

Measuring Expected Return and Risk

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Expected Return is the weighted average of possible returns

Risk reflects dispersion of possible returns around the expected return, measured by standard deviation of returns

Example

Security X has a 10% probability of a 15% return, an 80% probability of a 25% return and a 10% probability of a 35% return.

Security Y has a 10% probability of a 10% return, an 80% probability of a 30% return and a 10% probability of a 50% return.

Calculate the expected return and standard deviation for both Security X and Security Y.

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Probability	Security X Return	
0.1	15%	1.5%
0.8	25%	20.0%
0.1	35%	3.5%
Expected Return		<u>25%</u>

Probability	Security Y Return	
0.1	10%	1.0%
0.8	30%	24.0%
0.1	50%	5.0%
Expected Return		<u>30%</u>

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Probability	Security X Return	$X - \bar{X}$	$p(X - \bar{X})^2$	
0.1	15%	-10	10	
0.8	25%	0	0	
0.1	35%	10	10	
		Variance	<u>20</u>	Std Deviation

$$\sqrt{20} = 4.47\%$$

Probability	Security Y Return	$X - \bar{X}$	$p(X - \bar{X})^2$	
0.1	10%	-20	40	
0.8	30%	0	0	
0.1	50%	20	40	
		Variance	<u>80</u>	Std Deviation

$$\sqrt{80} = 8.94\%$$

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