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Realized Variance; 1.4.1.1 Empirical Application; 1.4.2 Realized Covariance; 1.4.2.1 Realized Quadratic Covariation; 1.4.2.2 Realized Bipower Covariation; Acknowledgments; part one Autoregressive Conditional Heteroskedasticity and Stochastic Volatility; 2 Nonlinear Models for Autoregressive Conditional Heteroskedasticity; 2.1 Introduction; 2.2 The Standard GARCH Model; 2.3 Predecessors to Nonlinear GARCH Models; 2.4 Nonlinear ARCH and GARCH Models 2.4.1 Engle's Nonlinear GARCH Model2.4.2 Nonlinear ARCH Model; 2.4.3 Asymmetric Power GARCH Model; 2.4.4 Smooth Transition GARCH Model; 2.4.5 Double Threshold ARCH Model; 2.4.6 Neural Network ARCH and GARCH Models; 2.4.7 Time-Varying GARCH; 2.4.8 Families of GARCH Models and their Probabilistic Properties; 2.5 Testing Standard GARCH Against Nonlinear GARCH; 2.5.1 Size and Sign Bias Tests; 2.5.2 Testing GARCH Against Smooth Transition GARCH; 2.5.3 Testing GARCH Against Artificial Neural Network GARCH; 2.6 Estimation of Parameters in Nonlinear GARCH Models; 2.6.1 Smooth Transition GARCH
2.6.2 Neural Network GARCH2.7 Forecasting with Nonlinear GARCH Models; 2.7.1 Smooth Transition GARCH; 2.7.2 Asymmetric Power GARCH; 2.8 Models Based on Multiplicative Decomposition of the Variance; 2.9 Conclusion; Acknowledgments; 3 Mixture and Regime-Switching GARCH Models; 3.1 Introduction; 3.2 Regime-Switching GARCH Models for Asset Returns; 3.2.1 The Regime-Switching Framework; 3.2.2 Modeling the Mixing Weights; 3.2.3 Regime-Switching GARCH Specifications; 3.3 Stationarity and Moment Structure; 3.3.1 Stationarity; 3.3.2 Moment Structure
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4.3.3 Statistical Factor Covariance

Sommario/riassunto

A complete guide to the theory and practice of volatility models in financial engineering Volatility has become a hot topic in this era of instant communications, spawning a great deal of research in empirical finance and time series econometrics. Providing an overview of the most recent advances, Handbook of Volatility Models and Their Applications explores key concepts and topics essential for modeling the volatility of financial time series, both univariate and multivariate, parametric and non-parametric, high-frequency and low-frequency. Featuring contributions f