

AN ANALYSIS OF THE EFFECTS OF RISK BIASES
ON REAL OPTIONS PRICING

by

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A dissertation submitted in fulfillment of the requirements
for the degree of Doctor of Business Administration

The University of Newcastle, Australia

[December 2014]

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(Signed) _____

Nathan Brady

DEDICATION

To my wife Tobey for her unwavering support of my academic pursuits over the years, and to my daughter Kora for reminding me that sometimes playtime comes first.

ACKNOWLEDGMENTS

Throughout the writing of this dissertation, my advisor, Professor Stephen Chen has been a fantastic guide. While I'm sure he understood that the journey would be long and the challenges great, he always provided just the right amount of encouragement to keep me going and the guidance to stay on track.

Thank you to Dr. Kelly Welch for introducing me to real options during the MBA program at the University of Kansas. Had it not been for his challenge to include them in a capstone project, I would have never taken interest in them and may not have pursued the DBA.

Thank you to the late Professor Mark Hirschey for introducing me to the real world of finance and investing. Rare is the day where I do not think of one of your nuggets of wisdom. May your soul rest in peace, professor.

Finally, I'd like to express my gratitude to The University of Newcastle, Australia, to its program administrators, and, in particular, to Sam Doherty, for putting together the postgraduate program that made this endeavor possible, even from the United States.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 Purpose.....	2
1.2 Significance.....	3
1.3 Research Objective	4
1.4 Research Questions.....	5
1.5 Research Model	5
1.6 Dissertation Structure.....	7
CHAPTER 2: LITERATURE REVIEW	8
2.1 Options Theory	8
2.1.1 Financial Options	9
2.1.2 Real Options.....	16
2.1.3 Use Cases	17
2.1.4 Valuation Models	21
2.1.5 State of Adoption	24
2.2 Utility Theory.....	25
2.2.1 Expected Utility	26
2.2.2 Behavioral Finance	28
2.2.3 Prospect Theory	30
2.3 Questioning Risk Measures	33
2.4 Influential Works.....	34
2.5 Research Gap	36
2.5.1 Low Adoption Rate	38
2.6 Proposed Research Model.....	39
2.7 List of Hypotheses	42
2.7.1 Hypothesis 1.....	42
2.7.2 Hypothesis 2.....	43
2.7.3 Hypotheses 3	44
2.7.4 Hypothesis 4.....	46
2.7.5 Hypothesis 5.....	46
CHAPTER 3: RESEARCH DESIGN.....	48
3.1 Background.....	48

3.2	Research Method Selection and Design	48
3.2.1	Research Method	48
3.2.2	Design Process	49
3.2.3	Research Instrument.....	49
3.2.4	Sample and Sampling	52
3.3	Questionnaire Design.....	53
3.4	Analysis Techniques and Hypotheses Testing	57
3.4.1	Hypothesis 1.....	58
3.4.2	Hypothesis 2.....	58
3.4.3	Hypothesis 3.....	58
3.4.4	Hypothesis 4.....	58
3.4.5	Hypothesis 5.....	60
3.5	Reliability.....	61
3.6	Validity	62
3.7	Ethical Considerations	63
CHAPTER 4: RESULTS		65
4.1	Ethical and Regulatory Safeguards.....	65
4.2	Response to Survey.....	66
4.3	Preparation for Analysis.....	66
4.3.1	Amendments to the Data.....	66
4.3.2	Formation of the Discount Variable	67
4.4	Results of Reliability Testing	68
4.5	Results of Hypothesis Testing.....	68
4.5.1	Hypothesis 1.....	69
4.5.2	Hypothesis 2.....	70
4.5.3	Hypothesis 3.....	70
4.5.4	Hypothesis 4.....	71
4.5.5	Hypothesis 5.....	72
4.6	Results of Other Testing.....	75
CHAPTER 5: DISCUSSION.....		78
5.1	Evidence of Prospect Theory in Options Pricing.....	78
5.2	Implications for Options Pricing in Practice.....	81
5.3	Agency Issues	83

5.4	Managerial Education	84
5.5	Limitations	84
5.6	Future Research Opportunities	86
5.7	Contribution Summary.....	88
	REFERENCES	91
	APPENDICES	96
	Appendix A – Definitions and Abbreviations	97
	Appendix B – Invitation Flyer	100
	Appendix C – Options Primer and Survey Instructions.....	102
	Appendix D – Ethics Approval Notification.....	104
	Appendix E – Information Statement	108
	Appendix F – Prize Draw Terms and Conditions	110
	Appendix G – Questionnaire Server Side Source Code	114
	Appendix H1 – SPSS output for Hypotheses 1 testing.....	125
	Appendix H2 – SPSS output for Hypotheses 2 testing.....	127
	Appendix H3 – SPSS output for Hypotheses 3 testing.....	129
	Appendix H4 – SPSS output for Hypotheses 4A testing	131
	Appendix H5 – SPSS output for Hypotheses 4B testing	133
	Appendix H6 – SPSS output for Hypotheses 5A testing	135
	Appendix H7 – SPSS output for Hypotheses 5B testing	137
	Appendix I – Survey Questions and Responses.....	140

LIST OF TABLES

Table 1 Biases by Response Stage	51
Table 2 Research Variables	56
Table 3 Hypotheses Testing Summary	69

LIST OF FIGURES

Figure 1. Simplified research model	6
<i>Figure 2.</i> Call option payoffs	13
<i>Figure 3.</i> Put option payoffs	15
<i>Figure 4.</i> Prospect theory utility curve	31
Figure 5. Research model	40
<i>Figure 6.</i> Discount versus probability for call options	73
<i>Figure 7.</i> Discount versus probability for puts	75

ABSTRACT

Over the past two decades, a significant amount of academic knowledge has been created on how to apply real options analysis to business investments. Despite the many apparent advantages of using real options to value projects, the approach has not found favor with managers in practice. Some critics claim that the method is untrustworthy and might encourage too much risk taking. This dissertation provides an exploration of risk biases, viewed through the lens of prospect theory, as a potential cause for the mistrust toward real options. Using evidence from a survey of 67 business school students, the results showed that participants generally evaluated options in a manner consistent with prospect theory's S-shaped utility function. This research agrees with prior findings that buyers will price options at a discount and adds to the literature by confirming a new hypotheses that call options are consistently discounted more than put options of similar expected value. Additionally, evidence is provided that, in agreement with prospect theory, small probabilities cause distortions in options pricing. In general, pricing biases were found to be dependent on the framing of the scenario as either a gain or a loss and whether or not there were small probabilities involved. These findings bring into question the applicability of standard risk measures, such as discount rates derived from opportunity costs, to options scenarios.

Keywords: Real options, prospect theory, expected utility, options pricing, risk aversion