



**The University of Chicago**  
**Department of Statistics**  
**Master's Seminar**

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**Determine the Time Varying Distribution of High Frequency  
Finance Data Under Market Microstructure**

**WEDNESDAY, February 25, 2009 at 4:30 PM**  
**110 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

The purpose of this paper is to empirically analyze the “best” sampling time interval for the underlying log return process to be approximately normal. Four principal statistics “realized volatility”, “skewness”, “kurtosis” and “P-value” of Shapiro-Wilks normality test are used as indications of normality. Two sampling methods “pre-averaging” and “sub-sampling” are compared in both real data and simulated data. The result find that there does exist such “best” time interval. The meaning of doing so is that normality property has nice implication in real world finance application, such as derivative securities, risk management, and optimal portfolio.