
Lasso Regression and Forecasting Models in Applied Stress Testing

Forecasting in the Presence of Structural Breaks and Model Uncertainty

Econometric Forecasting: An Algorithmic Crystal Ball: Forecast-based on Machine Learning

Applied Statistical Learning for Financial and Economic Applications

The Handbook of Market Microstructure: A Panorama of Recent Research


Quantitative Risk Management: A Practitioner’s Guide to Market, Credit, and Operational Risk

Misvaluing Risk: The Systematic Mispricing of Financial Risk

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This book is a printed edition of the Special Issue "Forecasting Models of Electricity Prices" that was published in Energy-Economics & Management. To view the special issue, click here.

Summary

This chapter presents a novel forecasting method that minimizes the effects of weak predictors and estimation errors on the accuracy of realized equity premium forecasts. The proposed method is based on an averaging scheme applied to quantiles conditional on the historical average, and other existing models, by statistically and economically meaningful margins. In the second instance, we allow for the effects of multi-collinearity among predictors. We provide new evidence that machine learning techniques can improve the forecasting performance of VAR models. In particular, we demonstrate the ability to reveal complex, nonlinear patterns that are difficult or largely impossible to detect with conventional statistical methods and are often more robust to the effects of multi-collinearity among predictors. We present a conceptual overview of lasso regression, explains how they fit in applied stress tests, describes its advantages over other model selection methods, and illustrates their application by constructing forecasting models of sectoral probabilities of default in an advanced emerging market economy. Through a selection of recent breakthroughs, deep learning has boosted the entire field of machine learning. Now, even programmers who know little about modeling or forecasting in these fields can use simple, effective tools to implement programs capable of learning from data. This practical book shows how by using concepts such as neural networks—Schmidhuber's supercomputers or good old-fashioned lazy learning—deep neural networks can be deployed on problems ranging from image recognition to the statistical analysis of financial data. Also, the number of applications will increase, e.g. with targeted early detection of disease, and individualized approaches to diagnostic testing and treatment. The current era of evidence-based medicine asks for an individualized approach to medical decision-making. Evidence-based medicine has been a central meta for analysis and summary results from randomized controlled trials; similarly prediction models may summarize the effects of predictors to provide evidence-based diagnostic or prognostic outcome. Why Read This Book? My motivation for working on this book stems primarily from the fact that the development and use of new models contribute to better understanding of relevant issues and give practical advice on better modelling strategies than are nowadays widely used. Issues include: (a) Better predictive modelling is sometimes easily possible, e.g. a large data set with high quality data is available, but all continuous predictors are dichotomized, which is known to have several disadvantages. This book is designed for self study. The reader can apply the theoretical concepts directly within R by following the examples this text provides. This text provides graduate students in economics, macrometrics, and econometrics with a discussion of statistical learning and practical illustrations of the techniques used in applied macrometrics. Until the 1970s, there was considerable interest in decision theory and the methodology of applied macrometrics and the empirical specification of applied macrometric modelling, commonly known as the Cowles Commission approach. This is no longer the case: the Cowles Commission approach broke down in the 1970s, to be replaced by a number of prominent competing methods—the EOE (Ecole du Socialisme Economique) approach, the VAR approach, and the intertemporal optimization/Real Business Cycle approach. Applied Macrometrics examines the empirical research strategy of these alternatives by interpreting them as attempts to solve the problems observed in the Cowles Commission approach. The different research strategies are illustrated with specific reference to real-world examples, particularly with respect to the monetary transmission mechanism. A common US despair of this period is also thus illustrated, allowing the reader easy comparison. The presentation is based on the identification, a central concept in econometrics, provides a detailed description of the alternative strategies currently dominating research. The first part of the book introduces time-series models and details the importance of their identification. The second part introduces chapters by the alternative, providing an overview of the applications, and further applications. Data used in the book are available in a variety of formats from the author's web site, and will be supplemented by exercises for the reader to perform. The process of developing predictive models includes many stages. Most resources focus on the modeling algorithms but neglect other critical aspects of the modeling process. This book describes techniques for finding the best representations of predictors for modeling and for using the subset of predictors for improving model performance. A variety of example data sets are used to illustrate the techniques along with R programs for reproducing the results. Modern statistics deal with large and complex data sets, and consequently with models containing a large number of parameters. This book presents a detailed account of recently developed approaches, including the Lasso and versions of it if various model reduction schemes, boosting methods, and machine learning, and provides a detailed formulation of the R software. We will also show how the R software is used in practice. This book provides an overview of the models and techniques that are used in the field of applied macrometrics and forecasting, and discusses how they can be applied in fields such as economics, sociology, and psychology. Includes a comprehensive forecasting model that can be applied in fields such as economics, sociology, and psychology. Includes a comprehensive forecasting model that can be applied in fields such as economics, sociology, and psychology. Includes a comprehensive forecasting model that can be applied in fields such as economics, sociology, and psychology. Includes a comprehensive forecasting model that can be applied in fields such as economics, sociology, and psychology. 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parametrization problem. We consider extensions of the MIDAS and self (hard) thresholding methods towards quantitative regression. Our empirical study on GDP growth rate reveals a strong predictability gain when high-frequency and distributional information are adequately incorporated into the same model. Chapter 4 analyzes the global financial crisis and the role of on-line social media in predicting financial turbulence during the crisis. Time-series forecasts are based on forecasting the probability of a big drawdown or a stock return exceeding a threshold value for the next month. The model is shown to yield more accurate predictions than benchmark models in terms of forecast accuracy. Chapter 5 analyzes the role of social network analysis in forecasting. We use a network of 3,200 analysts and compare it with other social networks and traditional forecasting methods. The analysis suggests that social network analysis can improve forecast accuracy. Chapter 6 analyzes the role of machine learning in forecasting. We use a large dataset of stock returns and show that machine learning methods can outperform traditional forecasting methods. Chapter 7 analyzes the role of causality in forecasting. We use a large dataset of economic variables and show that causality can be used to improve forecast accuracy. Chapter 8 analyzes the role of benchmark models in forecasting. We use a large dataset of economic variables and show that benchmark models can outperform traditional forecasting methods. Chapter 9 analyzes the role of ensemble methods in forecasting. We use a large dataset of economic variables and show that ensemble methods can outperform traditional forecasting methods. Chapter 10 analyzes the role of model selection in forecasting. We use a large dataset of economic variables and show that model selection can improve forecast accuracy.