International Financial Management:-

Basic Concepts:-

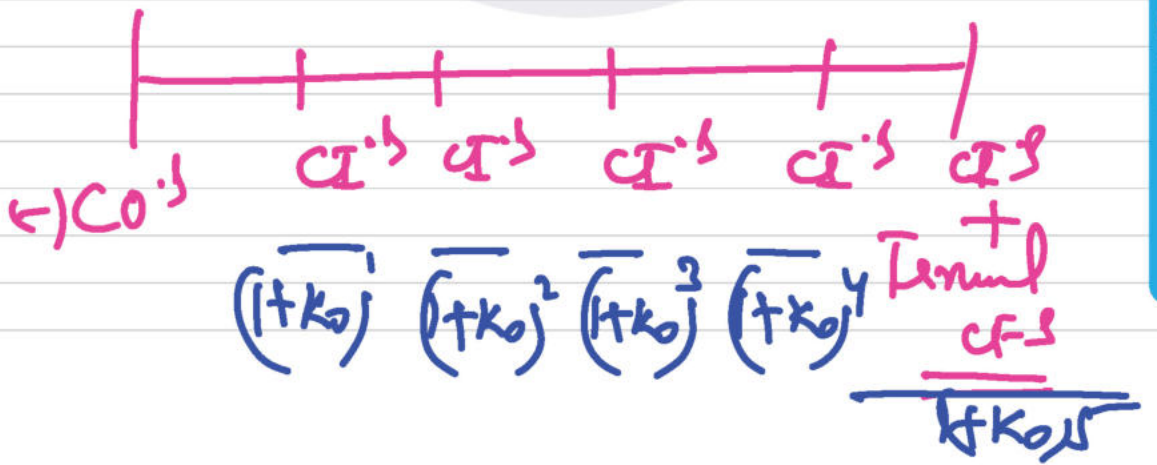
1) Cal. of NPV:-

Three types of CF's:-

(i) Initial cash outflows / Initial Investment

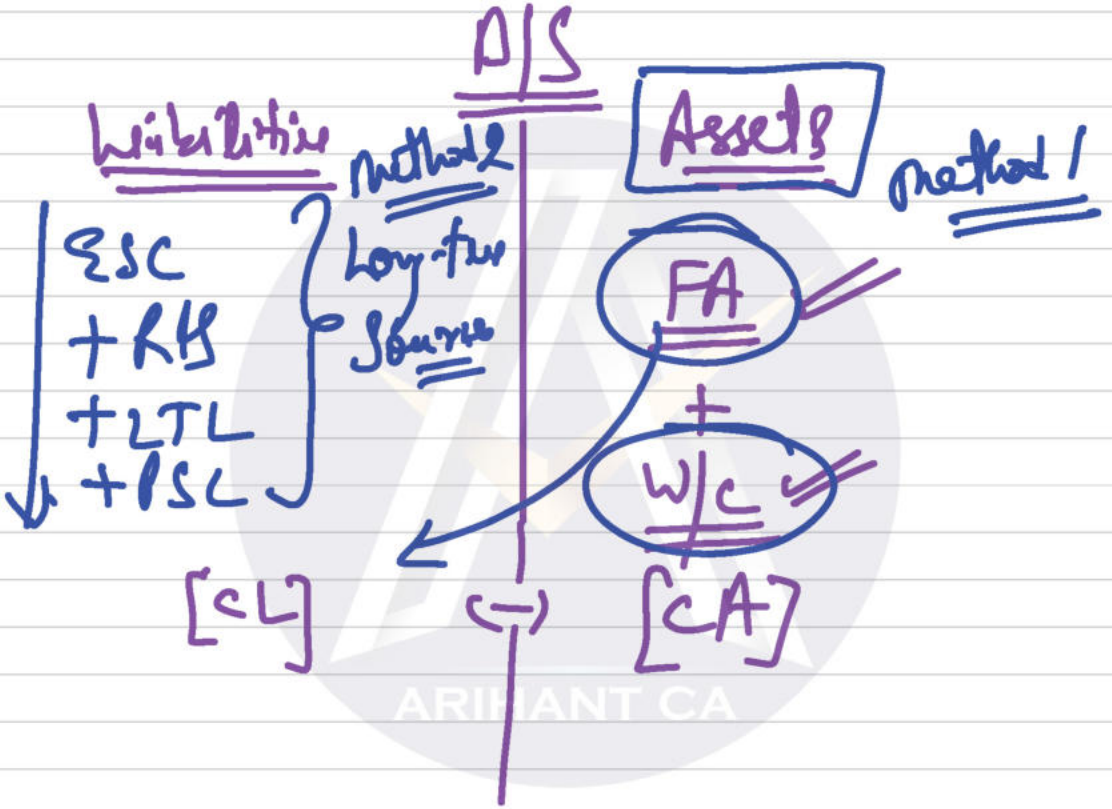
(ii) Annual CF's after tax [CFAT]

(iii) Terminal CF's



NPV = PV of C.I − PV of C.O.

(i) Cal. of Initial Investment:-



Method 1:

1) Investment in FA

2) Investment in W/C → [CA − CL] or Net CA

Method 2: [Liability side]

ESC
+ RR
+ LTL
+ PSL
+ Debentures
⇒ Long-term Source of finance

Note: Adjustment related to W/C

→ Introduction to W/C → Outflow

→ Release of W/C → Inflow

⇒ There will be No Def^{n}, No Tax effect on W/C

Note: Treatment of Def^{n}:-

Def^{n} → Non-Cash charge

↓

Tax Saving

↓

Inflow

Tax Saving on Def^{n}:-

⇒ Depreciation × Tax rate

(1 − Tax)

Method of Depn:

1) SLM Depn → $\frac{\text{Cost} - \text{SV}}{\text{life}}$

2) WDV Depn :-

Depn → [Cost − Accumulated Depn] × % of Depn

(ii) Cal. of Annual CF's after tax :-

↓

(FCFF)

CF's available for LT investors without any distribution

Cal. of CFAT :- OR (FCFF)

Sales price p.u	xxx
(−) V/c p.u.	xxx

Contribution p.u.	xxx
×	
No of Units	xxx
Total Contribution	xxx
Less: Fixed Cost excluding Depn	xxx
EBITDA	xxx
Less: Ncc / Depn	xxx
EBIT	xxx
Less: Tax	xxx
NOPAT	xxx
Add: Depn	xxx
CFAT	

OK

$$[EBITDA - Dep^{n}](1-tax) + Dep^{n} = CFAT$$

OR

$$EBITDA(1-tax) + \text{Tax Saving on } Dep^{n} = CFAT$$

Note:

NOPAT
+ Dep^{n}
(–) Invt. in FA
(–) Invt. in w/c (NWC)
CFAT

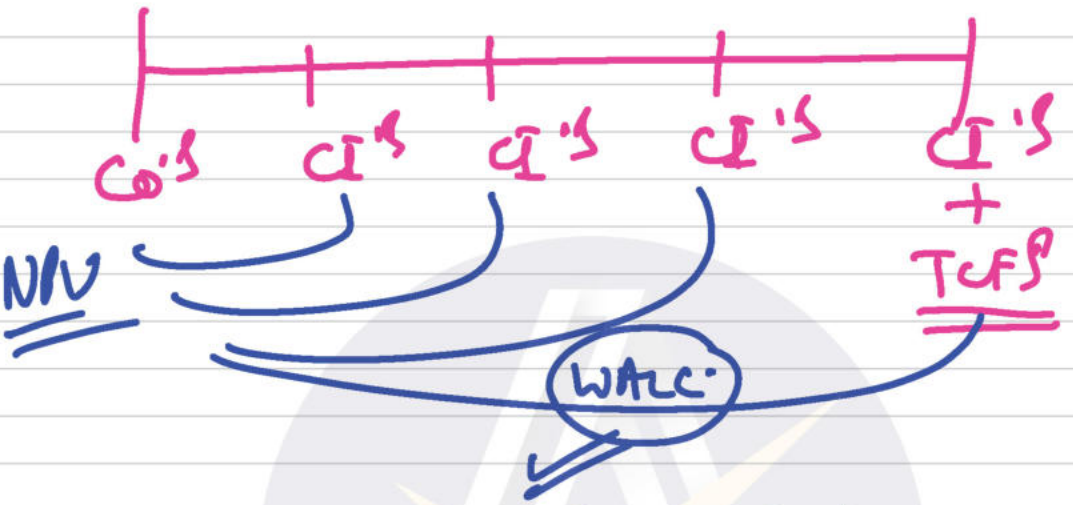
↑ in w/c → outflow
↓ in w/c → inflow

(iii) **Terminal CF:-**

(a) **Release of w/c** → inflow

(b) Salvage Value Adj: for tax → inflow

Concept: Inflation under Capital Budgeting:



Inflation Rate effects

- Cash flows
- Discount Rate
- NPV

1) Cash flows:

- Real CF's
- Money CF's / Nominal CF's

↓↓
It excludes Inflation

↓↓
It includes Inflation

⇒ Conversion of Real CF's into Money CF's & vice-versa!-

$$\text{Money CF's} \Rightarrow \text{Real CF's}\,(1+\text{Inflation})^{n}$$

OR

$$\text{Real CF's} = \frac{\text{Money CF's}}{(1+\text{Inflation})^{n}}$$

2) Discount Rate!-

↓

↓ Real DR

Money DR

It excludes Inflation

Normal DR

It includes Inflation

⇒ Conversion of Real Discount Rate into Money DR & Vice-Versa!-

$$(1+\text{Money Rate}) = (1+\text{Real Rate})(1+\text{Inflation rate})$$

3) NPV!-

NPV may either be calculated!-

(i) By Discounting Real CF's with Real DR

(ii) By Discounting Money CF's with the Money DR.

(#) Answer will be same under both approach.

Note: Depreciation is not affected by the inflation as depreciation is charged on Original Cost of Asset i.e. Historical Cost not on the Mkt. Value.

Note: V.V.Imp (As per ICAI)

Case I:

CF's → Real term

DR → Silent

Inflation Rate → Not given

Assume DR → Real DR

Case II:

CF:1 → Mony terms

DR → Silent.

Inflation rate → Not given

Assume DR → Mony DR

Q1 Q2

GSM III: (As per ICAI)

CF:1 → Real terms

DR → Silent

Inflation rate → given

opposite

Assume DR → Mony DR

GSM IV: CF:1 → Mony terms

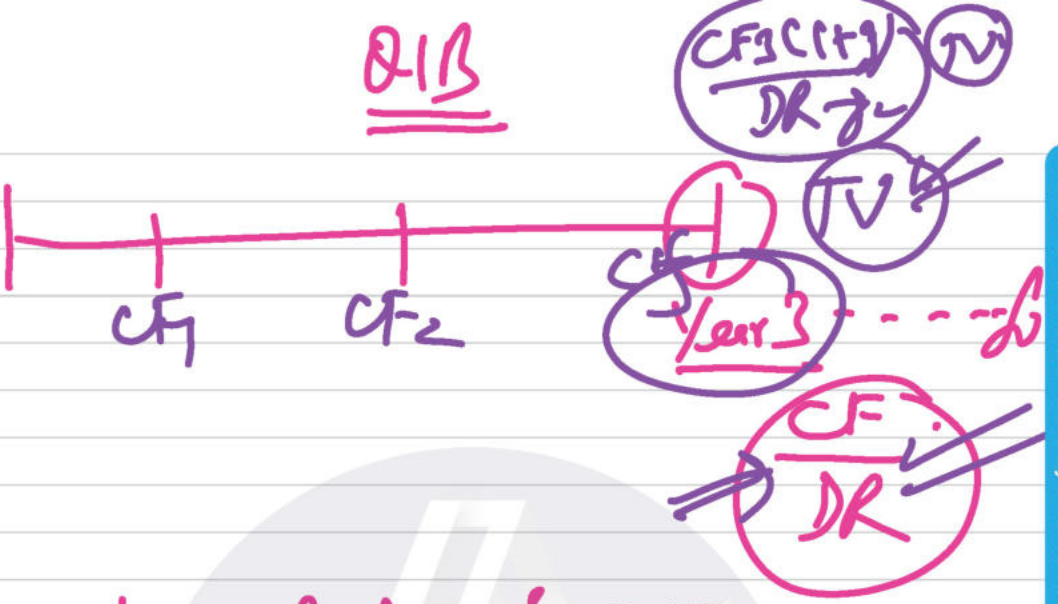
DR → Silent

Inflation rate → given

Assume DR → Real DR

Opposite

Q1B

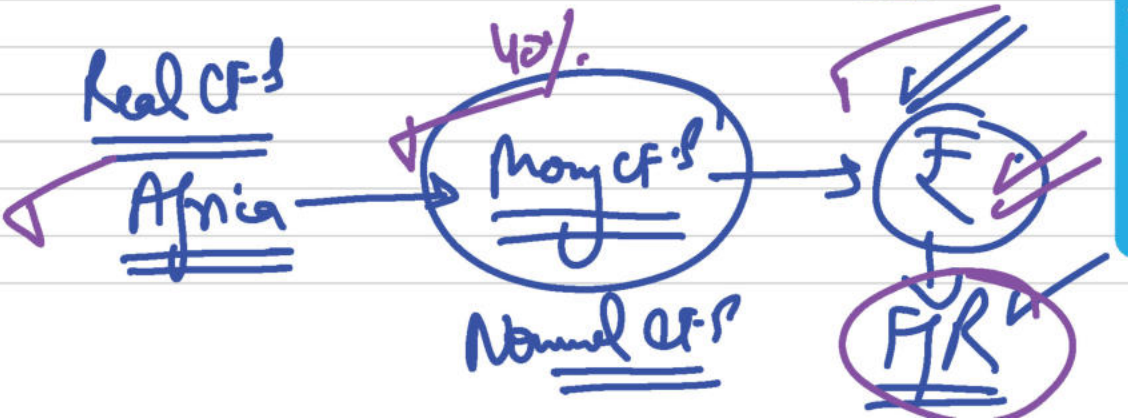


CF-1 → Real CF-s

Inflation → given

DR → Silent

DR → Many DR → 20%



INDIA

Real Cf.s → Many CFs → ₹ ✓

Nominal Cf.s

DR = Nominal DR

⇒ 2%.

NPV

W.No.1 Cal. of Forward Rate:-

S/R ₹ = 6 AR

AR/₹

Africa Inflation = 4%.

India Inflation = 10%.

Using PPPT:-

$$\frac{FR\ (AK/₹)}{SR\ (AK/₹)} = \frac{(1+\text{Inflation}_{AK})}{(1+\text{Inflation}_{₹})}$$

$$\frac{FR}{6} = \frac{(1+\cdot40)^{1/2/3}}{(1+\cdot10)^{1/2/3}}$$

1 year FR ₹ ⇉ 7.64 AK

2 yr FR ₹ ⇉ 9.72 AK

3 yr FR ₹ ⇉ 12.37 AK

W.No.2 Cal. of Nominal CF's (₹)

Africa (AK '000)

Year	Real CF-s	Nominal CF-s
0	-2,00,000	-2,00,000 ⇒ -2,00,000
1	50,000	50,000 (1+.40)^1 ⇒ 70,000
2	70,000	70,000 (1+.40)^2 ⇒ 137200
3	90,000	90,000 (1+.40)^3 ⇒ 246960

Year	Enchg Rate	Nominal CF-s (₹'000)
0	1/6	(-) 33,333
1	1/7.64	9162
2	1/9.72	14115
3	1/12.37	19964

INDIA (₹'000)

Year	Real CF-s	Nominal CF-s

0 −50,000 −50000

1 −1500 −1500(1+0.10)^1 ⇒ −1650

2 −2000 −2000(1+0.10)^2 ⇒ −2420

3 −2500 −2500(1+0.10)^3 ⇒ (−) 3328

W.No.3 Cal. of Terminal Value:- (₹000)

Year	CF Nominal	
0	−33,333 − 50,000	⇒ (−) 83,333
1	9162 − 1650	⇒ 7512
2	14115 − 2420	⇒ 11695
3	19964 − 3328	⇒ 16636

3 TV $\frac{16636 \cdots}{.20}$ ⇒ 83180

Main Sol^n (₹000)

Year	Normal CF	Normal DF @20%	PV
0	-83,333	1	-83,333
1	75112	.833	6258
2	11695	.694	8116
3	16636	.579	9632
3	83180	.579	4816/

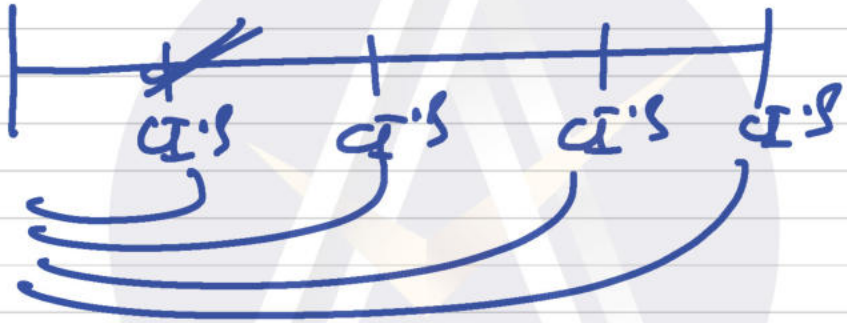
NPV = (-) 11,166

(₹ '000)

Concept: Modified NPV & Modified IRR (MIRR)

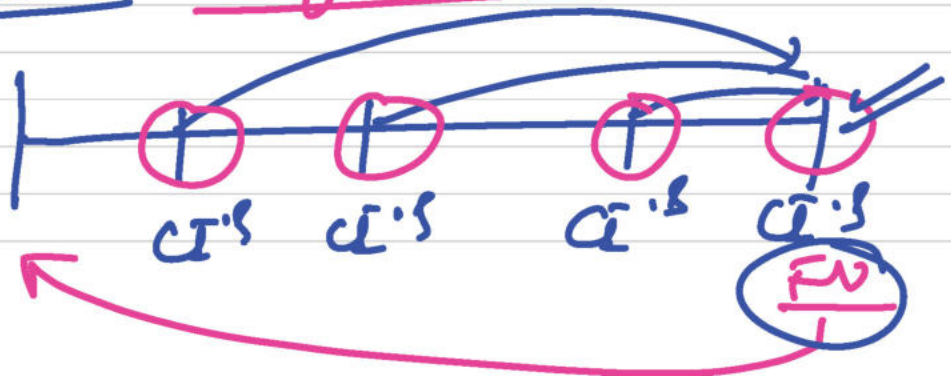
1) Modified NPV:-

Method 1:- Cal. of NPV:-



NPV = PV of CI's − Initial Investment

Method 2 Modified NPV



Interest CF's are re-invested @ DR

$$\frac{FV}{(1+r)^n} - \text{Initial Investment} = \text{Modified NPV}$$

(#) Answer will be same under both Methods

2) Modified IRR:-

i) IRR

DR at which

PV of CI's = PV of CO's / Initial Investment

OR NPV = 0

@ +ve

@ -ve

$$IRR \Rightarrow LR + \frac{LR\,NPV}{LR\,NPV - HR\,NPV} \times \text{Diff in rate}$$

(ii) Modified IRR:- (MIRR)

It is a DR at which:-

Modified NPV = 0

Inflows = Outflows

$$\frac{FV}{(1+r)^n} - \frac{\text{Initial}}{\text{Inv}} = 0$$

$$\frac{FV}{(1+r)^n} = \text{Initial investment}$$

$(1+r)^n$ ↳ ?

Y= MIRR

Q1C Imp (2 times)

W.No.1

Cal. of FJR

As per IIIT:-

$$\frac{FR\ NC/₹}{SR\ NC/₹} = \frac{(1+\text{Inflation}_{NC})}{(1+\text{Inflation}_{₹})}$$

$$\frac{FR}{1.60} = \frac{(1+.09)^{1/2/3}}{(1+.08)^{1/2/3}}$$

1 year FR ⇒ 1₹ ⇒ 1.615 NC

2 yrs FR ⇒ 1₹ ⇒ 1.630 NC

3 yrs FR ⇒ 1₹ ⇒ 1.645 NC

$$1NC = \frac{1}{1.60}₹ \rightarrow SJR$$

Cal. of NPV

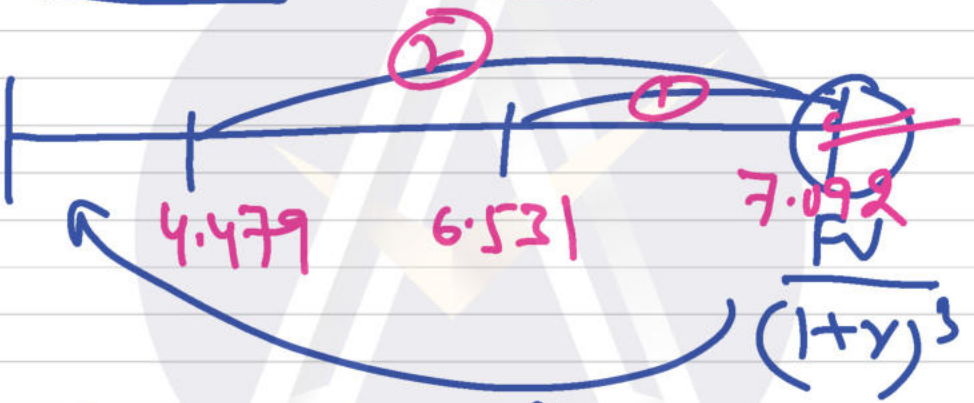
Year	NC CF ($ million)	Entry Rate	₹ million	₹ (million) (INDIA)
0	−25	1/1.60	(−)15.625	—
1	2.60	1/1.615	1.610	2.869
2	3.80	1/1.630	2.331	4.200
3	4.10	1/1.645	2.492	4.600

Year	Total ₹ million	PVF@9%	PV
0	−15.625	1	−15.625
1	4.479	.917	4.107
2	6.531	.842	5.500
3	7.092	.772	5.475

NPV £ million £ 10.543

(ii) Modified IRR:-

$$\frac{FV}{(1+r)^n} - \text{Initial Invt.} = 0$$



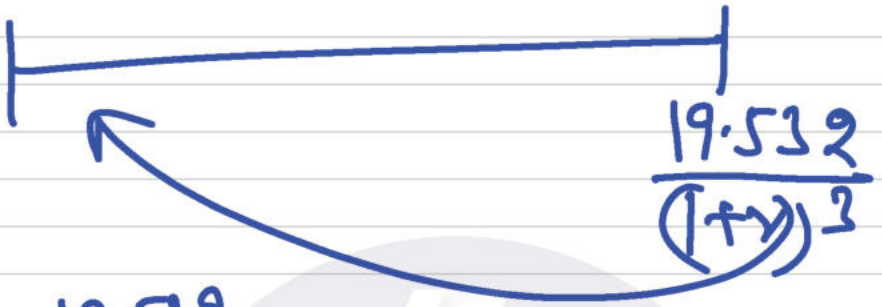
$$\frac{FV}{(1+r)^3} - \text{Initial Invt.} = 0$$

$4.479\,(1+.09)^2 \Rightarrow 5.321$

$6.531\,(1+.09)^1 \Rightarrow 7.119$

$7.092\,(1+.09)^0 \Rightarrow 7.092$

FV ⇒ 19.532



$$\frac{19.532}{(1+y)^3} - 15.625 = 0$$

↳ MIRR = ? Solve for 'r'

$$\frac{19.532}{(1+y)^3} = 15.625$$

$$\left[\frac{19.532}{15.625}\right]^{1/3} - 1 \Rightarrow y$$

y ⇒ 7.72% p.a.

Concept: Incremental NPV:-

Cond: If remaining life of Existing project/proposal & New proposal is same:

Existing =	5 years	=	New Project =	5 years
	remaining			

Use Incremental Concept i.e. Cal. the Incremental NPV:-

New - old ⇒ Incremental

(i) Incremental Initial outflow

(ii) Incremental CFAT

(iii) Incremental Terminal CF's [New-old]

Note: (i) Cal. of Incremental Initial outflows:- [New-old]

Cost of New Proposal	xxx
(-) SV Adjusted for tax of existing Proposal	xxx
Incremental CO's →	xxx

(ii) Incremental CFAT:- (New-old)

(iii) Incremental Terminal CF's:- (New-old)

Case 2:- If life is different, use EAA (Equated Annual Annuity)

10 yrs ≠ 5 yrs

EAA ⇒

Avg CI's	No of Co's	NPV
PVAF @ r%, n years		

Pg. 1.

Q.1A V.V.Imp (3 times)

W.No.1 Cal. of Incremental Initial Investment:-

Cost of Plant & Machinery	$500 millio
Net w/c Req.	$50 millio
Less: Release of w/c from Export Operation	$15 millio
Incremental Initial Inv.	$535 millio

W.No.2 Cal. of Incremental CFAT:-

(New - old)

Cal. of Depn: $\frac{\$500 \text{ million} - 0}{5}$

$\Rightarrow$ $100 millions p.a.

1) Cal. of CFAT in India:-

$$\{[SP - VC]Qty. - FC - Dep^n\}(1 - tax) + Dep^n = CFAT$$

$\Rightarrow$ {5 million [80 − 20] − 30 million − 10 million} (1 − .35) + $100 million

$\Rightarrow$ $210.5 million

(#) Allocated fixed cost is sunk cost, so irrelevant.

2) Cal. of CFAT from Export operation:-

Qty [SP − VC] (1 − tax)

⇒ 1.5 million [80 − 40] (1 − .35)

⇒ $39 million

Annual Incremental CFAT:- (New − old)

⇒ $210.50 − $39 million

⇒ $171.50 million (1 − 5 years)

W-No 3 Cal. of Incremental Terminal CF:-

Incremental Release of W/C

= $50 million − $15 million ⇒ $35 million

Final Answer:-

Cal. of Incremental NPV:-

⇒ $ 174.50 million × PVAF @12%, 5 years

+

$ 35 million × PVF @12%, 5th year

(−)

$ 535 million

⇒ $ 174.50 mill × 3.6048

+

$ 35 million × 0.5674

(−)

$ 535 millions

⇒ Incremental NPV:- = $ 103.08 million

Decision:

The project is viable since Incremental NPV is positive.

D.I.F Imp.

W.No.1 Cal. of F/R:-

S/R 1$ = ₹72

Inflation → $ → 8%.

₹ → 9%.

As per IRT:-

$$\frac{FR(₹/\$)}{SR\ ₹/(\$)} = \frac{(1+\text{Inflation}_₹)}{(1+\text{Inflation}_\$)}$$

$$\frac{FR}{72} = \frac{(1+.09)^{1/2/3/4/5}}{(1+.08)^{1/2/3/4/5}}$$

1 yr F/R 1$ ⇒ ₹72.67

2 yr F/R 1$ = ₹73.34

3yr FR 1$ = ₹ 74.02

4yr FR 1$ = ₹ 74.71

5yr FR 1$ = ₹ 75.40

W.No2 Cal. of Initial Investment:-

Initial outflow	⇒	₹ 80,00,000
(+) W/c Invt.	⇒	₹ 10,00,000
		₹ 90,00,000

Initial Invt in '$'

= ₹ 90,00,000 × 1/72 $

⇒ $ 12500

S/R 1$ = ₹72

₹ = 1/72 $

W.No.2 Cal. of Annual CFAT:-

Cal. of Dep^{n} ⇒ (80,00,000 − 20,00,000) / 5

⇒ ₹ 12,00,000 p.a.

Cal. of CFAT:- (₹)

Sales (80,000 × 100)	80,00,000
less: V/C (80,000 × 30)	24,00,000
less: Add. F/C	5,00,000
less: Dep^{n}	12,00,000

PBT	39,20,000
Less: Tax @ 34%	13,26,000
NOPAT	25,74,000
Add: Depⁿ	12,00,000
Annual CFAT	37,74,000

Amt. Reparated p.a. in US $

Year	Amt (₹)	FIR	In US($)
1	37,74,000	1/72.67	$ 51933.40
2	37,74,000	1/73.34	$ 51458.96
3	37,74,000	1/74.02	$ 50986.22
4	37,74,000	1/74.71	$ 50515.33

$ 37,74,000 ÷ 75.40 = $50053.05

W.No.4 Cal. of Terminal C.F

(i) Release of W/C ₹ 10,00,000

(ii) SV Adj. for tax ₹ 20,00,000

Year 5 ⟶ ₹ 30,00,000

In US $ ₹ 30,00,000 × 1/75.40 $

≈ $ 39787.80

Final Answer: Cal. of NPV:- In '$'

Year	CF $	PVF@8%	PV
0	(125000)	1	($125000)
1	51933.40	.926	$48090.33
2	51458.96	.857	$44100.33
3	50986.22	.794	$40483.06
4	50515.33	.735	$37128.77
5	50053.05	.681	$34086.13
5	39787.80	.681	$27095.49
			$105984.11

Since, NPV is positive, project is feasible

Q.1E

W.No.1 Cal. of FR

S/R ₹/$ = ₹ 74

Inflation USA = 9%.

INDIA = 8%.

As per PPT:-

$$\frac{FR\ ₹/\$}{SR\ ₹/\$} = \frac{(1+\text{Inflation}_{₹})^{1/2/3}}{(1+\text{Inflation}_{\$})^{1/2/3}}$$

$$\frac{FR}{74} = \frac{(1+.08)^{1/2/3}}{(1+.09)^{1/2/3}}$$

1 year FR ⇒ 1$ = ₹ 73.32

2 year FR ⇒ 1$ = ₹ 72.65

3 year FR ⇒ 1$ = ₹ 71.98

Cal. of NPV:-

(in lakhs)

Year	CF's ($)	Exch rate	CF (₹)	CF (₹) Cost of Hedging	CF (₹) INDIA
0	-25	74	-1850	-400	-
1	5	73.32	366.60	-45	60
2	7	72.65	508.55	-50	80
3	8	71.98	575.84	-60	90

Year	Total CF (₹ lakhs)	DF@9%	PV
0	-2250	1	-2250
1	-23.40	0.917	-21.46
2	+88.55	0.842	+74.56
3	+65.84	0.772	+50.83

(Salvage) (-) 2146.07

Decision:

Proposal should not be accepted as NPV is negative.

Q.16

(i) Cal. of CFAT:-

Particulars	Scenario 1	Scenario 2	Scenario 3
Annual Sales in Units (A)	10,00,000	10,00,000	10,00,000
Selling Price/Unit	10	10	10
Cost p.u.	6	5.70	5.55
Profit p.u. (B)	4	4.30	4.45
Total Profit (A×B)	40,00,000	43,00,000	44,50,000
Less: Dep^{n}	10,00,000	9,00,000	8,50,000
PBT	30,00,000	34,00,000	36,00,000
(-) Tax @ 30%	9,00,000	10,20,000	10,80,000
NOPAT	21,00,000	23,80,000	25,20,000

Add. Dep^{n}	10,00,000	9,00,000	8,50,000
CFAT (OSI)	31,00,000	32,80,000	33,70,000

(ii) Expected Value of CFAT:-

	CFAT	Prob.	Exp. Value
Scenario 1	$31,00,000	.40	$31,00,000 x .40
Scenario 2	$32,80,000	.40	$32,80,000 x .40
Scenario 3	$33,70,000	.20	$33,70,000 x .20
		1	$32,26,000

(iii) Viability of the Proposal:-

Initial Investment = $25,00,000

PV of CI's

Exp CF 1 ⇒ $ 32,26,000

$g = 3\% \text{ ---} b$

$DR = 11\%$

PV of CI's ⇒ $\frac{CFAT_0(1+g)}{K_0 - g_c}$

⇒ $\frac{32,26,000\ (1+.03)}{.11 - .03}$

⇒ $ 415,34,750

Calc of NPV:-

PV of CI's − Initial Invt.

⇒ $ 415,34,750 − $ 250,00,000

(+ve) ⇒ $ 165,34,750

Since, NPV is positive, project is viable.

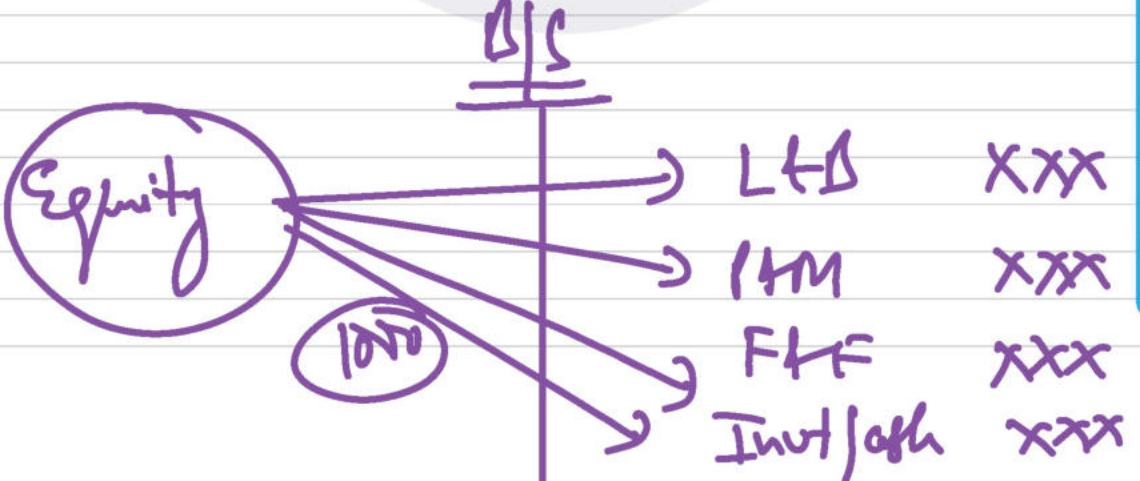
Concept:- Overall Beta / Asset Firm / Firm Beta / Project Beta:-

⇒ Cal. of Beta equity of Put. Co. / Non-listed Co.'s / New Co. / Thinly traded Co.

Basics:-

Situation 1:- 100% Equity firm:-

(Unlevered firm)



100 100

Total risk of Equity = Total risk of Assets

Beta equity = Beta Assets = Beta overall

$$\Rightarrow \boxed{\beta_{eq.} = \beta_A = \beta_{overall}}$$

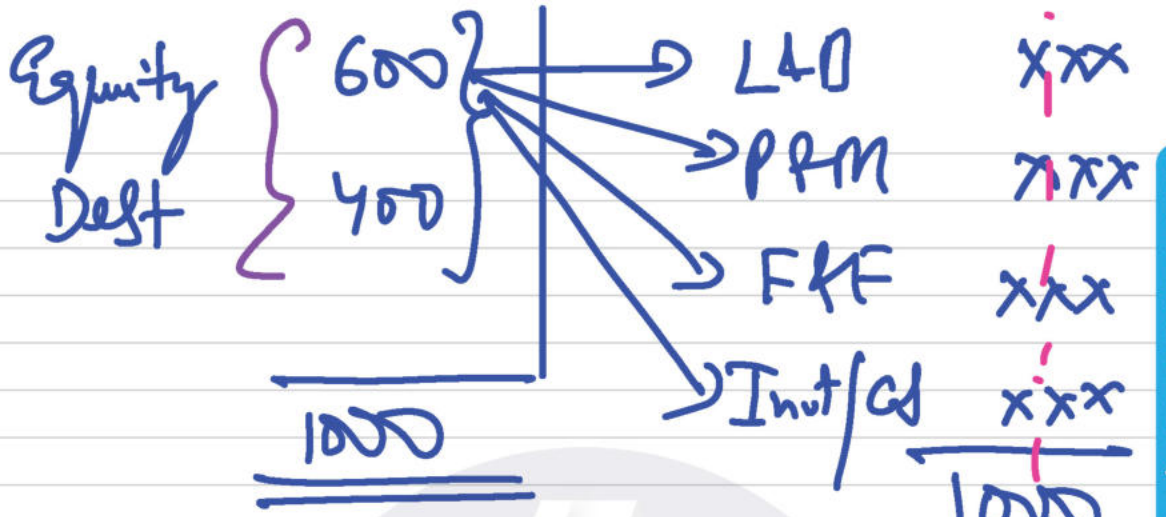
1.20 = 1.20 = 1.20

Situation-2

Debt + Equity firm

Levered firm

Q 15



Total Risk of Debt & Equity = Total Risk of Assets

$$\beta_{eq} \times \frac{E}{E+D} + \beta_{Debt} \times \frac{D}{E+D} = \beta_{Assets} = \beta_{overall}$$

Note:

1) Total Assets will not change whether the project is financed by 100% Equity or (Equity + Debt) is whether it is a

levered firm or Unlevered firm.

The EBIT / operating Profit & consequently total risk of the assets will remain same.

2) The change in capital structure don't change the overall risk i.e. Overall Beta.

3) Overall Beta of levered firm & Unlevered firm will remain same. Equity Beta & Debt Beta will change with the change in the capital structure.

4) For 100% Equity firm.

$\beta_{equity} = \beta_{overall}$

Assumptions. [As per MM Approach]

1) Overall Beta of the Co's belonging to the same sector / Industry will remain same.

2) Assume Debt is always RF i.e. Beta Debt = 0

Overall Beta:-

$$\Rightarrow \beta_{eq.} \times \frac{E}{E+D} + \underbrace{\beta_{Debt}}_{=0} \times \frac{D}{E+D}$$

$$= 0$$

3) Debt generate tax-shield/tax-savings. Hence, taken Net of Tax

Final Crux :-

Overall

$$\Rightarrow K_{eq.} \times \frac{E}{E + D(1-tax)} + K_{Debt} \times \frac{D(1-tax)}{E + D(1-tax)}$$

Note: Cal. of WACC :-

$$K_o = K_e W_e + K_d W_d$$

$$K_e = R_f + \beta_{eq.} [K_m - R_f]$$

$$K_d \Rightarrow YTM \cdot (1-tax)$$

Main Concept & Application:-

Example.

RIL (Oth) → Diversification → Telecom Sector

JIO

↓

New Project

NPV = ?

⇒ PV of CI's − Initial Investment

||

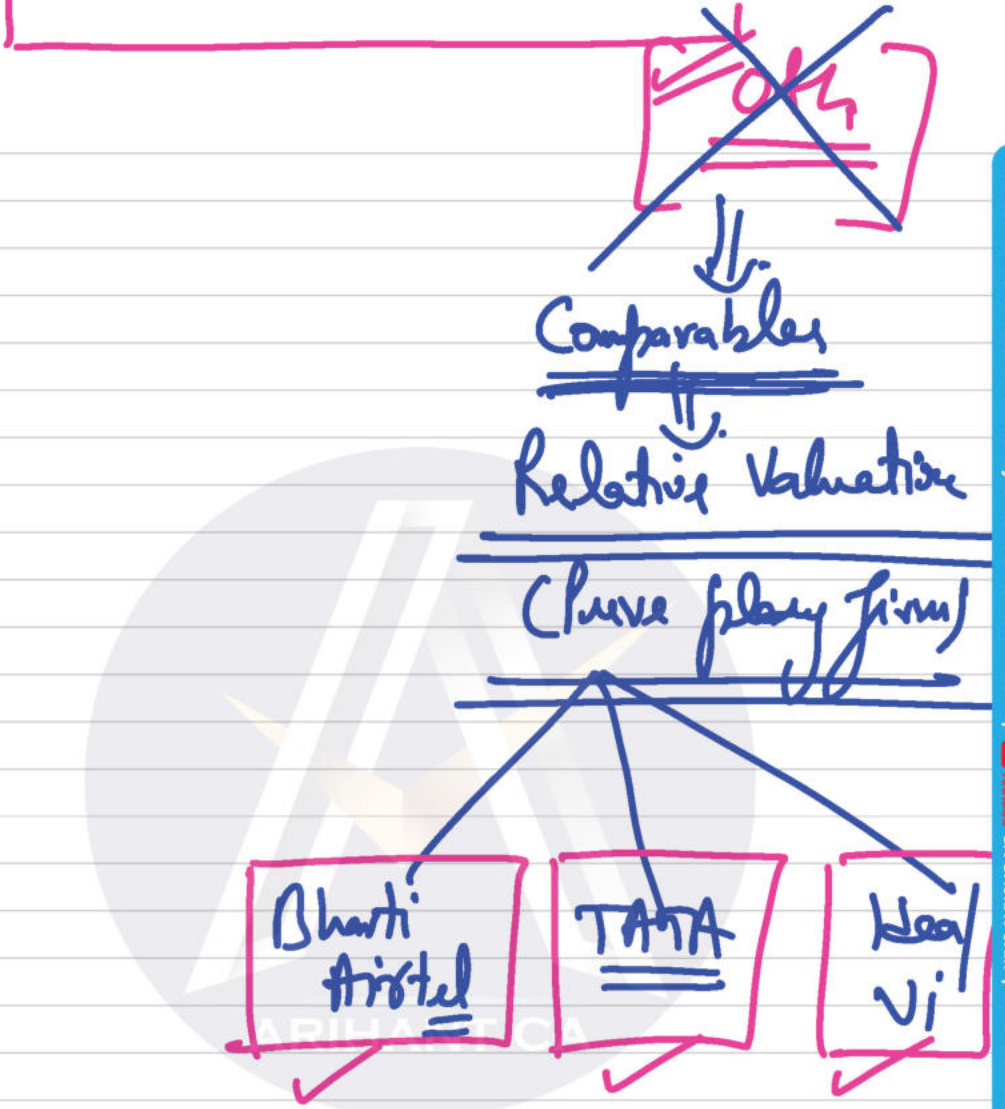
DR = ? / WACC = ?

$K_e W_e + K_d W_d$

||

CAPM ⇒ $K_e = R_f + \beta_e (R_m - R_f)$

||



Q&A: If we are using only 1 Co. Data!-

Bharti - Airtel

Listed

Equity → Available

1.20

Capital Structure → Airtel

Tax rate → Available (30%)

Step 1: Cal. of $\beta_{overall}$:-

$\beta_{overall} = \beta_{eq} \times \frac{E}{E + D(1-tax)} + \beta_{Debt} \times \frac{D(1-tax)}{E + D(1-tax)}$

β_{eq} → available

β_{Debt} → 0

E → available

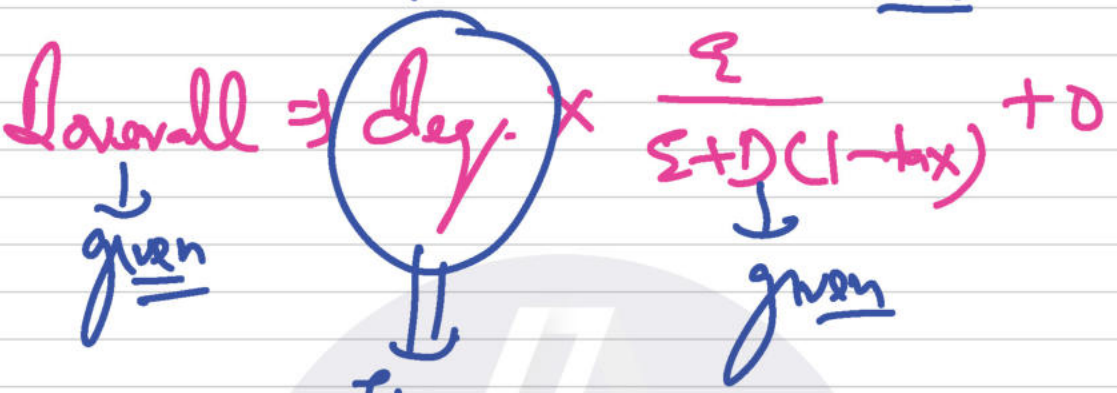
D → available

Telecom Sector

Step 2:- JIO → Capital structure

Overall → Telecom sector

Tax rate ⇒ available



$K_e = K_f + \beta_{eg.} [K_m - K_f]$

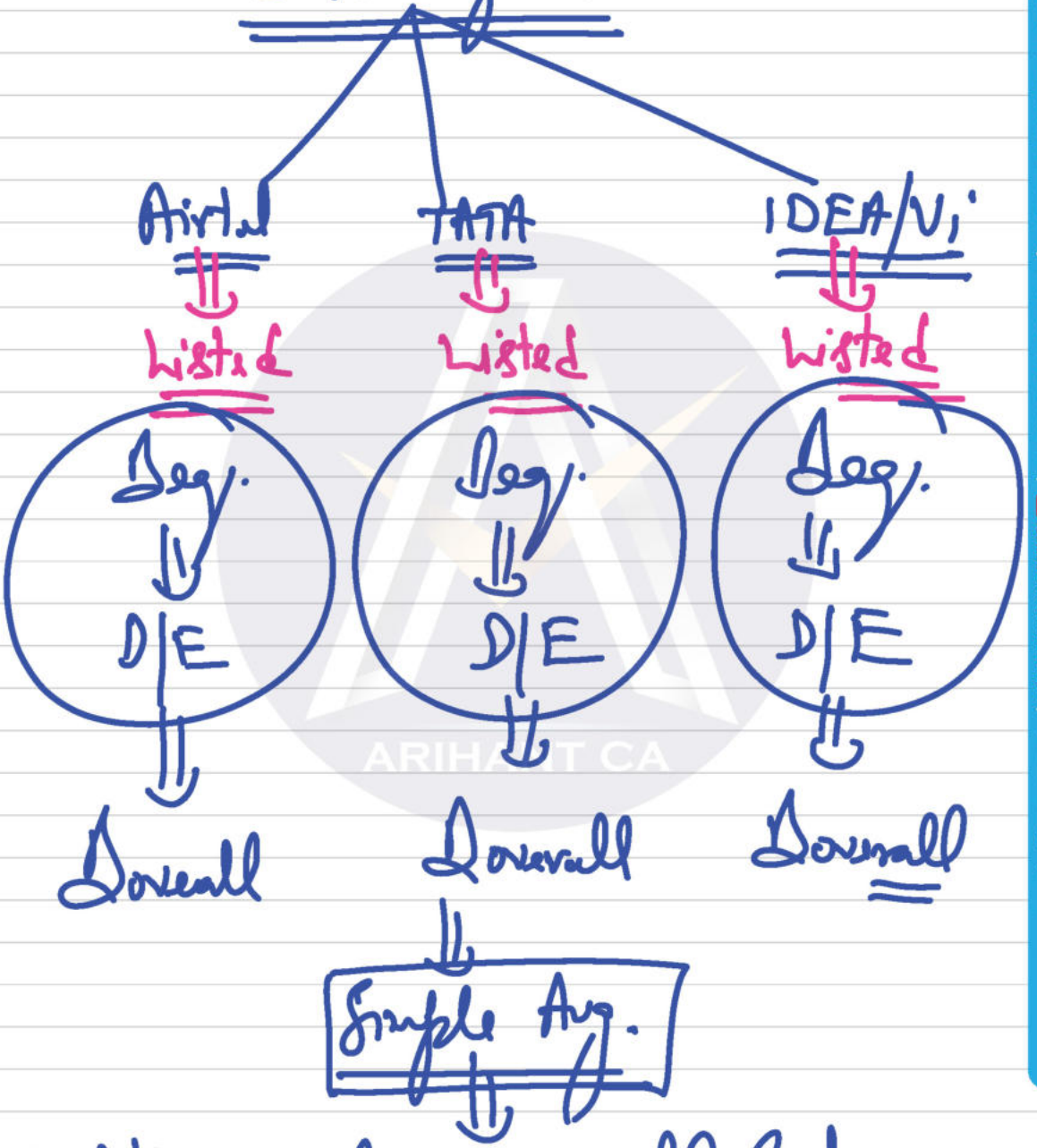
$K_D = ?$ ⇒ NPV

+ve accept

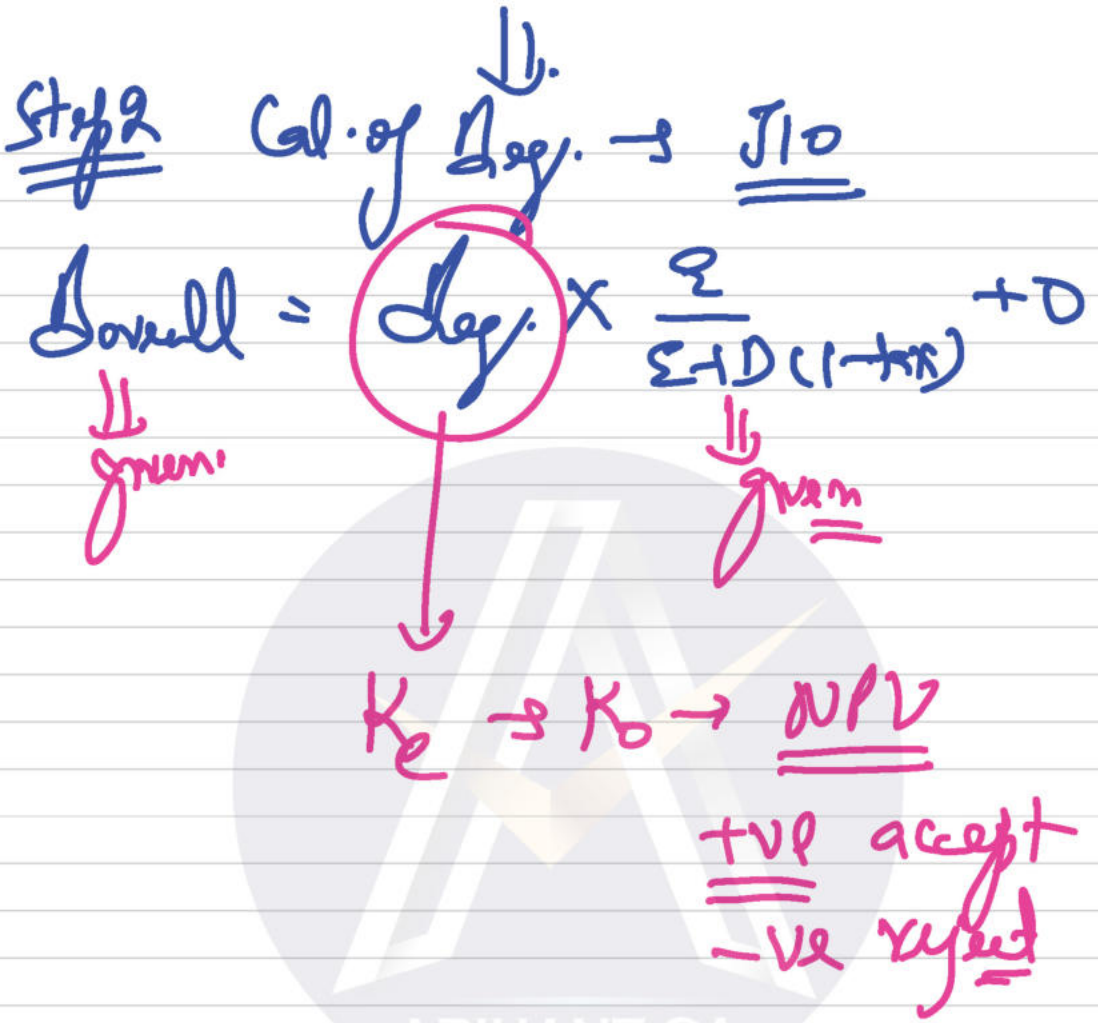
−ve reject

Case II: If more than 1 Comparable Co.

Data is given! –



Step 1: Average overall Beta



Q.2A CFA-LI

Acme INC.

D/E = 2

Tax rate = 40%.

Inst cost = 14%.

R_f = 5%.

R_m = 12%.

(Listed) Dalfor LTd.

D/E = 1.5

Tax rate = 30%.

β_{eq} = 0.90

(i) Dalfor's Asset Beta:-

$$\beta_{overall} = \beta_{eq} \times \frac{E}{E + D(1-tax)} + D$$

$$\Rightarrow 0.90 \times \frac{1}{2.5}$$

$$\frac{1}{2.5} + \frac{1.5}{2.5}(1-.30)$$

Overall ⇒ 0.439 times

Hint: $D/E = \frac{1.5}{1}$

$$\frac{D}{E} = \frac{1.5}{1} \qquad E = \frac{1}{1+1.5} = \frac{1}{2.5}$$

$$D = \frac{1.5}{2.5}$$

D/S

$E = 1$

$D = 1.5$

2.5

2) **Project Equity Beta:- (Acme Inc.)**

$\beta_{overall} = 0.439 \quad \beta_{eq.} = ?$

$D/E = \frac{2}{1}$ $E = \frac{1}{3}$ $D = \frac{2}{3}$

$$\beta_{overall} = \beta_{eq.} \times \frac{E}{E + D(1-tax)} + D$$

$$0.439 = \beta_{eq.} \times \frac{\frac{1}{3}}{\frac{1}{3} + \frac{2}{3}(1-.40)}$$

$\beta_{eq.} \Rightarrow 0.9658$ times

3) Cal. of WACC:-

$$K_e = R_f + \beta_{eq.}[R_m - R_f]$$

$$= 5\% + 0.9658[12\% - 5\%]$$

$$K_e \Rightarrow 11.761\%$$

$$K_d = 14\% \cdot (1 - .40) = 8.4\%$$

$$K_o = K_e W_e + K_d W_d$$

$$= 11.761 \times \frac{1}{3} + 8.4\% \times \frac{2}{3}$$

$$\boxed{K_o = 9.52\% \text{ p.a.}}$$

Q.2B Inf (5 marks)

W.No 1 Cal. of $\beta_{overall}$:-

(Using Proxy Entity Data)

$$\beta_{overall} = \beta_{eq.} \times \frac{E}{E + D(1-tax)} + \beta_{D}$$

$$= 1.1 \times \frac{\frac{4}{5}}{\frac{4}{5} + \frac{1}{5}(1-.30)}$$

$\beta_{overall} \Rightarrow 0.936$ times

W.No 2 β_{equity} of XYZ & ABC

XYZ :-

$$D_{overall} = D_{eq.} \times \frac{E}{E + D(1-tx)} + D$$

$$0.936 = D_{eq.} \times \frac{\frac{2}{3}}{\frac{2}{3} + \frac{1}{3}(1-.20)}$$

$D_{equity\ XYZ} \Rightarrow 1.264$ times

ABC

$$0.936 = D_{eq.} \times \frac{\frac{3}{4}}{\frac{3}{4} + \frac{1}{4}(1-.30)}$$

$D_{equity\ ABC} \Rightarrow 1.154$ times

W.No 3

	XYZ	ABC
No. of Shares	1025 cr / 10	106 cr. / 10
	= 102.5 cr. Shares	= 10.6 cr. Shares
MPS	129.60/Sh.	55/Sh.
MKT. Value	₹ 13284 cr.	₹ 583 cr

Total Value of Equity [Combined]

$= ₹ 13284 + 583$ cr.

$= ₹ 13867$ cr

Final Answer:

β Combined Entity :- (Deg.)

$$\Rightarrow \beta_{XYZ} \times W_{XYZ} + \beta_{ABC} \times W_{ABC}$$

$$\Rightarrow 1.264 \times \frac{13284}{13867} + 1.154 \times \frac{583}{13867}$$

$$\Rightarrow \beta_{\text{Combined Entity}} \Rightarrow \text{Deg.} \Rightarrow \boxed{1.26 \text{ times}}$$

Q.2C

i) Overall Beta :-

$$\Rightarrow \text{Beg unity} \times \frac{E}{E + D(1-\text{tax})} + D$$

$$\Rightarrow 1.50 \times \frac{60}{60 + 40}$$

Overall ⇒ 0.90 times

2) Cal. of K_D = ?

Alt'l $K_e \Rightarrow R_f + \text{Beg.}[R_m - R_f]$

$= 8\% + 1.50\,[10\%]$

$K_e \Rightarrow 23\%$

$K_d \Rightarrow 8\%$

$K_o \Rightarrow K_e W_e + K_d W_d$

$\Rightarrow 23\% \times \frac{60}{100} + 8\% \times \frac{40}{100}$

$\boxed{K_o \Rightarrow 17\%}$

Alt 2 **If tax rate is missing :-**

$K_o \Rightarrow K_F + \beta_{overall} [K_m - K_F]$

$= 8\% + .90 [10\%]$

$= 17\% = COC = DR$

Q.20

100% Equity firm:-

$\beta_{equity} = \beta_{overall} = 0.60$ times

(i) $\beta_{overall} = \beta_{eq.} \times \frac{S}{S+D}$ + D

$0.60 = \beta_{eq.} \times \frac{.10}{.50+.50}$ + D

β_{equity} (After-Buy-back) $\Rightarrow$ 1.20 times

(ii) Risk Premium before Buy-back:-

$E(R) = R_F + \text{Risk Premium}$

or $E(R) = R_F + \beta[R_m - R_F]$

$\beta_{eq} = 0.60$ $R_F = 10\%$

$E(R) = 20\%$

$20\% = 10\% + 0.60[R_m - 10\%]$

$R_m \Rightarrow 26.67\%$

Risk Premium $= 20\% - 10\% = 10\%$

or

$0.60[26.67\% - 10] \Rightarrow 10\%$

(iii) $E(R)$ after Buy-back :-

$E(R) = 10\% + 1.20[26.67\% - 10\%]$

$E(R) \Rightarrow 30\%$

Risk Premium

$30\% - 10\% = 20\%$

or $\beta[R_m - R_f] \Rightarrow 1.20\,[26.67 - 10\%]$

$= 20\%$

(iv) Exp. return on debt = 10%

(v) % ↑ in EPS :-

20% ⟶ 30%

$\Rightarrow \frac{30\% - 20\%}{20\%} \times 100 \Rightarrow 50\%$

% ↑ in EPS = 50% ∴

(vi) New P/E Multiple:-

$$K_e = \frac{1}{P/E \text{ Ratio}}$$

$$30\% = \frac{1}{P/E \text{ Ratio}}$$

P/E Ratio ⇒ 3.33 times

Q.2E V.V.Imp. (6 marks) (May 2019)

W.No.1 Cal. of Average Overall Beta or Weighted Avg. Asset Beta:-

$\beta_{Overall} / \beta_{Asset} \Rightarrow 1.45 \times .74 + 1.20 \times .26$

$\Rightarrow 1.385$ times ✓

(i) Cal. of Equity Beta (β_E):-

$$\text{Overall Beta} = \beta_{eq.} \times \frac{E}{E+D} + \beta_{Debt} \times \frac{D}{E+D}$$

$$1.385 = \beta_{eq.} \times \frac{410}{410+170} + .24 \times \frac{170}{410+170}$$

$1.385 = \beta_{eq} \times .707 + 0.0703$

$\beta_{equity} \Rightarrow 1.86$ times

(ii) Beta equity (β_E) = ?

Revised D/E Ratio = 1.90 : 1

Total Value of Firm (Before Buy-back) = 410 cr + 170 cr. = 580 cr.

Desired level of Debt (After-Buy Back)

$580 \text{ cr.} \times \frac{1.90}{1.90+1} \Rightarrow 380 \text{ cr.}$

Less: Existing Debt ⇒ 170 cr.

Value of Debt to be raised 210 cr.

⇒ Value of Equity Buy-back

Revised Capital Structure:-

Equity [410 cr. − 210 cr.] = 200 cr.

$Debt_1$ (Existing) = 170 cr.

$Debt_2$ (New) = 210 cr.

Total Value of firm ₹ 580 cr.

$$\beta_{overall} = \beta_{eq.} \times \frac{E}{E+D_1+D_2} + \beta_{D_1} \times \frac{D_1}{E+D_1+D_2}$$

$$+ \beta_{D_2} \times \frac{D_2}{E+D_1+D_2}$$

$$1.385 = \beta_{eq} \times \frac{200}{500} + .35 \times \frac{170}{500}$$

$$+ .40 \times \frac{210}{500}$$

$$\beta_{eq.} \Rightarrow 3.297 \text{ times}$$

(iii) Yes, it justifies the increase as it leads to increase in the value of equity due to increase in beta.

Q.3A

Hint:

$\beta_L = \beta_{equity}$

$\beta_{UL} = \beta_{overall}$

W.No.1 Cal. of overall Beta (Answer)

ABL $\beta_{overall} = \beta_{eq.}\left[\frac{E}{E+D(1-tax)}\right] + D$

$\Rightarrow 1.1 \times \frac{\frac{1}{1.3}}{\frac{1}{1.3} + \frac{.3}{1.3}(1-.25)}$

$\beta_{overall\ ABL} \Rightarrow 0.921$ times

DEF $\Rightarrow .90 \times \frac{\frac{1}{1.25}}{\frac{1}{1.25} + \frac{.25}{1.25}(1-.25)}$

Overall ⇒ 0.774 times

GHL

$$= .95 \times \frac{\frac{1}{1.35}}{\frac{1}{1.35} + \frac{.35}{1.25}(1-.35)}$$

⇒ 0.774 times

JKL

$$\Rightarrow 1 \times \frac{\frac{1}{1.30}}{\frac{1}{1.30} + \frac{.30}{1.30}(1-.35)}$$

⇒ 0.837 times

Average overall Rate

$$\Rightarrow \frac{0.921 + 0.774 + 0.779 + .837}{4}$$

Overall ⇒ 0.827 times

For XYZ पद.

$$0.827 = \beta_{op.} \times \frac{1}{1.27}$$

$$\frac{1}{1.27} + \frac{.27}{1.27}(1-.35)$$

$\beta_{op.}$ ⇒ 0.972 times

K_e ⇒ 12% + 0.972 [18% − 12%]

⇒ 17.832%

K_d = 14%

WACC ⇒ $17.832 \times \frac{1}{1.27} + 14\% \times \frac{.27}{1.27}$

K_o ⇒ 17.02%

Concept:- ADR/GDR (Security Val.)

American Depository Receipt

Global Depository Receipt

Example:-

INDIAN Co (Infosys) → USA

want to raise funds

↓

Promotor

↳ Eg. 5% stake

↓

Deposit → Depository Bank

Citi Bank US

Issue → Receipt

ADR / GDR

List → NYSE

SURINEAR

Features:-

1) INDIA — 5 shares — Bundle → 1 ADR/GDR

₹500 → 5 × 500 = 2500

If Discount - 10%

250

$1 = ₹81$

Issue Price $27.108

Q.4A (SM)

Net Issue Size ⇒ $10.00 million

Gross Issue Size ⇒ $\frac{\$10.00}{(1-.02)}$

Hint:-

$$x(1-.02) = \$10 \text{ mill.}$$

$$x = \frac{10}{1-.02} = ?$$

Gross Issue Size ⇒ $10.204 million

Issue Price/GDR ⇒ [250 × 2] × 90%

⇒ ₹450

Qn($) ⇒ ₹450

1$ = £60 ⇒ £60

Issue Price in '$' per GDR ⇒ $7.50

(a) No. of GDR's ⇒ $10.204 million / $7.50

⇒ 1.3605 million GDR's

(b) Cost of GDR's :-

$K_e = ?$ → (GORDON'S)

$I_0(1-F_c) = \frac{D_1}{K_e - g_e}$

$$450(1-.02) = \frac{10 \times 20\% \times 2}{K_e - .12}$$

$$K_e = \frac{40}{441} + .12$$

$$= 21.07\%$$

Q.4C July 2021

Gross Issue size = $ 8.82 million / 1 − .02

⇒ $ 9 million

Issue Price of GDR in ₹

⇒ [360 × 2] × 90%

⇒ ₹ 648

In $ ⇒ ₹ 648 / ₹ 72 ⇒ $ 9/GDR

1) D_1 ⇒ 20 × 2 = ₹ 40

(a) No. of GDR's

$$\Rightarrow \frac{\$9 \text{ million}}{\$9} \Rightarrow 1 \text{ million GDR's}$$

(b) Cost of GDR's

$$P_0(1-F_c) = \frac{D_1}{K_e - g_L}$$

(a)

$$648(1-.02) = \frac{40}{K_e - .12}$$

$$K_e = \frac{40}{635.04} + .12$$

$$K_e = 18.30\%$$

2) If the co. receives an offers from us Bank willing to provide an

Equivalent amount of loan with int rate of 12%, it should be accepted

3) If the offer is accepted there will be net savings of 6.30%