



The University of Chicago
Department of Statistics
Master's Seminar

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**Nonparametric Estimation of Index Parameter of Symmetric
 α -Stable ($S\alpha S$) Levy Process and Application to Financial Data**

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ABSTRACT

Since the work of Mandelbrot (1963), Levy processes have been a popular tool to model financial time series data, providing a flexibility to incorporate empirical characteristics of distributions of asset price changes such as excess kurtosis. Recent work of Wu and Zhao (2009) proposes a nonparametric estimator of index parameter for symmetric α -stable($S\alpha S$) Levy process and establishes its n-rate convergence and asymptotic normality. This paper applies the nonparametric estimation method in Wu and Zhao (2009) to daily stock price data of major firms in the banking sector and shows the performance of the estimator through a simulation study. The estimated values range from 1.7 to 2.0, indicating long-tailedness of distribution of price changes.