



THE UNIVERSITY OF
CHICAGO

Department of Statistics
MASTER'S THESIS PRESENTATION

XINLONG LI

Department of Statistics
The University of Chicago

Asymmetric Stochastic Volatility Models

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ABSTRACT

The stochastic volatility model usually incorporates asymmetric effects by introducing the negative correlation between the innovations in returns and volatility. In this paper, a new asymmetric stochastic volatility model was proposed, based on the leverage and size effects. The model is a generalization of the exponential GARCH (EGARCH) model of Nelson (1991). The new model is estimated by the efficient importance sampling method of Liesenfeld and Richard (2003), and the finite sample properties of the estimator are investigated using numerical simulations. Four financial time series are used to estimate the alternative asymmetric SV models, with empirical asymmetric effects found to be statistically significant in each case. The empirical results Euro/USD returns indicate that the leverage and size effects are significant, supporting the general model.

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