

Forecasting, Structural Time Series Models and the Kalman Filter

In this book, Andrew Harvey sets out to provide a unified and comprehensive theory of structural time series models. Unlike the traditional ARIMA models, structural time series models consist explicitly of unobserved components, such as trends and seasonals, which have a direct interpretation. As a result the model selection methodology associated with structural models is much closer to econometric methodology. The link with econometrics is made even closer by the natural way in which the models can be extended to include explanatory variables and to cope with multivariate time series. From the technical point of view, state space models and the Kalman filter play a key role in the statistical treatment of structural time series models. The book includes a detailed treatment of the Kalman filter. This technique was originally developed in control engineering, but is becoming increasingly important in fields such as economics and operations research. This book is concerned primarily with modelling economic and social time series, and with addressing the special problems which the treatment of such series poses. The properties of the models and the methodological techniques used to select them are illustrated with various applications. These range from the modelling of trends and cycles in US macroeconomic time series to an evaluation of the effects of seat belt legislation in the UK.

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ANDREW C. HARVEY

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