

Contents

<i>Preface</i>	<i>page xi</i>
I Econophysics	1
1 WHY ECONOPHYSICS?	3
1 Newton's apple paradigm revisited	4
1.1 Newton's apple	5
1.2 An economic parallel	7
2 Simple phenomena first	8
2.1 Two-body problems	9
2.2 Complexity classification	10
2.3 The role of time: Simon's bowl metaphor	11
2.4 Simple aspects of complex systems	12
3 From plausible reasons to regularities	14
3.1 The pot of yoghurt paradigm	15
3.2 Plausible causes versus scientific explanations	17
3.3 Regularities	20
3.4 Circumstantial causes versus structural factors	21
3.5 Models need accurate empirical targets	21
4 Conclusion	22
4.1 The primacy of observation	22
4.2 "Modest goals"	23
4.3 Clusters of events and comparative analysis	23
2 THE BEGINNINGS OF ECONOPHYSICS	25
1 Pre-econophysics	26
1.1 Pre-econophysicists	27
1.2 Assessment of pre-econophysics	28

2	Institutional econophysics	29
2.1	Idiosyncrasies of economic journals	29
2.2	The beginnings of econophysics	30
2.3	Neurophysics	31
2.4	The fractal revolution	33
2.5	Formation of an econophysical community	33
2.6	A personal note	34
2.7	The future of econophysics	35
II	How do markets work?	37
3	SOCIAL MAN VERSUS HOMO ECONOMICUS	39
1	The social man and the Zeitgeist	40
1.1	Connection between fast growth sectors and Zeitgeist	41
1.2	Quantitative measure of the role of the Zeitgeist	45
1.3	Ways and means of the Zeitgeist	47
2	Regularities	48
2.1	The search for uniformities and regularities	48
2.2	Examples of speculative peaks	49
4	ORGANIZATION OF SPECULATIVE MARKETS	55
1	Trends	56
1.1	Concentration	56
1.2	The thorny question of commission rates	60
2	Trading techniques	62
2.1	Short selling, futures, options	63
2.2	How to create a successful financial product?	66
2.3	Protection against market crashes	68
2.4	Sources of instability: the boomerang effect	70
3	Organization of the banking system	72
3.1	The United States	73
3.2	Canada versus the United States	73
4	Time series for stock prices and bankruptcies	74
4.1	Stock prices	74
4.2	Downgrades, failure rate, and suspensions	78
III	Regularities in speculative episodes	81
5	COLLECTIVE BEHAVIOR OF INVESTORS	83
1	High-tech booms	84
1.1	The high-tech boom of the automobile industry	84

<i>Contents</i>		vii
1.2	The phase of “natural selection”	85
1.3	High-tech booms backed by venture capital	87
2	Flight to safety	89
2.1	Grain panics	91
2.2	Nineteenth-century banking panics	91
2.3	Relationship with grain crisis	92
2.4	“Deliver us from inflation”	93
2.5	Flight to quality in equity markets	97
3	To sell or not to sell?	103
3.1	Formulation of the problem	104
3.2	Some methodological points	108
3.3	Short-term response (weekly fluctuations)	108
3.4	Long-term response (yearly fluctuations)	109
3.5	Effect of mutual funds purchases on stock prices	112
3.6	Conclusion	114
4	Connection between property and stock markets	115
4.1	Impact of property crashes on economic growth	115
4.2	Delay in the response of real estate markets	117
4.3	The connection between property and stock bubbles	118
6	SPECULATIVE PEAKS: STATISTICAL REGULARITIES	122
1	A “thermometer” of speculative frenzy	122
1.1	Real estate	124
1.2	Bonds	125
2	Shape of price peaks	126
2.1	Empirical evidence for asymmetry parameters	128
2.2	Mathematical description of the shape of peaks	130
2.3	Empirical evidence for shape parameters	131
3	Stock market crashes	133
3.1	When?	134
3.2	How?	135
3.3	Overnight crashes	137
3.4	Lawsuits in the wake of market crashes	139
4	Trading volume	140
4.1	Volume at the level of individual stocks	140
4.2	Volume movements at market level	141
5	Economic consequences of stock market collapses	143
5.1	Consumer confidence	144

viii	<i>Contents</i>	
	5.2 Relationship between stock price levels and commission rates	149
	5.3 Effect on the distribution of income	151
IV	Theoretical framework	155
7	TWO CLASSES OF SPECULATIVE PEAKS	157
1	Speculative peaks: two illustrative examples	158
1.1	Wheat price peaks	158
1.2	Real estate prices	158
2	The price multiplier criterion	160
3	The ensemble dispersion criterion	163
4	Two classes	167
5	Bond market	172
6	Differences in response times	175
6.1	Dispersion of peak times	175
6.2	Relationship between amplitude and response time	176
8	DYNAMICS OF SPECULATIVE PEAKS: THEORETICAL FRAMEWORK	177
1	Main ideas	178
1.1	A comparative perspective	178
1.2	Shock versus permanent monitoring	179
1.3	Users and speculators	179
1.4	Transaction friction	180
1.5	Agents and markets form a compound	182
2	Implementation	183
2.1	Recapitulation of empirical regularities	183
2.2	Dynamic equations: first order	183
2.3	Dynamic equations: second order	184
2.4	Dynamic equations: higher orders	185
2.5	Light or heavy damping?	186
3	Implications	188
3.1	Amplitude versus duration of the ascending phase	188
3.2	Peak amplitude and proportion of investors	190
3.3	Synchronization effects	193
	Appendix A: Green's function for a fourth-order equation	195
9	THEORETICAL FRAMEWORK: IMPLICATIONS	198
1	The resilience effect	199
1.1	Description	199

Cambridge University Press

978-0-521-80263-5 - Patterns of Speculation: A Study in Observational Econophysics

Bertrand M. Roehner

Table of Contents

[More information](#)

	<i>Contents</i>	ix
1.2	Interpretation	200
1.3	Statistical evidence	202
2	Breakdown of scaling	203
2.1	First-order process	204
2.2	Second-order process	207
3	Ensemble coefficient of variation	208
4	The stochastic spatial arbitrage model for U-class goods	211
5	Perspectives	214
	<i>Main data sources</i>	216
	<i>References</i>	219
	<i>Index</i>	227