

Universitext

For other titles published in this series, go to
www.springer.com/series/223

Jürgen Franke • Wolfgang Karl Härdle
Christian Matthias Hafner

Statistics of Financial Markets

An Introduction

Third Edition

 Springer

Prof. Dr. Jürgen Franke
TU Kaiserslautern
FB Mathematik
Erwin-Schrödinger-Str.
67663 Kaiserslautern
Gebäude 48
Germany
franke@mathematik.uni-kl.de

Prof. Dr. Christian Matthias Hafner
Université Catholique de Louvain
Inst. Statistique
Voie du Roman Pays 20
1348 Leuven-la-Neuve
Belgium
christian.hafner@uclouvain.be

Prof. Dr. Wolfgang Karl Härdle
Humboldt-Universität zu Berlin
Ladislaus von Bortkiewicz Chair of Stati
C.A.S.E. Centre for Applied
Statistics a
School of Business and Economics
Unter den Linden 6
10099 Berlin
Germany
haerdle@wiwi.hu-berlin.de
and
Graduate Institute of Statistics
National Central University
Taiwan

Editorial board:

Sheldon Axler, San Francisco State University
Vincenzo Capasso, Università degli Studi di Milano
Carles Casacuberta, Universitat de Barcelona
Angus MacIntyre, Queen Mary, University of London
Kenneth Ribet, University of California, Berkeley
Claude Sabbah, CNRS, École Polytechnique
Endre Süli, University of Oxford
Wojbor Woyczyński, Case Western Reserve University

ISBN 978-3-642-16520-7 e-ISBN 978-3-642-16521-4
DOI 10.1007/978-3-642-16521-4
Springer Heidelberg Dordrecht London New York

© Springer-Verlag Berlin Heidelberg 2011

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Cover design: deblik

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Handwritten notes covering various topics in financial econometrics, including regression analysis, time series models (AR, MA, ARMA), and econometric theory. The notes are densely packed with mathematical derivations and definitions.

1. **Regression Analysis:** Discusses the linear regression model $Y = \beta_0 + \beta_1 X + \epsilon$, the method of least squares, and the properties of the OLS estimator. It includes the normal equations and the derivation of the variance-covariance matrix of the OLS estimator.

2. **Time Series Models:** Covers Autoregressive (AR) and Moving Average (MA) processes. It discusses stationarity, the unit root test, and the cointegration of non-stationary series. The ARMA model is also discussed, along with the Kalman filter for state space models.

3. **Econometric Theory:** Discusses the relationship between the structural form and the reduced form of a system of equations. It covers the identification problem and the consistency of the two-stage least squares (2SLS) estimator.

4. **Other Topics:** Includes notes on the random walk hypothesis, the efficient market hypothesis, and the Black-Scholes model for option pricing.

Figure 0.3: Notes of a student for the exam of a course based on this book.

