

***ADVANCED CAPITAL
BUDGETING DECISIONS***

CLASS 10-HW-Q23

Topic Risk analysis - Statistical Techniques

Mean & S.D of Cash Flow Required

Question 23:

KLM Ltd., is considering taking up one of the two projects-Project-K and Project-So Both the projects having same life require equal investment of ₹ 80 lakhs each. Both are estimated to have almost the same yield. As the company is new to this type of business, the cash flow arising from the projects cannot be estimated with certainty. An attempt was therefore, made to use probability to analyse the pattern of cash flow from other projects during the first year of operations. This pattern is likely to continue during the life of these projects. The results of the analysis are as follows:

Project K		Project S	
Cash Flow (in ₹)	Probability	Cash Flow (in ₹)	Probability
11	0.10	09	0.10
13	0.20	13	0.25
15	0.40	17	0.30
17	0.20	21	0.25
19	0.10	25	0.10

Required:

- Calculate variance, standard deviation and co-efficient of variance for both the projects.
- Which of the two projects is riskier?

(Source: ICAI)

ANSWER:

Calculation of Variance and Standard Deviation

Project K

Expected Net Cash Flow

$$= (0.10 \times 11) + (0.20 \times 13) + (0.40 \times 15) + (0.20 \times 17) + (0.10 \times 19)$$

$$= 1.1 + 2.6 + 6 + 3.4 + 1.9 = 15$$

$$\sigma^2 = 0.10 (11 - 15)^2 + 0.20 (13 - 15)^2 + 0.40 (15 - 15)^2 + 0.20 (17 - 15)^2 + 0.10 (19 - 15)^2$$

$$= 1.6 + 0.8 + 0 + 0.8 + 1.6 = 4.8$$

$$\sigma = \sqrt{4.8} = 2.19$$

Project S

Expected Net Cash Flow

$$= (0.10 \times 9) + (0.25 \times 13) + (0.30 \times 17) + (0.25 \times 21) + (0.10 \times 25)$$

$$= 0.9 + 3.25 + 5.1 + 5.25 + 2.5 = 17$$

$$\sigma^2 = 0.1 (9 - 17)^2 + 0.25 (13 - 17)^2 + 0.30 (17 - 17)^2 + 0.25 (21 - 17)^2 + 0.10 (25 - 17)^2$$

$$= 6.4 + 4 + 0 + 4 + 6.4 = 20.8$$

$$\sigma = \sqrt{20.8} = 4.56$$

Calculation of Coefficient of Variation

Coefficient of Variation = Standard Deviation/ Mean

$$\text{Project K} = 2.19/15 = 0.146$$

$$\text{Project S} = 4.56/17 = 0.268$$

Project S is riskier as it has higher Coefficient of Variation.