



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

BRANDON CHAO

Department of Statistics
The University of Chicago

Bayesian Quantile Forecasting for Value-at-Risk in Cryptocurrency Markets

WEDNESDAY, November 14, 2018, at 11:00 AM
Jones 304, 5747 S. Ellis Avenue

ABSTRACT

Value-at-Risk (VaR) is a widely-used measure of the risk of loss for investments that involves estimating conditional quantiles based on the available information. Recent techniques of VaR evaluation include the conditional variance into the quantile estimation, thus yielding different Conditional Autoregressive Value-at-Risk (CAViaR) models. A Bayesian approach to the quantile regression problem, through the use of the Skewed-Laplace distribution, is leveraged to estimate the parameters of the CAViaR models via Markov chain Monte Carlo sampling. Simulation results show that the Bayesian estimation method has slightly improved precision as compared to numerical optimization of the quantile loss function. Empirical results on a study of several cryptocurrency return series show the comparative performance of SAV, AS, and T-CAViaR models in forecasting VaR over a one-year period.