



THE UNIVERSITY OF
CHICAGO

DEPARTMENT OF STATISTICS

MASTER'S THESIS PRESENTATION

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Difference Approaches for VaR Estimation: Relative Performance in Three Emerging Asian Markets

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ABSTRACT

One of the reasons for the significant financial crisis was inadequate supervision and lax management of the financial risks. In coping with this issue, the Value-at-Risk (VaR) was developed and played a critical role in risk management in the 90s (Holton, 2002). Given a certain level of confidence, the VaR summarizes the potential financial losses. It could give financial institutions a heads-up about how much an investment might lose in the worst scenario. Therefore, it is essential to have VaR models that can provide a precise prediction. Since we would like to know the potential losses in the worst case, by their nature, extreme events are related to the tails of the distributions. It is, therefore, also essential to study the tails. Rather than imposing a single distribution on the entire sample data, we focus on only the tails of the return distributions.

In this project, various methods of tail index estimation and some well-known VaR estimation approaches will be introduced. The models' relative performance will be compared through a backtesting procedure (violation ratio) in the context of three emerging Asian markets. From our research, the result shows that the generalized extreme distribution(GEV) and the generalized Pareto distribution(GPD) from the Extreme Value Theory(EVT) seem to dominate over other models in terms of VaR forecasting. Therefore, we should consider the EVT in financial risk management, especially when calculating the Value-at-Risk for dynamic emerging markets.