

Author Index

- Abadie, A., 370, 378–380, 452

Abraham, K., 442

Abramowitz, M., 178

Ahn, H., 38, 71, 72, 221, 240, 311, 317, 326, 331, 363

Ai, C., 269, 270

Akaike, H., 412, 455

Akashi, K., 161

Alessi, L., 331, 333, 336, 337, 338

Amemiya, T., 27, 69, 165, 167, 219, 430, 462

Anderson, T.W., 29, 51, 67, 79, 158, 159, 173, 240, 266, 308, 324, 418

Antweiler, W., 281

Arellano, M., 69–71, 74, 98, 244, 391

Ashenfelter, O., 2, 284

Athey, S., 440, 442, 444
- Bai, J., 11, 153–155, 319, 323, 324, 329–333, 336, 337, 371, 372

Balazsi, L., 282

Balestra, P., 83, 85

Baltagi, B.H., 43, 117, 120, 156, 281, 355

Banerjee, A., 156

Barth, J., 400, 401

Bartolucci, F., 211, 213

Bassett, G., 274

Bates, G., 373

Beckett, S., 2

Bekker, P.A., 73

Bell, D., 369, 448

Belloni, A., 447

Ben-Porath, Y., 4

Bhargava, A., 77, 80, 89

Binder, M., 140

Biørn, E., 287

Blundell, R., 83

Bond, S., 69, 70, 74, 98, 418

Bonhomme, S., 305, 306, 391
- Borus, M.E., 2

Bover, O., 71, 244

Box, G.E.P., 52, 370

Breiman, L., 441, 444

Breitung, J., 156

Bresson, G., 442

Breusch, T.S., 69, 354, 397, 398, 406

Butler, J.S., 178
- Cai, L., 121, 423

Carrion-i-Silvestre, J., 155

Carro, J.M., 208

Carroll, R.J., 269

Case, A.C., 346

Chamberlain, G., 54, 55, 58, 85, 115, 129, 130, 174, 179, 189, 195, 200, 240

Chang, Y., 153

Charlier, E., 241

Chen, B., 423

Chen, K.M., 455

Chen, S., 221, 223

Chen, X., 269

Chernozhukov, V., 447, 450–452

Cheser, A.D., 398

Chetverikov, D., 447

Chiang, M.H., 144, 145

Ching, H.S., 369, 374

Chintagunta, P., 196, 199

Choi, I., 151, 154–156

Choo, E., 456

Chou, S., 365

Chow, G.C., 423, 426

Chu, J., 149, 150

Chudik, C., 68, 69, 443

Chue, T.K., 155

Chui, C.K., 269

Coleman, J.S., 184

Conley, T.G., 342

Author Index

499

- Cox, D.R., 211, 254
 Cripps, T., 194
- Damrongplasit, K., 190, 192, 193,
 196, 201, 202
 Das, S., 156
 Davis, P., 281
 De Finetti, B., 411
 Deaton, A., 192, 302
 Dehejia, R.H., 365
 Dempster, A.P., 11
 Dhaene, G., 206, 306
 Dickey, D.A., 149, 150
 Donald, S., 73
 Duan, J.C., 258, 259
- Eicker, F., 241
 Engle, R.F., 142
- Fan, J., 366, 445, 446
 Fazzari, S.M., 418
 Fisher, R.A., 151
 Florens, J.P., 255
 Fomby, T.B., 442
 Fougère, D., 255
 Fujiki, H., 463
 Fuller, W.A., 149, 150
- Galvao, A.F., 275
 Gan, L., 272
 Gijbels, I., 366
 Girma, S., 303
 Goldberger, A.S., 454
 Gorseline, D.E., 129
 Granger, C.W.J., 142, 373
 Grassett, L., 162
 Griliches, Z., 108, 129, 130, 289, 291,
 294, 297
 Groen, J.J.J., 157
 Gronau, R., 219
 Grunfeld, Y., 390
- Hahn, N., 67, 73, 97, 100, 101, 205
 Han, A., 68, 88, 134, 255, 348
 Hansen, B., 144, 357
 Harvey, A.C., 428
 Hausman, J., 30, 37, 73, 118, 169, 202, 227,
 243, 255, 301
 Heckman, J.J., 176, 183, 187, 195–198, 216,
 219, 220, 225, 230, 432
 Henderson, D.J., 269
 Hildreth, C., 405
 Hoch, I., 16
- Hong, Y., 272, 423
 Honoré, B., 190, 192, 200, 201, 208, 210, 230,
 235, 238, 239, 244, 267
 Horenstein, J.L., 331
 Hotelling, H., 11
 Houck, J.P., 405
 Hsiao, C., 29, 49, 51, 67, 79, 86, 89, 91, 93,
 101, 140, 159, 162, 169, 192, 193, 201,
 202, 266, 287, 314, 317, 325, 327, 330,
 333, 334, 337, 359, 365, 369, 372–374,
 378–380, 384, 396, 404, 413, 416–418,
 433, 435, 437, 440, 449, 450, 463
 Hsieh, Y.W., 455
 Hu, L., 244, 248
 Huang, Y., 444, 446
 Hubbard, R.G., 418
- Im, K.S., 151, 155
 Imbens, G.W., 442
- Jenkins, D., 52, 370
 Jochmans, K., 206, 306
 Johansen, S., 145, 148
 Jorgenson, D.W., 418
 Ju, G., 272
 Judson, R.A., 73
 Jung, B., 281
 Juster, T., 2
- Kalb, G., 121
 Kao, C., 144, 145, 156, 287
 Kapetanios, A., 440
 Kapetanios, G., 154, 312
 Kapoor, M., 345, 347
 Kapteyn, A., 281
 Kato, K., 275
 Ke, X., 381, 382
 Kelejian, H.H., 355, 406
 Kesina, M., 239, 267
 Kiefer, N.M., 52
 Kiviet, H.H., 73, 417
 Kleibergen, F., 157
 Klein, L.R., 454
 Klette, T.J., 287
 Koenker, R., 72, 274, 328
 Koning, R.H., 285
 Kotchoni, R., 454
 Kraft, A., 400
 Kraft, J., 400
 Krishnakumar, J., 287
 Kruniger, H., 88
 Kuersteiner, G., 67, 73
 Kuh, E., 49, 390

500 **Author Index**

- Kunitomo, N., 161
- Kyriazidou, E., 190, 192, 196, 199–201, 210, 230, 239, 240, 241, 242, 249, 250, 301
- Labeaga, J., 244
- Lalonde, R., 365
- Lamarche, C., 276
- Lancaster, T., 398
- Larsson, R., 312
- Lee, J., 155
- Lee, L.F., 169, 349
- Lee, M.J., 182
- Lee, Y.H., 311, 317
- LeSage, J., 349, 350
- Levin, A., 149, 150
- Li, K.T., 369
- Li, Q., 269, 270, 272, 435, 437
- Liang, Z., 435, 437
- Lin, C., 149, 150
- Lin, M.J., 455
- Lin, X., 269
- Lindley, D.V., 416
- Liu, E., 365
- Liu, T.C., 133
- Lu, X., 393
- Lv, J., 445
- Maasoumi, E., 384, 387, 388
- Machado, J.A.F., 72
- MaCurdy, T.E., 6, 52, 69
- Maddala, G.S., 24, 29, 151, 154, 165, 465
- Malinvaud, E., 58
- Manresa, E., 305
- Manski, C.F., 180, 181, 240
- Mao, G., 359, 360
- Martins-Filho, C., 269
- Matillion, 442
- Matsumoto, T., 365
- Matyas, L., 282
- McCoskey, S., 156
- McCullah, P., 207
- McFadden, D., 165, 169
- McKenzie, D.J., 303
- Meghir, C., 418
- Mehta, J.S., 406
- Melenberg, B., 241
- Min, C.K., 413
- Mizon, G.E., 69
- Modigliani-Miller, F., 418
- Moffitt, R., 178, 303
- Montes-Rojas, G.V., 275
- Moon, H.R., 11, 38, 97, 100, 101, 103–106, 153 154, 317, 323
- Mouchart, M., 255
- Mundlak, Y., 32–34, 55, 85, 400
- Nasreen, S., 155
- Nerlove, M., 61, 62, 65, 67, 79, 83, 85, 176
- Nevale, K., 442
- Newey, W., 73, 205, 221, 242, 269, 447
- Neyman, J., 50
- Ng, S., 153, 154, 330–333, 336, 337
- Nickell, S., 67
- Nigro, V., 211, 213
- Nijman, T.H.E., 228
- Okui, R., 72
- Owen, A.L., 73
- Pace, R.K., 349, 350
- Pagan, A., 354, 397, 398, 406
- Pakes, A., 289, 291, 294, 297
- Perktold, J., 196, 199
- Perron, B., 153, 154
- Pesaran, M.H., 68, 69, 86, 91, 101, 140, 141, 148, 151, 154, 312, 318, 319, 353, 355, 359, 360, 385, 396, 415–417, 433, 467
- Petersen, B.C., 418
- Phelps, E., 194, 196
- Phillips, G.D.A., 417
- Phillips, P.C.B., 11, 68, 88, 103–106, 144
- Pick, A., 359, 467
- Powell, J.L., 216, 218, 219, 221, 240, 363
- Prucha, I.R., 355
- Qu, X., 348, 349
- Quah, D., 149
- Rao, C.R., 398
- Ridder, G., 228, 229
- Robertson, D., 323, 326, 356, 363
- Robinson, P.M., 220, 221, 423, 447
- Rosenbaum, P.R., 363
- Rosenberg, B., 423
- Roy, N., 269
- Rubin, 161
- Rubin, D.B., 158, 161, 308, 324, 363
- Ruckstuhl, A.F., 269
- Sant, D., 426
- Sarafidis, V., 323, 326, 356
- Saranadasa, H., 11
- Sargan, J.D., 77, 80, 89, 356, 357
- Schmidt, P., 69, 71, 72, 311, 317, 326

Schnell, J.F., 287	van Soest, A., 241
Schuermann, T., 141, 148	Varian, H.R., 440, 442
Scott, E.L., 50	Vella, F., 304
Secrest, D., 178	Verbeek, M., 228, 304
Shen, X., 269	Vogelsang, T., 343
Shen, Y., 314, 319, 359, 360, 384, 463	Vytlacil, E., 432
Shin, Y., 151	
Sims, C., 133	Wachter, M.L., 429
Siow, A., 456	Wager, S., 444
Small, K., 169	Wahba, S., 365
Smith, L.V., 154	Wan, S.K., 369, 373, 374
Smith, R., 415	Wang, J., 444–446
Smith, R.J., 83, 415	Wang, L., 384, 388
Solon, G., 2, 284	Wang, T., 258, 259
Song, S., 281	Wansbeek, T., 73, 281, 285, 323
Stegun, J., 178	Weidner, M., 317, 323
Stephan, S.W., 406	Weiner, S.M., 141, 148
Stiglitz, J.E., 418	Weiss, A., 418
Stoker, T., 461	Westerlund, J., 312
Stroud, A.H., 178	White, H., 241, 272
Su, L., 393	Wilhelm, D., 287
Sun, B.H., 258, 259, 413	Willis, R., 198
Sun, Y., 423, 467	Wise, W., 227
Swamy, P.A.V.B., 390, 394, 397, 399, 401, 406	Wu, R.Y., 462
	Wu, S., 151, 154, 462
Tahmiscioglu, A.K., 86, 91, 396, 416–418, 433	
Tamer, E., 208	Xie, W., 334, 435, 437
Tarling, R., 194	Xie, Y., 330, 333, 334
Taylor, 118	Xu, Y., 372
Thiel, H., 462	
Tibshirani, R.J., 443	Yamagata, T., 154, 312, 323, 356
Tieslau, M., 155	Yang, Y., 385
Tosetti, E., 353	Yao, F., 269
Trognon, A., 79	
Tsiatis, A.A., 255	Zellner, A., 146, 392, 397, 407, 413
	Zhang, J., 94, 162, 317
Ullah, A., 269	Zhou, Q., 314, 319, 330, 333, 334, 337, 372, 378–380, 384, 449, 450

Subject Index

- accelerated failure time (AFT) model, 256
- aggregate data analysis
 - micro foundations in panel studies for, 7
- aggregate predictive models
 - big data analytics, 457–464
 - methods, 457–459
- aggregation, 457, 462
- AICC criterion, 369, 374–375
- Aitken estimation procedure, 117
- Aitken's theorem
 - linear regression model, 21
- Akaike Information Criterion (AIC)
- analysis of covariance test
 - coefficient variation, 398
- analysis of covariance tests
 - homogeneity, 47
 - individual- or time-specific effects, 43–50
 - investment theory and, 49–50
- analysis-of-covariance model
 - regression analysis, 19
- Anderson-Rubin limited information approach
 - dynamic simultaneous equation model, 158
- arbitrary error structure
 - linear-regression models, 54–59
- asymptotic covariance matrix
 - big data analytics, 452
 - minimum distance estimator, 101
- asymptotes
 - cross-sectionally dependent data, 340–341
 - dynamic models, 64
 - joint limit and sequential limit, 103, 104
 - multi-dimensional, 11
 - simulation methods, 277–279
- attrition
 - Gary income-maintenance experiment, 227–229
 - nonrandomly missing data, 223
 - probability model, 224–227
- attrition in panel surveys
 - nonrandomly missing data, 229
- augment Dickey Fuller (ADF) lag order
 - unit root test, 150
- autocorrelation estimates
 - heteroscedasticity autocorrelation consistent estimator, 53
- autoregressive moving average (ARMA), 182, 370
- average treatment effects (ATE), 384
- averaging method
 - panel studies, 373
- averaging methods
 - mean and scale corrected simple averaging, 373
 - mean corrected simple averaging, 373
- Bai & Ng information criterion
 - factor model, 330
- Bai and Ng information criterion
 - interactive effects model, 331
 - recursively iterating procedure, 332
- baseline hazard function, 254
- Bayesian Information Criterion (BIC)
- Bayesian estimation
 - dynamic random coefficients models, 417
- Bayesian solution
 - mixed fixed and random coefficient models, 409–411
- behavioral hypotheses
 - panel studies construction of, 4–5
- best linear unbiased estimator (BLUE), 19
 - generalized-least-squares-estimator as, 24
 - restrictions, 21
- Bhattacharya-Matusita-Hellinger measure, 384
- bias adjusted estimator
 - dynamic models, 204–208

Subject Index

503

- big data analytics K-means clustering, 441
- aggregate/disaggregate predictive models, 457–464
- asymptotic covariance matrix, regression coefficients, 452
- data-based or causal predictive models, 453–457
- high dimensional data interference, 442–446
- income tax deduction on net financial assets, 450
- low dimensional parameter inference, 446–453
- machine learning algorithms, 440–442
- Monte Carlo simulation, 449–450
- multiple-source data and time frequency differences, 464–467
- neural networks, 442
- nonparametric method, 444–447
- orthogonal projection, 448–449
- regression approach-variable selection, 442–444
- sample split double/debiased estimator, 447
- structural changes, 467–468
- support vector machines, 441
- unemployment duration and insurance, 452
- binary choice model
 - maximum score estimator, 180
- bounding parameters
 - dynamic models, 208–210
- Box-Jenkins ARMA method
 - policy assessment, 370
- Box-Jenkins procedure
 - serially correlated errors, 52
- British Household Panel Survey (BHPS), 2
- Brownian motion, 157
- budget share equations
 - panel data models, 243
 - sample selection models, 242
- California Tobacco Control Program (CTCP), 378–381
- capital-intensive firms
 - fixed-coefficient vs. mixed fixed and random coefficient comparisons, 422
 - mixed fixed and random coefficient estimation, 421
 - variable intercept model, 420
- causal predictive models, 453–457
- CD test
 - cross-sectional dependence, 355
- censored regression models
 - cross-sectional data, 214–219
 - dynamic Tobit models, 244–249
 - pairwise trimmed least squares and least absolute deviation estimators, 236–239
- Chamberlain arbitrary error structure model, 54–59
- Chamberlain minimum-distance estimator, 80
- structural equation model, 115
- Chinese Township and Village Enterprises panel survey, 3
- Choi unit root test, 151
- Closer Economic Partnership Arrangement (CEPA, Hong Kong), 374–378
- Cobb-Douglas production function
 - variable intercept models 16–18
- coefficient estimation
 - time-invariant variables, 183
- coefficient heterogeneity, 420
- coefficient variation testing
 - random-coefficient models, 397–399
- cointegration
 - estimation techniques, 143–148
 - heterogeneity, 145–148
 - homogeneity, 143–145
 - individual-specific PVAR, 135
 - likelihood estimation, 156
 - maximum likelihood estimator (MLE), 145–148
 - panel vector autoregressive model, 134
 - processes, 142–143
 - residual-based tests, 155
 - tests of, 155–157
 - vector error and, 142
- cointegration rank
 - vector error and, 148
- common correlated effects (CCE) approach
 - fixed-effects linear static model, 312–314
 - Pesaran CCE, 318
- common correlated effects pooled estimator (CCEP), 312
- complete heterogeneity
 - variable-coefficient models, 392
- complete structural system estimation
 - single-equation method, 118–121
- conditional inference, 37
 - fixed or random effects, 30
 - individual effects and attributes, 34
 - linear regression model, 35
- conditional maximum-likelihood estimation
 - dynamic models, 188–192
 - fixed-effects sample selection models, 240
- conditional mean approach
 - fixed-effects models, 85–88
 - linear difference method vs., 89

504 Subject Index

- consistent estimator
 - panel parametric approach, 173–176
 - semiparametric approach, 182–183
- control group, 361
- correlated fixed-effects models
 - panel pooled least squares estimator, 435–436
- correlated random-coefficients models, 431–437
- correlated random-effects models
 - cross-sectional data, 431–433
 - fixed-effects estimator, 434
 - group mean estimator, 433
 - panel data mean effects estimation, 433–437
 - semiparametric estimates, 437
- correlations
 - simultaneous-equation models, 109
 - triangular structure, 121–123
- count data models
 - estimation, 264–267
 - excess zeros, 264
 - negative binomial model, 263
 - Poisson model, 262–263
- counterfactuals, 468
- covariance estimator (CV)
 - covariance matrix, 53
 - defined, 21
 - least-squares dummy variable (LSDV), 66–67
 - method of moment derivation, 21
 - transformation matrix, 24
- covariance matrix
 - random-coefficient models, cross-sectional data, 404
- COVID-19 outcomes simulation, 384–386
- Cowles Commission structural equation model, 109
- Cox quadratic exponential model
 - dynamic model approximation, 211
- Cramer-Rao bound, 468
- cross-section-averaged-based estimator, 312
- cross-sectional data
 - CD dependence test, 355
 - censored regression models, 214–219
 - correlated data, 153–155
 - correlated random-effects models, 431–433
 - dependence, 339–341
 - dependence testing methods, 354–360
 - endogenously determined spatial weight matrix, 348–349
 - fixed-coefficient model, 392–393
 - fixed-coefficient models, 403
 - independent data, unit root tests, 149–153
 - Lagrangian Multiplier dependence test, 354
 - limitations of, 4
 - limited dependent variable model, 358–360
 - linear model of dependence, 354–355
 - linear models of dependence, 356–357
 - matrix exponential models, 349–351
 - mixed spatial and factor process, 351–353
 - modelling dependence in panel studies, 11
 - policy intervention measurement, 370
 - pricing behavior, variational-coefficient model, 400–401
 - program evaluation, 362–368
 - pseudo panels, 302–305
 - qualitative response models, 165–170
 - random-coefficient models, 404–407
 - sample selection models, 219–223
 - spatial error models, 343–345
 - spatial regressive models, 346–348
 - spatial weight matrix and spatial dependence, 341–343
 - special dependence coefficient zero test, 355
 - summary of approaches, 368
 - truncated models, 214–219
 - variable-coefficient models, 391–407
- cross-sectional units
 - mixed fixed and random coefficient models, 407–411
- Cross-validation, 442
- Current Population Survey and Social Security Administration (CPS-SSA) study, 248
- data based predictive models, 453–457
 - multiple-source data and time frequency differences, 464–467
- data generating process (DGP)
 - interactive effects models, 334–338
- data generating process (DGP)
 - quasi-likelihood estimation, 75
- decision trees
 - big data analytics, 441
- developing countries
 - panel surveys in, 3
- Development Research Institute (China), 3
- difference-in-difference (DID) approach
 - nonparametric evaluations, 367–368
- disaggregate predictive models
 - big data analytics, 457–464
- disaggregate treatment effects measurement
 - program evaluation, 384
- discrete data models, 165–170
- discrete time Markov chain modeling, 257–258
- discrete-response models
 - cross-sectional data, 165–170
- discretization of unobserved heterogeneity, 305–306
- distance function
 - GLS estimation, 112–113

Subject Index

505

- distributed lag estimation
 - common assumptions, 289
 - exogenous variable, prior structure, 290
 - exogenous variables, 290–294
 - lag coefficients, prior structure identification, 294–296
 - short panels, 288–297
 - testing, 296–297
- distributed lag models
 - limitations of, 5
- dummy variables
 - fixed-effects models, 18
- duration model
 - discrete time Markov Chain modeling, 258
 - proportional hazard model, 256
- duration models
 - accelerated failure time model, 256
 - cumulative duration of distribution, 251–253
 - discrete time Markov Chain modeling, 257
 - likelihood function, 253–254
 - proportional hazard model, 254
 - rating firm default probability example, 258–262
- Durbin regression
 - serially correlated errors, 51
- dynamic error-components
 - maximum likelihood estimation (MLE), 79
- dynamic fixed-effect models
 - covariance estimation, 67
- dynamic fixed-effects models
 - individual and time-specific effects, 96–101
 - individual and time-specific effects, 101
 - natural gas demand example, 83–85
 - serial correlations in residuals, 95–96
- dynamic model
 - random coefficient models, 414–418
- dynamic models
 - alternative approaches to dependence, 203–213
 - approximate model, 210–213
 - bias adjusted estimator, 204–208
 - bounding parameters, 208–210
 - conditional maximum likelihood estimator, 188–192
 - female employment example, 197–199
 - general model, 183–185
 - health shock response example, 205
 - household brand choices example, 199–201
 - individual-specific effects, cohort approach to, 192–193
 - initial conditions, 185–188
 - labor-participation decision model, 201–202
 - likelihood approach, 162–164
 - sample selection models, 249
 - spatial error model, 345
 - state dependence vs. heterogeneity, 193–196
 - Tobit models, 244–250
 - true vs. spurious dependence in, 195
- dynamic relationships
 - panel studies exploration of, 5
- dynamic simultaneous-equation model
 - Anderson-Rubin limited information approach, 158
 - basic properties, 157–159
 - instrumental variable estimator, 159
 - jackknife instrumental variable estimator (JIVE), 161
 - panel two-stage least squares estimator (P2SLS), 159
- dynamic simultaneous-equation models
 - generalized method of moments estimator, 160–161
- dynamic Tobit models
 - panel studies and, 8
- earnings-function structural model
 - attrition probability, 227
- economic behavior
 - dynamic models, state dependence, 194
 - panel studies of, 5
 - unionism impact on, 4
- economic models
 - omitted variables, 307
- efficiency, 27, 59, 308, 407
- eigenvalue, 61–62, 309–315, 340
- eigenvector, 61–62, 309–315
- endogenous variables
 - simultaneous-equation models, 108
- endogenously determed sample selection model
 - semiparametric two-step approach, 239–241
- endogenously determined spatial weight matrix
 - cross-sectional data dependence, 348–349
- English longitudinal Study of Aging, 3
- error components model, 408
- error-component assumption
 - random-effects model testing, 80–81
- error-component two-stage least-squares (EC2SLS) estimator
 - full information case, 120
 - unknown parameters, 117
- errors-in-variables models, 283–287
- estimation techniques
 - triangular structure, 123
 - variable-coefficient models, random coefficients, 394–397
- Euclidian norm, 104

506 Subject Index

- Europe
 - national surveys in, 2
- European Community Household Panel (ECHP), 2
- European Community Innovation Surveys CIS I and CIS II, 2
- excess zeros
 - count data models, 264
- exit intensity, 258
- exogenous variables
 - distributed lag estimation, 290–294
 - least squares estimator (LS), 65
 - simultaneous-equation models, 108
 - variable-coefficient models, 428–431
- F-statistic, 46–48
- F-tests
 - robust interference, 48
- Factor approach, 307–309
- factor dimensions
 - interactive effects models, 330–338
 - mixed spatial and factor process, cross-sectional data dependence, 351–353
- female employment
 - dynamic model of, 197–199
- fixed coefficients
 - variable-coefficient models, 399
- fixed effects
 - covariance estimation, 67
 - Michigan income dynamics example, 29
 - parameter estimation, 29–37
- fixed individual effects
 - mixed individual and random effects models, 326–329
- fixed time effects models
 - mixed fixed and random effects, 323, 326
- fixed-coefficient model
 - cross-sectional data, 392–393
 - prediction comparison, mixed fixed and random-coefficients models, 422
- fixed-coefficient models
 - cross-sectional data, 403
 - heterogeneous forecasting, 460–464
 - mixed fixed and random model comparisons, capital-intensive firms, 422
- fixed-effects estimation
 - correlated random-effects models, 434
- fixed-effects estimator
 - least absolute deviation estimator, 230–239
 - pairwise least squares, 230–239
- fixed-effects model
 - cointegration, 145
- fixed-effects models
 - conditional mean approach, 85–88
 - conditional or unconditional inference, 30
 - covariance estimation, 67
 - dummy-variable approach, 18
 - likelihood estimation, 85–89
 - linear dynamic models
 - least-squares estimation or quasi-difference estimation, 315–318
 - linear static models, common correlated effects approach, 312–314
 - linear static models, least squares estimator, 309–311
 - linear static models, overview, 309
 - linear static models, quasi-difference estimator, 311
 - minimum distance estimator, 88
 - misspecification tests, 37–38
 - mixed fixed-random effects models, 323–328
 - Monte Carlo simulations, 176
 - Monte Carlo studies, 319–323
 - panel parametric approach, 171–176
 - serially correlated errors, 52
 - simultaneous-equation models, 108
 - transformed estimator, 314–315
 - transformed likelihood approach, 86
- Frobenius norm, 104
- full-information estimation
 - complete structural system, 118–121
- fuzzy regression discontinuity (FRD), 365
- Gary income-maintenance experiment
 - attrition probability model, 227–229
- Gaussian quadrature formula
 - random-effects models, 178
- general method of moments (GMM) estimator
 - linear static fixed effects model, 311
- generalized method of moments (GMM) estimator
 - Arellano and Bond GMM, 70–73
 - dynamic simultaneous-equation models, 160–161
 - higher moment conditions, 72
 - likelihood estimation and, 89–94
 - overview, 69
 - panel vector autoregressive model, 136
- generalized method-of-moments (GMM) estimator
 - random-effects models, 179
- generalized moment method (GMM)
 - CPS-SSA study, 248
- generalized-least-squares (GLS) estimation
 - attrition probability model, 226

Subject Index

507

- best linear unbiased estimator (BLUE) as, 24
- between-group and within-group estimators, 25
- conditional procedure, 83
- distance function, 112–113
- equations, 24
- heteroscedasticity, 50
- likelihood estimation, 82–83
- likelihood estimation, exogenous observations, 76
- Mundlak's formulation, 33
- serially correlated errors, 52
- generalized-least-squares (GLS) estimator
 - variable-coefficient models, random coefficients, 394–397
- German Social Economics Panel (GSOEP), 2
- Gibbs samples, 416
- global vector autoregressive model (GVAR), 141
- group heterogeneity
 - variable-coefficient models, 392
- group mean augmented (CCE) approach
 - interactive effects models, 312–314
- group mean estimator
 - correlated random-effects models, 433
- growth rate, conditional convergence of, 7
- Grunfeld investment function
 - variable coefficient estimations, 396
- Hausman type test statistic
 - GMM estimator, 74
 - transform likelihood approach, 89
- Hausman-Wise two-period attrition model, 226, 228
- hazard function
 - duration model cumulative distribution of duration, 251–253
 - proportional hazard model, 254–256
- Health and Retirement Study in the USA, 3
- Heckman two-step estimator
 - truncated and censored regression models, cross-sectional data, 216
- Heckman's Monte Carlo studies
 - dynamic model, initial conditions, 187
- Hermite formula
 - random-effects models, 178
- heterogeneity
 - coefficients, 420
 - cointegration, 145–148
 - dynamic models, bias adjusted estimator, 204
 - dynamic models, state dependence vs., 193–196
 - in static models, panel parametric approach, 179
 - in static models, panel parametric approachAa, 170
 - unobserved, discretization, 305–306
 - variable-coefficient models, complete heterogeneity, 392
 - variable-coefficient models, group heterogeneity, 392
 - vector autoregressive models, 140–141
- heterogeneous forecasting
 - fixed vs. random coefficients, 460–464
- heterogeneous forecasting models
 - money demand, 462
 - monthly kilowatt-hour demand prediction, 461
- heterogeneous intercepts and slopes
 - unobserved heterogeneity and, 9
- heterogeneous intercepts-homogeneous slopes
 - unobserved heterogeneity and, 9
- heterogeneous vector autoregressive models
 - overview, 140–141
- heteroscedastic-autocorrelation consistent (HAC) estimator
 - panel studies, 370
- heteroscedasticity
 - autocorrelation consistent estimator, 53
 - panel studies and, 50
- high dimensional data
 - low dimensional parameter inference, 446–453
 - nonparametric approach, 444–447
 - regression approach-variable selection, 442
- high dimensional data interference, 446
 - big data analytics, 442
 - regression approach variable selection, 442–444
- Hildreth-Houck estimator, 405
- homogeneity
 - cointegrating relations, 143–145
 - covariance tests for, 47
 - F-tests, 48
 - failure of tests for, 49
 - panel vector autoregressive models, 134–140
 - panel vector autoregressive models), 140
- Honoré-Kyriazidou (HK) conditional maximum likelihood estimator
 - dynamic models, individual-specific effects, 192–193
- household brand choices research
 - dynamic model, 199–201
- Household, Income and Labour Dynamics in Australia Survey, 3, 121

508 Subject Index

- housing expenditure research
 - sample selection models, 241
- importance sampling
 - simulation methods, 278
- incidental parameters
 - count data model, 265
 - discrete data, 171–173
 - dynamic models, 66–67, 188–192
 - dynamic systems, 134–136, 159–164
 - sample truncation, 231
- incidental parameters and multi-dimensional statistics
 - unobserved heterogeneity and, 10
- income tax deduction, net financial assets
 - big data analytics, 450
- income-schooling model, 107–108
- income-schooling-ability model
 - triangular structure, 122
- incomplete panel data, 297–302
- individual coefficient predictions
 - random-coefficient models, 397
- individual effect
 - serially correlated errors, 51
- individual effects
 - correlation of, 15
 - dynamic models, 96–101
- individual firm regression coefficients, 419
- individual-specific effects
 - dynamic models, 192–193
 - panel vector autoregressive models, 135
 - quantile regression analysis, 275
 - Tobit models, 229–230
- individual-specific variables
 - analysis of covariance tests, 43–50
 - model estimation, 38–41
- information criterion
 - AIC, 369, 375–376
 - AICC, 369, 374–375
 - Bai and Ng, 330
 - Bayesian, 369
- initial conditions, 76–78, 185–187
- instrumental variable (IV)
 - GMM estimator and, 73
- instrumental variables
 - method of moments estimation, 67–75
- instrumental variables estimation
 - dynamic simultaneous-equation model, 159
- interactive effects models
 - common correlated effects approach, 312–314
 - factor dimension determination, 330–338
 - fixed effects linear dynamic models, 315–323
 - fixed individual and random time effects, 326–328
 - fixed-effects linear static models, 309
 - individual-specific and time-specific effects, 307
 - least squares estimator, 309–311
 - orthogonal projection, 333–338
 - panel interactive model, 331
 - quantile models, 328–329
 - quasi-difference estimator, 311
 - transformed estimator, 314–315
- Investing in Children and their Societies (ICS, Netherlands), 3
- investment expenditures
 - variable-coefficient models, 389, 418–422
- jackknife instrumental variable estimator (JIVE)
 - dynamic model bias reduction, 205
 - dynamic simultaneous-equation model, 161
- Jacobian, 468
- joint generalized-least-squares estimation, 110–114
- joint probabilities, 468
- K-means clustering
 - big data analytics, 441
- Kalman filters
 - time-variant random-coefficient model prediction, 424–427
- Kernel estimates, 468
- kernel weighted generalized method of moments (KGMM) estimator, 250
- Kullback-Leibler-Thiel information measure, 384
- labor-participation decision model
 - parameter homogeneity, 201–202
- Lagrangian Multiplier
 - cross-sectional dependence test, 354
- Lagrangian multiplier
 - coefficient variation testing, 398
- Lagrangian Multiplier (LM)
 - unit root test, 152
- Lagrangian Multiplier Test
 - fixed effects estimation, 314
- Lasso (least absolute shrinkage and selection operator), 369, 443
- latent-continuous-random-variable
 - dynamic models, 184
- least absolute deviation (LAD) estimators
 - truncated and censored regressions, 230–236
- least squares estimator (LS)
 - bias, 64–65

Subject Index

509

- exogenous variables, 65
 - statistical properties, 64
- least-squares dummy variable (LSDV)
 - analysis-of-covariance model, 21
 - covariance estimator, 66–67
 - defined, 20
 - generalized-least-squares (GLS) estimation, 25
 - sigma estimator, 22
- least-squares estimator
 - fixed-effects linear dynamic models, 315–319
 - fixed-effects linear static model, 309–311
- Levin and Lin (LL) unit root test, 149
- Levin, Lin and Chu (LLC) unit root test, 150
- life-cycle labor supply, prime-age males
 - omitted variables in, 6
- likelihood estimation
 - cointegration testing, 156
 - discrete-response models, cross-sectional data, 167
 - dynamic models, 162–164
 - endogenous observations, 76–80
 - exogenous observations, 76
 - fixed effects, 85, 89
 - GMM and, 89–94
 - random effects, 75–82
- likelihood function
 - duration model, 253–254
 - dynamic model, initial conditions, 186
- likelihood ratio test statistics
 - dynamic models
 - female employment example, 198
- likelihood-ratio tests
 - coefficient variation, 397
- limited dependent variable model
 - cross-sectional data dependence, 358–360
- limited information maximum likelihood estimator, 91
- limited-information principle
 - 2SLS asymptotic equivalence, 116
 - structural single equation model, 114
- linear difference method
 - conditional mean approach vs., 89
- linear dynamic models
 - cross-sectional data dependence, 356–357
 - transformed estimator, 319
- linear models
 - cross-sectional data dependence, 354
 - cross-sectional data dependence tests, 355
- linear probability model, 166
- linear regression
 - unobserved heterogeneity and, 9
- linear regression model
 - conditional and unconditional inference, 35
 - singular-disturbance covariance matrix, 21
- linear static effects models
 - transformed estimator, 314–315
- linear static fixed effects models
 - common correlated effects approach, 312–314
 - least squares estimator, 309–311
 - overview, 309
 - quasi-difference estimator, 311
- linear-probability model
 - cross-sectional data, 166–167
- liquidity constraints
 - variable-coefficient models, 418–422
- local linear regression, 268, 366
- local polynomial least squared regression
 - nonparametric models, 268
- log-likelihood function
 - random-effects models, 177
- logit model
 - cross-sectional data, 166
 - dynamic model, 468
 - static model, 468
- long-haul regression coefficients, 412
- Luxembourg's Social Economic Panel (PSELL), 2
- machine learning algorithms
 - big data analytics, 440–442
- Maddala-Wu (MW) unit root test, 151
- Manheim Innovation Panel (MIP), 2
- Mannheim Innovation Panel-Service (MIP-S), 2
- Manski maximum score estimator, 181, 240
- Markov chain monte carlos (MCMC), 416
- Markov process
 - dynamic model, initial conditions, 187
- matching observables, propensity scoring
 - nonparametric approach, 363–365
- matrix exponential models
 - cross-sectional data dependence, 349–351
- maximum-likelihood estimation (MLE)
 - triangular estimation, 123
- maximum likelihood estimation (MLE), 129
 - dynamic error components, 79
 - endogenous observations, 77–80
 - fixed-effects models, panel parametric approach, 171–172
 - Monte Carlo simulations, 81–82
 - solutions for, 27–29
 - transformed likelihood approach, 87, 89
 - triangular structure, 126–129

510 Subject Index

- maximum likelihood estimator (MLE)
 - cointegration, 145–148
- maximum score estimator
 - static models, 180–182
- maximum-likelihood estimation
 - truncated and censored-regression models, 216
- maximum-likelihood estimation (MLE)
 - variable-coefficient models, 427
- mean and scale corrected simple averaging, 373
- mean corrected simple averaging, 373
- mean effects estimation
 - correlated random-effects, panel studies, 433–437
- mean square errors, 468
- measurement errors
 - economic analysis, 283–287
 - panel studies' avoidance of, 8
- measurement errors
 - dynamic models, 285–287
 - generalized method of moments (GMM) and, 468
- method of moments estimator
 - generalized method of moments (GMM) estimator, 69
 - simple instrumental variable estimation, 67–75
- method of moments estimator (MME)
 - dynamic simultaneous equation model, 159
- Michigan income dynamics study, 30
- minimum distance estimator
 - asymptotic covariance estimator, 101–102
 - asymptotics, 102
 - fixed-effects models, 88
 - structural equation model, 115–116
 - transformed likelihood approach, 89
- minimum distance estimator (MDE)
 - full-information application, 118–121
 - panel vector autoregression model, 139
- minimum-chi-square estimator
 - discrete-response models, 168
- minimum-distance estimator
 - consistency and asymptotic normality, 59–61
- minimum-distance estimator (MDE)
 - random-effects models, 179
- misspecification
 - tests for, 37–38
- mixed fixed and random coefficient models
 - Bayesian solution, 409–411
 - capital-intensive firm estimations, 421
 - differences, 411–413
 - fixed-coefficient comparisons, capital-intensive firms, 422
 - formulation, 407–409
 - individual vs. pooled parameter estimates, 411
 - overview, 399
- mixed fixed and random effects models, 323–326, 328
 - fixed time and random individual effects, 323–326
 - selection criteria, 412
- mixed fixed- and random-coefficient models
 - liquidity constraints, 421
- mixed individual and random effects models
 - fixed individual and random time effects, 326–329
- model averaging, 468
- models
 - fixed vs. random coefficients, heterogeneous forecasting models, 464
- Modigliani-Miller theory, 418
- money demand estimation
 - forecasting models, 462
- Monte Carlo simulation
 - big data analytics, 449–450
- Monte Carlo simulations
 - dynamic random coefficients models, 417
 - fixed-effects models, 176, 319–323
 - GMM, MLE and MDE comparisons, 91–94
 - maximum likelihood estimation (MLE), 81–82
- monthly kilowatt-hour demand
 - predictive model, 461
- multi-level structures
 - data analysis, 281–283
- multicollinearity, 468
- multiple treated units programs
 - evaluation of, 381–382
- multiplicative form
 - individual-specific and time-specific effects, 307
- Mundlak's formulation, 32–33
- National Longitudinal Surveys (NLS)
 - overview, 1
 - span and sample sizes, 2
- nearest neighbor approach
 - big data analytics, 445
- negative binomial model, 263
- negative-variance-components problem
 - maximum likelihood estimation (MLE), 29
- neural networks
 - big data analytics, 442

Subject Index

511

- Newey approach
 - sample selection models, 221
- Newton-Raphson iteration
 - maximum likelihood estimation (MLE), 28, 79
- non-parametric approach
 - program evaluation, 363–366
- nonparametric approach
 - big data analytics, 444–447
 - difference-in-difference methods, 367–368
 - matching observables, propensity score method, 363–365
 - nearest neighbor algorithm, 445
 - panel studies, 369–371
 - random forest algorithm, 444
 - regression discontinuity (RD), 365–366
- nonparametric method
 - regression (PDA), 369–370
 - synthetic control method, 370–371
- nonparametric models
 - panel studies, 268–271
- nonrandomly missing data
 - sample selection models, 223–229
- nonstationarity, 7, 148
- normal distributions
 - variable-coefficient combinations, 422, 438
- normalization
 - cross-sectionally dependent panel data and, 468
 - discrete data and, 166, 181
 - duration model and, 254
 - dynamic models and, 468
 - nonparametric panel data and, 269
 - sample truncation and, 248
 - static simultaneous - equation model and, 114, 122
 - variable coefficient models and, 409
- null hypotheses
 - cross-sectionally dependent panel data and, 354–357
 - discrete data and, 468
 - dynamic models and, 81
 - dynamic system and, 148–152, 156
 - homogeneity and, 149, 382, 398
 - incomplete panel data and, 301
 - variable coefficients model and, 406
- omitted variable bias
 - generalized-least-squares (GLS) estimation, 83
- omitted variables
 - economic models, 307
 - panel studies and control of, 5–7
 - reduction or avoidance of bias, 16
 - significance of, 15
- ordinary-least-squares (OLS) estimator
 - as best linear unbiased estimator, 19
 - asymptotic bias, 65
 - least squares dummy variable (LSDV), 20
- orthogonal projection
 - big data analytics, 448–449
 - interactive effects models, 333–338
- orthogonality, 70
- outcome predictions
 - panel studies' accuracy in, 7
- outcomes simulation
 - program evaluation, 384–386
- pairwise trimmed least squares estimator
 - truncated and censored regressions, 230–236
- panel interactive model
 - Bai & Ng information criterion, 331
- panel least variance ratio estimator (PLVAR), 161
- panel limited information maximum likelihood estimator (PLMIL), 163
- panel parametric approach
 - consistent estimators, 173–176
 - fixed-effects models, 171–176
 - random-effects models, 177–179
 - state models with heterogeneity, 170–179
- panel pooled least squares estimator
 - correlated random-effects models, 435–436
- panel studies
 - advantages of, 4–8
 - averaging methods, 373
 - challenges in, 8–12
 - correlated random-effects models, mean effects estimation, 433–437
 - heteroscedasticity, 50
 - nonparametric method, 369–371
 - nonstationary time series data, 7
 - parametric approach, 371–372
 - program evaluation, 361, 368–373
 - semiparametric approach, 372
- Panel Study of Income Dynamics (PSID)
 - overview, 1
- panel two-stage least squares estimator (P2SLS), 159
- panel vector autoregression model
 - minimum distance estimator (MDE), 139
- panel vector autoregressive model
 - cointegrated with individual-specific effects, 135
 - transformed MLE, 138

512 Subject Index

- panel vector autoregressive models
 - cointegration, 145
 - cross-sectionally dependent processes, 141
 - cross-sectionally independent processes, 140
 - formulation, 134
 - GMM estimation, 136
 - homogeneity, 134–140
 - individual-specific effects, 135
 - random effects PVAR, 136
 - trend-stationary individual-specific effects, 135
 - unit roots and inividual-specific effects, 135
- parameter approach
 - constancy testing, variable-coefficient models, 428
- parameter estimation
 - Cobb-Douglas function, 16
 - fixed or random effects, 29–37
- parameter homogeneity
 - labor participation decision model, 201–202
 - test for structural break in, 194
- parametric approach
 - mixed fixed and random coefficient models, individual vs. pooled estimation, 411
 - panel studies, 371–372
 - program evaluation, 362
 - slow evolution over time, 422
 - time-variant random coefficient models, 423–427
- partition micro units
 - predictive models, 459
- per capita output growth rates
 - variable-coefficient models, 389
- period individual-invariant variables, 15
- Pesaran common correlated effects (CCE) approach, 318
- Poisson model
 - count data models, 262–263
- pooled regression models, 461–462
- Pooling, 411–412
- population studies
 - mixed fixed and random variable coefficient models, 399
- Powell type pairwise differencing estimator, 222
- predictive models
 - big data analytics, aggregate/disaggregate models, 457–464
 - big data analytics, data based or causal models, 453–457
 - coherence and reconciliation approaches, 459
 - fixed vs. random coefficients, heterogeneous forecasting models, 460
 - monthly kilowatt-hour demand prediction, 461
- pricing behavior
 - variable-coefficient model, 400–401
- Primary School Deworming Project (PDSP, Kenya), 3
- prior structures
 - exogenous variables, distributed lag estimation, 290–294
 - lag coefficient identification, 294–296
- Probit model
 - cross-sectional data, 166–167
 - simulation methods, 277
- program evaluation
 - aggregate/disaggregate treatment effects measurement, 383–384
 - California Tobacco Control Program (CTCP), 378
 - closer economic partnership arrangement (CEPA, Hong Kong) example, 374–378
 - cross-sectional data approach, 362–368
 - multiple treated units, 381–382
 - non-parametric approach, 363–366
 - panel studies, 368–373
 - parametric approach, 362
 - semiparametric approach, 363
- program evaluations
 - outcomes simulation, 384–386
- propensity score method
 - nonparametric approach, 363–365
- proportional hazard model, 254–256
- pseudo panels
 - applications, 302–305
- purged-instrumental-variable method
 - estimation, 123
 - examples, 124–126
- qualitative response models
 - cross-sectional data, 165–170
- quantile models
 - interactive effects, 328–329
- quantile regression analysis, 273–276
- quasi maximum likelihood estimation (QMLE)
 - mixed fixed and random effects models, 324–326
- quasi maximum-likelihood estimation (QMLE)
 - fixed mixed and random effects models, 327
- quasi-difference estimator
 - fixed-effects linear dynamic models, 315–319
 - fixed-effects linear static model, 311

Subject Index

513

- quasi-likelihood estimation
 - random effects models, 75–85
- random-effects models
 - Mundlak's formulation, 32
- random effects
 - Michigan income dynamics example, 29
 - parameter estimation, 29–37
- random effects models
 - endogenous observations, 76–80
 - exogenous observations, 76
 - likelihood estimation, 75–76, 82
 - quasi-likelihood estimation, 75
 - variance-components models, 22–23
- random forest algorithm
 - big data analytics, 441
 - nonparametric big data analytics, 444
- random individual effects models
 - mixed fixed and random effects, 323, 326
- random time effects
 - mixed individual and random effects models, 326–329
- random-coefficient models
 - cross-sectional data, 404–407
 - dynamic model, 414–418
 - estimation, 394–397
 - heterogeneous forecasting, 460–464
 - individual coefficient predictions, 397
 - mixed fixed and random coefficients, 399
 - time-variant parameters, 423–427
 - variable-coefficient model, 393–401
- random-coefficients models
 - correlated models, 431–437
- random-effect models
 - misspecification tests, 37–38
- random-effects model
 - transformed likelihood vs. fixed-effects model, 89
- random-effects models
 - conditional or unconditional inference, 30
 - error component assumption testing, 80–81
 - mixed fixed-random effects models, 323–328
 - Mundlak's formulation, 32–34
 - panel parametric approach, 177–179
 - panel vector autoregressive models, 136
 - Tobit models, individual effects, 229–230
- randomly missing data
 - overview, 297–302
- rating firm default probability
 - duration model, 258–262
- recursive partitioning, 441
- reduced form model
 - economic behavior, 133
- reduced-form equations
 - joint generalized-least-squares estimation, 110–114
- regression analysis
 - asymptotic covariance matrix, 452
 - big data, 441
- regression approach-variable selection
 - high dimensional data interference, 442–444
 - high-dimensional data, 442
- regression coefficients
 - individual firm regressions, 419
- regression discontinuity
 - nonparametric approach, 365–366
- regression models
 - omitted variables in, 6
- regression PDA
 - nonparametric approach, 369–370
- repeated cross-sectional data, 302–305
- representative agent assumption,
 - macroeconomics, 7
- residual sum of squares (RSS)
 - analysis of covariance, 44
- residual-based tests
 - cointegration, 155
- Robinson approach
 - sample selection models, 221
- rotating data
 - overview, 297–302
- sample attrition, in panel studies, 11
- sample selection models
 - attrition probability model, 224–227
 - cross-sectional data, 219–223
 - dynamic models, 249
 - housing expenditure example, 241
 - nonrandomly missing data, 223–229
 - semiparametric two-step approach,
 - endogenously determined model, 239–241
- sample split double/debiased estimator, 447
- Sargan test of overidentification
 - serial correlation testin, 74
- schrinkage estimator, 410, 443
- seemingly unrelated regression, 407
- selection criteria
 - AIC
 - BIC
 - mixed fixed and random effects models, 412
- self-reported health status, endogeneity of
 - EC2LS estimator for, 120
- semiparametric approach
 - consistent estimator, 182–183
 - correlated random-effects models, 437
 - panel studies, 372

514 Subject Index

- semiparametric approach (cont.)
 - program evaluation, 363
 - static models, 180–183
 - two-step estimator, endogenously determined sample selection model, 239–241
- sequential iterative procedure
 - maximum likelihood estimation (MLE), 28
- sequential limit, 103–105
- serial correlation
 - dynamic model estimation, 95–96
 - Hausman-type test statistic, 74
- serial correlation measurement errors, 285
- serially correlated errors
 - variable intercept models, 51–53
- series approximations
 - nonparametric models, 269
- sharp regression discontinuity (SRD), 365–366
- short panel studies
 - distributed lag estimation, 288–297
- short-run coefficients, bias, 417
- simulated least squares (SLS) estimator, 279
- simulated maximum likelihood estimator (SMLE), 279
- simulated method of moments estimator (SMM), 279
- simulation methods
 - overview, 276–280
- simultaneous-equation models
 - dynamic models, 157–162
 - income-schooling model, 107–108
 - static models, 108–120
 - variance-covariance matrix, 110
- single equation estimation
 - complete structural system, 118–121
 - structural equation model, 114–118
- SIR epidemic model, 384–386
- Socio-Economic Panel (SEP, Netherlands), 2
- Solow growth model, 389
- spatial dependence
 - cross-sectional data, 341–343
 - mixed spatial and factor process, cross-sectional data, 351–353
- spatial dependence coefficient zero test
 - cross-sectional data dependence, 355
- spatial error models
 - cross-sectional data dependence, 343–345
 - dynamic model, 345
 - static model, 343–345
- spatial regressive models
 - cross-sectional data dependence, 346–348
- spatial weight matrix
 - cross-sectional data dependence, 341–343
 - endogenous determination, 348–349
- SSP penalized least squares approach
 - variable-coefficient models, 393
- state dependence
 - dynamic models
 - heterogeneity vs., 193–196
- static models
 - maximum score estimator, 180–182
 - panel parametric approach with heterogeneity in, 170–179
 - semiparametric approach, 180–183
 - spatial error model, cross-sectional dependence, 343–345
- statistical inference
 - panel studies' simplification of, 7–8
- Statistical Office of the European Communities National Data Collection Units (NDU), 2
- stochastic dominance, 387–388
- structural break
 - state dependence in dynamic models, 193
- structural changes
 - big data analytics, 467–468
- structural equation model
 - economic behavior, 133
 - limited information principle, 114
 - single equation estimate, 114–118
- structural-form coefficient matrix
 - cross-equation linear restrictions, 80
- support vector machines
 - big data analytics, 441
- Survey of Health, Aging and Retirement (SHARE), 3
- survival function
 - duration model, 251
- symmetrically trimmed estimator
 - truncated and censored-regression models, 217
- synthetic control method (SCM)
 - panel studies, 370–371
- Taylor series, 269–270
- three-stage least squares (3SLS) estimator, 58
 - full-information case, 118–121
 - MLE procedures, 80
 - serial correlation, dynamic models, 96
- time heterogeneity effects
 - correlation of, 15
- time series data
 - nonstationary time series, 7
- time-evolving coefficients, 427–430
- time-invariant effects
 - correlated regressors, 117
- time-invariant variables, 15
 - coefficient estimation, 183

Subject Index

515

- time-series
 - serially correlated errors, 52
- time-series analysis
 - big data analytics, 464–467
- time-series data
 - limitations of, 4
- time-specific effects
 - dynamic models, 96–101
 - unit root tests, 148
- time-specific variables
 - analysis of covariance tests, 43–50
 - model estimation, 41–43
- time-variant random-coefficient models
 - Kalman filter prediction, 424–427
 - parameters, 423–427
- time-variant units
 - slow parametric evolution, 422
 - variable-coefficient models, 401–407, 422–428
- time-varying variables, 15
- Tobin model
 - liquidity constraints, 419
- Tobit models
 - dynamic censored models, 244–249
 - dynamic models, 244–250
 - random individual effects, 229–230
 - simulation methods, 277
 - truncated models, 246
- Tobit models, dynamic, 8
- transformed estimator
 - interactive effects models, 314–315
 - linear dynamic models, 319
 - linear static effects models, 314–315
- transformed likelihood approach
 - fixed-effects models, 86
 - random vs. fixed-effects specification, 89
- transformed maximum likelihood estimator (MLE)
 - panel vector autoregressive model, 138
- treatment effects, 361
- treatment group, 361
- treatment on the treated (TT) effect, 468
- trend-stationary individual-specific effects
 - panel vector autoregressive models, 135
- triangular structure
 - estimation, 123
 - identification, 121–123
 - maximum likelihood estimation (MLE), 126–129
 - model estimation, 121–131
- truncated models
 - cross-sectional data, 214–219
 - pairwise trimmed least squares and least absolute deviation estimators, 231–236
 - semiparametric two-step estimation, 241
- two-stage least squares (2SLS method)
 - generalized method of moments (GMM) estimator, 73
 - structural equation model, 114–116
- two-step feasible estimator
 - nonparametric models, 268
- two-step GLS estimation
 - variance components and, 26
- Type II Tobit model, 219
- type II Tobit model, 229
- unconditional inference, 37
 - fixed or random effects, 30
 - individual effects and attributes, 34
 - linear regression model, 35
- unemployment duration and insurance
 - big data analytics, 452
- unionism
 - impact on economic behavior of, 4
- unit roots
 - cross-sectional correlated data, 153–155
 - cross-sectional independent data, 149–153
 - GMM estimator, PVAR model, 137
 - panel vector autoregressive models, individual-specific effects, 135
 - tests, 148, 155
- unobserved heterogeneity
 - discretization, 305–306
 - variable-intercept models, 15
- unobserved heterogeneity, across individuals and over time, 8–9
- variable intercept model, 408
 - capital-intensive firms, 420
- variable-coefficient models
 - coefficient variation testing, 397–399
 - complete heterogeneity, 392
 - correlated random-coefficients models, 431–437
 - cross-sectional data, 391–401
 - dynamic random coefficient models, 414–418
 - estimation, random coefficients, 394–397
 - exogenous variable coefficients, 428–431
 - fixed or random coefficients, 399
 - fixed-coefficient model, 392–393, 403
 - group heterogeneity, 392
 - individual coefficient predictions, 397
 - liquidity constraints and firm investment expenses example, 418–422
 - maximum-likelihood estimation, 427

516 **Subject Index**

- variable-coefficient models (cont.)
 - mixed fixed and random coefficients, 407
 - normal distribution combinations, 422, 438
 - pricing behavior example, 400–401
 - random-coefficient model, 393–401
 - time-variant coefficients across
 - cross-sectional units, 401–407
 - time-varying coefficients, 422–428
- variable-intercept models
 - Cobb-Douglas function, 16
 - Cobb-Douglas production function, 15
 - serially correlated errors, 51–53
 - unobserved heterogeneity, 15
- variance components
 - two-step GLS estimation, 26
- variance-components models
 - random effects models, 22–23
- variance-covariance matrix
 - cross-equation linear restrictions, 80
 - income-school-ability model, 122
 - maximum likelihood estimation (MLE), 29
 - simultaneous-equation models, 110
 - vectors and inverse of, 61
- vector autoregressive model, 134–141
- vector error
 - cointegration panel models, 142–148
- Wald type tests, 37, 44–48, 398–399
- within-group estimates
 - analysis of covariance, 44
- within-group estimator, 21
- World Bank
 - panel surveys by, 3