

1 Description

The symmetric random walk will be described in this document (Mt). it covers the theory of "Stochastic Calculus for finance" Tome 2 chapter 3 section 1.

The construction of the random walk depends on the evolution of a random variable X_i . The previous RV can take two values at each time, like tossing a coin. X_i can take the value 1 or -1.

$$X_i = \begin{cases} 1 \\ -1 \end{cases} \quad (1)$$

The Symmetric Random Walk is constructed by summing up the different outcomes of the random variable X_i from k experiments:

$$M_k = \sum_{j=1}^k X_j \quad (2)$$

In the following lines of code, X_i is randomly defined. The variable k ensures to have a sufficient number of periods to further generate the scaled random walk. It refers to the k of equation 2. p and q are the probability measures, respectively p chance to get value 1 and q chance to get -1 from random variable X_i .

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