

# Alphanomics: The Informational Underpinnings of Market Efficiency

---

**Charles M. C. Lee**  
Stanford University, USA  
clee8@stanford.edu

**Eric C. So**  
Massachusetts Institute of Technology, USA  
eso@mit.edu

**now**

the essence of knowledge

Boston — Delft

# Contents

---

<b>Foreword</b>	<b>3</b>
<b>1 The Magic of Markets</b>	<b>11</b>
1.1 The value of markets in society . . . . .	11
1.2 The joint equilibrium problem . . . . .	14
1.3 What do we mean by market efficiency? . . . . .	16
1.4 The conceptual case for efficiency . . . . .	20
1.5 Can mispricing exist in equilibrium? . . . . .	21
1.6 Costly informational arbitrage . . . . .	24
1.7 The "As If" defense of market efficiency . . . . .	26
<b>2 The Noise Trader Approach to Finance: An Alternative to the EMH?</b>	<b>33</b>
2.1 Overview . . . . .	34
2.2 The Shiller model . . . . .	36
2.3 The noise trader approach to finance . . . . .	41
2.4 Implications for market-based research . . . . .	45
2.5 Research design issues . . . . .	49
<b>3 Noise Trading and Investor Sentiment</b>	<b>55</b>
3.1 Investor sentiment and arbitrage costs . . . . .	57
3.2 What moves stock prices? . . . . .	59

3.3	The quest for sentiment — early work . . . . .	61
3.4	Behavioral roots: The origins of investor sentiment . . . . .	64
3.5	Capital flows and stock returns . . . . .	69
3.6	Investor clienteles and systemic noise . . . . .	73
3.7	Measuring investor sentiment . . . . .	78
3.8	Firm-level sentiment . . . . .	81
3.9	Moods and emotions . . . . .	82
<b>4</b>	<b>Measuring Firm Value: The Role of Fundamental Analysis</b>	<b>89</b>
4.1	Overview . . . . .	90
4.2	Benjamin Graham as a quant . . . . .	91
4.3	A bit of theory might help . . . . .	95
4.4	The two sides of value investing . . . . .	99
4.5	Lessons from the field . . . . .	100
4.6	Empirical evidence from academic studies . . . . .	102
4.7	Why does value investing continue to work? . . . . .	110
<b>5</b>	<b>Arbitrage Costs</b>	<b>121</b>
5.1	What the smart money sees . . . . .	125
5.2	Strategy identification and verification . . . . .	128
5.3	The role of complexity . . . . .	133
5.4	Implementation and execution costs . . . . .	141
5.5	Funding and financing constraints . . . . .	145
<b>6</b>	<b>Research Methodology: Predictability in Asset Returns</b>	<b>153</b>
6.1	Exposure to risk factors . . . . .	154
6.2	If it looks like risk... . . . .	158
6.3	Short-window returns . . . . .	160
6.4	Other non-return-based metrics . . . . .	162
6.5	Sub-periods and sub-populations . . . . .	163
6.6	Delisting and survivorship biases . . . . .	165
6.7	Size, illiquidity and exploitability issues . . . . .	166
6.8	Gauging economic significance . . . . .	168
6.9	Testing statistical significance . . . . .	170
6.10	Long-window returns . . . . .	172
6.11	Incremental contribution . . . . .	174

**Acknowledgements** 179

**References** 181