

Index

- α -mixing, *see* strong mixing
- β -mixing, 21
- ACF, *see* autocorrelation function
- ADF, *see* augmented Dickey–Fuller test
- ADL, *see* autoregressive distributed lag
- AIC, *see* Akaike information criterion
- Akaike information criterion, 91, 219, 331
- amplitude, 103
- AR, *see* autoregressive
- ARFIMA, *see* autoregressive fractionally integrated moving average
- ARMA, *see* autoregressive moving average
- augmented Dickey–Fuller test, 177
- autocorrelation function, 17, 20, 24, 27, 30, 31, 33, 45, 63, 83, 133
- autocovariance function, 17
- autoregressive, 43
- autoregressive distributed lag, 206
- autoregressive fractionally integrated moving average, 180
- autoregressive moving average, 42
- autoregressive representation, 56
- band spectral regression, 205
- band-pass filter, 110
- bandwidth, 313
- Bartlett window, 131
- Baxter–King filter, 114
- Bayes’ theorem, 252
- Bayesian information criterion, 92, 218, 219
- Bayesian vector autoregression, 261
- BEKK model, 293
- best linear predictor, 18, 241, 250, 383
- Beveridge–Nelson decomposition, 169
- BIC, *see* Bayesian information criterion
- block bootstrap, 138
- BLP, *see* best linear predictor bootstrap, 135, 136
- Brier score, 390
- Brownian bridge, 134
- Brownian motion, 347, 349, 353, 363, 364
- BVAR, *see* Bayesian vector autoregression
- càdlàg, *see continue à droite, limite à gauche*
- calendar time, 355, 361
- Cauchy–Schwarz inequality, 368
- causal solution, 45
- CCC, *see* constant conditional correlation
- central limit theorem, 22, 25, 57, 78, 129, 132, 154, 161, 168, 173, 200, 220, 281, 330
- chaos, 274
- Cholesky factor, 214
- Christiano–Fitzgerald filter, 114
- CLT, *see* central limit theorem
- coherency, 199
- cointegration, 226
- compatibility condition, 340
- conditional likelihood, 73
- conjugate prior, 254
- constant conditional correlation, 293
- continue à droite, limite à gauche*, 303
- copula, 295
- correlogram, *see* autocorrelation function
- Cramer–Rao efficiency bound, 78
- cross-autocovariance, 197
- cycle, 2, 3, 12, 53, 88, 95, 102, 115, 117, 122, 126, 387
- DCC, *see* dynamic conditional correlation
- DFT, *see* discrete Fourier transform
- Dickey–Fuller test, 176
- Diebold–Mariano test, 390
- difference equation, 53
- difference stationary, 169
- Dirac delta function, 107
- discrete Fourier transform, 105, 118
- distributed lag, 206
- Durbin–Levinson algorithm, 19
- Durbin–Watson statistic, 84
- dynamic conditional correlation, 295
- dynamic factor model, 230
- EGARCH, *see* exponential GARCH
- empirical Bayes, 263
- empirical process, 172
- ergodicity, 22
- error correction, 208
- EWMA, *see* exponentially weighted moving average
- exogeneity, 141
- exponential GARCH, 284
- exponentially weighted moving average, 113, 244
- factor analysis, 230
- fan charts, 387
- fast Fourier transform, 119
- FCLT, *see* functional central limit theorem
- FFT, *see* fast Fourier transform
- FIGARCH, *see* fractional integrated GARCH
- focused information criterion, 91
- fractional integrated GARCH, 290
- frequency domain, 102
- functional central limit theorem, 174
- fundamental, 48
- gain, 109
- GARCH, *see* generalized autoregressive conditional heteroskedasticity
- Gauss–Markov theorem, 76

- Gauss–Seidel algorithm, 215
- Gaussian process, 16
- generalized autoregressive conditional heteroskedasticity, 276
- generalized method of moments, 144, 361
- generalized spillover index, 215
- Gibbs sampling, 259
- Gibrat's law, 306
- GJR GARCH, 284
- GMM, *see* generalized method of moments
- gradient descent, 70
- Granger causality, 210
- Grenander's conditions, 155
- Hampel filter, 164
- HAR, *see* heterogeneous autoregressive model
- HARCH, *see* heterogeneous autoregressive conditional heteroskedasticity
- harmonic frequencies, 118
- HCCME, *see* heteroskedasticity consistent covariance matrix estimator
- Herrndorf, 131
- heterogeneous autoregressive conditional heteroskedasticity, 291
- heterogeneous autoregressive model, 208
- heteroskedasticity consistent covariance matrix estimator, 83
- highest posterior density, 255
- Hill estimator, 307
- Hodrick–Prescott filter, 13, 163
- HPD, *see* highest posterior density
- $I(1)$, 169
- IGARCH, *see* integrated GARCH
- ignorance prior, 254
- improper prior, 254
- impulse response function, 60
- initial conditions, 65
- integrated GARCH, 281
- invertible, 48
- Itô's rule, 352, 360, 365
- Jeffrey's prior, 257
- Kalman filter, 73
- Kalman gain, 243
- Kalman smoother, 246
- kernel estimation, 361, 362, 370
- kernel smoothing, 160
- KPSS test, 177
- LAD, *see* least absolute deviation
- lag operator, 43
- lag polynomial, 43
- Lagrange multiplier, *see* score test
- LASSO, 92
- law of iterated expectation, 360
- law of large numbers, 22, 63, 78, 89
- least absolute deviation, 76
- likelihood function, 68
- likelihood ratio, 82
- linear filters, 62
- linear process, 23
- Ljung–Box statistic, 83
- LLN, *see* law of large numbers
- LM, *see* Lagrange multiplier
- local likelihood, 326
- local linear smoothing, 321
- local projection method, 222
- local time, 362, 363
- local-level model, 239
- locally stationary processes, 334
- log periodogram regression, 180
- log rank estimator, 308
- long memory, 58
- long-run variance, 25
- Lyapunov exponent, 274
- MA, *see* moving average
- MA representation, 56
- Markov chain Monte Carlo, 255
- Markov process, 22
- Markov switching, 269
- martingale, 22, 284, 348, 349, 363, 365
- martingale difference sequence, 23
- matrix normal distribution, 217, 222
- MCMC, *see* Markov chain Monte Carlo
- MDS, *see* martingale difference sequence
- mean reversion, 353
- mean squared error, 161, 311, 325, 327, 385
- method of moments, 74
- Metropolis–Hastings, 259
- Minnesota prior, 261
- mixed normal distribution, 362, 366, 370
- MoM, *see* method of moments
- Moore–Penrose estimator, 339
- moving average, 43
- MSE, *see* mean squared error
- multiple testing, 32
- NARVAX model, 316
- nearest neighbors, 322
- neural networks, 326
- OCMT, *see* one covariate multiple testing
- one covariate multiple testing, 343
- out-of-sample R^2 , 386
- PACF, *see* partial autocorrelation function
- pairwise pseudo-likelihood, 75
- parametric bootstrap, 137
- partial autocorrelation function, 18
- persistence, 60
- phase, 103
- polynomial lag, 206
- power spectrum, 105
- prediction equation, 246
- prewhitening, 108
- profile likelihood, *see* profiling
- profiling, 69, 72, 158, 186, 269
- QMLE, *see* quasi-maximum likelihood estimator
- quantile function, 303
- quantile regression, 166
- quantilogram, 309
- quasi-maximum likelihood estimator, 68
- random walk, 167, 348, 351
- recurrence, 172
- recurrent process, 363
- regime switching, 266
- rolling window, 152
- roots, 50
- SCAD, *see* smoothly clipped absolute deviation
- score test, 82
- seasonal adjustment, 181
- seasonality, 1, 2, 5, 7, 10, 12, 92, 95, 102, 108, 116, 141, 151, 171, 181, 182
- self normalization, 134
- semimartingale, 349, 363, 365
- sieve estimators, 323
- skill score, 389

430 **Index**

- SMA, *see* smooth moving average filter structural vector autoregression, 223
smooth moving average filter, 112 subsampling, 139
smoothly clipped absolute deviation, 342 SVAR, *see* structural vector autoregression
sparse, 70 test sample, 385
spectral density, 105, 106 threshold ARMA, 267
spectral distribution function, 105 tightness, 174
spectral representation theorem, 105 Toeplitz matrix, 18
Spiegelhalter's DIC, 91 training sample, 385
spline smoothing, 163 transfer function, 109
state variable, 238 trend, 1, 2, 10, 141, 153, 154
state vector, 238 ULLN, *see* uniform law of large numbers
stationarity, 351 uniform law of large numbers, 145
STL, 188 unit root, 167, 351, 363
stochastic equicontinuity, 174 update equations, 246
strong mixing, 21 Yule–Walker equations, 66
strong stationarity, 15 Zipf's law, 306