

## Answer on Question #83961 - Economics - Finance

### Question:

Consider the following information:

	Bear Market	Normal Market	Bull Market
Probability	0.3	0.5	0.2
Return on Stock A	10%	0%	40%
Return on Stock B	5%	5%	50%

Calculate and comment upon the expected return and standard deviation of A and B.

### Answer

1) We can calculate expected return by the following formula:

$$ERR = \sum_{i=1}^n R_i P_i$$

Where

R – return expected in a given scenario;

P – probability of the return being achieved in the scenario;

n – number of scenario.

$$ERR_A = 10\% \cdot 0.3 + 0\% \cdot 0.5 + 40\% \cdot 0.2 = 11\%$$

$$ERR_B = 5\% \cdot 0.3 + 5\% \cdot 0.5 + 50\% \cdot 0.2 = 14\%$$

2) Then we find standard deviation for stocks A and B:

$$\sigma_A = \sqrt{\sum_{i=1}^n (R_i - ERR_i)^2 \cdot P_i}$$

$$\sigma_A = \sqrt{(10 - 11)^2 \cdot 0.3 + (0 - 11)^2 \cdot 0.5 + (40 - 11)^2 \cdot 0.2} = 15\%$$

$$\sigma_B = \sqrt{(5 - 14)^2 \cdot 0.3 + (5 - 14)^2 \cdot 0.5 + (50 - 14)^2 \cdot 0.2} = 18\%$$

Standard deviation reflects volatility of return. As we can see the stock A has the lower expected return and lower volatility, the stock B has higher expected return and higher level of volatility.

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