

Capital Budgeting with Inflation

FD Rate = 10%.

Inflation Rate = 6%.

Funds available = ₹ 1,00,000

Sp.p.u. of a Book today = ₹ 100

Option 1 : Buy today

$$\begin{aligned}\text{No. of Books that can be bought} &= \frac{\text{₹ } 1,00,000}{\text{₹ } 100} \\ &= 1,000 \text{ Books}\end{aligned}$$

Option 2 : Buy after 1 year

$$\begin{aligned}\text{No. of Books that can be bought} &= \frac{\text{₹ } 1,00,000 + 10\%}{\text{₹ } 100 + 6\%} \\ &= 1037.73 \text{ Books}\end{aligned}$$

FD Rate $\longrightarrow$ Nominal Rate $[n]$ $[10\%]$
Indicates increase in wealth

Inflation Rate $\longrightarrow$ $[i]$ $[6\%]$
Indicates increase in price of
Commodities

Real Rate $\longrightarrow$ $[r]$ $[3.773\%]$
Indicates increase in purchasing
power.

Equation:

$$[1+n] = [1+r] [1+i]$$

$$1.10 = [1.03773] [1.06]$$

$$1+n = (1+r)(1+i)$$

$$1+n = (1+r)1 + (1+r)i$$

$$1+n = 1+r + i + ri$$

$$n = r + i + ri$$

AFM

Project:

$$II = 200$$

$$CI = 100, 200, 300 \text{ in yrs 1, 2 \& 3}$$

[In Real Terms]

$$COC = 10\%$$

$$\text{Inflation Rate} = 6\%$$

Calculate NPV

Note: If Nothing is mentioned, COC is assumed to be r .

Method 1: Real CF @ Real Rate

Yr	CF	DF @ 10%	PV
0	(200)	1	(200)
1	100	0.909	90.9
2	200	0.826	165.2
3	300	0.751	225.3
NPV @ 10%			281.4

Alternatively,

Method 2 : Nominal CFs @ Nominal Rate

y_2	CF [R]	Inflation Factor	CF [N]
0	(200)	$1.06^0 = 1$	(200)
1	100	$1.06^1 = 1.06$	106
2	200	$1.06^2 = 1.1236$	224.72
3	300	$1.06^3 = 1.1910$	357.3

Calculation of n :

$$\begin{aligned} n &= r_2 + i + r_i \\ &= 10\% + 6\% + 10\% \times 6\% \\ &= 16.6\% \end{aligned}$$

Calculation of NPV

y_2	CF [N]	DF @ 16.6%	PV
0	(200)	1	(200)
1	106	0.858	90.95
2	224.72	0.736	165.39
3	357.3	0.631	<u>225.46</u>
NPV @ 16.6%			281.8 [R]