



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Modelling Time-varying Behavior of Maxima with Dynamic Fréchet
Model

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ABSTRACT

This paper works on a dynamic generalized extreme value framework to model dependent time series of maxima and its time-varying tail risks. Specifically, an autoregressive conditional Fréchet model is studied with its scale parameter and shape parameter evolve according to an autoregressive structure. This model outperforms dynamic POT by modelling maxima sequence directly and outperforms static GEV by considering dependence and variation in extreme value distributions. MLE method is implemented to estimate the set of parameters in the model. Several numeric experiments illustrate the reliability of the MLE estimators and the efficiency of this model in modelling tail risks. Two real data analysis cases including one cross-sectional maxima sequence and one intra-day maxima sequence are taken to exhibit the improvement of this model over static GEV for financial market tail risk monitoring and conditional VaR estimation.