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2.7.1. Large panel data criteria 2.8. Chapter 2 highlights; Chapter 3. Least Squares Estimation (LSE) and Kalman Filtering (KF) for Factor Modeling: A Geometrical Perspective; 3.1. Introduction; 3.2. Why LSE and KF in factor modeling?; 3.2.1. Factor model per return; 3.2.2. Alpha and beta estimation per return; 3.3. LSE setup; 3.3.1. Current observation window and block processing; 3.3.2. LSE regression; 3.4. LSE objective and criterion; 3.5. How LSE is working (for LSE users and programmers); 3.6. Interpretation of the LSE solution; 3.6.1. Bias and variance; 3.6.2. Geometrical interpretation of LSE 3.7. Derivations of LSE solution; 3.8. Why KF and which setup?; 3.8.1. LSE method does not provide a recursive estimate; 3.8.2. The state space model and its recursive component; 3.8.3. Parsimony and orthogonality assumptions; 3.9. What are the main properties of the KF model?; 3.9.1. Self-aggregation feature; 3.9.2. Markovian property; 3.9.3. Innovation property; 3.10. What is the objective of KF?; 3.11. How does the KF work (for users and programmers)?; 3.11.1. Algorithm summary; 3.11.2. Initialization of the KF recursive equations; 3.12. Interpretation of the KF updates 3.12.1. Prediction filtering, equation [3.34]; 3.12.2. Prediction accuracy processing, equation [3.35]; 3.12.3. Correction filtering equations [3.36]-[3.37]; 3.12.4. Correction accuracy processing, equation [3.38]; 3.13. Practice; 3.13.1. Comparison of the estimation methods on synthetic data; 3.13.2. Market risk hedging given a single-factor model; 3.13.3. Hedge fund style analysis using a multi-factor model; 3.14. Geometrical derivation of KF updating equations; 3.14.1. Geometrical interpretation of MSE criterion and the MMSE solution; 3.14.2. Derivation of the prediction filtering update

Sommario/riassunto

With recent outbreaks of multiple large-scale financial crises, amplified by interconnected risk sources, a new paradigm of fund management has emerged. This new paradigm leverages "embedded" quantitative processes and methods to provide more transparent, adaptive, reliable and easily implemented "risk assessment-based" practices. This book surveys the most widely used factor models employed within the field of financial asset pricing. Through the concrete application of evaluating risks in the hedge fund industry, the authors demonstrate that signal processing techniques are an interest