

Preface

This book is an extended revision of *Modelling Irregularly Spaced Financial Data – Theory and Practice of Dynamic Duration Models* (Hautsch 2004) which has been written as a doctoral dissertation at the Department of Economics at the University of Konstanz. Six years later, when I started thinking about a second edition of this book accounting for recent developments in the area of high-frequency finance, I realized that an extension of the scope of the book and the inclusion of more topics and material are inevitable. Given the developments in high-frequency finance, the number of new approaches and the current challenges induced by technological progress in market structures as well as in the trading industry, I decided to change the title of the book, to revise and restructure existing material and to include additional topics resulting in a new monography.

Compared to Hautsch (2004), the list of topics has been extended, among others, by various types of univariate and multivariate multiplicative error models, autoregressive count data approaches, dynamic specifications for integer-valued variables as well as models for quote dynamics. Moreover, different approaches to quantify intraday volatility are discussed involving realized volatility measures, trade-based volatility concepts, and intensity-based measures. A further focus lies on the modeling of liquidity and order book dynamics. Finally, institutional settings, market structures, issues of data preparation, preprocessing, and implementation pitfalls as well as illustrations of the empirical properties of high-frequency data are discussed more extensively and thoroughly using updated data from trading at the New York Stock Exchange, NASDAQ and the Deutsche Börse.

The book is intended for researchers interested in methods, approaches and applications in the area of high-frequency econometrics. Moreover, it is written for students and scholars covering this subject, for instance, in a course on financial econometrics, financial statistics, or empirical finance. Students using the book should have a basic knowledge in mathematical statistics, time series analysis, and econometric estimation theory. Finally, the book addresses the needs of financial practitioners who require statistical methods to model and predict high-frequency market processes as well as intraday volatility and liquidity dynamics.

Needless to say that a book focusing on a rapidly developing and growing field, such as high-frequency financial econometrics, is never complete and entirely up-to-date. Moreover, it is impossible to cover *all* specific topics, approaches, and applications. Furthermore, it is obvious that each topic could be addressed in more depth both from a methodological (and mathematical) viewpoint and from an applied side. In fact, some of the topics, such, for instance, the concept of realized volatility, are only touched without going into deep mathematical details. Therefore, I tried to find a compromise between elaborateness, compactness, and topical broadness.

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