

Return Dynamics with Levy Jumps: Evidence from Stock and Option Prices

by

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June 2006

ABSTRACT

We examine the performances of Levy jump models and affine jump-diffusion models in capturing the joint dynamics of stock and option prices. We discuss the change of measure for infinite-activity Levy jumps and develop efficient Markov chain Monte Carlo methods for estimating model parameters and latent volatility and jump variables using stock and option prices. Using daily returns and option prices of the S&P 500 index, we show that models with infinite-activity Levy jumps in returns significantly outperform affine jump-diffusion models with compound Poisson jumps in returns and volatility in capturing both the physical and the risk-neutral dynamics of the S&P 500 index.