



The University of Chicago
Department of Statistics

Master's Seminar

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“Bayesian Inference of Stochastic Beta Model and GARCH Processes”

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ABSTRACT

This study explains how stochastic beta models and their parametrizations based on Bayesian inference work using Korean stock market data. In this study, Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model, is newly adopted to the original stochastic beta model. The ability of estimating parameters between original stochastic beta model and stochastic beta model based on GARCH model could be compared by the simulation with Bayesian inference based on Gibbs sampler. These results support the rational asset pricing model in that market anomalies are closely related to the variation of expected returns generated by time-varying betas as well as asset volatilities. Also, it provides some possibilities to show dynamic asset pricing model better as we can adopt plausible factors which can be explained market characteristics more effectively.