

Mathcad Worksheet

Compare Two Projects Based on Net Present Value

Define Initial Data for Two Projects

Time, N, in years

$$N := 4$$

Initial Investment, IV, in \$dollars

$$IV := -1180083$$

Interest Rate, Rate, in % percent

$$\text{Rate} := 7$$

Cash Flow, CF, in \$ dollars

$$CF_{\text{projA}} := (450479 \ 477629 \ 506501 \ 537201)^T$$

$$CF_{\text{projB}} := (492952.5 \ 492952.5 \ 492952.5 \ 492952.5)^T$$

Define Equations

Net Present Value, NPV, in \$ dollars

$$NPV(CF, R) := IV + \left[\sum_{k=1}^N \frac{CF_k}{\left(1 + \frac{R}{100}\right)^k} \right]$$

$$PV(CF, R) := NPV(CF, R) - IV$$

$$ROI(CF, R) := \frac{NPV(CF, R)}{PV(CF, R)}$$

Coefficient of Variation, CV

$$CV(CF) := \frac{\text{stdev}(CF)}{\text{mean}(CF)}$$

Compare Results for the Two Projects

✓ Results for project A

$$NPV(CF_{\text{projA}}, \text{Rate}) = 4.81 \times 10^5 \quad PV(CF_{\text{projA}}, \text{Rate}) = 1.661 \times 10^6$$

$$CV(CF_{\text{projA}}) = 0.066 \quad ROI(CF_{\text{projA}}, \text{Rate}) = 0.29$$

Results for project B

$$NPV(CF_{\text{projB}}, \text{Rate}) = 4.897 \times 10^5 \quad PV(CF_{\text{projB}}, \text{Rate}) = 1.67 \times 10^6$$

$$CV(CF_{\text{projB}}) = 0 \quad ROI(CF_{\text{projB}}, \text{Rate}) = 0.293$$

Ra := 0, .01 .. 99

