

DOCTORAL THESIS

Empirical likelihood based evaluation for value at risk models

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Empirical Likelihood based Evaluation for Value at Risk Models

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Abstract

Value at risk (VaR) has become an essential component in the toolkit of risk managers because it provides a quantitative measure of downside risk. In practice, the objective should be to provide a reasonable accurate estimate of risk at a reasonable cost. This involves choosing among the various industry standards a method that is most appropriate for the portfolio at hand.

There are many existing value at risk (VaR) models both in theory and practice. Of course, each method has its own merits under different circumstances. Therefore, it is of vital importance to compare and to evaluate all these different models. Many methods have been proposed in the literature to carry out these tasks. In this thesis, we shall propose several other nonparametric approaches to evaluate VaR models. In particular, we shall propose to use the Owen's empirical likelihood method to evaluate VaR models. The advantages of the empirical likelihood method has been well known in the literature. It should be noted, however, that the empirical likelihood method has typically been studied under the independent setting although it has also been extended to cover the weak dependent data under very general setting. In our VaR models, however, we can explore the special dependence structure (e.g., martingale differences) to develop the empirical likelihood methods. Our simulation results indicate that our methods do compare favorably with other alternative methods in the literature.

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