaning	Ideal / Interpretation
1) Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	CA = Cash and Cash Equivalents, Current investment, Tread Receivables (Debtor), Inventories [stock], Short term loan and advance, and prepaid expensed CL = Tread payable [creditors], outstanding Expense, Bank overdraft, Short term Loan & Advance.	Measures Short-term Solvency.	Ideal : internation = 2.0 India = 1.33.
2) Acid test / QUICK / Liquid Ratio	$\frac{CA - Inventories - Prepaid\ Expense}{CL}$	Exclude inventory, prepaid, Advance tax etc from CA	Stricter liquidity test	Ideal : 1:1
3) Cash Ratio	$\frac{Cash + Bank}{CL}$	only liquid cash	Most Strict Liquidity test	Ideal : 0:2
Working Capital.	CA - CL	Net Liquidity.	Surplus WC = Healthy.	

* Leverage / Solvency Ratio :

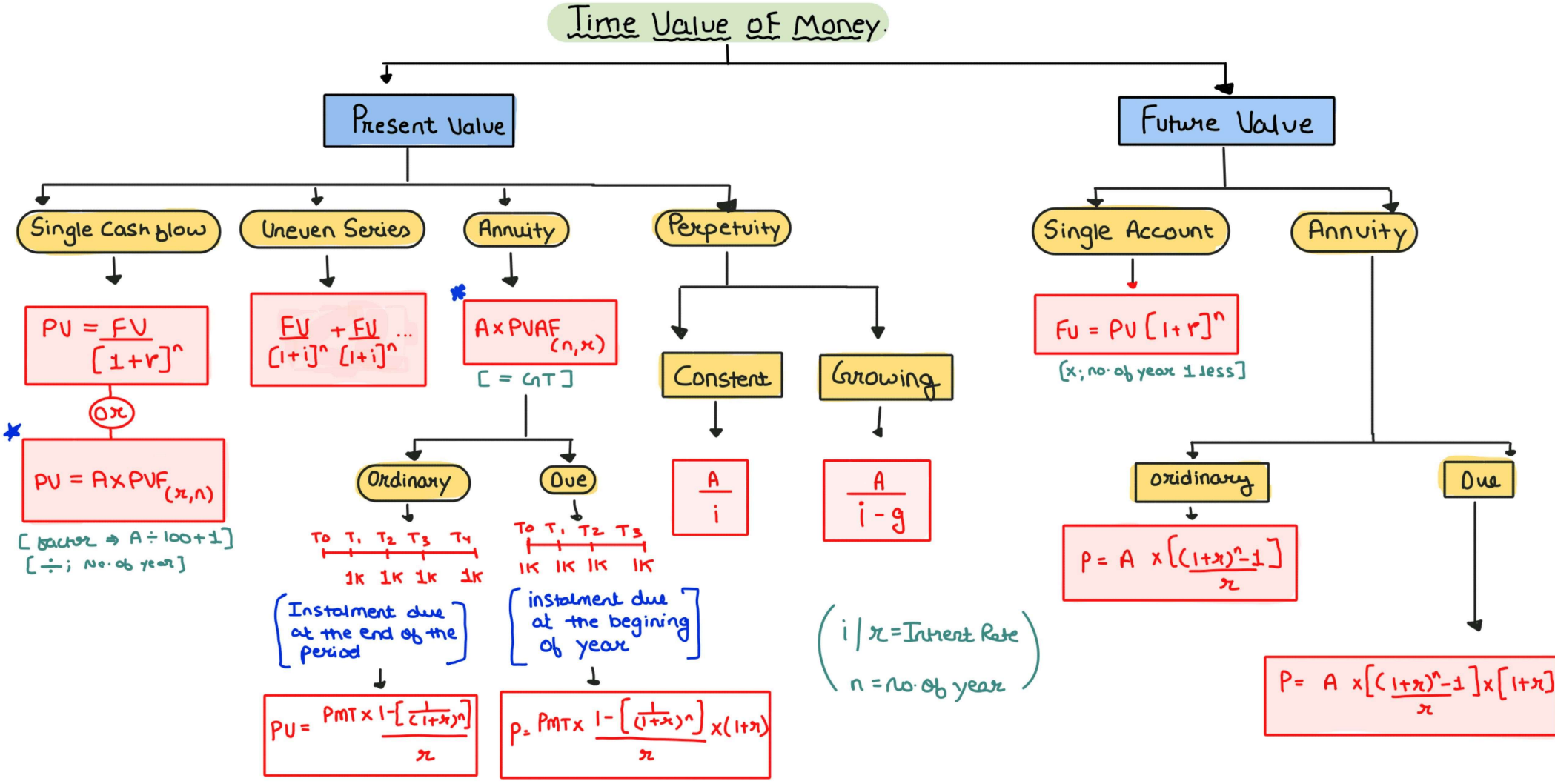
Ratio	Formula	Components	Meaning	Ideal / interpretation
1) Debt Equity Ratio	$\frac{\text{Long term Debt}}{\text{Shareholder's funds}}$	Shareholder funds : [Equity] includes, Share Capital [Equity + prefrence] + Reserve & Surplus + Money received against Share warrants + Share application money pending allotement.	Measures financial Risk	Ideal : < 1
2) Debt to Capital Employed	$\frac{\text{Long-term Debt}}{\text{Capital Employed or Net Assets.}}$	Capital Employed = long-term Debt + Shareholder funds [Debt + Equity] ↳ bib CE is not given use Net Assets. [TA - CL]	Capital mix	50:1. preferred
3) Intrest Coverage Ratio	$\frac{EBIT}{intrest}$	If PAT is given → I] find PBT by PAT ÷ (1-t) II] Then add intrest = PBT + intrest ⇒ EBIT	Ability to pay interest	≥ 3 = Safe
4) Fixed Charge Coverage Ratio	$\frac{EBIT + Dep}{intrest + [1 - tax]}$		Broader Coverage.	Higher the Better
5) Debt Service Coverage Ratio	$\frac{PAT + Dep + other\ non\text{-}interest\ on\ term\ Loan + \overset{Leane\ Rental}{}}{Intrest + lease\ Rental + Repayment\ of\ term\ Loan}$		Loan Replacement Capacity	ideal : 1·5 +

* Turnover Ratio :

Ratio	Formula	Components	Meaning	Interpretation
1) Inventory Turnover	$\frac{\text{COGS}}{\text{Avg inventory}}$	COGS: opening Stock + Net purchase − Closing Stock Avg inventory: [opening + closing Stock] / 2	Measure Stock rotation Speed	High = Efficient
2) Debtors Turnover / Receivable turnover	$\frac{\text{Net credit Sale}}{\text{Average Sundary debtors}}$	Net credit Sale :- Total Sale − Cash Sales Average Sundary Debtors = (opening + closing) / 2	Collection efficiency	High = Fast Recovery
3) Fixed Asset Turnover	$\frac{\text{Net Sales}}{\text{Avg net fixed assets}}$		Revenue from fixed assets.	High = Efficient
4) Total Assets Turnover	$\frac{\text{Net Sales}}{\text{Average total Assets}}$		overall efficiency.	High = Good Usage

* Profitability Ratios :

Ratio	Formula	Components	Meaning	Interpretation
1) Gross profit Ratio	$\frac{\text{Gross profit}}{\text{Net Sale}} \times 100$	Gross profit = Net Sale − COGS Net Sale = Gross Sale − Sale return	Basic profitability.	Higher = Better Cost Control
2) EBITDA Margin	$\frac{\text{EBITDA}}{\text{Net Sale}} \times 100$	EBIT + Dep + Amortisation	Pre-interest per tax margin	Higher = Strong operations
3) Net profit Ratio	$\frac{\text{Net profit}}{\text{Net Sale}} \times 100$	Revenue [Sale] = Direct Expense = Gross profit. Gross profit − Indirect Expense = Net profit	overall profitability	Higher = Better control
4) RoA [Return on Assets]	$\frac{\text{Net profit}}{\text{Total Assets}} \times 100$		Return on all assets	Higher = more efficient
5) Earning Power	$\frac{\text{PBIT}}{\text{Avg TA}} \times 100$		operational Strength	Higher = Strong business
6) Return of Capital Employed	$\frac{\text{PBIT}(1-\text{tax})}{\text{Avg TA}} \times 100$		Return on total funds.	> cost of capital
7) Return on Equity	$\frac{\text{Equity Earning}}{\text{Average Equity}} \times 100$		Return on Shareholder	Higher = more Rewarding.



* **Annuity** :- Series of cash flows of equal amount at equal time intervals.
[either payment made or received] for a specified period of time

* **Perpetuity** :- Perpetuity is a constent stream of idential cash flows with no end
It is a type of annuity which is unending, it sum or future value cannot be calculated.

* Doubling period.

① Rule 72 ⇒ $n = \frac{72}{r}$ R↑ D↓ R↓ D↑

② Rule 69 ⇒ $0.35 + \frac{6}{r}$ R↑ D↓ R↓ D↑

③ Rule 70 ⇒ $n = \frac{70}{r}$.

[Help's to find the doubling period by dividing the intrest Rate by 72 [ex:- r = 8% ; [72/8 = 9]; It will take 9 year to double the amount if we receive interst at 8%]

* [calculator trick for any power [including non-integer]]

Base [√] [√] .. 12 times [-1] [x] [n] .... [+1]

[x=] [x=] .. 12 times.

* Compounded Annual Growth Rate [CAGR]

CAGR ⇒ $r = \left[\frac{FV}{PV}\right]^{1/n} - 1$

Capital Budgeting Techniques

Traditional Techniques

Pay-back period [PPB]

Lower the better

Even Series = $\frac{II}{CFAT}$

Uneven Series = $E + \frac{B}{C}$

Post payback period :-
Useful life (-) payback period.

Post payback Profitability

Higher the Better

PPP = Total Cashflow - Investment

Post Payback Profitability Index

Higher the better

$PPPI = \frac{PPB\ Profit}{Investment} \times 100$

Discounted Payback period.

Lower the better

Step : 1 - PV factor of Cashflow
Step : 2 - Discounted Cashflow
Step : 3 - Cumulative D.C.F
Step : 4 - $E + \frac{B}{C}$

Average Rate of Return [ARR]

Even Series.

Higher the better.

$ARR = \frac{\text{Average Annual Net income [or PAT]}}{\text{Average Investment}} \times 100$

Uneven Series

$ARR \Rightarrow \frac{\text{Average Annual Cashflow - Annual Dep}}{\text{Average investment}} \times 100$

Average Investment $\Rightarrow \frac{\text{Initial investment + Salvage Value}}{2}$

Average Depreciation $\Rightarrow \frac{II - SV}{\text{no. of Year}}$

Average Annual Cashflow = $\frac{\text{Add all Cashflow}}{\text{no. of year of CF}}$

Average Annual net income / PAT :-

- SV [Not given] → $\frac{CFAT - II}{n}$
- SV [Given] → $\frac{CFAT - Dep}{n}$

E = no. of year preceding the year of Recovery
B = The balance amt to be Recover
C = Cash flow durring the year of recovery.

Modern Techniques

Net present Value [NPV]

NPV = PVCI - PVCO

PVCI = inflow
PVCO = outflow.

NPV + → Accept
NPV - ⇒ Reject
NPV 0 ⇒ Accept | Reject

Internal Rate of Return [IRR]

Even Series.

$LDR\left[\frac{\text{NPV at LDR}}{\text{NPV at LDR - NPV at HDR}}\right]^{HDR-LDR}$

[LDR ⇒ lower Discount Rate
HDR ⇒ Higher Discount Rate.]

Uneven Series

$NPV(Co) = \frac{C/F_1}{(1+IRR)^1} + \frac{C/F_2}{(1+IRR)^2} \ldots\ldots - II$

Modern IRR

$MIRR = \left[\frac{FV\ of + Cashflow}{PV\ of - Cashflow}\right]^{1/n} - 1$

Profitable Index [PI]

$\frac{PV\ of\ Cashinflow}{PV\ of\ Cashoutflow}$

Higher the better.

$\frac{PVCI}{PVCO} \times 100$

%

PV > 1 ; Accept
PV < 1 ; Reject
PV = 1 ; Accept | Reject.

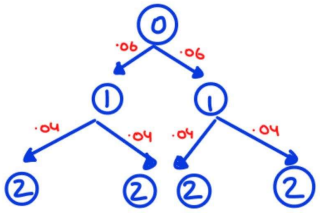
Measuring of Risk & Uncertainty.

General Techniques

- **Risk Adjusted Discount Rate [RADR]** → Risk free Rate of Return + Risk Premium Rate
- **Certainity Equivalent [CE]** → Riskless Cashflow / Risky Cashflow

Quantitative Techniques

- **Statistical Techniques.**
  - **Probability Index** → $\frac{PVOCI}{PVOCO} \times 100$
  - **Measure of Dispersion**
    - **Standard Deviation** → $\sqrt{\Sigma(x)-\bar{x}^2 \times prob}$ or $\sqrt{\Sigma[p \cdot \sigma^2]}$
    - **Co-efficient of Variance** → $\frac{\sigma}{\bar{x}} \times 100$
- **Sensivity Analysis** → NPV ↑ ⇒ Better
- **Decision Tree**



* Riskfree Cashflow ⇒ Risky Cashflow × Certainity Coefficient

Expected NPV :- $(\overline{NPV}) = \Sigma[NPV \times prob]$

σ = standard deviation.

* Capital Rationing.

- Meaning :- Investing Under limited Capital.
- Goals :- Select best project to max return.
- Tools :- Use NPV ; IRR and Mainly PI.
- Types :- Hard [external] and Soft [internal].

p = probability

NPV = Cashflow

$\overline{NPV}$ = Average / Mean → Mean = total of cashflow / No. of Cashflow.

$\sigma = [x - \bar{x}]$

CH→2 Capital Budgeting

Financing decision + Investment Decision + Dividend Decision.

* Cash Flows :-

Inflow

- CFAT [T_1-T_5]
- Salvage Value [T_5]
- Working Capital Recovered [T_5].

Outflow

- Initial Investment (I I) [T_0]
- Working Capital investment [T_0].

* Calculation of Initial Investment [T_0]

Cost of Project / Assets	xxx	– outflow
+ Freight and Insurance	xxx	
+ Installation / Assembly	xxx	
– Salvage Value of Scrap	xxx	
– Decrease in Working Cap.	xxx	
Initial inv →	xxx	

- **Working Capital :-**
  - Given
  - Non-Given
    - Current Assets
    - – Current Liabilities

* Calculation of CFAT – [T_5]

Income Statement

Sale
–(VC)
Contri
–(OFC)
EBIT
–(tax)
PAT
–(P.D)
EAESH

Preference Dividend.

Income Statement pro

Sale
–(VC)
Contri
–[COFC] – Cash operating F.C
EBIDITA
–[D,A]
EBIT
–(tax)
PAT
–(PD)
EAESH

EBIDITA → Earning before interest, dep, tax, amortisation.

Income Statement pro max

Sale
–(VC)
Contri
–[COFC]
EBIDITA / EBIT / EBT
–[tax]
NO PAT
+ tax Advantage on dep
CFAT.

* Calculate Depreciation :

- Straight line method.
- Reducing Balance Method. / Written down method / Demination Balance Method.

- When question is Silent Always Use SLM

$$\text{Dep} = \frac{\text{Total Cashflow} - \text{Salvage Value}}{\text{Useful life.}}$$

Book Value = Salvage Value.

1000 [Dep Rate ⇒ 10%]
×10%
100 [complimenty of 10% is 90%].
×90%
90
×90%
81
×90%
72.9
×90%
65.61
×90%
So on....

* Calculation of Terminal Cashflow | Salvage Value – (Ts)

Scrap Value of the Assets	xxx	→ Inflow
(–) tax on Capital gain	(xxx)	→ outflow
(+) tax on Capital loss	xxx	→ outflow avoided ie inflow
(+) working Capital Recovered	xxx	
Amount of Salvage Value.	xxx	

COST OF CAPITAL

PD is not tax Deductible so before and after tax Cost remains the Same [unless CDT is added]

- Cost of Debt Kd
  - Redeemable
    - Post tax: $\frac{I[1-t]+\frac{RV-NP}{n}}{\frac{RV+NP}{2}} \times 100$ (Pre tax [1-t])
    - Irredeemable
      - Post tax: $\frac{I[1-t]}{NP} \times 100$
- Cost of prefrence Share Kp
  - Redeemable
    - Post tax: $\frac{PD+\frac{RV-NP}{n}}{\frac{RV+NP}{2}} \times 100$ (Pre tax PD/[1-t])
    - Irredeemable
      - Post tax: $\frac{PD}{NP} \times 100$
      - If DDT/CDT Corporate Dividend tax is given: will add [1+CDT] in both formula. $\frac{PD[1+CDT]}{NP} \times 100$
- Cost of equity Ke
  - CAPM: $Re = RF + [Rm - RF]\beta$
  - Dividend yield
    - DDM: $Re = \frac{D_1}{P_0}$
    - DDM+G: $Re = \frac{D_1}{P_0} + g$, $D_1 = D_0[1+g]$
  - Earning yield
    - EYM: $Re = \frac{E_1}{P_0}$
    - EYM+G: $Re = \frac{E_1}{P_0} + g$, $E_1 = E_0[1+g]$
- Cost of Retain Earning Kre: $\frac{DPS[1-T_i][1-B]}{MP[1-Te]}$
  - If Growth Rate is given: $\frac{[DPS+G][1-T_i][1-B]}{MP[1-Te]}$
- Cost of term Loan Kt: $i(1-t)$

* In Kd; NP is only use when fresh issue is made.

I = Interest / Coupen Amount → [FV x i]
i = Interest Rate
RV/MV = Redemption Value / Maturity Value [FV, Par, premium+ discount-]
↳ If not given in question [FV = RV]
N.P = Net proceed [current market price - flotation cost]
PD = Prefrence dividend per share [FV x D.Rate]
D_1 = Dividend at the end of 1 year If Do is given [Do+G → D1]
T_i = tax rate applicable to individual Share holder [Personal tax]
Te = Capital Gain tax
G = growth Rate of dividend If not given = g = b x r (Retain Earning Ratio, ROE)
ROE = $\frac{PAT-PD}{NW}$ (NW = Net worth)
B = Brokerege Cost.
RF = Risk free Return
Rm = Market Rate of Return
β = Beta [Systomic Risk]
Re = Require Rate Of Return
F = Floation Cost [every expenses which a Co. incurred while issuing Shares.]
[Rm - RF = RP] = Risk premium
Po/Mp = Current market price [$Po = \frac{D_1}{Ke-g}$]
E1/Eps = Earning per Share [$\frac{EPS}{MOS}$] [$EPS = \frac{PAT}{No.of\ ES}$]

Re = Internal [only for Understanding purpose.
Ke = External
- How to know what question is asking us to find?
  - If in question flotation cost is given we need to find Ke if not then Re

Before tax :- ÷ by [1-t]
After tax :- x by [1-t]

* Main objective of this topic is to find WACC [Kc/Ko]

Kc/Ko ⇒ We·Ke + Wd·Kd + Wp·Kp + Wt·Kt + Wre·Kre

→ Ke = Kre

But if personal tax and Brokerage / commision are given than Kre is Calculate.

Components of Kc

- Specific Cost of Capital
- Specific weights of Capital

* Tynes of weights:
  - Target Value weights I preference.
  - Market Value weights II
  - Book Value weights. III

$$WACC = \frac{E}{V} \times Re + \frac{D}{V} \times R_d \times [1-t]$$

E = Market Value of firm Equity
D = Market Value of firm Debt
V = E + D
Re = Cost of equity
Rd = Cost of debt
tc = Corporate tax.

* Bond Yeild Plus Risk Premium Approach:

Ke = Kd + RP

RP = Risk premium [Rm - RF = RP]

* Marginal Cost of Capital [mcc]

WACC	MCC
• Average Cost of all Capital	• Cost of new Capital raised.
• Past + Current weights	• only new funds Considered
• Used for evaluating existing portfolio	• Used for evaluating new project.

* Step to Calculate MCC:

1. Estimate cost of each Components of Capital [Equity, Debt, Pref.]
2. Estimate proportions of funds to be raised.
3. Calculate WACC for new funds → This is MCC.
4. If funds exceed breakpoints → Apply higher Cost accordingly.

CAPITAL STRUCTURE

***Capital Structure:** Refer to the mix or proportion of debt and equity that a company use to finance its overall operations and growth.
main objective to find the best Debt : Equity Ratio that max the value of the firm. (CS = Debit + Equity)
Debt ⇒ Risk ↓, cheaper
Equity ⇒ Risk ↑, Expensive.

- **Leveraged Capital Structure** : High proportion of Debt
- **Unleveraged Capital Structure**: 100% equity financing [No Debt] [Ko = Ke]

V = Value of firm.
VL = Value of levered firm
VU = Value of Unlevered firm

Capital Structure Theories:

Net Income Approach

- Kd < Ke
- No tax
- ↑ Kd = ↑ V = ↓ Ko
- Optimal Capital Structure exit under this theory.
- Value of firm [V]:
  $V_F = V_E + V_D$ or $\frac{EBIT}{Ko}$
- Value of Equity [V_E]:
  $\frac{EBT}{Ke}$
- Value of Debt [D]:
  Given / Intrest / Kd
- overall CoC [Ko]:
  $\frac{EBIT}{V}$
- Ke: given, assumed Constant
- Kd: given, assumed Constant Usually less than Ke.

Net Income operating approach

- Ko is Constant
- Kd is Constant
- ↑ in Kd = ↑ Ke proportionately to keep Ko Constant.
- Capital Str. is irrelevant to Value. No optimal Capital Str.
- No impact of Capital Str. on firm Value.
- Value of firm [V]:
  $V = \frac{EBIT}{Ko}$ or $V_F = V_E + V_D$
- Value of Equity [V_K] = $V_K = V_F - V_D$
  (Or)
- V_K: $\frac{[EBIT - intrest]}{Ke}$
- overall Ko : Constant or given

Traditional Approach

- Combines NI and NOI views.
- Capital Structure affects values up to a certain point (optimal point)
- After that, further debt increases financial Risk, increase Ke and overall Ko rise.
- There exist an optimal Capital Str. where Ko is minimum and V is maximum.
- More practical.

Price ⇒ Return / Expectation

Modigliani Miller Approach

With tax

- Kd ↑ because of tax shield
- Capital Str. is relevant under taxation.

$V_L = V_U + \text{tax Rate} \times \text{Debt}$

$V_L = \frac{PAT}{Ke} + [\text{Debt} \times t]$

Without tax

- Perfect Capital Markets
- Capital Str. is Irrelevant, Value is based on EBIT and Ko.

$V_F = V_K + V_D$

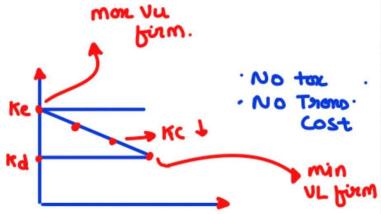
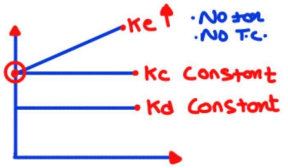
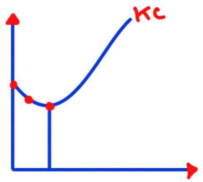
$V_K = \frac{EBIT}{Ko} - V_D$

$Ke = Ko + (Ko - Kd) \times \frac{V_D}{V_K}$

$Ko = \frac{EBIT}{V_F}$

EBIT = Earning Before intrest and tax.
NI = Net income [EBIT - intrest]
VD = Value of Debt
VE = Value of Equity
V_F = total Value of firm = $V_K + V_D$
Ko = overall cost of Capital
Ke = Cost of Equity
Kd = Cost of Debt
t = Corporate tax Rate

Summary Table.

Approach	Value of firm [V]	Explanation	Graph's.
1. Net Income App.	$V_F = V_K + V_D$ or $\frac{EBIT}{Ke}$	V_L (K_C ↓) > V_u (K_C ↑) · K_d is ↓ than K_e · K_d & K_e will remain Constant K_C ↑ VF ↓ K_C ↓ VF ↑] inverse Relati.	
2. Net operating Income App.	$V = \frac{EBIT}{KO}$	• Kd Remain Constant • Kc remain Constant • Debt ↑ → Ke ↑ • As Kc remain constant Value of firm is not affected by chang in CS	
3. Traditional App	—	Some debt is good but excess of debt is bad.	
4. MM without tax.	$V_f = \frac{EBIT}{KO}$ $V_u = V_L$	Same as NOI · EBIT is Same · Kc [L] = Kc [UL] · VF [L] = VF [UL] · Kd is Constant · Ke [L] > Ke [UL]	—
4.2 MM with tax	$V_L = V_u$ + Tax Rate x Debt ↓ $V_L = \frac{PAT}{Ke} + (\text{debt} \times \text{tax Rate})$	There are tax $V_L > V_u$ [To the extent of tax benefit on debt]	—

* Trade off Theory.

- Balance tax Shield benefits of debt with cost of financial distress.
- firm should borrow until marginal benefit = marginal cost
- Explain why firm use moderate level of debt.

Value of levered firm ⇒ Value of Unlevered firm
+ Tax benefit on Debt
− Cost of financial distress

Leverage

- **Leverage**: Refers to the Use of Fixed Cost [either operating or financial] to magnify the return of a Business. It Helps measure risk and profitability based on change in Sales and Cost.

TYPE	AFFECTED BY	Shows Impact on	Risk Level.
• Operating Leverage	Fixed operating Cost	EBIT	Business Risk
• Financial Leverage	Fixed Financial Cost	EPS	Financial Risk
• Combined Leverage	Both	EPS (via Sale)	Total Risk

- **Variable Cost Ratio**: $\frac{\text{Variable Cost}}{\text{Sale}} \times 100$

- **Contribution / PV Ratio**: $\frac{\text{Contribution}}{\text{Sale}} \times 100$

PV Ratio & Variable Cost ratio are Complementary to each other
if PV Ratio is = 30% of Sales.
Variable Ratio = 70% of Sales.

PVR + VCR = 100%

* **Balance Sheet**:

Sale
− [Variable Cost]
Contribution
− [fixed Cost]
EBIT [operating profit]
− [Interest]
EBT
− [Tax]
EAT / PAT
− PD
EAESH
− Equity Dividend
Retained Earning [Surplus]

operating lev. — Contribution to EBIT
fixed lev. — EBIT to EBT
Combined Leverage. — Contribution to EBT
Earning Available to equity shareholder — EAESH

- pre tax $\xrightarrow{\times(1-t)}$ post tax
- post tax $\xrightarrow{\div(1-t)}$ pre tax.

* **Financial Break-even point**:

The level of EBIT where "EPS = 0"

$$\text{Interest} + \frac{PD}{(1-t)}$$

[EBIT; post tax items]

[EBIT; pre tax items]

Indifference point:

The level of EBIT Under different financial plans at which EPS is "Same"

EPS (plan A) = EPS (plan B)

* Indifference point ⇒

$$\frac{(EBIT - I)(1-t) - PD}{N_1} = \frac{(EBIT - I)(1-t) - PD}{N_2}$$

[EBIT - interest] × [1 - tax] - preference Dividend
No. of Share.

EBT ⟶ PAT

• EPS ⇒ EAESH / No. of eq. Share

* Working Capital leverage :-

$$\frac{CA}{TA + \Delta CA}$$

ΔCA = CA × % change

* HUMADA Co-Efficient ⇒

$$BL = Bu\left[1 + (1-t)\frac{D}{E}\right]$$

BL = Levered Beta
Bu = Unlevered Beta
T = tax Rate
D/E = Debt to Equity Ratio

Leverage Type	Basic Formula	when PD is given.	Degree of leverage
1. Operating Leverage	Contribution / EBIT	No change	% change in EBIT / % change in Sale
2. Financial Leverage	EBIT / EBT	$\frac{EBIT}{EBT - \left[\frac{PD}{(1-t)}\right]}$	% change in EPS / % change in EBIT
3. Combined Leverage.	Contribution / EBT or OL × FL	$\frac{Contribution}{EBT - \left[\frac{PD}{(1-t)}\right]}$	% change in EPS / % change in Sale or DOL × DFL

CH-6

Dividend Decision

Return that Shareholder get out of profit of the Co. on there Shareholding.

Theories

Relevance Theories

Change in Payout Ratio Leads to change in Value of the firm

Walter's Models

Value of a firm depends on how profit are used.

$$P_0 = D_1 + \frac{\frac{R}{K_e}[E_1 - D_1]}{K_e}$$

P_0 = Market price per Share
D = Dividend per Share
E = Earning per Share
R = IRR
Ke = Cost of equity capital.

E-D ⇒ Retain.

*** Assumption :-**

- Firm finance only through 'r'
- r and K are constant
- All earning are either distributed as dividend or reinvested
- firm has ∞ life.

- Growth firm — r > Ke — Retain - 100% (Good) Payout - 0%
- Normal firm — r = Ke — Any payout Ratio is optimum
- Declining firm — r < Ke — Retain - 0%; Payout = 100% (Bad)

Gordon's Model

$$P_0 = \frac{E_1[1-b]}{Ke - bR}$$

$E[1-b]$ can be written as D_1

D_1 can be written as $D_0(1+g)$

P_0 - price of Share
b - Retention Ratio
(1-b) - Dividend payout Ratio
bR - growth Rate.

1. Growth - R > Ke — R - 100% ; P = 0%
2. Stable - R = Ke — Any payout Ratio
3. declining - R < Ke — R - 0% ; P = 100%

*** Supporting Formula :-**

$$EPS = \frac{EAT}{No.\ of\ Share}$$

$$B = 1 - Payout\ Ratio$$

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

$g = b \times r$

Retention — Return on Retain earning.

Irrelevance Theories

Change in payout Ratio does not leads to change in Value of the firm.

Modigliani & Miller Models (MM models)

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

$$P_1 = P_0(1+Ke)$$

P_0 = Market price per Share today.
P_1 = Market price of Share after dividend.
D_1 = Dividend per Share at the end of the year

Step 1 - Find P_0; then Rearrange to find P_1

Step 2 - Calculate New Share to issue. ⇒ $\frac{\text{Amt to be raised}}{P_1}$

EAESH | PAT
(-)(Dividend)
Retained
(-)(Fresh investment)
Amt raised through fresh issue
÷ issue price (P_1)
no of Share to be issued.

Step 3 - Calculate fair Value of firm :

V = No. of Share existing x P_0

Total Share. x price.

Ratio	formula	
① Payout Ratio	DPS / EPS x100	% of earnings paid to shareholder
② Retention Ratio	1 - PR or $\frac{\text{Retained}}{\text{Net profit}}$ x 100	% of earnings kept by company.

* They are complimentry to each other.

* This chapter helps to find out best payout Ratio to maximize the value of firm.

* **Formula:**

① Dividend per Share = $\frac{\text{Total Dividend}}{\text{No. of Share}}$

② Dividend payout Ratio = $\frac{DPS}{EPS} \times 100$ / DPR = 1 - b

③ Retation Ratio (b) ⇒ b = 1 - DPR / $\frac{EPS - DPS}{EPS}$

Working Capital Management

* **Working Capital** : refer to the fund required for day to day operating of a business; It is the capital used to buy raw material, pay wages; bills, salaries, rent etc. everything needed to keep business running daily.

Working Capital [WC] = Current Assets - Current Liabilities.

- Types of Working Capital

On Basic of time
- **permanet WC** — fixed; always needed.
- **Temporary WC** — Variable, Seasonal or Special demand.

On Basic of Concept
- **Gross WC** — Total CA only.
- **Net WC** — CA − CL

On Basic of position
- **positive WC** — CA > CL = Safe liquidity
- **Negative CW** — CA < CL = Risky position

* **operating cycle [OC]**: Shorter oc → Better liquidity ; Cash to Cash Conversion Cycle.

$$t = R + w + F + d - [c]$$

t - Total period of operating cycle

R - Raw material period. = $\frac{\text{Average Stock of Raw material}}{\text{Raw material consumed per period}}$

w - work in progress period. = $\frac{\text{Average work-in progress}}{\text{Average Cost of production per day.}}$

F - finished good period. = $\frac{\text{Average inventory of fixed good}}{\text{Average cost of sale per day.}}$

d - debtors period. = $\frac{\text{Average book debts}}{\text{Average Sale per day}}$

c - Creditor period. = $\frac{\text{Average trade creditors}}{\text{Average Credit purchase per day}}$

* No. of operating cycles in a year: ⇒ $\frac{360\text{d} \mid 12\text{m}}{t}$

* Average Balance is Calculated Using ⇒ $\frac{\text{opening} + \text{closing}}{2}$

* when question not Specified opening/closing then **opening = closing = Average.**

* Estimation of Working Capital [WCR].

Net Working Capital = Total CA − Total CL + Safety

- RM
- WIP
- FG
- Debtor
- Cash Balance
- prepaid expense

- Creditor for RM
- outstanding wage
- overheads
- GST

① Closing Stock of Raw Material :

Raw material period
x
Raw Material Consumption per period

② Closing Stock of work in progress.

Work in progress period
x
Cost of production per period

③ Closing Stock of finished goods.

finished good period
x
Cost of goods Sold per day | week | month

③ Closing Stock of Debtors [Sale basic]

Debtor period
x
Credit Sale per period

④ Closing Stock of Debtors [Cash Cost basis]

Debtor period
x
Cash Cost of Credit Sale per period.

⑤ Closing Stock of creditors

Creditor period
x
Creditor Purchase per period.

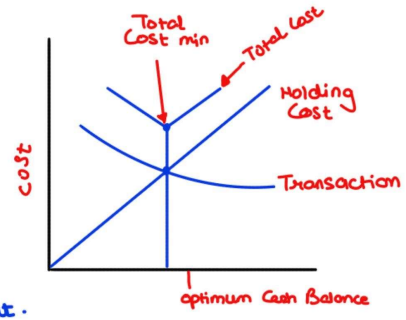
*Management of Cash:

managing cash & cash equivalents to ensure sufficient liquidity for day to day operations while minimizing idle cash.

- Models
  - Baumol Model — EOQ-based.
  - Miller-Orr Model

1] Baumol Model:-

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

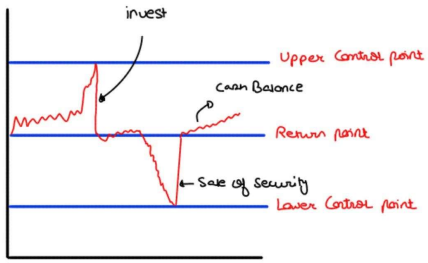


C = optimum Cash Balance
A = Annual (or monthly) Cash disbursement.
F = Fixed Cost per transaction
O = opportunity Cost of holding Cash

2) Miller-Orr Model :-

- Used when Cash flow are unpredictable.
- Upper limit
- Lower limit [min cash]
- Return point [when to return to optimal cash]

$$Z = \left[\frac{3 \times b \times \sigma^2}{4 \times i}\right]^{1/3}$$



Z = target Cash balance
b = fixed Cost per transaction.
σ^2 = Variable of net Cash flow
i = interest Rate

Upper limit = Lower limit + 3Z
Return Point = Lower limit + Z
or Upper limit - 2Z
Avg Cash Balance = Lower limit + Z

* Management of Inventory:-

① Determination of Stock level.

① Minimum Stock level

Reorder level – Normal consumption × Normal re-order period

② Re-ording level:-

Maximum Consumption × Maximum Re-order period

③ Maximum Level:-

Re-ording level + Re-ording Quantity – [minimum Consumption × Minimum Re-ording period]

④ Danger level:-

Average Consumption × Maximum re-ording period for emergency purchere]

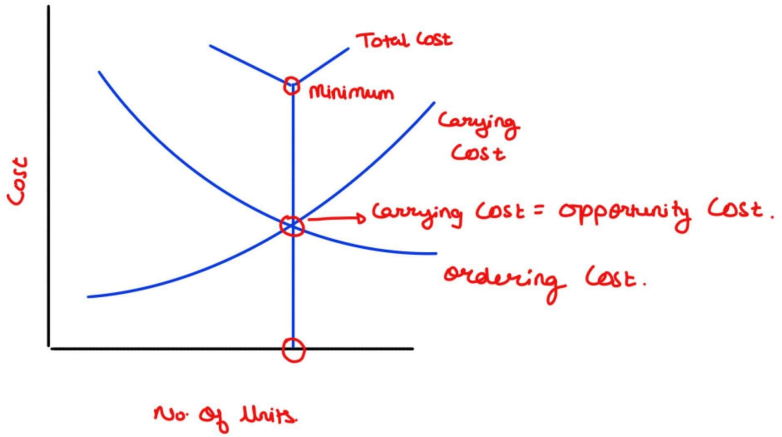
⑤ Average Stock level:-

Min Stock level + 1/2 of re-ording qunity.

② Economic order qunity [EOQ]

$$EOQ = \sqrt{\frac{2 \times R \times C_P}{C_H}}$$

R = Amt qunity Used (in Units)
C_P = Cost of Placing an order
C_H = Cost of holding one Unit



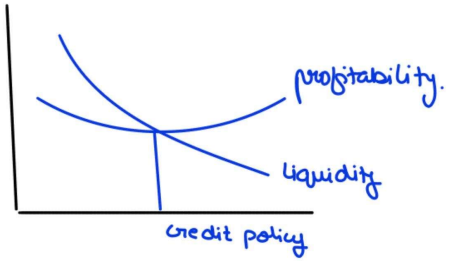
③ Inventory Turnover Ratio:-

$$\frac{COGS}{Avg\ Inventory}$$

* Receivable Management:

Investment in receivables =>

$$\frac{\text{Variable Cost} + \text{Fixed Cost}}{12} \times \text{No. of month credits.}$$



Securities Analysis

* Investment Vs Speculation Vs Gambling.

Basic	Investment	Speculation	Gambling.
1) meaning	Putting money in assets for long term growth.	Taking calculated risk for quick gain	Betting Uncertain outcomes based on luck.
2) objective	wealth creation & Steady return	profit from short term price movement	Instant monetary gain or thrill
3) Time Horizon	Long-term (year)	Short to medium term (day to month)	Very short term (minutes to hours)
4) Risk level	Moderate	High	Extremely high
5) Return	Stable	Uncertain	Random and Unpredictable.
6) legal Status	Legal & regulated	Legal, but can be risky	Legal or illegal depend on Country
7) Example.	Mutal fund, Share, bonds, real estate	Intraday Stock trading, crypto, option	Lottery, horse racing, card game.

* Fundamental Analysis. : Evaluates intrinsic Value of Securities Using

- **Economic Analysis**
  - Study of overall economy
  - Indicators: GDP, inflation, Interest Rate, fiscal & Monetary policy.
- **Industry Analysis**
  - Study of industry prospects
  - focus: industry life cycle, Competion, Govt policies, Demand Supply, Tech changes.
- **Compony Analysis**
  - Use financial & ratio analysis to Value the Compony.

  Imp formula:
    - EPS → Net profit after tax / no. of Equity Share.
    - P/E → Market price per Share / EPS.
    - PEG Ratio → P/E Ratio / projected Earning growth.
    - P/S → Market price per Share / Sales per Share
    - P/B → Market price per Share / Book Value per Share.
    - Dividend yield → DPS/MPS x100
    - Dividend Payout Ratio → DPS/EPS x100
    - Book Value per Share → Equity Share Capital + Reserve − loss / no. of Equity Share
    - Return on Equity [ROE] → Net profit After tax / Shareholders Equity x100

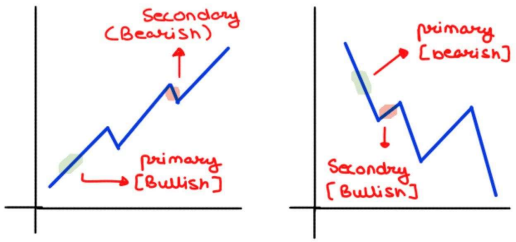
* Technical Analysis :

Dow Jone Theory

Stock

Patterns — Follow – 4 to 5 year

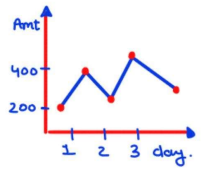
- **primary trends**
  - Bullish ↑
  - Bearish ↓
  - [1 to 3 year]
- **Secondary trends**
  - Reversed of primary
  - [1 to 3 month]
- **minor trends**
  - fluctuation [daily]



* Dow Theory explains that stock prices move in trends – primary [long-term], secondary [medium], and minor [short-term].
It helps investors understand market direction and make better entry/exist decision.

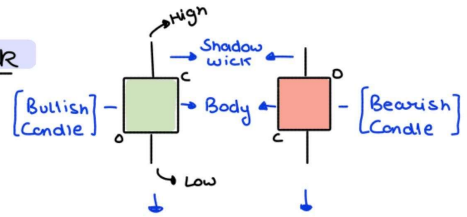
Technical Theory and patterns based on charts.

① Line charts:



Shows only the closing price of share.

② Candle stick charts:

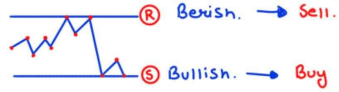


Closing price > opening price.

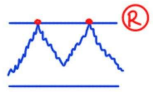
Closing price < opening price.

Patterns created by charts.

① Support & Resitence =

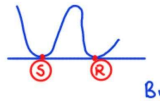


② Double top =



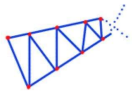
Berish.

③ Double Bottom =



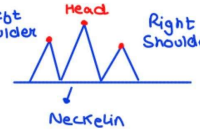
Bullish

④ Channel =



Triangular → Break out ; But its uncertain that if it will goes upwards or downwards.

⑤ Head & Shoulder =



Technical Indicators

① Advance Decline Ratio:

500 Share

300 Advance — 150 Decline.

> 1 = Bullish

< 1 = Barish

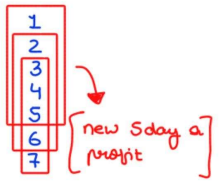
$\frac{300}{150} = 2$

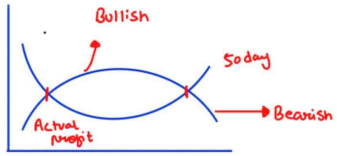
② Market Breath Index.

Difference b/w no. of stock rising and no. of stock flowing

↑ – ↓ ⇒ MBI

③ Moving Average.





④ Relative Strength Index:

$$\frac{\text{Ave. Gain per Day}}{\text{Ave. Loss per Day}}$$

⑤ Arroon Indicator:-

$$\frac{25 - \text{Period Since 25 period High}}{25} \times 100$$

⑥ Price Rate of Change:-

$$\frac{\text{Closing Price}_{p} - \text{Closing Price}_{p-n}}{\text{Closing price}_{p-n}} \times 100$$

ECMT

Efficient Capital Market Hypothesis.

Weak form
- Reflects past price data
- Technical analysis is useless.

Semi-Strong form
- Reflects all public information
- fundamental analysis is useless.

Strong form
- Reflects public + insiders info
- No one can beat market even with insider info

* Stock price already reflect all available info. So no one can earn abnormal profit consistently using Analysis.

RWT

Random walk Theory.

↓

Stock price move Randomly.

↓

- past price has no effects on future price.
- No pattern can be predicted
- Support weak form of ECMT

CAPM

Capital Assets pricing model.

↓

Calculated Expected Return Using.

$$Re = RF + \beta[Rm - RF]$$

* CAPM tells how much return you should except based on risk [β]
* only Systematic Risk is rewarded, Unsystematic risk is ignored.

Return

Current Return
- Dividend yield. or intrest yield.

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

or

$$\frac{I}{P_0} \times 100$$

Capital Return
- Capital Gain Yield.

$$\frac{P_1 - P_0}{P_0} \times 100$$

P_1 - Selling price
P_0 - purchase price.

* Total Risk ⇒ Current + Capital Risk.

$$\left[\frac{D_1}{P_0} + \frac{P_1 - P_0}{P_0}\right] \times 100$$

Total yield $= \frac{[P_1 - P_0] + D_1}{P_0} \times 100$

* Fundamental Approach to Valuation :-

① Single-period Valuation :- $P_0 = \frac{D_1}{(1+r)} + \frac{P_1}{(1+r)}$

② Multiple period Valuation :- $P_0 = \frac{D(1+g)}{(1+r)^1} + \frac{D(1+g)^2}{(1+r)^2} \ldots$

③ When Constant Growth is there :- $P_0 = \frac{D_1}{r-g}$

* Holding period Return :-

① Basic HPR $= \text{Income} + \left[\frac{\text{End of period Value} - \text{Initial}}{\text{initial Value} + 1}\right]^{1/n} - 1$

② Annualized HPR $= [1 + HPR] = [1 + r_1] + [1 + r_2] \ldots$

Risk

Systematic Risk
- Affects the entire market; cannot be avoided.
- Market Risk
- IRR
- Inflation Risk
- political Risk

↓

β

- <1 less Risky.
- $=1$ Some risk [market Risk]
- >1 More Risky

Unsystematic Risk
- Company Specific Can be reduce by diversification
- Business Risk
- financial Risk
- operational Risk

Operational Approach To Financial Decision.

Costing — Element of Cost — Marginal Costing

- Cost is the amt Spent on producing goods / Services.
- Costing = System of finding and Controlling Cost.

objectives:

- Cost Control
- Pricing decision.
- Budgeting and efficiency

Types of Costing.

- Marginal
- Absorption
- Standards
- Historical
- Uniform
- ABC

• Classification of Cost

Types	Example
Fixed	Rent, Salary
Variable	Raw material
Semi Variable	Electricity
Direct	Material, wages
Indirect	Office expense.

Statement of Marginal Cost

Direct Material	xxx
Direct Wages	xxx
Prime Cost	xxx
Variable factory overhead	xxx
Marginal factory overhead	xxx
Variable Administrative overhead	xxx
Marginal Cost of Production	xxx
Variable Selling & Direct overhead	xxx
Total Marginal Cost.	xxx

- only Variable Cost is Considered.
- Fixed Cost is treated as period Cost

Features:-

- Classifies Cost into Variable and fixed
- Help in Short-term decision.
- Based on Cost behaviour.

Use:-

- profit Planning
- fixing Selling price
- Make or buy decision.

- Contribution = Sales - Variable Cost
- profit = Contribution - Fixed Cost.

Fixed Cost = Sales - VC - Profit

Contribution = Selling price - Marginal Cost

Contribution = Fixed Expense + profit

Break-Even Point

- Level of Sales where no profit, no loss.

Assumption:-

At BEP:

- Contribution = Fixed cost
- Contribution − Fixed Cost = 0

$$BEP\ (unit) = \frac{\text{Fixed Cost}}{\text{Contribution per Unit}}$$

$$BEP\ (₹)\ (unit) = \frac{\text{Fixed cost}}{\text{P/V Ratio.}}$$

or

BE unit - even Unit x Selling price p.u.

$$\text{Desired Sales} = \frac{\text{FC + Desire profit}}{\text{P/V ratio}}$$

$$BEP = \frac{\text{Fixed Cost}}{\text{price - VC}}$$

Acitivity level at BEP: $\frac{\text{BEP Sales}}{\text{Total capacity}}$

Profit Volume Ratio

- Shows Contribution per ₹ 1 of Sale
- Higher ratio = more profitable

$$PV\ Ratio = \frac{Contribution}{Sale} \times 100$$

or

$$\frac{\Delta \text{ in profit}}{\Delta \text{ in Sale}} \times 100$$

Use: find BEP
Desired profit Sale
profit forecasting.

$$VC\% + P/V\ Ratio = 100\%$$

$$P/V\ Ratio = 100\% - VC\%$$

* Weighted Profit Volum Ratio :

$$PVR \times W_1 + PVR \times W_2 + PVR \times W_3$$

Margin of Safety [MOS]

- How much actual Sale exceed BEP Sales
- Shows Safety Zone before incurring Loss

$$MOS = Actual\ Sale - BEP\ Sales$$

$$MOS\% = \frac{MOS}{Actual\ Sale} \times 100$$

or

$$MOS = \frac{Profit}{P/V\ Ratio}$$

$$MOS = \frac{Profit \times Selling\ price\ pu.}{SP\ per\ unit - VC\ pr\ unit}$$

$$BEP\% + MOS\% = 100\%$$

* Higher MOS = Safer Business

* How to improve MOS :-

- ↑ Sp
- ↓ Vc
- ↑ Volume
- ↓ Reduce FC.

Angle of incidence [AOI]

- Angle between Sale Line & Total Cost line after BEP
- Shows rate of profit growth