

## RISK AND RETURN PROBLEMS AND SOLUTIONS

### Illustration 1:

Calculate the expected rate of return from the following information relating to B Ltd.

State of the Economy	Probability of Occurrence	Rate of Return%
Boom	0.30	40
Normal	0.50	30
Recession	0.20	20

### Solution:-

$$\begin{aligned}\text{Expected Rate of Return} &= \sum (P \times R) \\ &= 0.30 \times 40 + 0.50 \times 30 + 0.20 \times 20 \\ &= 12 + 15 + 4 \\ &= 31\%\end{aligned}$$

### Illustration 2:

An investor would like to find the expected return on the share of Golden Ltd. The following data have been available:

State of the Economy	Probability of Occurrence	Rate of Return (%)
Boom	0.30	30
Normal	0.50	18
Recession	0.20	10

Calculate the expected return from the share.

### Solution:-

$$\begin{aligned}\text{Expected Rate of Return} &= \sum (P \times R) \\ &= 0.30 \times 30 + 0.50 \times 18 + 0.20 \times 10 \\ &= 9 + 9 + 2 \\ &= 20\%\end{aligned}$$

### Illustration 3:

Given below are the likely returns in case of shares of VCC Ltd. and LCC Ltd. in the various economic conditions. Both the shares are presently quoted at Birr.100 per share.

Economic Conditions	Probability	Returns of VCC Ltd.	Returns of LCC Ltd.
High Growth	0.3	100	150
Low Growth	0.4	110	130
Stagnation	0.2	120	90
Recession	0.1	140	60

Which of the two companies are risky investments?

**Solution:-**

**VCC Ltd.**

Economic Condition	P	R	$\bar{R} = R \times P$	$(R - \sum \bar{R})$	$(R - \sum \bar{R})^2$	$P(R - \sum \bar{R})^2$
High Growth	0.3	100	30	- 12	144	43.2
Low Growth	0.4	110	44	- 2	4	1.6
Stagnation	0.2	120	24	8	64	12.8
Recession	0.1	140	14	28	784	78.4
			112			Variance 136

$\therefore$  Expected Return = 112%

Risk = Standard deviation =  $\sqrt{V} = \sqrt{136} = 11.66\%$

**LCC Ltd.**

*Genius ain't anything more than elegant common sense.*

Economic Condition	P	R	$\bar{R} = R \times P$	$(R - \sum \bar{R})$	$(R - \sum \bar{R})^2$	$P(R - \sum \bar{R})^2$
High Growth	0.3	150	45	29	841	252.30
Low Growth	0.4	130	52	9	81	32.40
Stagnation	0.2	90	18	- 31	961	192.20
Recession	0.1	60	6	- 61	3721	372.10
			121			Variance 849

$\therefore$  Expected Return = 121%

Risk = Standard deviation =  $\sqrt{V} = \sqrt{849} = 29.14\%$

	<b>VCC Ltd.</b>	<b>LCC Ltd.</b>
Return	112%	121%
Risk ( $\sigma$ )	11.66%	29.14%

**Comment :**

1. The risk in LCC is more than VCC Ltd.
2. The choice of an Investor totally depends upon the risk return profile of the Investors. An Investor, who is willing to take risk, would invest in LCC, since the return is higher. An Investor who is willing to take less risk, will Invest in VCC Ltd.