Determinants of Risk-Taking in Experimental Asset Markets

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Submitted in total fulfilment of the requirements of the degree of

Doctor of Philosophy (PhD)

February 2018

Bond Business School

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This research was supported by an Australian Research Council grant.
Abstract

This thesis examines the effects of biases on investment decisions and risky asset prices using laboratory asset markets. A bias is a systematic error in decision-making and can be caused by many factors. In contrast to unsystematic errors, biases affect investor behaviour directionally and do not cancel each other out. Hence, a bias can cause asset prices to deviate from fundamental values, with potentially detrimental effects for investors and economies.

This thesis examines three possible sources for biased decision-making, that is, it considers bias caused:

- by option-like compensation: tournament behaviour
- by probability judgement error: the gambler’s fallacy
- when feelings affect information processing: mood misattribution

Throughout the study, we increase the signal-to-noise ratio in our data. We use an established experimental design combined with extensive training to create ‘expert’ experimental subjects.

The first study investigates the ways in which relative performance-based compensation, tournament incentives, affect portfolio choice and market prices. Unlike most experimental studies on this topic, we use a design with two risky assets that can be traded simultaneously. We draw on previous findings on price behaviour in two risky asset markets that exchange rates remain close to theoretical values even if individual prices deviate from risk-neutral fundamental values. We report that exchange rates between ‘tournament markets’ and markets with linear compensation do not differ significantly; however, individuals change portfolio risk in line with the main prediction of tournament theory that midcompetition underperformers take excess risks.

The second study examines the effects of the gambler’s fallacy on asset prices and portfolio choice. The gambler’s fallacy is the belief that that small samples should have the same distribution mean as their population. Investors sharing this belief would overpay for assets that have recently performed worse than expected and underpay for
assets after better-than-expected recent performance. Individual portfolios would be biased towards assets with unexpectedly bad performance.

Existing models link the gambler’s fallacy to the disposition effect, the phenomenon that investors sell winning, but hold losing, investments, as well as medium-term momentum and long-term reversal in stock prices. To our best knowledge, our experimental study is the first to examine the gambler’s fallacy in a double-auction market setting. We deliberately trigger the gambler’s fallacy in treatment markets by paying a series of higher-than-expected dividends. We find that subjects benefitting the most from the high dividends become net sellers in the latter part of the experiment, while those not benefitting become net buyers. We report that market prices during the first half of phase two treatments are lower than those of phase two controls. Under these circumstances, buying the asset is a rational decision.

The third study combines data from both experiments with surveys on subject mood to test for effects of mood misattribution. Mood misattribution is a bias suspected to alter the way investors search for, and evaluate, information on risks and returns based on their current mood. The cognitive psychology literature is divided in two competing hypotheses with opposite predictions for risk-taking and asset valuation. We find that subjects in a negative mood select higher-risk portfolios. Market prices are significantly positively correlated with the relative number of such subjects in the market; that is, the more the subjects in a market reporting a negative mood, the higher the prices for risky assets. Our findings stand in contrast to several empirical studies that use the weather as a proxy for investor mood. We question the validity of such a proxy based on published work in cognitive psychology and the working hours of employees in financial institutions.

Key words

Behavioural Finance, Experimental Finance, Risk-Taking, Tournament Behaviour, Gamblers Fallacy, Mood Misattribution, Cognitive Bias
Declaration by Author

This thesis is submitted to Bond University in fulfilment of the requirements of the degree of Doctor of Philosophy.

This thesis represents my own original work towards this research degree and contains no material that has previously been submitted for a degree or diploma at this University or any other institution, except where due acknowledgement is made.

Johannes Michael Burger
Research Outputs During Candidature


‘Risk-Taking Behaviour in a Two-Asset Experiment Under Tournament Incentives with Well-Trained Participants’ with Julia Henker and Thomas Henker, Bond Business School research seminar series, Gold Coast Australia, August 2016.
Ethics Declaration

The research associated with this thesis received ethics approval from the Bond University Human Research Ethics Committee. Ethics application number RO1484 and RO1484B.
To my mum.
Acknowledgements

I would like to express my special appreciation and thanks to my supervisors Associate Professor Julia Henker and Professor Thomas Henker, you have been tremendous mentors for me. I would like to thank you for your unlimited support and your guidance throughout my candidature. I will forever be grateful for your kindness and warmth that helped me so much when the goings got tough.

I am thankful to the Australian Research Council for providing the funding for my experiments. Thanks to Professor Mark Spence for the great advice on experimental design and to Guilherme Gomes for helping with the setup of the laboratory. I thank all staff of the Bond Business School for being extremely supportive of my work. Special thanks to Emma Hunt for her assistance in many administrative tasks.

I am grateful for the love and support of my family and friends. Thank you for standing by me through all this time. I miss you, and I am looking forward to seeing you again more often. To my dad, thank you for your never wavering faith and support. Ich liebe Dich und bin sehr stolz darauf Dein Sohn zu sein.
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List of Abbreviations

Affect Infusion Model  AIM
Assets Under Management  AUM
Efficient Market Hypothesis  EMH
Graz-Innsbruck Market System  GIMS
Mood Maintenance Hypothesis  MMH
Ordinary Least Squares  OLS
Smith, Suchanek and Williams  SSW