

TOPIC

Economics – Section VI – Question 9

QUESTION

Two alternatives have the following cash flows.

Year	Alternative A	Alternative B
0	- \$3,000	- \$3,500
1	+ \$1,700	+ \$2,000
2	+ \$1,700	+ \$2,000

Assuming a 6% interest rate, use the Net Present Worth (NPW) and Net Future Worth (NFW) methods to identify the alternative that should be selected.

- (A) Alternative A
- (B) Alternative B
- (C) Neither alternative A or B
- (D) Both alternatives A and B are good

HINT

Net Present Worth (NPW) = PW of benefits – PW of cost

Net Future Worth (NFW) = FW of benefits – FW of cost

SOLUTION

Net Present Worth (NPW) = PW of benefits – PW of cost

The Net Present Worth of Alternative A is

$$\begin{aligned} NPW_A &= 1700 (P/A, 6\%, 2) - 3000 \\ &= 1700 (1.833) - 3000 \\ &= 3116.10 - 3000 \\ &= \$116.10 \end{aligned}$$

The Net Present Worth of Alternative B is

$$\begin{aligned} NPW_B &= 2000 (P/A, 6\%, 2) - 3500 \\ &= 2000 (1.833) - 3500 \\ &= 3666 - 3500 \\ &= \$166 \end{aligned}$$

Net Future Worth (NFW) = FW of benefits – FW of cost

The Net Future Worth of Alternative A is

$$\begin{aligned} NFW_A &= 1700 (F/A, 6\%, 2) - 3000 (F/P, 6\%, 2) \\ &= 1700 (2.060) - 3000 (1.124) \\ &= 3502 - 3372 \\ &= \$130 \end{aligned}$$

The Net Future Worth of Alternative B is

$$\begin{aligned} NFW_B &= 2000 (F/A, 6\%, 2) - 3500 (F/P, 6\%, 2) \\ &= 2000 (2.060) - 3500 (1.124) \end{aligned}$$

$$\begin{aligned} &= 4120 - 3934 \\ &= \$186 \end{aligned}$$

Based on both Net Present Worth and Net Future Worth, we choose Alternative B.

ANSWER

(B)

CONTRIBUTOR

Ram Pendyala