



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Methods for Evaluating Volatility Predictions

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ABSTRACT

Volatility plays a fundamental role in many financial decisions and it is an important attribute of the returns of a financial asset, which motivates people to make efforts to build appropriate time series models to make satisfactory volatility predictions. In this paper, we try to explore how to evaluate volatility predictions made by different models and how to determine which model can give more accurate volatility predictions. This paper reviews the following approaches available in the literature for evaluating the volatility predictions: the statistical approach via loss functions, the economic approach via backtesting procedure on Value at Risk (VaR) measures and a relatively new mixed approach using VaR measures within loss functions. A useful procedure, called the Model Confidence Set (MCS) procedure, for constructing a set of superior models in terms of predictive ability, is also introduced. In order to obtain a concrete sense of the performances of the various approaches, we conduct a numerical simulation experiment and an empirical study of the returns of a stock (IBM) listed on the New York Stock Exchange (NYSE). From our numerical simulation, it seems that no approach always outperforms the others. In the empirical analysis, the best model suggested by the mixed approach with the adjusted asymmetric loss function seems to be a more satisfactory choice, compared with those identified by some other approaches applied. Also, in both the simulation and the empirical analysis, greater discrimination among the candidate models is achieved by the mixed approach with the adjusted asymmetric loss function than by the others.

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