



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

---

YI JIN

Department of Statistics  
The University of Chicago

Estimating Value at Risk with Kernel Density Estimation

MONDAY, February 10, 2020, at 8:30 AM  
Jones 304, 5747 S. Ellis Avenue

#### ABSTRACT

In this paper, in order to make up the shortcomings of traditional historical simulation, we make use of kernel density estimation to estimate the Value at risk (VaR) of Brunswick Corporation (BC) and eBay Inc (EBAY) 1-day stock change rate. To emphasize on the importance of fat tail, we investigate kernel density estimator with both fixed and adaptive bandwidth, and use five different kernels. The distribution function of order statistic is derived and we show the specific process to estimation VaR using kernel density estimation. Then, we also implement the classical Monte Carlo simulation and variance-covariance approach to compute VaR. The performances of these three methods are compared in the end.