



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Method of Kernel Conditional Quantile Estimation for  
Time Dependent Processes-with Application to Conditional  
Value-at-risk

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#### ABSTRACT

The most traditional measure of risk in finance is volatility, which was widely used in risk management process. However, volatility has an inherent problem that it treats all uncertainties as risk, regardless of their directions. As a result, an alternative of volatility, Value-at-Risk, which cares about the odds of losing money, was introduced to all investors. During the last several years, the VaR approach of risk measurement was becoming the most standard procedure in risk management at both financial and non-financial institutions. This article introduces the methodology of kernel estimation of conditional quantiles for stationary processes, which includes the VaR of the market value of an asset conditional on the historical information. Then we illustrate this methodology on a simulation study and apply the estimation technique to Apple, AT&T, J. P. Morgan and P&G monthly stock returns.