

1. **Simple NPV** = -Initial Investment + Sum of Net Cash Flows from Each Future Year.

$$\text{Simple NPV} = -I_0 + \text{PV}(\text{CF1}) + \text{PV}(\text{CF2}) + \text{PV}(\text{CF3}) + \text{PV}(\text{CF4}) + \dots + \infty$$

$$\text{PV}(\text{CF}_x) = \text{CF}_x / (1 + i)^x$$

Where x is the year for which you are calculating

Calculate present value (PV) for each year for both projects independently like:

Theta	Gamma
1 st yr = $8,000 / (1.084)^1 = 7380.07$	1 st yr = $9,000 / (1.084)^1 = 4612.54$
2 nd yr = 11914.32	2 nd yr = 12765.34
3 rd yr = 10205.99	3 rd yr = 9420.92
4 th yr = 3621.20	
5 th yr = 7349.30	
6 th yr = 6163.45	

Then calculate the simple NPV for each project. For that you will need to add all the PV's you calculated for each project.

Simple NPV for Theta = 6634.32

Simple NPV for Gamma = 8798.8

Now

Common Life Approach:

The NPV formula remains the same:

$$\text{Simple NPV} = -I_0 + PV(CF1) + PV(CF2) + PV(CF3) + PV(CF4) + \dots + \infty$$

Least common multiple: 6 (Since theta lasts for 6 years, and gamma lasts for 3, the least common multiple will be 6)

Now Common Life NPV for Theta will be the same as Simple NPV = 6634.32

But the Common Life NPV for Gamma will be different:

Since we need to assume that Gamma lasts as long as Theta, we assume that gamma has the same outflow over the next three years as it had the first three years:

Project	Cash Flows (Rs. '000)						
	FY- 0	FY- 1	FY- 2	FY- 3	FY- 4	FY- 5	FY- 6
Gamma	(18,000)	9,000	15,000	12,000	9000	15000	12000

Now we calculate PV's for the 4th, 5th and 6th year.

$$PV \text{ for } 4^{\text{th}} = 6518.16$$

$$PV \text{ for } 5^{\text{th}} = 10021.77$$

$$PV \text{ for } 6^{\text{th}} = 7396.14$$

Hence the Common Life NPV for Gamma will be = 32734.87

EAA Approach:

In order to find the EAA value, first calculate the EAA factor:

EAA FACTOR = $(1+i)^n / [(1+i)^n - 1]$ where n = life of project & i=discount rate

EAA Value For Theta = 2.62

EAA Value For Gamma = 4.72

EAA for each project: Simple NPV * EAA Factor

Theta: 17381.91

Gamma: 46250.33



1. I think Gamma is better

Advantages of asset with short life

The advantage of a short life asset is that the investor, by making reinvestment in the asset of a

superior quality, lowers down the costs and updates the project to the new technological requirements.

Plus more cash inflow

Everything done according to handouts - well most of it. Formula's used from the handouts as well. I didn't understand the hint formula at the end, so I just used what's given in the handouts. Pray I pass all my subjects this semester please :(