Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Cheap Talk in the Game of Chicken: An Experimental Investigation.

A thesis presented in partial fulfilment of requirements for the degree of

Masters in Business Studies in Economics

at Massey University, Albany, New Zealand.

Nigel Espie

2015

Abstract

Following the suggestion that cheap talk can help players to coordinate on Nash equilibria in Chicken, an experimental test was undertaken to test this claim. In pairs, participants (n=180) played an endowment version of Chicken involving either no communication, one-way communication, or two-way communication. Participants were each given a sum of money which they could either *Invest* or *Not Invest*. Based on both participants' decisions, the initial amount of money could be increased or decreased. Although cheap talk did not significantly increase the proportion of equilibria outcomes, one-way and two-way cheap talk influenced participants' behaviour in opposing ways. In the one-way condition, senders used their messages to take charge of the game while two-way communication elicited greater cooperativeness between participants. These findings support the idea that two messages can create a focal point even when they do not constitute a Nash equilibrium. Explanations for these findings, the applicability of level-k model predictions, and also practical applications of this research are discussed.

Acknowledgements

I would like to express gratitude to the Massey University Business School for the opportunity to undertake graduate study. In particular, I am very grateful for the ongoing support from my supervisor, Professor Christoph Schumacher, who has guided me through the research process from beginning to finish. I am also very appreciative of Bronwyn Bruce-Brand for helping me to undertake the experimental component of this research. I would also like to thank numerous other faculty members at Massey University's Economics and Finance Department, who have taught me over the past few years. Lastly, I am indebted to my partner, Jayla, and also my family, who have tolerated me throughout my time as a student.

Table of Contents

	Abstract	i
	Acknowledgements	ii
	Table of Contents	iii
	List of Tables	iv
	List of Figures	v
1	Introduction	1
2	Literature Review	4
	2.1 Cheap talk: An Overview $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$	4
	2.2 Cheap Talk and Game Structure $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$	6
	2.3 Cheap Talk in Chicken $\ldots \ldots \ldots$	11
	2.4 Predicted Impact of Cheap Talk in Chicken	13
3	Method	18
	3.1 Methodology \ldots	18
	3.2 Design	20
	3.3 Procedure	25
	3.4 Measures	26
	3.5 Participants	27
	3.6 Ethical Approval	27
4	Results	28
	4.1 Preliminary Analysis	28
	4.2 Comparing Communication Structures	28
	4.3 Probit Regressions	33
5	Discussion	41
	5.1 Comparison with Previous Research	41
	5.2 Outcomes across Communication Structures $\ldots \ldots \ldots \ldots \ldots$	42
	5.3 Messages, Decisions, and Gender	48
	5.4 Level-k model Analysis	51
	5.5 Practical Applications	53

		5.5.1 Case Study: The Greek-Eurozone Chicken game	55
	5.6	Limitations	58
	5.7	Future Research	59
6	Cor	nclusion	60
	Ref	erences	62
	App	pendix A: Participant Information Sheet	72
	App	pendix B: Experimental Instructions	75
	App	pendix C: Results Sheet Example	77
	App	pendix D: MUHEC Ethical Approval	79
	App	pendix E: Logit Model Output	79

List of Tables

2.1	Action profiles in Chicken as suggested by EÖ	17
4.1	Decision proportions vs. MSE predictions	29
4.2	Proportion of outcomes across conditions	29
4.3	Proportion of decisions across conditions	30
4.4	Proportion of messages across conditions	31
4.5	Average payoffs for participants across conditions	31
4.6	Proportion of decisions and messages by gender across conditions \ldots	32
4.7	Proportion of honest messages by gender	33
4.8	Probit model 1: Impact of communication on participants' decisions	35
4.9	Probit model 2: One-way vs. Two-way com. on participants' decisions	38
4.10	Probit model 3: Messages in the one-way condition	39
4.11	Probit model 4: Messages in the two-way condition	40
5.1	Proportion of equilibria outcomes compared to DF (2002)	42
5.2	Proportion of <i>Not Invest</i> decisions compared to DF (2002)	42
A.1	Logit model 1: Impact of communication on participants' decisions $\ . \ .$	79
A.2	Logit model 2: One-way vs. Two-way com. on participants' decisions .	79
A.3	Logit model 3: Messages in the one-way condition	79
A.4	Logit model 4: Messages in the two-way condition	80

List of Figures

1.1	Typical Game of Chicken where $(T>R>S>P)$	2
2.1	The Battle of the Sexes and Stag Hunt games	5
2.2	The Chicken and the PD games	7
2.3	Variants of the Stag Hunt game played in Clark et al. (2001)	11
2.4	Chicken games played in the experiments of SS (1972) and DF (2002) $\ .$	13
3.1	Chicken game used in Bornstein et al. (1997)	20
3.2	Chicken game used in this experiment (NZ)	21
5.1	Extensive form of Chicken used in this experiment	44
5.2	Chicken game between Greece and the Troika	56