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Option Pricing Using Variance Gamma Markov Chains

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Abstract

This paper proposes a Markov Chain between homogeneous Lévy processes as a candidate class of processes for the statistical and risk neutral dynamics of financial asset prices. The method is illustrated using the variance gamma process. Closed forms for the characteristic function are developed and this renders feasible, series and option prices respectively. It is observed in the statistical and risk neutral process is fit to data on time period of 4 to 6 months in a state while this reduces to month for indices. Risk neutrally there is generally a low probability of a move to a state with higher moments. In some cases this is reversed.

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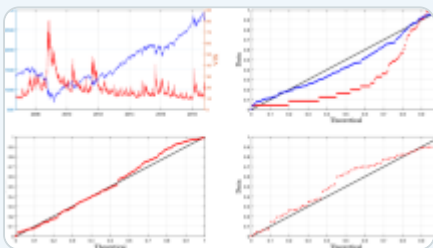
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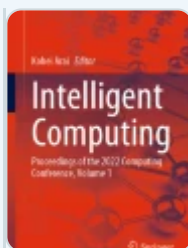
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