

Investor biases in financial markets

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Certificate of original authorship

I, Anirudh Dhawan, declare that this thesis, titled “Investor biases in financial markets”, is submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy in the UTS Business School at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

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To my Amma and Appu

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Preface

Chapters 2–4 in this thesis have each been developed into an individual co-authored working paper. The working paper version of Chapter 2 is currently at a revise-and-resubmit stage at the *Review of Finance*. Two of these working papers have been presented or have been selected for presentation at various academic conferences. The list of working papers and conference presentations is as follows:

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 - UWA Blockchain, Cryptocurrency, and Fintech Conference 2019
 - Australasian Finance and Banking Conference (AFBC) 2019
 - IGIDR-IIM Udaipur Market Microstructure Workshop 2020
 - Financial Intermediation Research Society (FIRS) Conference 2020 (canceled due to the COVID-19 pandemic)

2. Dhawan, A., Loos, B., Navone, M., Putnins, T., 2021. “Getting burned by frictionless financial markets” (Chapter 3)
 - Financial Research Network (FIRN) Ph.D. Symposium 2020
 - Economic Science Association (ESA) Meeting 2021
 - Peking University International Young Finance Scholars’ Conference 2021
 - Academy of Behavioral Finance & Economics Annual Meeting 2021 (scheduled)
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 - Melbourne Asset Pricing Meeting 2021 (scheduled)

3. Dhawan, A., Putnins, T., 2021. “Attention to information releases” (Chapter 4)

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List of abbreviations

AMM	Automated Market Maker
API	Application Programming Interface
ASX	Australian Securities Exchange
AUD	Australian Dollar
BPS	Big Pump Signal
BTC	Bitcoin
CPT	Cumulative Prospect Theory
EDGAR	Electronic Data Gathering, Analysis, and Retrieval System
GMT	Greenwich Mean Time
ICO	Initial Coin Offering
NFT	Non-Fungible Token
OLS	Ordinary Least Squares
ONYSAG	Office of the New York State Attorney General
PA	PumpAnalysis
PDF	Probability Density Function
PEAD	Post-Earnings Announcement Drift
S&P	Standard and Poor's
SIRCA	Securities Industry Research Centre of Asia-Pacific
SVI	Google Search Volume Index
US	United States of America
USD	US Dollar
WE	WalletExplorer

Abstract

Behavioral biases are a key determinant of investors' wealth outcomes in financial markets. However, there is still much to learn about the nature of these biases. This thesis studies different types of financial markets to understand the individual- and aggregate-level effects of specific biases and how these biases are influenced by the environment.

The first study examines how biases drive people to participate in pump-and-dump manipulation games in cryptocurrency markets. Cryptocurrency manipulators publicly announce the intended manipulations and invite others to join them. In a simple framework, we show that these pumps are inherently negative-sum games for non-manipulators, as manipulators have an advantage. So, why do people participate in these schemes? Rational agents do not participate unless they have a skill or speed advantage. However, overconfident agents and gamblers participate, even without any advantage. We find strong empirical support for both mechanisms. Pumps generate extreme price and volume distortions, and cause large wealth transfers between participants.

The second study asks whether investor loss-making tendencies are influenced by the trading environment, particularly the trend towards frictionless access to markets. We hypothesize that adding back certain "trading frictions" in markets can make investors think harder and mitigate losses arising from impulsive trading. Using laboratory experiments, we examine how investor performance is impacted by various frictions: transaction costs, time delays in placing orders, and tasks requiring cognitive effort. High costs and time delays have no effect or harm performance, whereas cognitive tasks benefit participants who are most prone to underperforming. We conclude that frictions can yield performance benefits if they help inattentive investors consider nonsalient fundamental information they might otherwise neglect.

The third study investigates the aggregate effects of attention to fundamental information in stock markets. To isolate attention to information, we propose a new measure that involves classifying investors as inattentive when they do not cancel or update their pending orders after material overnight news events. We find strong underreactions and price drifts after material corporate announcements for stocks that receive less attention. These drifts cannot be explained

by other mispricing effects, such as mispricing after earnings announcements and for stocks favored by retail investors.

In summary, this thesis contributes by investigating how biases drive participation in loss-making schemes in financial markets, how certain elements in the market architecture can reduce investor losses by directing their attention to fundamental information, and the aggregate effects of inattention to fundamental information in stock markets.