

3.4.2.1 Net Present Value (NPV) Example.

Q:

Year	Inflows	Outflows	Net Flow	Discount Factor	NPV
0		\$100,000	(\$100,000)	1.0000	(\$100,000)
1	\$20,000		20,000	0.8772	17,544
2	50,000				
3	50,000				
4	25,000				
Total					?

$$NPV = I_0 + \sum \frac{F_t}{(1+r+p_t)^t}$$

Solution ① Year 1

$$\frac{1}{(1+r+p_t)^1} = 0.8772$$

$$\Rightarrow r + p_t = \frac{1}{0.8772} - 1$$

$$= 0.13999$$

$$NPV = 20000 \times 0.8772 = 17544$$

② Year 2.

$$\begin{aligned}\text{Discount Factor} &= \frac{1}{(1+r+p_e)^2} \\ &= \frac{1}{(1+0.14)^2} \\ &= 0.7695\end{aligned}$$

$$\begin{aligned}\text{NPV} &= 50,000 \times 0.7695 \\ &= 38475\end{aligned}$$

③ Year 3

$$\frac{1}{(1+0.14)^3} = 0.67497 \approx 0.6749$$

$$\text{NPV} = 50,000 \times 0.6749 = 33745$$

④ Year 4

$$\frac{1}{(1+0.14)^4} = 0.5921$$

$$\text{NPV} = 25000 \times 0.5921 = 14803$$

⑤ Total

$$NPV = -100,000 + 17544 + 38475$$

$$+ 33745 + 14803$$

$$= 4567 > 0$$

So, invest!