under what circumstances will the coefficient of variation of a security's returns and the standard deviation of that security's returns give the same relative measure of risk when compared with the risk of another security?

Answer:

Coefficient of variation shows the extent of variability in relation to mean of the population.

In finance, standard deviation is a representation of the risk associated with a given security (stocks, bonds, property, etc.), or the risk of a portfolio of securities (actively managed mutual funds, index mutual funds, or ETFs). Risk is an important factor in determining how to efficiently manage a portfolio of investments because it determines the variation in returns on the asset and/or portfolio and gives investors a mathematical basis for investment decisions (known as mean-variance optimization). The overall concept of risk is that as it increases, the expected return on the asset will increase as a result of the risk premium earned – in other words, investors should expect a higher return on an investment when said investment carries a higher level of risk, or uncertainty of that return. When evaluating investments, investors should estimate both the expected return and the uncertainty of future returns. Standard deviation provides a quantified estimate of the uncertainty of future returns.