

# HOMEWORK SECTION - Risk Analysis

**Q1.** Shivam Ltd. is considering two mutually exclusive projects A and B. Project A costs Rs. 12,000 and project B Rs. 11,000. You have been given below the net cash flow (NCF) probability distribution for each project.

Project A		Project B	
NCF estimates (Rs.)	Probability	NCF estimates (Rs.)	Probability
15,000	0.4	15,000	0.3
12,000	0.3	12,000	0.5
10,000	0.2	10,000	0.1
8,000	0.1	8,000	0.1

- COMPUTE the expected net cash flows (ENCF) of projects A and B.
- COMPUTE the risk attached to each project i.e. standard deviation of each probability distribution.
- COMPUTE the profitability index of each project.
- IDENTIFY which project do you recommend? State with reasons.

**Q2.** Giri Ltd. is using the Certainty Equivalent approach in the evaluation of risky proposals. The following information regarding a new project is as follows:

Year	Expected Cash flow (Rs.)	Certainty equivalent quotient
0	(4,00,000)	1.0
1	3,20,000	0.8
2	2,80,000	0.7
3	2,60,000	0.6
4	2,40,000	0.4
5	1,60,000	0.3

Riskless rate of interest on the government securities is 6 per cent. DETERMINE whether the project should be accepted?

**Q3.** The Textile Manufacturing Company Ltd. is considering one of two mutually exclusive proposals, Project M and N, which require cash outlays of Rs. 8,50,000 and Rs. 8,25,000 respectively. The certainty equivalent (C.E) approach is used in incorporating risk in capital budgeting decisions. The current yield on government bonds is 6% and this is used as the risk free rate. The expected net cash flows and their certainty equivalents are as follows:

Project M			Project N	
Year-end	Cash Flow (Rs.)	C.E.	Cash Flow (Rs.)	C.E.
1	4,50,000	0.8	4,50,000	0.9
2	5,00,000	0.7	4,50,000	0.8

3	5,00,000	0.5	5,00,000	0.7
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Present value factors of Rs. 1 discounted at 6% at the end of year 1, 2 and 3 are 0.943, 0.890 and 0.840 respectively.

**Required:**

- (i) ANALYSE which project should be accepted?
- (ii) If risk adjusted discount rate method is used, IDENTIFY which project would be appraised with a higher rate and why?

**Q4.** A&R Ltd. has under its consideration a project with an initial investment of Rs. 90,00,000. Three probable cash inflow scenarios with their probabilities of occurrence have been estimated as below:

Annual cash inflow (Rs.)	20,00,000	30,00,000	40,00,000
Probability	0.2	0.7	0.1

The project life is 5 years and the desired rate of return is 18%. The estimated terminal values for the project assessed under the three probability alternatives, respectively, are Rs. 0, Rs. 20,00,000 and Rs. 30,00,000.

**You are required to:**

- (i) CALCULATE the probable NPV.
- (ii) CALCULATE the worst case NPV and the best case NPV.
- (iii) STATE the probability occurrence of the worst case, if the cash flows are perfectly positively correlated over time.

**Q5.** SG Ltd. is considering a project "Z" with an initial outlay of Rs. 7,50,000 and life of 5 years. The estimates of project are as follows:

	Lower Estimates	Base	Upper Estimates
Sales (units)	4,500	5,000	5,500
	(Rs.)	(Rs.)	(Rs.)
Selling Price p.u.	175	200	225
Variable cost p.u.	100	125	150
Fixed Cost	50,000	75,000	1,00,000

Depreciation included in Fixed cost is Rs. 35,000 and corporate tax is 25%.

Assuming the cost of capital as 15%, DETERMINE NPV in three scenarios i.e worst, base and best case scenario.

PV factor for 5 years at 15% are as follows:

Years	1	2	3	4	5
P.V. factor	0.870	0.756	0.658	0.572	0.497

**Q6.** New Projects Ltd. is evaluating 3 projects, P-I, P-II, P-III. Following information is available in respect of these projects.

	P-I	P-II	P-III
Cost	Rs. 15,00,000	Rs. 11,00,000	Rs. 19,00,000
Inflows-Year 1	6,00,000	6,00,000	4,00,000
Year 2	6,00,000	4,00,000	6,00,000
Year 3	6,00,000	5,00,000	8,00,000
Year 4	6,00,000	2,00,000	12,00,000
Risk Index	1.80	1.00	0.60

Minimum required rate of return of the firm is 15% and applicable tax rate is 40%. The risk free interest rate is 10%.

REQUIRED:

- (i) Find out the risk-adjusted discount rate (RADR) for these projects.
- (ii) Which project is the best?