

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.

**An Analysis of the Capital Structure
Determinants and Financing Behaviour of
New Zealand Firms**

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

Doctor of Philosophy
in
Finance

at Massey University, Manawatu,
New Zealand

David John Smith

2011

Abstract

This thesis investigates the determinants of the capital structure of New Zealand firms and the financing behavior of these firms. The first essay in the thesis examines the relationship between the capital structure of firms and their product markets. Results suggest that New Zealand firms use debt to compete more aggressively in their product markets, even though this strategy comes at a cost of lower relative-to-industry profitability. A possible explanation for this behaviour is the more competitive trading environment that, due to market deregulation, has developed in New Zealand over the last 25 years. The second essay in the thesis looks at the capital structure choices made by New Zealand firms, why these firms choose particular capital structures and how their structures change over time. It presents evidence of consistent trends in the financing policies of firms, and in the factors that influence those policies. The final essay in the thesis examines factors that determine how quickly New Zealand firms adjust toward target capital structures. The main findings are that speeds of adjustment vary across New Zealand industries, New Zealand firms adjust towards a target debt ratio more quickly when the firms are experiencing a financial deficit, and firms' financing policies influence adjustment speed.

Acknowledgements

I wish to acknowledge all the people who have assisted in the completion of this thesis.

My particular thanks go to my supervisors, Dr Jianguo Chen and Associate Professor Hamish Anderson, for their guidance and encouragement throughout the time I have been working on the thesis. I was especially grateful for their always prompt responses to my questions and timely feedback on my work.

I would like to thank the anonymous reviewers for the *Review of Quantitative Finance and Accounting* in which the first essay in this thesis is to be published. I am also grateful to the discussants and participants at the 2008 12th New Zealand Finance Colloquium, the 2009 FMA Asian Conference and the 2011 FMA Asian Conference who provided comments and suggestions on earlier versions of the first and third essays in the thesis.

I would also like to thank all the people in the School of Economics and Finance at Massey University who kindly helped me in various ways as I worked on the project.

Finally, I would like to dedicate the thesis to my wife Suzanne, without whose love, support and patience I could not have completed the work. Thank you.

Note

The first essay in the thesis has been accepted for publication and is reproduced in its accepted form in Chapter 2.

Smith, D.J., Chen, J. and Anderson, H.D., (2010). The relationship between capital structure and product markets: Evidence from New Zealand. Forthcoming in *Review of Quantitative Finance and Accounting*. DOI: 10.1007/s11156-010-0216-x

The final publication is available at www.springerlink.com .

Table of Contents

Abstract.....	i
Acknowledgements	ii
Table of Contents	iv
List of Tables	vii
Chapter One Introduction.....	1
1.0 Introduction.....	1
2.0 Essay One.....	3
3.0 Essay Two	4
4.0 Essay Three	5
5.0 Publications Arising from the Thesis.....	7
6.0 Structure of the Thesis	7
Chapter Two Essay One	8
Abstract.....	9
1.0 Introduction.....	10
2.0 Literature.....	12
3.0 Variables and Hypotheses.....	16
3.1 Determinants of Product-Market Performance.....	16
3.2 Determinants of Debt.....	19
4.0 Model Specification	22
5.0 Data	25
6.0 Results.....	26
6.1 Summary Statistics.....	26
6.2 Correlation Between Variables	27
6.3 Regression Results With Performance as the Dependent Variable	27
6.4 Regression Results With Leverage as the Dependent Variable.....	30
6.5 Sector Results.....	32
6.5.1 Regression Results With Sales Growth as the Dependent Variable	32
6.5.2 Regression Results With ROA as the Dependent Variable	33
6.5.3 Regression Results With Leverage as the Dependent Variable and Sales Growth and ROA as the Independent Variables	34
6.6 Industry Competitiveness.....	35
6.7 Do Differences Occur Over Time?	38
7.0 Conclusion	40

Chapter Three Essay Two	59
Abstract	60
1.0 Introduction	61
2.0 Literature	65
3.0 Methodology	69
3.1 Statistical Analysis of Capital Structure Decisions.....	69
3.1.1 Summary of Business Status Variables	69
3.1.2 Summary of Capital Structure Decisions.....	73
3.1.3 Relating Business Status Variables to Capital Structure Decisions.....	74
3.2 Using Probit and Logit Models.....	74
3.3 Do Capital Structure Decisions Change Over Time?	76
4.0 Data	77
5.0 Results	78
5.1 Statistical Analysis.....	79
5.1.1 Summary of Business Status Variables	79
5.1.2 Summary of Capital Structure Decisions.....	80
5.1.3 Relating Business Status Variables to Capital Structure Decisions.....	82
5.2 Probit Analysis.....	85
5.3 Do Capital Structure Decisions Change Over Time?	89
6.0 Conclusion	94
Chapter Four Essay Three	108
Abstract	109
1.0 Introduction	110
2.0 Literature	113
3.0 Variables	116
3.1 Determinants of Capital Structure.....	116
3.2 Determinants of the Speed of Adjustment	119
4.0 Model Specification	121
4.1 Two-Step Partial Adjustment Model	121
4.2 Integrated Partial Adjustment Model.....	123
4.3 Industry Variations in the Speed of Adjustment.....	123
4.4 The Influence of Financing Deficits and Financing Policies on the Speed of Adjustment.....	124
5.0 Data	124
6.0 Results	126
6.1 Summary Statistics of Leverage and Explanatory Variables.....	126
6.2 Correlation Between Variables	126
6.3 Determinants of Capital Structure.....	127
6.4 Estimating the Speed of Adjustment.....	128
6.5 Industry Differences as an Influence on Adjustment Speed	129
6.6 The Effect of Financing Deficits and Financing Policies on the Speed of Adjustment.....	132
7.0 Conclusion	134

Chapter Five Conclusion	146
1.0 Main Findings and Implications	146
2.0 Future Areas of Research	149
Appendix	152
References	154
Chapter 1	155
Chapter 2	156
Chapter 3	158
Chapter 4	160
Chapter 5	162

List of Tables

Chapter Two Essay One	8
Table 1 Predicted Signs for the Determinants of Product Market Performance and Long-Term Debt.....	42
Table 2 Number of Firms and Company Years by Industry.....	43
Table 3 Summary Statistics.....	44
Table 4 Correlation Matrix	45
Table 5 Ordinary Least Squares Regressions for Determinants of Firm Performance and Leverage	46
Table 6 Comparison of Changes in Long-Term Debt with Changes in Sales and ROA; and Changes in Sales with Changes in ROA.....	48
Table 7 Number of Firms and Company Years by Sector.....	49
Table 8 Sector Regression Results: Dependent Variable Sales Growth; Independent Variable Leverage.....	50
Table 9 Sector Regression Results: Dependent Variable ROA; Independent Variable Leverage.....	51
Table 10 Sector Regression Results: Dependent Variable Leverage; Independent Variables Sales Growth and ROA.....	52
Table 11 Industry Rankings Based on Competitiveness.....	53
Table 12 Ordinary Least Squares Regressions on Determinants of Firm Performance and Leverage, Controlling for Industry Competitiveness.....	54
Table 13 Ordinary Least Squares Regressions on Determinants of Firm Performance and Leverage, Controlling for Differences Between the Sub-Periods 1984-1999 and 2000-2008	56
Chapter Three Essay Two	59
Table 1 Average Characteristics of Firms' Key Business Status Variables	96
Table 2 Frequency of Firms' Capital Structure Decisions.....	97
Table 3 The Frequency of Firms' Capital Structure Decisions Matched with Average Characteristics of Firms' Key Business Status Variables.....	98
Table 4 Probit Regressions for Determinants of the Debt-Equity Choice.....	100
Table 5 Probit Regressions for Determinants of the Debt-Equity Choice, Controlling for Differences Between the Sub-Periods 1984-1999 and 2000-2009.....	102
Table 6 Changes in the Frequency of Firms' Capital Structure Decisions Over Time.	104
Table 7 Probit Regressions for Determinants of Two Decisions Consistently Made by Firms	105
Table 8 Probit Regressions for Determinants of Two Decisions Consistently Made by Firms, Controlling for Differences Between the Sub-Periods 1984-1999 and 2000-2009	106

Chapter Four Essay Three	108
Table 1 Number of Firms and Company Years by Industry	136
Table 2 Summary Statistics of Leverage and Explanatory Variables.....	137
Table 3 Correlation Matrix	138
Table 4 Fixed Effects Regressions for Capital Structure Determinants	139
Table 5 Regression Results for Estimates of Adjustment Speed	140
Table 6 Summary Statistics of Leverage by Industry	141
Table 7 Industry Speed of Adjustment Regression Results	143
Table 8 Regression Results Controlling for the Influence of Financing Deficits and Financing Policies	145
Appendix	152
Table 1 Proportion of “Other” Item in Database Constituting Long-Term Debt	153