Random variables and distribution

In the previous module, we built a simple trading strategy base on Moving Average 10 and 50, which are "random variables" in statistics. In this module, we are going to explore basic concepts of random variables. By understanding the frequency and distribution of random variables, we extend further to the discussion of probability. In the later part of the module, we apply the probability concept in measuring the risk of investing a stock by looking at the distribution of log daily return using python. Learners are expected to have basic knowledge of probability before taking this module.

Learning Objectives

- Differentiate between outcome and variables by examples
- Categorize discrete and continuous random variables
- Explain the major reason of using "Relative Frequency" in comparing the distribution of random variables
- Conclude the distribution of random variables is close to the limit as number of trial increases
- Describe the probability distribution is similar to the random variable distribution of infinite trials
- Summarize mean and variable are used for describing the distribution of random variables
- Describe the main reason of using "Log Return" in measuing the risk of stock investment
- Use the distribution of log return to estimate the probability of losing a defined % of investment
- Evaluate the amount of an investment might lose at a certain probability by normal distribution quantiles
- Recall the kind of distribution of stock returns suggested by Fama and French