Application of Monte Carlo Method on Parameter Estimates for Merton-Jump Diffusion Model: Evidence from the Unrest Situations of the Southern Provinces of Thailand

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Abstract: Regarding the time series data, at some points of time, an unexpected event could affect so that the values jump out of the range of the majority. This behavior could be observed through the normal Quantile-Quantile (QQ) plot of the changes. In fact, the fatter tail of changes indicating that the values which are outside the range of the majority values occur with higher probability than those of normal distribution.

In most studies, the changes of values in time series, e.g. returns in financial markets, are assumed to be normally distributed. Many authors produced their works under this assumption and accepted it as a weakness of their results. This paper aims to detect and counts the number of jumps in time series changes by considering its Quantile-Quantile (QQ) plot of normal distribution. The Monte Carlo method will be applied to the counting. After that the parameters of Merton-Jump diffusion model will be estimated based on these jumps. The experiments are on some data from the unrest situations of the southern provinces of Thailand since 2004.

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