

Contents

Acknowledgements	v
Abstract (English/Deutsch)	vii
List of Figures	xix
List of Tables	xxi
1 Introduction	1
1.1 Positioning of research	3
1.2 Outline	4
1.3 Work outside dissertation	5
1.3.1 Risky decision making and the brain	5
1.3.2 Strategic interactions and risky cooperation	6
1.3.3 Software developed for research purposes	7
2 HML for cumulative prospect theory	9
2.1 Introduction	10
2.1.1 Example of a risky choice	10
2.1.2 EV maximization and descriptive individual level modeling	11
2.1.3 Three necessary components for measuring risk preferences	11
2.1.4 Overfitting and bounding parameters	15
2.1.5 Justification for using hierarchical estimation methods	15
2.1.6 Other applications of hierarchical estimation methods	16
2.1.7 Other research examining parameter stability	16
2.1.8 Structure of the rest of this paper	17
2.1.9 Major contributions	17
2.2 Lotteries and Experimental design	17
2.2.1 Participants	17
2.2.2 Lotteries	18
2.2.3 Procedure	19
2.3 Model specification	19
	xv

Contents

2.3.1	Value function	20
2.3.2	Probability weighting function	21
2.4	Estimation methods	22
2.4.1	Maximum Likelihood Estimation (MLE)	22
2.4.2	Bounded MLE	25
2.4.3	Hierarchical Maximum Likelihood Estimation (HML)	25
2.5	Parameter recovery results	28
2.6	Empirical results	29
2.6.1	Aggregate results	29
2.6.2	Individual risk preference estimates	30
2.6.3	Parameter reliability	33
2.7	Discussion	35
2.8	Appendix: Online implementation	37
2.9	Appendix: Inter-parameter correlation	38
2.10	Aggregate stochastic predictions	39
2.11	Appendix: Lotteries	40
3	Sequential investment and the Kelly criterion	43
3.1	Introduction	44
3.2	Problem 1: A stylized sequential decision problem	45
3.2.1	Problem 1	45
3.2.2	Theory	46
3.3	Problem 2: A stylized sequential decision problem with a cost for adjustments	52
3.3.1	A modified Kelly problem	52
3.3.2	Theoretical implications	53
3.4	Literature	54
3.5	Experimental design	55
3.5.1	Procedure	55
3.5.2	Exclusions	58
3.5.3	Payment	58
3.6	Results	58
3.6.1	Behavior in the dynamic decision task	58
3.6.2	Effect of the cost of adjustment	68
3.6.3	Correlates	70
3.7	Conclusion and discussion	71
4	Bonuses bite back	83
4.1	Introduction	84
4.1.1	Outline	85

4.2	Existing literature	86
4.3	Theory	87
4.3.1	Problem 1. A simple dynamic decision task	87
4.3.2	Problem 2. A simple constant sum stochastic game	88
4.3.3	Problem 3. A simple non-constant sum stochastic game	90
4.4	Experimental Design	92
4.4.1	Design	92
4.4.2	Methods	93
4.4.3	Payment	95
4.5	Results	96
4.5.1	Task results	96
4.5.2	Efficiency when competing for a bonus	100
4.5.3	Behavior in the games	101
4.5.4	Main results	105
4.6	Discussion	106
4.6.1	Major points	106
4.6.2	Managerial implications	107
4.7	Appendix: Normative solutions	109
4.8	Appendix: The effect of $p(g)$ and the bonus on efficiency	112
4.9	Appendix: Delicateness of the Nash Equilibrium	113
4.10	Appendix: Logit-QRE	114
5	Discussion and conclusion	115
5.1	Major results	115
5.2	Future research directions	117
5.2.1	Design of lotteries	117
5.2.2	Theories of risk preferences and reference point formations	118
5.2.3	Decision theory and game theory	119
5.2.4	Technology and software	119
5.3	Afterword	120
	Bibliography	121