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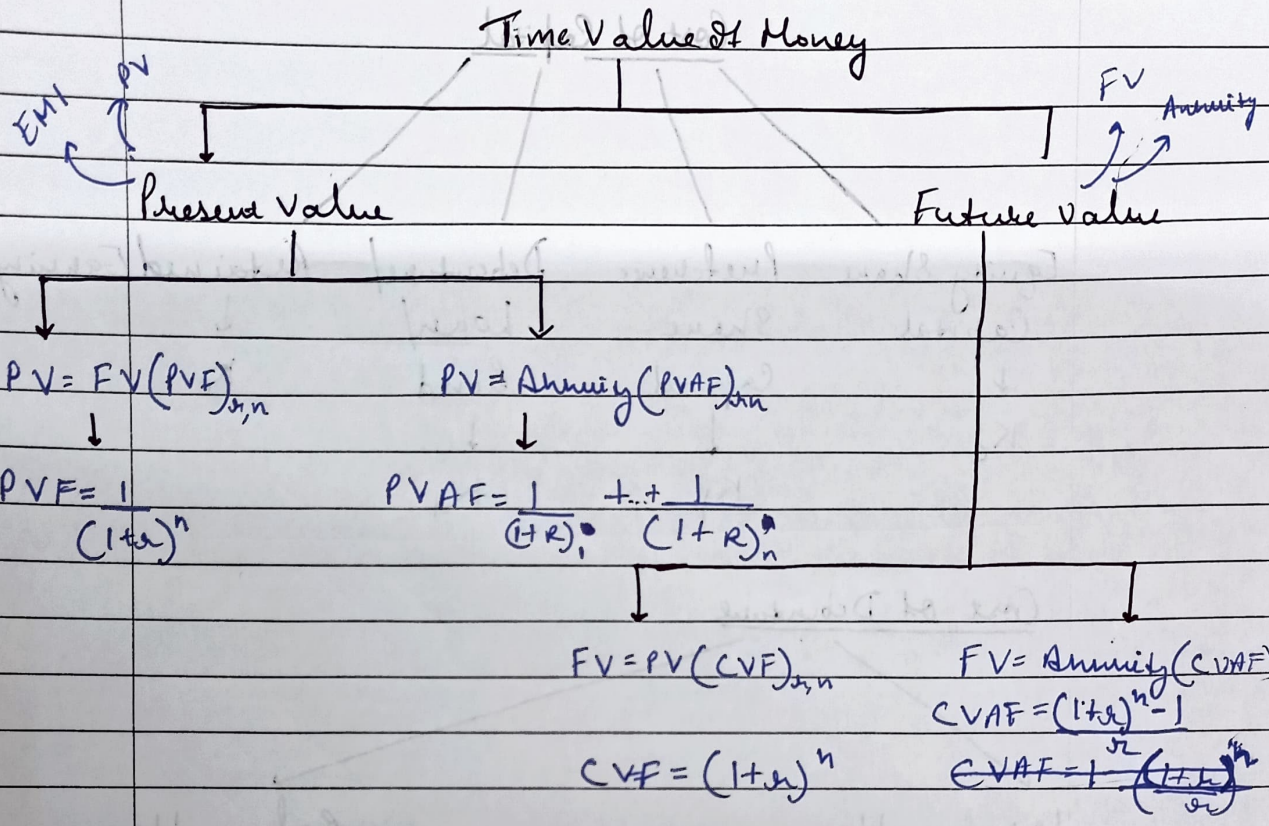

Annuity means when something is happening at a same interval and same amount, it is not total amount but amount received regularly

If talking about receiving an amount forever

$$\text{Forever} = \frac{\text{Cash in Flow}}{r}$$

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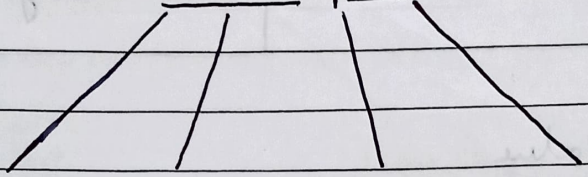
Cost of Capital



- Equity Share Capital → K_e
- Preference Share Capital → K_p
- Debenture/ Loan/ Bond → K_d
- Retained Earning → K_e

Cost of Debenture

Irredeemable

$$K_d = \frac{I(1-t)}{NP} \times 100$$

Redeemable

$$K_d = \frac{I(1-t) + \frac{RV-NP}{N}}{\frac{RV+NP}{2}} \times 100$$

I = Interest

NP = Net Proceeds

t = tax

RV = Redeemable Value

N = time

NP = FV - Discount
+ Premium
- ~~Float~~ Flotation Cost

Cost of Preference Share

Redeemable

$$K_p = \frac{D + \frac{RV - NP}{N}}{\frac{RV + NP}{2}} \times 100$$

Irredeemable

$$K_p = \frac{D}{NP} \times 100$$

D = Dividend
NP = Net Proceeds
RV = Redeemable Value

NP = Face Value - Discount + Security Premium + Flotation Cost

Cost of Equity

When dividend has been paid

$$K_e = \left[\frac{D_0(1+g)}{P_0} + g\right] \times 100$$

D_0 = dividend paid
P_0 = Market Price
g = growth in dividend

When dividend will pay

$$K_e = \left[\frac{D_1}{P_0} + g\right] \times 100$$

$D_1 = D_0(1+g)$
D_1 = dividend to be paid

∴ Both are same

Overall Cost of Capital / WACC

Using Book Value

Using Market Value

WACC (Book Value)

Particular	Fund Received (A)	Cost (B)	Product (A×B)
Equity Share	XXXX	K_e	XXXX
Preference Share	XXXX	K_p	XXXX
Debenture	XXXX	K_d	XXXX
Retained Earnings	XXXX	K_e	XXXX
	XXXX		XXXX

$$WACC = \frac{\Sigma \text{Product}}{\Sigma \text{Fund}} \times 100$$

WACC (Market Value)

Particulars	Fund Received (A)	Cost (B)	Product (A×B)
Equity Share	Market Value	K_e	XXX
Preference Share	Market Value	K_p	XXX
Debenture	Market Value	K_d	XXX
~~Retained~~ Earnings	XXX		XXX

Book Value ~~Market~~ Share Price = $\frac{\text{Asset} - \text{Liabilities}}{\text{No. of shares}}$

or

$= \frac{\text{Share Capital} + \text{Reserves \& Surplus}}{\text{No. of Shares}}$

~~These already include~~ Retained Earnings

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Giving Weight

Weight is given on the bases of fund received
It is obtained by $\frac{\text{Fund Received}}{\text{Total Funds}}$

Particular	Fund (A)	Weight (B)	K_o (WACC) (A×B)
Equity	×× (5L)	××× (0.1)	0.05
Debenture	×× (3L)	××× (0.2)	
Preference	×× (2L)	××× (0.06)	
Total	10L	WACC=	

Particular	Fund	Weight (A)	Cost (B)	WACC (A×B
ESC	5L	0.5	0.1	0.05
Debenture	3L	0.3	0.6	0.018
PSC	2L	0.2	0.02	0.04
	10L		WACC=	0.108

$$WACC = 0.108 \times 100$$
$$= 10.8\%$$

Ex-dividend is when interest is not included in the price cum-dividend is when interest is included

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Capital Budgeting

↓

Investment Decision

↓

Cash Outflow will be compared with Cash Inflow.

CFAT: Cash Flow After Tax

↓

Techniques for Investment Decision

- Payback Period
- ~~Net Present Value~~ ~~NPV~~ ←
- Profitability Index ←
- Internal Rate of Return ←
- Modified IRR ←
- Discounted Payback Period ←
- Net Terminal Value ←

CFAT

After deducting depreciation and finding EBIT, deduct tax and find NPAT. then add depreciation back to find real cash flows as depreciation is an expense for which we don't pay

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Estimation of Relevant Cash Flows and Terminal Value

(1) Initial Cash Outflow

- Includes not just cost of plant required for project but ~~also~~ also transportation, installation and any other related cost
- It won't include expenses incurred before the beginning of project even if done for the project
- When discarding an old asset during project will result in inflow of cash and in case of profit / loss tax will be paid which also has to be considered.

- (2) Market value of resources of firm should be added which have an opportunity cost
- Considerations for working capital to be made.

Cost of FA (New) + Installation − Sale price of old asset ± Tax on Capital Gain − Tax saving on Capital Loss

+ Working Capital

(2) Subsequent Cash Inflow

Annual Inflow = Profit After Tax + Depriciation / Non-cash expenses − Capital Expenditure ± Change in working Capital

Terminal Cash Flow

- It will include terminal cash flow as well as annual cash in flow

Terminal CF = Scrap of New Asset - Tax on Capital gain + Tax Saving on Capital loss + WC released - earlier tied up in project

Pay Back Period

Duration in which project pay back its original investment

- Same Cash Flow
- Different Cash Flow

Q Initial Investment = 9000 for each project.

CFAT

Year	Project A	Project B
1	3000	3000
2	3000	2000
3	3000	2000
4	3000	4000 A
5	3000	5000

Project A

PP = $\frac{\text{Initial Investment}}{\text{Annual CFAT}}$

= $\frac{9000}{3000}$ = 3 years

Project B

Year	CFAT	Cumulative CFAT
1	3000	3000
2	2000	5000
3	2000	7000 → 9000
4	4000	11000
5	5000	

3 years ⇒ remaining out of 9000 (7000) = 2000

In 4th year we get 4000
So we will get 2000 in $\frac{2000}{4000} = \frac{1}{2}$ year

So, 3.5 years is PP

Net Present Value

Present investment will be given and FV of returns will be given bring them to present value and check if total returns in current value more than investment then difference will be Net Present Value

Profitability Index

It is used to check returns getting on 1 rupee investment. CV of Investment ~~divided by~~ dividing ~~by~~ total CV of all returns.

IRR

It equates present value of cash inflow with present value of cash outflow

Case I

When 'r' or required rate is given

↓

Calculate NPV

Case II

When 'r' or rate not given take 10%

↓

Calculate NPV

If NPV results in

+ve then choose a rate higher than the prev rate and calculate NPV

-ve the choose rate lower than the prev rate and calculate NPV

$$IRR = L + \left(\frac{PV_L - \text{Initial Investment}}{PV_L - PV_H} \right) \times H - L$$

PV_L = Present Value at L

PV_H = Present value at H

L = lower rate

H = higher rate

If IRR > r, r is the first rate then accept the project otherwise reject

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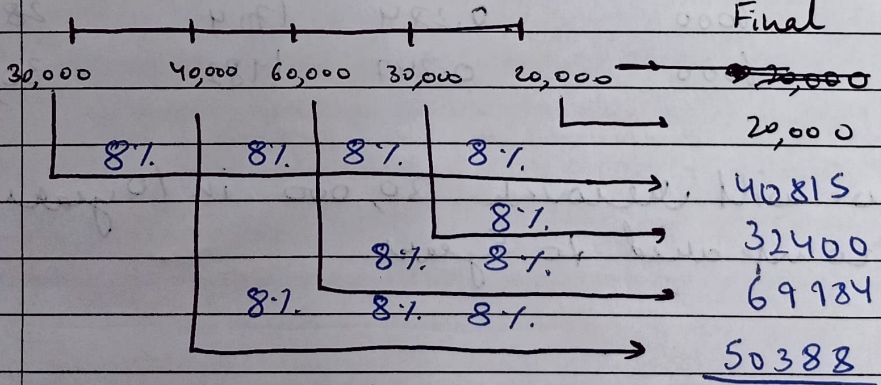
Modified IRR

In this we find future value considering the return we received is further invested till last year and total values at last are taken together and then PV is taken, their IRR is calculated at CoC as ~~modified to get MIRR~~
If MIRR > r then accept.

eg: Investment of 1,36,000 yields following cash inflows considering 8% as CoC.

Year	₹
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000



Investment = 1,36,000

~~MIRR = $\frac{196000}{136000}$ = 1.4~~

$$MIRR = 8 + \left(\frac{9453}{9453-(3362)}\right) \times (10-8) = 9.48\%$$

Discounted Payback Period

If 30,000 is investment and we receive 6000 per year we will recover in 5 years. but it is a problem as we did not consider TVM. To correct this we will use PV instead of FV.

eg: 30,000 with 6000 per year and CoC is 15%.

Year	Cash Flow	PV @ 15%	PV	Cumulative
1	6000	0.870	5220	5220
2	6000	0.756	4536	9756
3	6000	0.658	3948	13704
4	6000	0.572	3432	17136
5	6000	0.497	2982	20,118
6	6000	0.432	2592	22710
7	6000	0.376	2256	24966
8	6000	0.327	1962	26928
9	6000	0.284	1704	28632
10	6000	0.247	1482	30,114

So we will recover 30,000 in 10 years as compared to 5 years