

***ADVANCED CAPITAL
BUDGETING DECISIONS***

CLASS 6-HW-Q12

Topic Adjusted Present Value (APV)

Question 12:

Aventic Pharmaceuticals Ltd. is considering a project investment which requires an initial outlay of Rs.500 lakh. The company has estimated to generate a net cash inflow of Rs.105 lakh for 8 years. The company is planning to raise Rs.300 lakh from term loan. The term loan carries an interest rate of 12% and would be repayable in 10 equal half yearly installments, the first installment falling due at the end of third year. The balance amount required for the project can be raised by issuing external equity. The opportunity cost of capital is 15% and the issue cost is expected to be 4%. The tax rate for the company is 30%.

You are **required** to find out:

Base case NPV and Adjusted NPV of the project.

(Source: FOD)

ANSWER:

$$\begin{aligned}\text{Base case NPV} &= -\text{Rs.}500 + \text{Rs.}105 \times \text{PVIFA}(15,8) \\ &= -\text{Rs.}500 + \text{Rs.}105 \times 4.4873 \\ &= -\text{Rs.}500 + \text{Rs.}471.17 \\ &= -\text{Rs.}28.83\end{aligned}$$

∴ Base case NPV of capital project of the company is Rs.–Rs.28.83 lakh. The company raises Rs.300 lakh from debt @12%. The interest, repayment of loan and present value of tax shield are computed as follows:

Year	Half	Debt outstanding at the beginning	Interest	Tax shield	Present value of Tax shield	Repayment
1	1	300	18.00	5.40	5.09	0
	2	300	18.00	5.40	4.81	0
2	1	300	18.00	5.40	4.53	0
	2	300	18.00	5.40	4.28	0
3	1	300	18.00	5.40	4.04	0
	2	300	18.00	5.40	3.81	30
4	1	270	16.20	4.86	3.23	30
	2	240	14.40	4.32	2.71	30
5	1	210	12.60	3.78	2.24	30
	2	180	10.80	3.24	1.81	30
6	1	150	9.00	2.70	1.42	30
	2	120	7.20	2.16	1.07	30
7	1	90	5.40	1.62	0.76	30
	2	60	3.60	1.08	0.48	30
8	1	30	1.80	0.54	0.23	30
	2	0	-	-	-	-

Total value of the tax shield = Rs.40.51 lakh.

The company raises Rs.200 lakhs from equity.

As the issue cost is 4%, so to receive Rs.200 lakh from equity the company has to issue equity of (Rs.200 ÷ 0.96) or, value Rs.208.33 lakh.

$$\begin{aligned}\therefore \text{Cost of issue} &= \text{Rs.208.33} - \text{Rs.200.00} \\ &= \text{Rs.8.33 lakh.}\end{aligned}$$

$$\begin{aligned}\therefore \text{Adjusted NPV} &= -\text{Rs.28.83} - \text{Rs.8.33} + \text{Rs.40.51} \\ &= \text{Rs.3.35}\end{aligned}$$

ALTERNATIVE ANSWER

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1) Base case NPV = $105 \times PVAF(15\%, 8) - 500$
 $= -28.83 \text{ lakhs}$

2) Floatation Cost = $\frac{300}{96} \times 4 = 12.5 \text{ lakhs.}$

3) Tax advantage of debt disc @ 12%.

Years	Amt. of	Int. @ 12%	Total Int.	ITS	PV @ 12.36%
1 : 1 st half	300	18	36	10.8	9.61
2 nd half	300	18			
2 : 1 st half	300	18	36	10.8	8.55
2 nd half	300	18			
3 : 1 st half	300	18	36	10.8	7.61
2 nd half	300	18			
4 : 1 st half	270	16.2	30.6	9.18	5.76
2 nd half	240	14.4			
5 : 1 st half	210	12.6	23.4	7.02	3.92
2 nd half	180	10.8			
6 : 1 st half	150	9	16.2	4.86	2.41
2 nd half	120	7.2			
7 : 1 st half	90	5.4	9	2.7	1.19
2 nd half	60	3.6			
8 : 1 st half	30	1.8	1.8	0.54	0.21
2 nd half	0	0			
					TAD = 39.26

APV = Base case NPV - Issue Cost + TAD
 $= -28.83 - 12.5 + 39.26$
 $= -2.07 \text{ lakhs.}$

→ Project is not viable since APV is negative.

Note: Alternatively, post tax issue cost = 12.5×0.7
 $= 8.75$ lakhs

∴ $APV = -28.83 - 8.75 + 39.26 = 1.68$ lakhs.

In this case, The project is viable as APV is positive.