

Index

- α -parameter 24–6
- absolute cumulative returns 423–5
- ACE *see* agent-based computational economics
- adaptive agents 391–410
- adaptive search coordination 189–214
- addiction 119–20
- adjustment costs 108, 114
- affine linear functions 347–9
- agent-based computational economics (ACE) 125–58
- aggregate demand 40, 237–58, 306, 308–9
- aggregate distributed knowledge 154
- aggregating knowledge 155
- aggregate labor supply 306, 355–6
- aggregate savings 9–15
- aggregation
 - heterogeneity 67–89
 - information-contagious behavior 125–58
- AL *see* Asynchronous Local
- algebraic equations 40
- alternative Hill plots 429–30
- arithmetic weights 379
- asset return differentials 32–65
- asymmetric interactive discrete choice models 215–36
- asymptotic attractors 224–5
- asynchronous dynamics 217–18, 223–4, 231
- Asynchronous Local (AL) information regimes 161–2, 165–7, 175–7
- attractors 223, 228, 230–3, 320–2
- AUTO/AUTO2000 software 22
- autocorrelation functions 422–5
- average investment 246–51
- average performance 140–8
- average utilities 296–7
- backward-looking expectations 367
- backwards-perfect-foresight dynamics 344
- bad news case 37, 44–9
- Bellman equation solution 183–7
- benchmarks 137–9, 198–201
- bifurcation 363, 365, 366, 368, 370–379, 381–9
 - flip 372, 375, 377, 384
 - Hopf 372, 376, 378, 384, 386
 - 1:3 strong resonance 372, 375, 376, 378, 382, 384
 - 1:L resonance 365, 372, 389
 - $p:q$ resonance 376, 377, 384, 386
- bifurcation diagrams 296, 297
- bifurcation parameters
 - chaotic price dynamics 296–7
 - diagrams 320, 322, 324–5
 - general \mathbf{a}_L -process 363–90
 - heterogeneous interacting agents 267
- binary choice framework 240, 241–6
- binary strings 398–9
- bivariate systems 87
- Blanchard model 31–65
- bond price dynamics 41–2
- bounded leaf queue canonical policies 168–9
- BSP *see* bulk synchronous processing
- budget constraints 261, 263–4
- bulk synchronous processing model (BSP) 160
- Buridan's donkey 92–3
- business cycles 3–30

- candidate solutions 110, 116
- candidate value functions 97
- canonical policies 167–9
- capital coefficient 7–8
- capital gain expectations 35–6, 53
- capital intensity 355–6
- cautious adjustment process 279, 281
- cautiousness 52
- CCS consumption behavior model 217–36
- centralization 189–214
- chaos
 - fluctuations 3–30
 - in the tatonnement process 278, 280, 282
 - non-stationary 259–75
 - price dynamics 277–98
- chaotic 386, 373, 384
- chartist traders 260, 263
- check-shaped long-run average behavior 292–4
- choice dynamics 130
- Classical Unemployment 310, 331
- Classifier Systems 131–2, 155–7
- closed form expressions 76–9
- closed laissez faire economies 5–30
- Cobb-Douglas utility functions 280
- cobweb models 349–50, 381–8
- coevolutionary process 144, 149, 152, 155
- communication delays 159
- communication hierarchy 162, 163
 - one-level 170
 - two-level 172
- communication optimization in organizations 159–87
- comparative dynamics 206–11
- complex dynamics 301–31, 381
 - chaotic 373, 384, 386
 - quasi-periodic orbit 365, 373, 376, 378, 384, 386
- complex eigenvalues 18–20
- complex phenomenon 125, 126, 154
- complex remanence 67–89
- computation of the value function
 - Dynamic programming 95, 113, 114, 116
 - Hamiltonian 94, 95, 100, 102, 104, 111, 113, 119
 - Hamilton-Jacobi-Bellman 96
- concavity 95, 98–107, 117–18, 119
- consistently formulated models 33
- constrained enforcement measures 404–5
- constraint variety 339
- consumers
 - chaotic price dynamics 277–98
 - long-run average behavior 286–95
 - multi-unit firms innovation 193–4
- consumption
 - asymmetric interactive discrete choice 215–36
 - chaotic price instability 282–5
 - discrete choice 215–36
 - non-tâtonnement 304–7
- context switch 160
- continuous dynamic programming 113–14
- control variable 119
- convergence 295–6
- convex-concave technologies 117
- convexity 95, 98–9, 102–3, 108, 117–18, 119
- coordination failure 302
- costs
 - aggregate demand interaction 250–1
 - communication optimization 164–5, 168–70, 179–80
 - fashion good simulations 232–3, 234
- coupling constants 226–7
- crackdown enforcement 391–410
- critical points 420–5
- critical states 414
- critical values 382
- crossover 400
- cumulative absolute returns 423–5
- cumulative market share 134–7, 146, 148
- cyclograms 321–3

- deadlines 159–87
- dealers (drugs) 391–410
- decentralization 125–58, 189–214
- decentralized interaction 125, 135
- Dechert-Nishimura-Skiba (DNS)
 - thresholds 92–4, 96–8, 109–17
- decision markers 128–9, 131–3
- decision rules 131–2, 155–7, 218–21
- density functions 285–6, 289, 294–5
- depressed goods markets 34–5
- destabilizing policies 301–31
- deterministic dynamics 265–6
- deterministic economic laws 333–61
- Dickey-Fuller tests 84–6
- differential games 121
- direct interactions 216–17
- discrete choice with asymmetric interactions 215–36
- discrete time cautious adjustment processes 279–81
- discrete-time Markov chains 221–3
- disorder 125, 126, 137, 139, 155
- distributed lag expectations 367
- divergence planes 377
- DNS *see* Dechert-Nishimura-Skiba
- domestic enforcement 391–410
- downswing 31, 38, 56, 62–4
- drugs 118–20, 391–410
- dynamic equations 41–2
- dynamic non-tâtonnement macroeconomics 301–31
- dynamic optimization models 91–122
- dynamics
 - chaotic price instability 281–6
 - expectational leads 333–61
 - general a_t -process 372–81
 - growth-cycles 16–26
 - heterogeneous interacting agents 265–6
 - homogeneous recursive L -process 370–2
 - linear random Farmer model 411–30
 - non-tâtonnement 315–17, 329–31
 - perfect-foresight 343–6
 - Skiba points detection methods 113–14
- ε -parameters 24, 29–30
- earnings 14–15
- ecology of trading strategies 413
- efficiency wages 302
- effective aggregate demand 306, 311
- effective demand 302, 306–8
 - consumer's effective demand 306
 - effective aggregate demand 306, 311
 - firm's effective demand 307
- effective supply 302, 308
 - effective aggregate supply 311
- efficient market hypothesis (EMH) 416–30
- eigenvalues 18–20
- elasticity, aggregate savings 14
- EMH *see* efficient market hypothesis
- emergence 125, 126, 134, 150, 152, 154, 155
- employment 34–5, 68–9, 302–32, 357
- endogenous regime switching 317–32
- enforcement pressure 391–410
- enforcement swamping 118–19
- envelope condition 110, 115
- equations
 - Bellman equation solution 183–7
 - Hamilton–Jacobi–Bellman 95–6, 109–11, 114–17
 - Lyapunov's 20–1
 - Markov price adjustment 295–7
 - real-financial interactions 40–2
- equilibria
 - multiple 91–3, 117–9, 121
 - optimal 91, 93
 - single 92
 - stable 93
 - unstable 92
- equilibrium
 - allocations 309–12, 313, 314
 - growth 354–60
 - multiplicity 240–1, 246–51

- price 280
- regimes 312–15
- stability 266–7
- equilibrium with stochastic manipulable rationing 302, 303
- equity 35–6, 37, 53
- ergodically chaotic trajectories 282
- error function 338, 341–9, 352–3, 358–60
- eventually fixed cycles 286–8, 290–4
- evolution algorithms 217–18
- evolutionary competition 269, 270
- ex ante investments 8–9
- ex ante optimal organizational form 200
- expected return differential 39, 42, 51, 52, 63, 64
- ex post investments 6–9, 12
- ex post savings 6–7
- excess demand 262–4, 269, 280
- excessive productive capacity 302
- exchange economies 279–81, 350–4
- exchange rates 71–8, 411–30
- existence
 - perfect forecasting rules 341–3
 - temporary equilibrium 328–9
- expansion regimes 254
- expectations
 - asset return differentials 32–65
 - economic dynamical systems 333–61
 - expectational leads 333–61
 - formation 262, 263
 - functions 366–70
 - general a_L -process 363–9
 - income rate of growth 15
 - profits 247–9
 - relative prices 306
 - values 128–30, 244–5
- experimental economics 67–89
- explicit form of density function 277
- exports relationship 71–3
- externality route 121
- extrapolation rates 386
- factor price frontiers 357
- Farmer, J. Doyne 411–30
- fashion good simulations 227–33, 234
- fat-tails 259–75, 412, 418–20
- Feichtinger-Wirl approach 99–100
- Feigenbaum scenario 267
- fiat money 350
- financial phase diagram switching 56–62
- first order conditions 96, 98, 112
- first order Markov chains 252
- fitness of dealers 396–8
- fitness of police 394–6
- fixed proportions technology 42
- flexibility 301, 316–8, 320, 322, 325
- flip curve 375, 384
- flip surfaces 377
- flush 163, 170–1, 172–4
- forecasting 333–61
- foreign exchange rates 411–30
- Frobenius-Perron operators 285–6
- full centralization 196–7
- full decentralization 196–7
- full information regime 161, 165, 167–74
- fundamentalists 260, 261–3, 416
- GAUSS software package 317
- general a_L -process 363–90
- generalized cumulative absolute returns 423–5
- generating knowledge 155
- genetic algorithms 391–410
- genetic learning 391–410
- geometric weight 367, 379–81
- Gibbs equilibrium 220, 222
- Glauber dynamics 217–18, 221–4
- global bifurcations 267
- global dynamics 91–122
- growth
 - cycle models 3–30
 - factors 316–17
 - rates 279–81
 - theory 3–30
- Hamilton–Jacobi–Bellman (HJB) equation 95–6, 109–11, 114–17

- Hamiltonian 94–5, 100, 102, 104, 111–13, 119
 Harrod's dynamic theory 4
 headquarters control 196–7
 heat-bath algorithm 217–18, 221–4
 herding behavior 126, 127, 151, 154
 heterogenous belief models 412
 heterogeneous interacting agents 259–75
 hierarchical protocols 159–87
 higher order intertemporal optimization systems 107–9
 Hill estimator 420, 422, 429–30
 Hill plot 420, 429, 430
 history dependence 91–122
 HJB *see* Hamilton–Jacobi–Bellman
 Hodrick and Prescott (HP) filter 253
 homoclinic orbits 4, 20–4
 homogeneity
 beliefs 363–90
 learning 381–8
 recursion 363–90
 homogenous expectations 363–5
 contrarian 369, 373, 382
 trend chasing 369, 373, 382
 Hopf cycles 108
 household earnings 14–15
 HP *see* Hodrick and Prescott
 hysteresis 67–89
 hysteron 72–3

 illicit drugs 118–20, 391–410
 imitation 391–410
 imperfect substitution 41, 63
 implied input-output relations 82–4
 implied probability distributions 79–80
 income growth rates 6–15
 income levels 405–6
 increasing returns 125–7, 151, 154
 increasing returns to scale 126, 154
 indeterminacy 94, 120
 indirect utility function 285, 290, 294–5
 individual choice curves 135–7
 individual decision making 131–2
 individual decision rules 148–50
 induced error function 341–3
 inflation 302, 320–2, 330–1
 natural rate of inflation 321
 wage inflation 320, 321
 information aggregation 125–58
 information cascades 125–7, 151, 154
 information-contagion 133
 information-contagious behavior 125, 133, 150
 information regimes 161–87
 asynchronous 161, 162, 165, 175
 full 159, 161, 162, 165, 167, 169, 174, 175, 177, 180
 local synchronous
 innovation 189–214, 391–410
 instantaneous adjustment 42
 intensity of choice measure 244
 interaction parameter strength 249
 interest rates 237
 intermittency 413–14
 intertemporal optimization models 91–122
 interruption costs 161
 invariant density 285–6
 inversion 43, 341–3, 349–50, 359
 investment
 decisions 241–6
 demand 237–58
 growth-cycle 6–9, 12
 irrational traders 260, 263–4, 270
 IS-curves 43–4, 46–9
 IS-LM model 35, 37
 isoclines 58–60
 Italy 237, 240–1, 253–5

 Jacobian 16–17, 53–4, 57
 Johansen Trace VAR-based test 86–8
 jump intertemporal optimization 104–6
 jump Markov processes 221–4, 225
 jump variable technique (JVT) 32–3, 35–6, 49–51
 Kesten's theorem 418–20
 Keynes effect 34–5

- Keynesian arguments 238
- Keynesian Unemployment 310–12, 318–20, 322, 325, 330
- kurtosis 273–4
- labor 68–9, 306, 307–8
- lag expectations 367
- landscape structure 195–6, 197–214
- laws of motion 43
- leaf policies 176–7, 178–9
- learning
 - agent-based computational economics 131–2, 155–7
 - general a_L -process 363–90
 - growth-cycle models 11–15
 - information-contagious behavior 125–58
 - multi-unit firms innovation 209–11
 - Nash equilibria in illicit drug markets 391–410
- least squares L -processes 363–90
- leptokurtosis 259–75
- limit cycles 18–19, 59–60, 108
- limiting limit cycle 62
- limiting perfect foresight 62
- linear backward-looking expectations 367
- linear in control 102
- linear models 102–3, 347–9, 411–30
- literature, information-contagious behavior 151–4
- LM-curves 44–5, 46–9
- local information regimes 161–2, 165–7, 174–80
- local instability 63
- local optima 194, 195–6, 197–214
- local stability
 - general a_L -process 370–1, 374–5, 376–8
 - heterogeneous interacting agents 266–7
 - real-financial interactions 45–9
 - state-of-market dependent reaction coefficients 53–6
- local synchronous information 161–2, 165–7
- lock-in 133–9, 151–3, 249
- long-run average behavior 286–95
- long run average utility 291, 293–5, 298
- long-run simulations 405–8
- long-side rule 284
- Lyapunov's equations 20–1
- Lyapunov's exponent 414, 419, 422
- macrobehavior 125–7, 151
- MACRODYN software package 317
- macroeconomic growth 9–15
- majority rule, information-contagious behavior 143–4
- manipulability
 - definition of manipulability 303
 - manipulability of the rationing mechanism 303
- marketing
 - efficiency model 416–30
 - impact function model 415
 - markers 264
 - market share 134–7, 146, 148
 - outcomes 133–9
 - size 391–410
- Markov chains 221–3, 252
- Markov Decision Process (MDP) theory 160, 168–70, 172–4
- Markov price adjustment equation 295–7
- Markov switching 237, 238, 251–6
- Markov switching vector autoregression (MS-Var) 252–3, 254–5
- maximum principle 94–5, 111–13
- MDP *see* Markov Decision Process
- mean ergodic theorem 282, 298
- memory 75–8, 168–9, 231–3
- menu cost 302
- microfoundation 125–7, 151, 154
- micromotives 125–7, 151

- min-rule 264, 284
- minimal-state-variable predictor 344–6, 348–9
- monetary policy models 120
- money balances 309–25
- money market 35, 37
- monotonic process 125, 126, 137, 155
- moving averages 140–8, 210–11
- MS-Var *see* Markov switching vector autoregression
- multi-circuit homoclinic orbits 22–4
- multi-unit firms 189–214
- multi-period OLG model 354–60
- multiple features
 - equilibria 27, 91–122
 - feedback 121
 - rugged landscape 189–214
 - self-consistent equilibria 240, 246–51
 - steady states 117–21
- multiplicative stochastic processes 413
- multivariate Johansen Trace VAR-based test 86–8
- mutation operator 399–400
- myopic perfect foresight 42–63

- Nash equilibrium 121, 391–410
- Neimark–Hopf-saddle curves 384–6
- network communications 159–87
- network externalities 151
- node transmission 162
- noise traders 260, 263–4, 270
- nominal price adjustment 303, 316
- nominal wage stickiness 301
- non-concavity 98–9
- non-equilibrium price formulation rule 413–30
- non-linearity
 - aggregate demand interaction 237–58
 - aggregation heterogeneity 67–89
 - growth-cycles 3–30
 - strength parameters 265–75
 - three-dimensional growth-cycles 16
- non-price interactions 237–58
- non-stationary chaos 259–75
- non-stationary inputs 80–1
- non-storable commodities per period 350
- non-symmetric pairwise interactions 217
- non-tâtonnement 283–5, 301–31
- non-zero costs 232–3, 234
- normalized capital of traders 417, 429
- numerical analysis
 - non-tâtonnement 317–25
 - Skiba points detection 109–17
- numerical simulations 279, 295, 401–8

- offer curve
 - consumption sector's offer curve 306
 - producers' offer curve 308
- OLG model 354–60
- one-level hierarchies 170–1
- open-air drug markets 391–410
- optimizing communication 159–87
- order 125, 126, 128, 130, 133, 135, 137, 139, 152–5, 157
- organization theory 159–87
- Oseledets' multiplicative ergodic theorem 422
- output closed form expression 76–9
- output dynamics 31, 35
- output growth rates 20–1
- overlapping generations 302–3, 350–4

- parallel updating 217–18, 223–4, 228–31, 235
- Pareto dominant expansion regime 254
- Pareto tails 414, 419
- patched phase planes 59
- path-dependence 126, 127, 133–9, 146, 151–3
- path-dependent 127, 134, 146, 151, 152, 154, 155
- per capita variables 118–19
- perfect forecasting rules 333–61
- perfect foresight

- dynamics 343–6
- equilibrium growth 354–60
- exchange economies 350–4
 - orbits 333–61
- perfect myopic foresight 42–63
- perfect substitution 42–63
- perfect substitutes 31, 36, 41
- performance over time 139–48
- period-1 cycles 286–8, 290–4
- periodic message transmissions 159–87
- persistent fluctuations 32–65
- pessimistic phase 62
- phase diagrams 56–62, 101, 103, 106–7
- phase diagram switching 56
- phase plots 268–9, 382–5
- phases, profit differential time series 206–11
- Phillips curves 320–2
- piecewise-linear maps 281–2
- piecewise linear equation 281
- Pigou-effect 325
- Poisson arrival rates 169–71, 174
- police 391–410
- policy 161
 - canonical 167, 168
 - optimal 162, 165, 167, 168, 172–4, 176, 181, 183–6
- policy function continuity 106–7
- Polya urn schemes 151
- Pontryagin's maximum principle 94–5, 111–13
- portfolio constraints 51
- position based value strategies 416–25
- positive spillovers 239, 240, 242
- positive steady states 45–9
- preferable price instability 294–5
- preference classes 353–4
- price elements
 - adjustment 264, 295–7, 301–31
 - cost margins 194–5
 - dynamics, chaos 277–98
 - expectations 368–9
 - formulation rule 413–30
- impact function 415
- inflation 302
 - levels, growth factors 316–17
- private utility 219–20, 225
- probability
 - Farmer's linear random model 414, 429
 - investment decisions 243–6
 - non-linearity aggregation heterogeneity 79–80
 - regime switching 237
 - smoothed probabilities 252, 254–6
- production functions 327–8, 357
- production sector 307–9, 327–8
- profits 14–15, 201–11, 309–25
- proportional selection 400
- pure exchange economies 279–81, 283
- quasi-stationary state 303, 316, 317, 322, 325, 326
- queueing theory 159–87
- QWERTY lock-in 150
- Ramsey rule 98–9, 101
- Ramsey model (extended) 98, 100, 101
- random dynamical systems (RDS) 413–30
- random rule 148–9
- random sequential updating 217–18, 223–4, 231
- random walk 80–8
- rate of growth of income 6–15
- rates of return 351
- rationing
 - deterministic rationing 303
 - rationing coefficient 305, 308, 310, 311, 315, 330
 - rationing measure 312
 - rationing mechanism 303, 307
 - rationing of type All or Nothing 305
 - rationing rule 308
 - stochastic manipulable rationing 302, 303
 - stochastic rationing 301, 303
 - stochastic rule 305

- strength of rationing 303, 311, 312, 315, 316
- zero-one rationing 312
- rational expectations 333–61
- rational traders 260, 261–3
- RDS *see* random dynamical systems
- reaction coefficients 51–63
- real money balances 309–25
- real prices, non-tâtonnement 309–25
- real profits, non-tâtonnement 309–25
- real-balance effect 325
- real-financial interactions 31–65
- recursive learning processes 364, 371, 388
 - a_L -process 363–8, 372, 373, 388
 - a_2 -process 372–5, 377, 379, 384, 386
 - a_3 -process 373, 376–9, 386, 388, 390
- arithmetic weight 367, 379
- geometric weight 367, 379–1
- least-square L -process 364–6, 371, 381
- recursive L -process 363–90
- reduced form dynamics 43
- regime switching 237–58, 317–32
- regulatory economics 119
- reinforcement learning 125–58
- relative learning rates 209–11
- renewable resources 120
- replacement costs 250–1
- Repressed equilibrium 310–12, 330–1
- retail chain manufacturers 189–214
- return autocorrelation functions 422–4
- return rates 351
- rigidity 302, 316
- root of chaotic price behavior 268
- Rouche's theorem 389–90
- Routh-Hurwitz 54, 55
- ruggedness, stores landscape 195–6, 197–214

- saddle 32, 35, 44, 48–51
- saddle focus 17–20, 28–9
- saddle node bifurcation 382–3
- saddle paths 4, 20–4
- saddle points 95–6

- savings 6–15, 357–8
- scaling laws 411–30
- scheduling protocols 159–87
- screw-type trajectories 19
- searches 189–214
- selection operator 400
- self organization 125–58
- self-organizing process 126, 155
- self-consistent equilibrium 246–51
- sequential updating 217–18, 223–4, 231
- share of income saved 9–15
- share prices 41–51, 411–30
- short-run simulations 405–8
- short-side rule 264, 284
- Šil'nikov chaos theory 3–30
- simple persistence, complex remanence 67–89
- simulations
 - chaotic price dynamics 295–7
 - consumption patterns 227–35
 - genetic learning of Nash equilibria 401–8
 - multi-unit firms innovation 198
 - state-of-market dependent reaction coefficients 61, 62–3
 - strong hysteresis 80–8
- SK model 227–8
- skew product maps 426
- Skiba points 92–4, 96–8, 109–17
- SL *see* Synchronous Local
- smoothed probabilities 252, 254–6
- social features
 - disasters 143
 - interaction 239
 - learning 151–4
 - status 233–5
 - utility 219–20
- specific decision rules 148–50
- speculative bubbles 259–75
- spillover 239, 240, 242
- Spin Glass models 227
- spiral 97, 104, 106
- spiral-type strategies 19, 106

- spontaneous order 125, 126, 135, 137, 154, 155
- stability 363–6, 368, 370–7, 379–84, 386, 387, 389, 390
 - general a_L -process 366–90
 - heterogeneous interacting agents 266–7
 - homogeneous recursive L -process 370–1
 - intertemporal optimization 96
 - local asymptotical stability 368, 371–3, 375, 380–3, 390
 - local stability 368, 370, 371, 373–7, 380, 381, 388
 - non-tâtonnement 301–31
 - real-financial interactions 45–9
 - stability region 365, 371, 373–7, 379–81, 384, 388–90
 - state-of-market dependent reaction coefficients 53–6
 - unstable 371, 373, 375, 382, 383, 389
- state-of-market dependent reaction coefficient 51–63
- stationary inputs 80–1, 83–8
- stationary utility 292, 293
- status good simulations 233–5
- steady states
 - intertemporal optimization 96–7, 103–9, 121
 - perfect foresight 351–2
 - real-financial interactions 45–9, 54–6
- step functions 292–3
- stickiness 301, 302
- stochastic decision rules 218–21
- stochastic dynamics 270–4
- stochastic rationing 301–31
- stock-market prices 264
- store learning rates 209–11
- store manager control 196–7
- stores 194–5
- strategic complementarities 238, 239, 250
- strategy switching 265
- strong hysteresis 74–6, 80–8
- switch rates 138–9, 140
- switching strategies 265
- symmetric interactions 217
- synchronous dynamics 217–18, 223–4, 228–31, 235
- Synchronous Local (SL) information regimes 165–7, 177–80
- t -statistic 84–6
- tâtonnement 278, 283–5, 301–31
- tax rates 309–10, 314–25
- technical progress dynamics 9–15
- technical trading 411–30
- temporary equilibrium
 - allocations 309–12, 313, 314
 - existence 328–9
 - general a_L -process 366–70
 - uniqueness 328–9
- tent-shaped long-run average behavior 290–2
- test statistics 213–14
- three-dimensional non-linear systems 16
- thresholds 92–109, 175–7, 178–9
- time series patterns 60–2
- time structure 304, 305
- Tobin's q 32, 36–40, 53, 238–9, 250–1
- trade curves 306–7, 308–9, 327–8
- trade markets 69–70
- trader classes 260–4
- trading strategies 413–30
- transaction-consumption process 282–5
- transition probabilities 254
- trapping regions 59–60
- trend following strategies 416–17, 420–5
- two parameter analysis 24–6
- two-dimensional intertemporal optimization 107–9
- two-level hierarchies 172–3
- underconsumption regimes 313–15
- unemployment 34–5, 68–9, 302–32
- uniqueness 328–9
- unit-root processes 67–89

- United States of America (USA) 240–1, 253–6
- unrestricted learning 402–6
- unstable saddle focus 28–9
- unstable saddle path dynamics 32–3, 35–6
- unstable steady states 96–7, 104, 107–9
- updating rules 217–18, 223–4
- upswing 31, 38, 56, 62–4
- unstable node 57
- USA *see* United States of America
- utility functions
 - chaotic price dynamics 280, 290–4
 - consumption patterns 219–20, 225
 - heterogeneous interacting agent 261–2, 263
- value function computation 113–14
- value investors 417–25
- VAR-based test 86–8
- vector autoregression 252–3, 254–5
- VHS 155
- volatility autocorrelation functions 422–5
- volatility reduction 237
- wages 301–31, 357
- WAIT 172–3
- Walrasian steady state 302, 310
- wave dynamics 228–31, 234
- weak hysteresis 71–3
- wealth effects 101
- weight vector 367
- weighted averages 15
- welfare analysis 239
- white noise 80–8
- wiping out effect 76, 82
- young consumers curve 306–7
- zero growth equilibrium 17–20
- zero-cointegration relations 87