Price discovery with fallible choice

Ruiter, A.G.J.M.

Citation for published version (APA):
Index

ABM, see Agent Based Modeling
Agent Based Modeling, 21, 143
algorithm
  AA, 21, 53, 54, 67, 68, 70, 73, 76, 78, 79,
  118, 155, 161, 163
  C-D approximation, 16, 175
eBAS, 53, 54, 66–70, 73, 74, 118, 157, 159
eEMA, 53–55, 67–70, 72, 118, 152, 155–
  158
eGD, 53–55, 66–72, 74–79, 82–84, 97, 104,
  105, 109, 111, 117–119, 164, 166
eME, 53, 54, 66–72, 75–79, 117–119, 167,
  168
eRnd, 53–55, 67, 68, 70, 156
GDA, 53–55, 155, 164, 165
GDW, 53–55, 66–68, 70, 116, 117, 164, 165
Gjerstad-Dickhaut, 21, 155
Kaplan, 112
MEA, 53, 54, 167
MEW, 53, 54, 66–68, 70, 167
PID, 14
Smale, 14, 30
sniper, 112
TU, 53–55, 66–70, 73, 74, 115, 116, 118,
  168, 173, 174
Van der Laan/Talman, 15
ZI, 3, 21, 53–55, 63, 66–68, 70, 85, 155,
  156, 158
ZIP, 21, 53–55, 63, 67–70, 73, 75, 76, 78,
  79, 117–119, 155, 158, 160
arbitrage
  as mental accounting, 5, 98, 122, 129
calibration, 102, 108
  impact, 104
  learning, 121
vs strategic offers, 33
awareness of buyers/sellers
  calibration, 165, 167
defined, 147

calibration, see also sensitivity analyses
  adaptive expectations, 156
  awareness of buyers/sellers, 165, 167
  choice between opportunities, 97
  entropy sensitivity, 95
  expectation formation, 65
  haggling, 156
  markup, 157, 158, 166, 167, 171
  pre-calibration, 155
capturing human trading behavior, 77, 105, 123
CDA, see Continuous Double Auction
choice, see also fallible choice
  comprehensive, 2, 9, 87
  entropy-sensitive preferences, 92, 97, 107
  expected utility maximization, 97, 107, 121
  prospect theory, 90, 97, 107, 121
rules of thumb, 97, 105, 121, 149
sequential, 2, 87–90, 133, 150
Cobb-Douglas approximation, 16, 175
computing equilibria
  C-D approximation, 16, 175
  Smale, 14
  Van der Laan/Talman, 15
Continuous Double Auction, 17
and disequilibrium, 145
and disequilibrium theory, 22
compared to Hahn-process, 18
in Anderson et al. (2004), 27
in FACTS, 49
replacing intelligence, 85
signaling, 85
corvergence
  C-D approximation, 181
  concentration, 60, 61
  Lyapunov function, 29
critical discussion
  aggregate excess demand, 3, 23
  as an ideal, 83
censoring, 45
dominance of AA-traders, 161
equivalence of prospects, 92–94
favorable surprise, 70
insensitive beliefs, 77, 83
institutions vs intelligence, 85
insufficient transactions, 74, 77, 80
interpretation SMD-result, 22
optimization and disequilibrium, 89
private/public prices, 19
quadrant model, 45
role of the auctioneer, 12
cumulative prospect theory, see prospect theory
economic theory
  aggregate excess demand, 3, 10, 23
disequilibrium awareness, 84, 145
disequilibrium theory, 22, 46, 81, 89, 133,
  145
entropy-sensitive preferences, 92, 107
expected utility theory, 87, 90, 91, 94, 107
fallible choice, 87
folding back lotteries, 147
general equilibrium theory, 9
gross substitution (GS), 10, 11, 176
market failure, 85, 131, 132, 140
Marshallian path, 71, 168
mental accounting, 98
monopolistic competition, 5, 18, 20, 116
normal vs usual demand, 71, 81, 168
opportunities as prospects, 144
paradoxes of choice, 88
price formation, 12, 19
prospect theory, 90
quantity signals, 84, 133
rules of thumb, 22, 149
Saari-Simon result, 14, 16, 182
Scarf examples, 11
SMD result, 10, 11, 22
stability theory, 9, 11
utility of gambling, 93, 94
Walras’ Law, 10, 176, 177, 181
Weak Axiom of Revealed Preference (WARP), 10, 176, 180
efficiency, 65, 123, 124, 161
entropy-sensitive preferences defined, 93
embedding, 94
explaining paradoxes of choice, 88, 93
learning, 120, 121
pre-calibration, 95
equilibrium computation, 14, 175
conjectural, 20
core as fix-price equilibria, 133
end of period allocation, 43, 76, 98
end states of the simulation, 131
introspection, 46, 81
market failure, 131, 132, 140
shift, 27, 46, 71, 81, 82
Walrasian, 10, 12, 26, 46, 82
ESP, see entropy-sensitive preferences
experiments Gale, 111, 112
Santa Fe tournament, 112
Scarf, 2, 15, 25, 30
single financial market, 2, 21
FACTS calibration, 65, 97
design, 49, 153
elements, 143
global parameters, 56
robot behavior, 52, 74
fallible choice entropy-sensitive preferences, 92
folding back lotteries, 147
ignoring buyers/sellers, 147, 165–167
mental accounting, 98
no introspection, 46
why choice is fallible, 87
gamble, see prospect
gross substitution property, see economic theory
haggling defined, 154
pre-calibration, 156
law of demand and supply, 13, 14, 19, 178, 183
learning, 3, 5, 21, 27, 113, 114, 129
lottery, see prospect
market failure, 16, 131, 132, 140
market protocol Anderson et al. (2004), 26, 143
asynchronous trading, 50
synchronized trading, 50
markup calibration, 55, 157, 158, 164, 166, 167, 171
defined, 36
interpretation, 38
learning, 115
loglikelihood estimates, 37
simulated payoff matrix, 38
stylized facts, 36
MaxEnt, 167
ME, see MaxEnt
methodology assessing algorithms, 57
measuring convergence, 28, 59–61
measuring orbiting, 28, 45, 62
orbiting clock hand model, 29, 62
cumulative angles, 62
Lyapunov function, 29
quadrant model, 29, 45
\( T \), see Cobb-Douglas approximation
price expectations beliefs, 35, 52, 63, 69
no arbitrage prices, 76, 166
plausible prices, 168, 170
point expectations, 52, 63, 76
price formation acceptable prices, 153
arbitrage, 33
C-D approximation, 16, 175
complexity, 62, 133
conditional, 61
Cournot-Shubik mechanism, 18
Edgeworth process, 16
experimental, 4, 25, 30
Fisher process, 19
haggling, 154, 156, 157
Hahn/Negishi process, 17, 19
monopolistic competition, 4, 18, 20, 35, 66, 83, 128, 164
perfect foresight, 19
PID controller, 14
price setting, 19, 20, 116, 117
price taking, 12, 116, 117
private/public prices, 18
robot trading, 49
Scarf algorithm, 14
schedules market, 15, 16, 175
Smale algorithm, 14
strategic offer, 33, 147, 151
stylized facts of human trading, 32
synchronized prices, 29, 45
tâtonnement, 13, 18, 30, 111
unconditional, 62
Van der Laan/Talman algorithm, 15
prospect, 90, 144
quantity setting, 31, 40, 55, 56, 80, 84, 154
rationality competitive pressure, 3
ecological, 22, 112
equivalence of prospects, 92
information, 84
of choice, 87
sophisticated traders, 45
violations, 87, 88, 93, 94
rationing, 85, 133
reservation prices, 35, 55
conditional, 170
notional, 171
unconditional, 169
result
algorithms
improved, 161, 164
new, 157, 166–168
arbitrage
as mental accounting, 98
calibration methodology, 56
calibration of choice, 97
calibration of expectation formation, 77, 111
characterization excess quantities, 133
choice by rule of thumb, 97, 121
Cobb-Douglas approximation, 175
ecological rationality
arbitrage, 121
attitudes toward a target, 115
choice between opportunities, 121
entropy-sensitive preferences, 117
expectation formation, 117
markup, 115
monopolistic competition, 116
entropy-sensitive preferences
embedding, 94
explaining paradoxes of choice, 93
FACTS, 3, 49, 143
foresight through introspection, 45
market failure
probability, 134, 137
sensitivity to initial expectations, 138
markup
loglikelihood estimates, 37
simulated payoff matrix, 38
no monopolistic competition, 35, 83, 116
orbiting as lack of feedback, 63, 84
shift of equilibrium, 82
significance of quantity setting, 98, 115
stylized facts, 32
rules of thumb
derivation, 149, 151
in calibration, 97
in learning, 22, 121
sensitivity to, 76
Scarf examples
as proposed, 11, 13
in Anderson et al. (2004), 2, 26, 27
sensitivity analyses
calibration of expectations, 63, 76, 111
initial expectations, 138
number of simulations, 61
number of transactions, 80
urgent acceptances, 75
simulation
scripted, 50, 51, 56, 59, 61
semi-scripted, 51, 56, 60, 62
unscripted, 51
SMD result, see economic theory
Sonnenschein-Mantel-Debreu result, see economic theory
stability
defined, 10
Gale, 13, 111
Scarf, 13
stylized facts, 32
arbitrage, 32
end of period allocations, 43
preference for markets, 42
quantity setting, 40
regular vs strategic actions, 32
reservation prices, 35
tâtonnement, see price formation
uncertainty, 2, 35, 38–40, 42
Walras’ Law, see economic theory
Weak Axiom of Revealed Preference, see economic theory
Bibliography


