Table of contents

List of illustrations
Acknowledgements

PART 1
Background

1 Introduction
What is behavioural economics? 3
Why behavioural finance? 3
A quick history of behavioural economics 4
David Hume 4
Adam Smith 5
Jeremy Bentham 5
Vilfredo Pareto 6
Irving Fisher 6
John Maynard Keynes 6
Friedrich von Hayek 7
George Katona 8
Modern behavioural economics versus standard approaches 8
What are the standard assumptions of neoclassical economics? 8
Methodological tools 10
Game theory 11
Experimental economics 11
Behavioural policy implications 13
The structure of Behavioural Economics and Finance 14
A note on mathematics 16
Further reading 16
Some introductions to behavioural economics 16
Behavioural game theory/classical game theory 16
Experimental economics 17
Experimental software 17

2 Foundations: psychology
Introduction 18
Table of contents

Personality theory 19
  Freud's psychoanalytic theory 19
  Jung's archetypes 20
  Modern personality theory 20
  Measuring cognitive skills 21
  Personality tests 21
  Cognitive functioning 22
  Behavioural psychology 23
  Social psychology 25
  Social learning theory 26
  Social influences and social pressure 27
Conclusion 28
Further reading 29

3 Foundations: neuroscience and neuroeconomics 30

Introduction 30
  What are nerves and how do they work? 30
  Anatomy of the brain 32
  Brain areas and functions 34
  Modularity 35
  Neuroscientific data and techniques 36
  Neuroeconomics 41
  What is neuroeconomics? 41
  Neuroeconomic data 42
  Neuroeconomic models and theories 43
  Controversies in behavioural economics and neuroeconomics 45
  What's next? 46
Further reading 47

PART 2

Behavioural microeconomic principles 49

4 Learning 51

Introduction 51
  Belief learning 51
  A belief learning model 52
  Cheung and Friedman's experiments 53
  Reinforcement learning 54
  A reinforcement learning model 55
  Erev and Roth's empirical evidence 57
  Experience-weighted attraction 58
  Experimental evidence about EWA models 58
  Comparative econometric evidence on EWA versus RL and BL models 60
  Social learning and information cascades 61
  Social learning theories 61
  Experimental tests of Bayesian herding 63
Other behavioural approaches to social learning  66
Social influence  67
Evolutionary approaches  68
Neuroeconomic analyses of learning and social influence  70
Belief learning and reinforcement learning  70
Reward learning and reward prediction error  70
Observational learning  71
Case study: social influences in real-world networks  73
Social influences on household energy decisions  73
Firms' reputation-building and corporate social responsibility  73
A study of social influences in Indian villages  74
Conclusions and policy implications  75

5 Sociality and identity  77
Introduction  77
Some experimental evidence  77
Ultimatum games and dictator games  79
Experiments with trust games  80
Social preference models  81
Social utility models  81
Cooperation and punishment  86
Altruistic punishment  86
Extrinsic versus intrinsic motivations  86
Evolution and social cues  88
Ostracism in social networks  88
Identity  89
Social identity theory  89
Akerlof and Kranton's identity theory  90
Neuroeconomic analyses  91
de Quervain et al.'s analysis of altruistic punishment in the trust game  91
Neuroeconomic studies of empathy and trust  95
Case study: social norms and environmental decision-making  96
Fairness and inequity aversion  96
Social norms  97
Familial influence and identity  99
Conclusions and policy implications  100

6 Heuristics and biases  102
Introduction  102
Defining rationality  102
Procedural versus substantive rationality  103
Ecological rationality  103
Kahneman's maps of bounded rationality  104
Heuristics and decision-making  105
Tversky and Kahneman on heuristics and biases  106
Representativeness  106
Availability heuristic  111
Table of contents

Anchoring and adjustment 114
Loss aversion, endowment effects and status quo bias 116
Biases and heuristics in expert judgment 118
Choice overload and cognitive dissonance 119
Choice overload 119
Cognitive balance and cognitive dissonance 120
Neuroeconomic analyses 121
Case study: heuristics and biases in real-world decision-making 122
Online heuristics and biases 122
Heuristics, biases and folk wisdom in environmental decision-making 124
Conclusions and policy implications 126

7 Prospects and regrets

Introduction 128
Behavioural paradoxes 128
St Petersburg paradox 128
Allais paradox 129
Ellsberg paradox 129
Monty Hall/three prisoners paradox 130
Expected utility theory 131
Bar-Hillel and Falk's solution to the three prisoners problem 131
Kahneman and Tversky's critique of expected utility theory 132
Certainty effect 135
Reflection effect 136
Isolation effect 137
Kahneman and Tversky's prospect theory 138
Editing phase 138
Evaluation 139
The value function 139
Loss aversion 141
The weighting function 141
Evidence from game shows 143
Cumulative prospect theory 144
Mental accounting and framing 144
Mental accounting 144
Framing and bracketing 146
Regret theory 147
Neuroeconomic analyses 149
Case study: buying insurance 150
Conclusions and policy implications 151

8 Personality, moods and emotions

Introduction 153
Personality and individual differences 153
Personality and cognition 155
Personality and preference parameters 155
Individual differences and human capital investment 156
Moods 158
Moods and weather patterns 158
Social mood in socionomic analyses 158
Emotions and affect 159
Emotions and heuristics 160
The somatic marker hypothesis 160
Basic instincts and visceral factors 162
Social emotions 163
Cognition and emotion in dual-system models 164
Neuroeconomic analyses 167
Sanfey et al.'s fMRI study of social emotions 167
Neuroeconomic studies of empathy 170
Case study: emotional trading 170
Conclusions and policy implications 172

9 Time and plans 174
Introduction 174
Exponential discount functions 174
Individual differences with exponential discounting 174
Behavioural discount functions 175
Behavioural anomalies 175
Animal models 176
Behavioural discounting models 176
Time inconsistency in the real world 179
Behavioural life-cycle models 181
Limitations of the Angeletos et al. behavioural life-cycle model 183
Temporal mental accounting and bracketing 184
Bracketing in labour supply 184
Neuroeconomic analyses 185
McClure, Laibson, Loewenstein and Cohen's fMRI evidence 185
Glimcher, Kable and Louie's analysis of delayed choices 186
Case study: intertemporal planning and the environment 187
Behavioural discount functions for environmental decision-making 187
Goals, planning and feedback 188
Conclusions and policy implications 189

10 Bad habits 191
Introduction 191
Rational addiction models 191
Becker, Grossman and Murphy's model 191
Becker and Murphy's empirical evidence 195
Other econometric studies of addiction 196
Rational addiction models: summary of evidence and implications 199
Cue-triggered consumption 200
Laibson's cue theory of consumption 201
Bernheim and Rangel on hot–cold systems 201
Cues in natural addiction models 202
Table of contents

Visceral factors 203
Neuroeconomic analyses 204
Naqvi et al.'s lesion patient study 204
Post-mortem studies 205
Case study: healthy lifestyles 205
Bad health habits: not going to the gym 207
Conclusions and policy implications 208

PART 3
Macroeconomics and financial markets 211

11 Financial instability 213
Introduction 213
Herding, learning and social influences 214
Social learning 214
Beauty contests 215
Reputation 216
Heuristics, biases and prospect theory 216
Over-reactions and under-reactions 217
Diversification biases and the availability heuristic 218
Momentum trading 219
Prospect theory, loss aversion and ambiguity aversion 219
Time and instability 221
Moods, emotions and personality 222
An emotional finance model 223
Akerlof and Shiller's animal spirits 224
Neuroeconomic evidence 225
Risk, impulsivity and fear 226
Financial herding and social emotions 227
Conclusions and policy implications 230

12 Behavioural macroeconomics, happiness and wellbeing 232
Introduction 232
Keynes's psychology of the macroeconomy 233
Keynes's fundamental psychological laws 233
Expectations and the state of confidence 233
Macroeconomic conventions 234
Entrepreneurial animal spirits 235
A behavioural analysis of macroeconomic interactions 236
Akerlof and Shiller's animal spirits 237
Macroeconomic actors 238
Investment 238
Consumption and saving 242
Labour markets and unemployment 243
Government policy-making 244
Happiness 245
<table>
<thead>
<tr>
<th>Utility and happiness 246</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellbeing 247</td>
</tr>
<tr>
<td>Measuring wellbeing 249</td>
</tr>
<tr>
<td>Wellbeing and the environment 250</td>
</tr>
<tr>
<td>Neuroeconomic studies of happiness 252</td>
</tr>
<tr>
<td>Conclusions and policy implications 253</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bibliography</th>
<th>255</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>284</td>
</tr>
</tbody>
</table>