

Tax Audit Rules and Firm Behaviour

Tax Audit Rules and Firm Behaviour

David John Hoey



THE UNIVERSITY
of ADELAIDE

A thesis submitted to the University of Adelaide in
fulfillment of the requirements for the degree of Doctor
of Philosophy

October 2015

Declaration

I, David John Hoey certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968. I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

Acknowledgements

I would like to thank my supervisor Professor Ralph Bayer who has been immensely generous with his encouragement, advice and support. I cannot thank him enough. I acknowledge those who helped with the running of the experiments used in this thesis: Sookie Zhang, Mickey Chan and Alex Jarvis. I thank Pru Kerr, especially for her comments on my writing. I thank all those who have inspired my learning over the years, including Professor Ralph Bayer (again), Dr Virginie Masson, Dr Nadya Baryshnikova, Dr Eran Binenbaum, Professor Mark Weder, Dr Jacob Wong, Ian Graham and Dr Seungmoon Choi. Also, I thank everyone in my coursework cohort including Dr Anne Arnold, Dr Mark Dodd, Dr Brita Pekarsky, Sumit Dutta, Dr Kofi Otumawu-Apreku, Niti Rathod and Dr Hang Wu.

Finally, I would like to thank my family and friends—Mum, Dad and Dr Anne Hoey for everything they have done for me. Also, Nick Birch and Brian Monger for their explanations of comparative advantage and sunk cost! Last but definitely not least, my beautiful partner Carlyn Leaver. She has been unfailing in her love and support. I genuinely cannot thank her enough.

Contents

1	Introduction	17
1.1	Tax auditing, tax evasion and firm behaviour	19
1.1.1	Tax auditing	19
1.1.2	Tax evasion	20
1.1.3	Firm behaviour	22
1.2	Motivation	23
1.2.1	Audit policy affects firm behaviour	23
1.2.2	Utilizing reported information can reduce tax evasion	26
1.3	The compliance problem	29
1.3.1	The Bayer-Cowell model	30
1.3.2	Audit rules	32
1.4	Program of work	33
2	Market Structure and Relative Tax Auditing	37
2.1	Introduction	37
2.2	Setup	42
2.2.1	The Model	42
2.2.2	Audit Rules	46
2.3	Equilibrium	47

2.3.1	Timing	47
2.3.2	Tax Stage	48
2.3.3	Market Stage	49
2.4	The Market Effect	51
2.5	Market Structure	61
2.5.1	Firms' actions impose negative externalities on competi- tors and their actions are welfare improving	64
2.5.2	Firms' actions impose negative externalities on competi- tors and their actions are welfare reducing	68
2.5.3	Firms' actions impose no externalities on competitors	73
2.5.4	Firms' actions impose positive externalities on competi- tors and their actions are welfare improving	74
2.5.5	Firms' actions impose positive externalities on competi- tors and their actions are welfare reducing	76
2.6	Conclusion	80
3	A Rank-Order Tax Audit Rule	83
3.1	Introduction	83
3.2	The Model	86
3.3	Equilibria	91
3.3.1	Tax Stage.	92
3.3.2	Cournot Stage.	95
3.3.2.1	The Best Response Correspondences	96
3.3.2.2	Rationalizable Quantities	102
3.3.2.3	Equilibria	103
3.4	Comparison with the Relative Rule	104
3.5	Conclusion	106

<i>CONTENTS</i>	11
4 Tax Audit Policy: Experimental Evidence	109
4.1 Introduction	109
4.2 Experimental Design	115
4.2.1 Theoretical Framework	115
4.2.1.1 The Fixed Case	116
4.2.1.2 The Relative Case	117
4.2.2 Treatments and Equilibrium Predictions	119
4.2.3 Experimental Procedure	120
4.3 Results	122
4.3.1 Hypothesis 1: Tax evasion is lower under the relative rule than under the fixed rule.	123
4.3.2 Hypothesis 2: Quantities under the relative rule are the same as under the fixed rule.	126
4.3.3 Hypothesis 3: Quantities chosen are the same under the relative rule for both owner-manager firms and firms with separate decision makers.	128
4.3.4 Panel Models	128
4.4 Conclusion	132
5 Conclusion	133
5.1 What we have done	133
5.2 Policy/Practical Implications	135
5.3 Limitations and Caveats	138
5.3.1 Partial equilibrium analysis	138
5.3.2 Risk preferences	139
5.3.3 Static vs dynamic settings and collusion	139
5.3.4 No audit rule	140
5.3.5 Impact of other policy tools	141

5.3.6 Tax avoidance 142

5.4 Future Work 142

List of Figures

2.1	Illustration of Proposition 1	60
2.2	Price for varying degrees of product differentiation	74
3.1	The best response declarations under β^{RO}	94
3.2	Expected utility functions	95
3.3	Profitable regions of quantity space	98
3.4	The two branches of q^{BR}	99
3.5	Best response curves under β^{RO}	102
4.1	Total Gross Profit	124
4.2	Average Evasion and Average Fraction Evaded	125
4.3	Distributions of Average Quantity	126
4.4	Average Quantity over time	127

List of Tables

1.1	Tax evasion as a coordination game.	28
1.2	Tax evasion as a prisoner's dilemma game.	29
2.1	The market effect	62
2.2	Cournot with substitutes	67
2.3	Bertrand with complements	69
2.4	Vertical Competition and Sabotage	71
2.5	2 Monopolies	75
2.6	Public Goods	76
2.7	Advertising	79
2.8	Bertrand with Substitutes and Cournot with Complements	80
3.1	Rationalizable quantities	103
3.2	The rank-order rule vs the relative rule	106
4.1	Subject characteristics	121
4.2	Descriptive overview	123
4.3	Interval regression	131