



THE UNIVERSITY OF CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Application of Supervised Learning Models in Financial Time Series Forecasting

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ABSTRACT

Many prediction studies for asset pricing focus on using macroeconomic indicators, such as CPI and GDP, to train the predicting model. But few of them succeed in doing so, and it is very hard to make predicting model fully algorithmic. An alternative and popular way is to treat asset price as a financial time series and study the endogenous pattern of financial time series. This paper tries to compare the predicting power of several different types of regression model in financial time series problem. The objective of this paper is to examine the feasibility of simple statistical learning models including support vector regression (SVR) and K-nearest neighbors (KNN) in financial time series forecasting by comparing it with more complex statistical learning models such as artificial neural network (ANN). Several assets include stock, gold and oil are used as the data set. The research shows that SVR and KNN outperform ANN significantly based on the criteria of mean absolute value (MAE) in stock and gold price predicting. While in oil markets, all three methods behave similarly. We also simulate 100 sets of 15 years artificial return data which follows GARCH model, and perform all three methods on artificial return data.

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