Shareholder Wealth Effects of Seasoned Share Issues in New Zealand

A Thesis Presented In Fulfilment Of The Requirements For The Degree Of Doctor of Philosophy in Finance at Massey University

Hamish David Anderson

2003

Massey University
COLLEGE OF BUSINESS

Department of Commerce
Private Bag 102 904
North Shore Mail Centre
Auckland
New Zealand
Telephone: 64 9 441 8176
Facsimile: 64 9 441 8177

CANDIDATE'S DECLARATION

This is to certify that the research carried out for my Doctoral thesis entitled "*Shareholder Wealth Effects of Seasoned Share Issues in New Zealand*" in the Department of Commerce, Massey University, Albany, New Zealand is my own work and that the thesis material has not been used in part or in whole for any other qualification.

Candidate's Name Hamish David Anderson

Signature 

Date 12/11/03

Massey University
COLLEGE OF BUSINESS

Department of Commerce
Private Bag 102 904
North Shore Mail Centre
Auckland
New Zealand
Telephone: 64 9 441 8176
Facsimile: 64 9 441 8177

SUPERVISOR'S DECLARATION

This is to certify that the research carried out for the Doctoral thesis entitled "*Shareholder Wealth Effects of Seasoned Share Issues in New Zealand*" was done by Hamish Anderson in the Department of Commerce, Massey University, Albany, New Zealand. The thesis material has not been used in part or in whole for any other qualification, and I confirm that the candidate has pursued the course of study in accordance with the requirements of the Massey University regulations.

Supervisor's Name Professor Lawrence Rose

Signature James C. Rose

Date 12/10/03

Massey University
COLLEGE OF BUSINESS

Department of Commerce
Private Bag 102 904
North Shore Mail Centre
Auckland
New Zealand
Telephone: 64 9 441 8176
Facsimile: 64 9 441 8177

CERTIFICATE OF REGULATORY COMPLIANCE

This is to certify that the research carried out in the Doctoral Thesis entitled

Shareholder Wealth Effects of Seasoned Share Issues In New Zealand in the Department of Commerce at Massey University, New Zealand:

(a) is the original work of the candidate, except as indicated by appropriate attribution in the text and/or in the acknowledgements;

(b) that the text, excluding appendices/annexes, does not exceed 100,000 words;

(c) all the ethical requirements applicable to this study have been complied with as required by Massey University, other organisations which had a particular association with this study, and relevant legislation.

Candidate's Name: Hamish Anderson

Signature:

Date: 12/11/03

Supervisor's Name: Professor Lawrence Rose

Signature:

Date: 12/10/03

Abstract

This thesis investigates shareholder wealth impact surrounding the issue of seasoned equity by companies listed on the New Zealand Stock Exchange. The first two essays contained in this thesis examine the wealth impact of stock dividends. Technically, issuing new shares through the mechanism of stock dividends is simply a cosmetic accounting change and therefore should not have any impact on shareholder wealth. However, consistent with other international markets we find shareholder wealth is impacted around the announcement date and again on the ex-dates of stock dividends. In both stock dividend essays, we find evidence that investors value imputation tax credits attached to stock dividends. One of the major theories explaining stock dividend ex-dates in the US is the odd-lot cost theory but no direct test has been possible in that market. The New Zealand market enables us to directly test the odd-lot cost argument by examining the ex-date effect when odd-lot costs are present to a later period when they were eliminated. We find evidence supporting the odd-lot cost theory. The final essay contained in this thesis examines the announcements of new shares issued through the private placement mechanism. In New Zealand, private placement price contains important information regarding firm quality. In examining volumes surrounding private placement we find evidence supporting market commentators' conjecture that some placement purchasers may be exploiting relatively weak regulations by immediately reselling the new shares on the market for an instant profit.

ACKNOWLEDGEMENTS

There are a number of people who have contributed to the completion of this thesis. Firstly, I would like to thank my supervisors, Professor Lawrence Rose and Professor Steven Cahan for their guidance throughout the journey that this thesis has taken me on. At times when the journey seemed too far, their encouragement, which by necessity ranged from the carrot to the stick methods, motivated me to keep pressing on.

I would like to thank the anonymous reviewers for the journals that the essays in this thesis have been published. Also the discussants and participants at the *2003 FMA European Conference, 2000 PACAP Financial Management Association Conference* and the 2000 *Asia-Pacific Finance Association Conference* where earlier versions of the essays were presented. Their comments and suggestions for revision have substantially improved the overall quality of the essays presented in this thesis.

I would also like to thank everyone in the Department of Finance, Banking and Property at Massey University who have either directly or indirectly helped in completing this thesis. Also I would like to thank the Institute of Chartered Accountants of New Zealand (ICANZ) for the financial assistance provided by way of PhD Scholarship awarded in 2000.

Finally, this journey would not have been possible without the support and love of my wife Natalie, to whom this thesis is dedicated. Thank you.

TABLE OF CONTENTS

Abstract i
Acknowledgements ii
Table Of Contents iii
List Of Tables v
List Of Figures vii

Chapter One Introduction 1
1.0 Introduction 2
2.0 Essay One 4
3.0 Essay Two 5
4.0 Essay Three 7
5.0 Publications Arising From The Thesis 10
6.0 Structure Of The Thesis 11

Chapter Two Essay One 12
Abstract 13
1.0 Introduction 14
2.0 Taxation Of Dividends In New Zealand 17
3.0 Methodology 21
4.0 Data 24
5.0 Empirical Results 26
5.1 Event Studies 26
5.2 Taxable versus Non-taxable Stock Dividends 28
6.0 Summary And Implications 29

Chapter Two Appendix One 35
Abstract 36
1.0 Introduction 37
2.0 New Zealand's Company Tax Environment 38
3.0 The Case For Taxable Bonus Issues 41
4.0 Impact of a Top Tax Rate of 39% 44
5.0 Conclusion 46
6.0 Executive Summary 47

Chapter Three Essay Two 48
Abstract 49
1.0 Introduction 50
2.0 Overview of Literature 51
3.0 The New Zealand Market and Stock Dividends 54
4.0 Data 61
5.0 Methodology 63
6.0 Results and Discussion 68
6.1 Stock Dividend Ex-day Abnormal Returns 68
6.2 Impact of Stock Dividend Size on Ex-date Returns 72
7.0 Conclusion 74

Chapter Four Essay Three 84
Abstract 85
1.0 Introduction 86
2.0 Private Placements and New Zealand's Regulatory Environment 88
3.0 Literature Review 90
3.1 Announcement Effects of Seasoned Equity Issues 90
3.2 Information Signalling Hypotheses 92
3.3 Investment Opportunities Hypothesis 93
3.4 Wealth Transfer Hypothesis 93
3.5 Price Pressure Hypothesis 93
3.6 Firm Quality Hypothesis 94
3.7 Information Asymmetry Hypothesis 95
3.8 Ownership Concentration 95
4.0 Data 97
5.0 Event Study Methodology 99
6.0 Analysis of Private Placement Announcement Effects 103
6.1 Private Placement Announcement Effects 103
6.2 Trading Volume Effects 107
6.3.1 Multivariate Analysis of Announcement Impact 110
6.3.2 Findings: Multivariate Analysis of Private Placements 114
7.0 Conclusion 117

Chapter Five Conclusion 130
1.0 Major Findings and Implications 131
2.0 Future Areas Of Research 134

References 138
Chapter 1 139
Chapter 2 142
Chapter 2, Appendix 1 144
Chapter 3 146
Chapter 4 149
Chapter 5 152

List Of Tables

Chapter Two Essay One 12
Table 1 Investors' Tax Induced Dividend Policy Preferences 31
Table 2 Daily Abnormal Returns and Percentage of Positive Abnormal Returns on a Given Day for New Zealand Stock Dividends: January 1988 to December 1997 32
Table 3 Cumulative Average Abnormal Returns for Taxable and Non-taxable Stock Dividends January 1988 to December 1997 ... 33

Chapter Two Appendix One 35
Table 1 Investors' Tax Induced Dividend Policy Preferences 40
Table 2 Bonus Issue Example 41

Chapter Three Essay Two 48
Table 1 Breakdown of Stock Dividend Sub-Samples 77
Table 2 Daily Abnormal Returns and Percentage of Positive Abnormal Returns Surrounding New Zealand Stock Dividend Ex-Dates. 78
Table 3 Significance Levels of Differences Between the Samples' Abnormal Ex-Date Returns 80
Table 4 Regression Analysis of Stock Dividend Ex-Date Abnormal Returns 81

Chapter Four Essay Three 84
Table 1 A Country Comparison of Regulatory Characteristics of Private Placements 119
Table 2 Descriptive Statistics of Private Placements 120
Table 3 Daily Abnormal Returns and Proportion of Positive Abnormal Returns Surrounding New Zealand Private Placement Announcements. 121
Table 4 Daily Abnormal Returns Surrounding New Zealand Private Placement Announcements Divided By Use of Funds Raised 122
Table 5 Daily Average Abnormal Volume Surrounding New Zealand Private Placement Announcements 124

Table 6 Hypotheses and Variable Definitions 125
Table 7 Independent Variable Descriptive Statistics and Pearson Correlation Matrix 126
Table 8 Multivariate Regression Results 127

List Of Figures

Chapter Two Essay One 12
Figure 1 Cumulative Average Abnormal Returns Surrounding Stock Dividend Announcements 34

Chapter Two Appendix One 35
Figure 1 Excess Share Price Returns Surrounding Bonus Issue Announcements 43

Chapter Three Essay Two 48
Figure 1 Samples Used in Study 58
Figure 2 Cumulative Abnormal Stock Dividend Ex-date Return 82
Figure 3 Cumulative Abnormal Stock Dividend Ex-date Return 83

Chapter Four Essay Three 84
Figure 1 Cumulative Abnormal Return Private Placement Announcement Return 128
Figure 2 Cumulative Average Abnormal Volume Surrounding Private Placements 129

CHAPTER ONE

INTRODUCTION

This chapter provides an overview of the three essays contained in this thesis. In particular it outlines the reasons for studying the wealth impacts of new equity issues on the New Zealand Stock Exchange. The chapter concludes by outlining the journal publications resulting from this thesis and provides a framework for the remainder of the thesis.

1.0 Introduction

One of the keys to capital market efficiency is the rapid dissemination of new information. If a capital market is efficient, then no one should be able to obtain abnormal returns. Fama in 1970 and 1976 developed the descriptions of market efficiency including the weak, semi-strong and strong forms of market efficiency. A market is said to be efficient to the release of new information if the price responds rapidly and that change can be either positive, negative or have no change.

An important issue in corporate finance is the inference a market derives from management decisions. As the market value of securities is the present value of future cash flows, the only information that should impact on the value of a firm should be the expected cash flows of the firm and/or the timing and risk of those cash flows. This type of information is important to investors as it allows them to reassess the value and risk of a particular security.

Empirical studies provide evidence of share price reaction to managerial decisions regarding firm financing, investing and cash dividend policy[1]. These decisions impact on expected cash flows and/or the risk of the firm. However, the market is not fooled by management decisions that do not change future cash flows or the risk of those cash flows. For example, studies examining changes to accounting policies that impact on earnings per share but do not change the firm's cash flow find no evidence of abnormal share price performance[2]. The revaluation of securities upon the announcement of such information is in line with the semi-strong form of market efficiency.

---

1 For example, see Eckbo and Masulis (1995) for shareholder wealth impact of financing decisions, McConnell and Muscarella (1985) for impact of investment decisions and for changes to dividend policy see Asquith and Mullins (1983).

2 For example, see Hong, Kaplan, and Mandelker (1978) and Davis (1990). Also see Fields, Lys, and Vincent (2001) for a recent review of this literature.

The research in this thesis examines shareholder wealth effects of management decision to issue new shares. In particular, the thesis examines the impact on shareholder wealth of management decisions to issue new shares by way of stock dividends[3] and also through the mechanism of private placement in the New Zealand stock market.

The first two essays in this thesis examine the announcement and ex-dates of stock dividends. A stock dividend is merely a cosmetic accounting change that results in an increase in shares on issue and a corresponding decrease in share price with no change to the overall capitalisation of the firm. As such, the management decision to issue new shares through a stock dividend should not change shareholder wealth since the underlying characteristics of the business have not changed. Although previous studies do find abnormal returns surrounding the announcement dates, the cause may not be the stock dividend itself but rather the information content of the stock dividend regarding future cash flows (dividends) and risk (share price volatility)[4].

The second essay of this thesis examines stock dividend ex-dates. The ex-dates are known in advance and therefore no new information is imparted to the market on the ex-date. Past studies, however, reveal there are in fact abnormal returns on stock dividend ex-dates and to date there is no definitive answer to this puzzle[5].

---

3 A stock dividend is called a bonus issue in both Australia and New Zealand and a script issue in the United Kingdom.

4 For a discussion on these issues see Foster and Vickery (1978) on the information content of stock dividends, McNichols and Dravid (1990) on the signalling effect. For the impact on betas following stock splits and stock dividends see Brennan and Copeland (1988) and for liquidity changes to firms undertaking stock dividends and stock splits see Copeland (1979) and Murray (1985).

5 For example, see Grinblatt, Masulis, and Titman (1984) and McNichols and Dravid (1990).

The final essay of this thesis examines the decision to issue new shares by way of private placements. In contrast to the first two essays, such a decision is more likely to convey new information to the market. The management decision to raise new equity capital is not completed without purpose. For example, new capital is raised as part of management's decisions to repay debt (financing decision), invest in new projects (investment decision) or provide working capital for the firm's operations. Therefore, management's decision to issue new shares through a private placement is likely to convey new information to participants in the market regarding the firm's future cash flows and risk.

The next three sections of this chapter provide an overview of each of the three essays and in particular highlight how each essay contributes to the existing body of knowledge. Section 5.0 outlines the publication output of the essays contained in this thesis and the structure of the remainder of the thesis is presented in Section 6.0.

2.0 Essay One

The first essay examines stock dividend announcements in New Zealand. An issue of shares through a stock dividend theoretically entitles shareholders to receive extra shares "free of charge" in direct proportion to their existing shareholding. There is no fundamental change to the underlying business characteristics except for a rearrangement of the firm's balance sheet where retained earnings are transferred into paid up capital. In fact, the only direct impact on cash flow relates to the expense incurred in issuing the stock dividends. Therefore, theoretically stock dividend announcements should not have a positive impact on shareholders' wealth. However, previous research into stock dividend announcements has consistently revealed positive abnormal shareholder wealth effects in a number of different international equity markets.

There are several reasons why an examination of stock dividend announcements in New Zealand will add to the existing body of knowledge. Firstly, New Zealand stock dividend announcement reaction has not previously been investigated on a daily basis[6]. Therefore it is useful to establish whether similar announcement reactions are experienced in a small capital market compared to the larger North American markets where earlier studies are predominantly based. Secondly, the New Zealand market offers a unique opportunity to examine the impact of an imputation tax regime on stock dividend announcements. Studying New Zealand stock dividends can potentially contribute to the literature on the value of imputation tax credits as well as providing evidence on whether the "capitalisation" argument[7] applies to smaller capital markets like New Zealand.

3.0 Essay Two

A stock dividend ex-date is known well in advance and there is no impact on the firm's underlying cash flows or their risk. The market already knows all the information content that may be attached to a stock dividend on the announcement date. As such in a perfect market one would not expect the presence of abnormal ex-date returns. However, stock dividend studies in the US reveal positive abnormal returns of around

---

6 Emanual (1979) examines bonus issues (stock dividends) in the New Zealand market from 1968 to 1975 using weekly data and reports a positive abnormal return during that period. However, no mention is made regarding the impact of taxes on stock dividends in the paper. In 1965 to 1982 companies issuing stock dividends faced a tax liability of 17.5 percent of the value of the stock dividend. Emanual (1979) argues that the positive abnormal return can be explained by an increase in future dividends. However, the extra corporate tax liability makes it an expensive tool for signalling a dividend increase.

7 According to the "capitalisation" argument, the present value of personal taxes on future dividends are impounded within share prices (for development see Auerbach, 1979 and Bradford, 1981, while Zodrow, 1991, provides a useful review).

1% on the ex-date[8]. In other international markets, Dhatt, Kim and Mukherji (1993) find a 1.58% positive abnormal ex-date return in Korea and just over 2% in Japan. Athanassakos and Smith (1996) also find positive abnormal returns of over 2% for a sample of stock dividend ex-dates on the Toronto Stock Exchange.

As there is no obvious information event occurring on stock dividend ex-dates, past researchers have sought to explain the abnormal returns by relying on market frictions. There are two dominant arguments, one based on the friction caused by taxes and the other on transaction costs. Stock dividend ex-date studies outside of the US have been conducted in markets where taxes arising from stock dividends are greater than taxes on capital gains. Therefore, it has been argued that the stock dividend ex-date effect in these markets is a result of investor's trading activity as they try to avoid the higher taxes (Athanassakos and Smith 1996).

The transaction cost argument put forward by Grinblatt, Masulis and Titman (1984) and Conroy and Daves (1991) is based on the idea that stock dividends can result in investors holding an odd number of shares which is likely to attract higher transaction costs when they wish to sell. According to the odd lot transaction cost argument, trading activity around an ex-date is influenced by investors trying to avoid the higher execution costs when selling odd lot share parcels compared to round lot share parcels. Athanassakos and Smith (1996) found some supporting evidence for this theory on the Toronto Stock Exchange, which had no differential between odd lot and round lot trading costs. However, no study to date has been able to provide a direct test of the odd lot cost theory in the same stock market.

An examination of stock dividend ex-dates in New Zealand can make an important contribution to the existing stock dividend ex-date literature for several reasons. Firstly,

---

8 For example see Woolridge (1983), Grinblatt, Masulis and Titman (1984) and Conroy and Daves (1991).

a direct test of the odd lot transaction cost argument is possible in the New Zealand stock market. Odd lot transaction costs were eliminated from the NZSE on the 1st October 1991. Therefore examining non-taxable stock dividend ex-dates in the New Zealand market can add substantially to the debate by comparing the ex-dates during the period when odd lot costs were evident (pre October 1991) with the ex-date effect once the costs were removed.

Secondly, for the first time, evidence of the shareholder wealth effects on stock dividend ex-dates by New Zealand firms can be provided. New Zealand is a small capital market that has different regulatory and taxation environments. As such, the New Zealand market allows an examination of the taxation based argument from a new angle. Instead of an extra personal tax liability arising from stock dividends in New Zealand, imputation tax credits are attached to all taxable stock dividends which offset the personal tax liability. In the period up to 31st March 2000[9], investors were either tax neutral or gained a tax benefit from stock dividends due to the imputation credits attached. As such the ex-date reaction for taxable stock dividends should be different to that previously found in other international markets.

4.0 Essay Three

The third essay of this thesis examines management's decision to issue new equity by way of private placement in New Zealand. In contrast to the typically negative abnormal announcement returns for public seasoned equity issues in the US markets, a positive announcement reaction is reported for private placements in the same

---

9 On the 1st April 2000, the highest personal tax rate was increased to 39%. This resulted in a personal tax liability arising for high tax rate individuals from stock dividends.

markets[10]. However, in the few studies outside of the US, the announcement reaction is less clear, with returns ranging from significantly positive, to insignificant as well as significantly negative[11].

A number of information theories have been proposed that are based around how the market interprets management decisions who have superior information about a firm's prospects. For instance, Miller and Rock (1985) argue that firms' issuing seasoned equity implies unexpectedly lower current and future firm cash flows, while Myers and Majuf (1984) argue that management issues equity when the shares are overvalued. In contrast, the investment opportunities hypothesis argues that when seasoned equity is used to fund new investment it conveys positive information regarding the firm's ability to find positive net present value projects. The pricing of seasoned equity[12] is also argued as sending a signal to the market regarding firm quality (Heinkel and Schwartz, 1986). Other explanations that have been put forward include wealth transfer effects between capital stakeholders (Elliot, Prevost and Rao, 2002), changes in the level of ownership (Wruck, 1989) and the price pressure hypothesis (Loderer and Zimmerman, 1988). However, no one theory has consistently explained the announcement reactions found for private equity placements.

A study of private equity placements in New Zealand will add to the existing body of knowledge in several ways. Firstly, while there has been a study examining rights issues in New Zealand (Marsden, 2000), no study to date has examined private placements

---

10 See Eckbo and Masulis (1995) for a comprehensive summary of the key findings from studies examining the announcement reaction of seasoned equity issues through the different mechanisms of public offerings, rights issues and private placements.

11 For example, Kato and Schallheim (1993) find positive announcement effects in Japan. While Tan, Chng and Tong (2002) do not find any significant announcement reaction in Singapore, Chen, Ho, Lee and Yeo (2002) find a significant negative announcement reaction in the same market.

12 Heinkel and Schwartz (1986) argue that a deep discount in rights issue subscription price signals poorer firm quality. High quality firms are not required to offer deep discounted rights issues in order for the issue to be fully subscribed.

which is also an important funds raising mechanism for New Zealand companies. Secondly, the New Zealand market provides the opportunity to examine the effect of a relatively weak regulatory environment in a small capital market. Regulations controlling the issue and resale of privately placed shares is less stringent compared to those countries where private placements have already been examined. Unlike the US there are no resale restrictions on private placement purchasers. Also, in contrast to Singapore there is no restriction on discount size at which the shares can be placed. As such, there is the potential for purchasers of discounted private placements in New Zealand to immediately sell for a profit at the expense of non-participating shareholders.

5.0 Publications Arising From The Thesis

All of the essays contained in this thesis have been submitted to internationally recognised journals for publication. To date the following essays have been published or accepted for publication:

The first essay resulted in two publications. Both are reproduced in their accepted form in Chapter 2 and in Appendix 1 to Chapter 2[13].

Anderson, H.D., Cahan, S. and Rose, L.C., (2001). Stock dividend announcement effects in an imputation tax environment. *Journal of Business Finance and Accounting*, 28 (5 & 6) 653-669.

Anderson, H.D., Cahan, S. Rose, L.C (2001). Taxable bonus issues. Are they a good way to distribute imputation credits? *University of Auckland Business Review*, 3 (1), 48-54.

The second essay has been accepted for publication and is also reproduced in its entirety in Chapter 3 of this thesis.

Anderson, H.D., Rose, L.C and Cahan, S. (Forthcoming). Odd-lot costs and taxation influences on stock dividend ex-dates. *Journal of Business Finance and Accounting.*

---

13 The reference lists for each essay are found in the last section of this thesis. They are reproduced there under the relevant essay title.

6.0 Structure Of The Thesis

The remainder of this thesis is structured as follows. The first essay that examines New Zealand's stock dividend announcement effect is contained in Chapter 2. An appendix to Chapter 2 includes a short paper on the implications of the findings reported in Chapter 2. It also examines the usefulness of bonus issues (stock dividends) as a tool for distributing accumulated imputation tax credits as well as exploring the likely impact of increasing the top personal marginal tax rate above the corporate tax rate. Chapter 3 contains the second essay on New Zealand stock dividend ex-dates. The third essay investigating the announcement impact of New Zealand private placements on shareholder wealth is presented in Chapter 4. A summary of the key findings and implications of the three essays is outlined in Chapter 5 along with potential areas for future research. The final section of this thesis contains all references for each chapter in this thesis.

Chapter Two

Essay One

The first essay on stock dividend announcements is presented in Chapter Two. A brief overview of stock dividend announcement literature is provided along with a discussion of the capitalisation argument regarding future tax effects. An overview of New Zealand's imputation tax system is summarised in the essay which helps build the case for the importance of taxable stock dividends is distributing accumulated imputation tax credits. An event study methodology is used to examine the abnormal returns surrounding stock dividend announcements. This paper is reproduced in its published form in the *Journal of Business Finance and Accounting* as outlined in Chapter One Section 5.0. The essay's reference list is reproduced in the last section of this thesis.

STOCK DIVIDEND ANNOUNCEMENT EFFECTS IN AN IMPUTATION TAX ENVIRONMENT

Abstract

A key question in asset pricing is the extent to which tax effects are passed through market prices or are capitalised in them. New Zealand stock dividends provide a useful window into this debate because of (1) the existence of both taxable and non-taxable stock dividends, and (2) the particular form of imputation tax system which allows the full pass through of corporate taxes to the investor on the proportion of profits which are distributed either as cash or taxable stock dividends. We present evidence that investors value future tax benefits associated with imputation tax credits.

Key words

Stock Dividends, Imputation Tax System, Valuation

JEL Classification G14, G32, G38

STOCK DIVIDEND ANNOUNCEMENT EFFECTS IN AN IMPUTATION TAX ENVIRONMENT

1.0 Introduction

The impact of personal taxes on corporate valuation has intrigued academic researchers for a number of years. Previous research has concentrated on examining future tax liabilities where according to the capitalisation argument, the present value of personal taxes on future dividends are impounded within share prices (for development see Auerbach, 1979 and Bradford, 1981, while Zodrow, 1991, provides a useful review). Supporting this argument, Givoly and Hayn (1992) found investors price future corporate tax liabilities both in terms of timing and the likelihood of settlement. This study investigates the impact of future tax benefits on corporate valuation. Under New Zealand's (NZ) particular imputation tax system, imputation credits are stored at the corporate level and provide a tax benefit to certain investors once they are distributed via cash or taxable stock dividends[1]. The existence of both taxable stock dividends which have imputation credits attached and non-taxable stock dividends which carry no credits in NZ provides a window for examining whether investors value the future tax benefits associated with imputation credits.

According to the "capitalisation" argument, the future tax benefits (as with future tax liabilities) should be capitalised within share prices and consequently investors should be indifferent between receiving the imputation credits now or in the future. In order to realise the tax benefits, shareholders would simply sell their shares. Under this scenario, one would expect to find no valuation effects around the announcement of taxable stock dividends.

---

1 A stock dividend is called a bonus issue in New Zealand.

There are, however, two advantages associated with issuing taxable stock dividends: (1) it enables shareholders to realise the tax benefits without selling their shares (which may reduce transaction costs as no selling costs are required to realise tax benefits), and (2) the present value of the tax benefits is maximised. As the nominal value of imputation credits do not change over time (i.e. the company can pay $1 in imputation credits now or at some time in the future) inflation and opportunity costs reduce the real value of the imputation tax benefits if they are not distributed. The timing of imputation credit distribution is therefore important. So while one would expect the undistributed imputation tax benefits to be capitalised in share prices, the value of tax benefits do not grow in a compounded fashion.

Despite the fact that stock dividends are essentially cosmetic accounting changes and do not change the underlying business characteristics, US studies of stock dividends (Grinblatt, Madulis and Titman, 1984; Lakonishok, and Lev, 1987; McNichols and Dravid, 1990) have consistently found positive abnormal returns around the announcement of stock dividends. Similar results have also been found in other markets, including the Toronto stock exchange (Masse, Hanrahan and Kushner, 1997) and the Stockholm stock exchange (Liljeblom, 1989). Previous literature has broadly sought to tie the stock dividend announcement effect to either the information content being conveyed to the market about future cashflows (Foster and Vickery, 1978; McNicholls and Dravid, 1990) or changes in risk (Murray, 1985; Brennan and Copeland, 1988).

This paper provides a further explanation of the announcement effect for NZ's taxable stock dividends. Given the positive information (i.e. ability to realise tax benefits without selling shares and maximising the present value of the imputation tax benefits) conveyed by taxable stock dividends one would expect a positive announcement effect.

Further, all else being equal, the taxable stock dividend announcement effect should be greater than non-taxable stock dividends because of the tax benefit feature.

This paper sets out to (1) compare both taxable and non-taxable stock dividends which will provide insight into whether investors value future tax benefits (imputation credits), and (2) examine whether the valuation impact of stock dividends in NZ is consistent with overseas markets.

The remainder of the paper is structured as follows. Section two outlines NZ's imputation tax system and illustrates the tax induced dividend policy preferences of different classes of shareholders. The methodology and data to test this hypothesis is presented in the third and fourth sections respectively, while, the empirical results are reported in the fifth section and the final section offers some conclusions and research implications.

2.0 Taxation Of Dividends In New Zealand

In April 1988 NZ replaced its classical tax regime with an imputation tax system[2]. The impact of this was to reduce the double taxation of corporate profits. Under dividend imputation, tax collected at the company level "*is not really company tax but rather is a collection of personal tax at the company level*" (Officer, 1994, p.4). In addition in NZ capital gains are tax free except for investors deemed to be traders who must treat capital gains and losses as part of normal operating income (in which case capital gains are taxed at their marginal tax rate). Therefore, for most investors in NZ, retention is not favoured over dividends as the after-tax value of capital gains will be the same as the after-tax value of dividends when imputation credits are attached.

Under a full imputation system, corporate profits are effectively taxed at shareholders' marginal tax rates. The NZ imputation regime is an account-based system[3] where the amount of dividends with imputation credits attached is determined by the balance in the imputation account. This in turn is determined by the amount of domestic tax paid

---

2 While imputation tax systems provide a useful contrast to the classical tax systems, there has been only limited research on the valuation of imputation credits. Most of these studies (e.g., Poterba and Summers, 1984; Clarke, 1992; Menyah, 1993; Brown and Clarke, 1993) look at the ex-dividend day drop-off ratio in countries that switched from a classical to imputation system and use the change to test the tax differential and/or tax clientele hypotheses. However, the results have been mixed, and Brown and Clarke (1993, p.35) conclude that in Australia (which has a imputation system that is similar to NZ's) "tax laws are not the whole of the explanation for the ex-dividend day trade-off between dividends and capital gains." Our study differs from this previous research in that we directly examine the market's valuation of the imputation credits rather than valuing credits relative to capital gains.

3 A similar account-based system operates in Australia and differs from the compensatory tax system such as the United Kingdom's advanced corporation tax (ACT) system. Under the ACT system whenever a company pays a dividend it is required to pay an amount of ACT equal to the credits given to shareholders to the Inland Revenue. Whereas in an account based system dividends only have imputation credits attached if the company has paid domestic taxes or has received credits from other companies.

by the company and from imputation credits attached to dividends received from other companies. Therefore, a company can only pay out imputed dividends if itself has paid NZ corporate taxes (Consultative Document on Full Imputation, 1987).

In NZ, cash dividends and taxable stock dividends are treated equally for tax purposes. Shareholders must gross up any dividend distribution, D, to include the imputation tax credits. The maximum ratio of the credit to taxable value is equal to $t_c(1 - t_c)$ where t_c is the corporate tax rate. This limits the proportion of imputation credits to the gross dividend to the prevailing corporate tax rate[4]. Assuming companies distribute fully imputed dividends[5] then the gross dividend (for personal income tax purposes) is $D/(1 - t_c)$. If shareholders' marginal tax rate t_p are higher (lower) than t_c then a personal tax liability (tax credit) arises equal to the amount shown in equation one.

$$\left(t_p - t_c\right)\frac{D}{\left(1 - t_c\right)} \qquad (1)$$

Therefore, if investors had the option of receiving either a cash dividend or an equivalent capital gain (CG), shareholders would prefer dividends if the after-tax value of dividends is greater than the after-tax value of capital gains (see equation two where t_{cg} represent capital gains tax).

$$\frac{D}{\left(1 - t_c\right)}\left(1 - t_p\right) \; > \; CG\left(1 - t_{cg}\right) \qquad (2)$$

---

4 Credits can be allocated so that the ratio of credit to taxable value is less than the maximum. Any ratio less than the maximum will result in dividend withholding tax payments.

5 Few companies have a 100% dividend payout ratio and therefore will tend to accumulate imputation credits in their account allowing them to attach full credits to those dividends that are distributed.

Given equation two for calculating the after-tax value to investors, Table 1 demonstrates that low marginal tax rate investors (t_p = 19.5%) and those facing capital gains tax (irrespective of marginal tax rate) will also prefer dividends. The NZ corporate tax rate and the highest marginal rate are the same, therefore investors facing the highest marginal tax rate will be indifferent between dividends or capital gains. Low marginal tax rate investors will continue to prefer imputed dividends (either cash or stock dividends) until the ratio of imputation credits attached falls below their marginal tax rate, while those facing capital gains tax will only become indifferent when no imputation credits are attached to dividends.

{Insert Table 1 About Here}

As cash dividends and taxable stock dividends are treated equally for income tax purposes, investors facing the marginal tax rate of 33% and zero capital gains tax will be tax-indifferent between receiving taxable stock dividends or not[6].

However, all else being equal, low marginal tax investors will prefer receiving taxable stock dividends to non-taxable stock dividends due to the tax benefit arising from the distributed imputation credits. Investors subject to capital gains tax which as already mentioned include those deemed to be traders and include managed funds and unit trusts (those deemed to be traders can form a significant proportion of shareholders[7])

---

6 Theoretically companies could pay a taxable stock dividends without attaching the maximum imputation credits. However, in reality this would create a extra tax liability for the highest marginal tax rate investors. All taxable stock dividends issued to date have had maximum imputation credits attached.

7 The management of Nuplex Industries Limited stated at the announcement of their 21st October 1996 taxable stock dividend that they would continue to seek ways to maximise shareholder wealth. They stated that 89% of their shareholders were subject to capital gains taxes and therefore these investors could take advantage of the accumulated imputation credits attached to the stock dividend.

face the equivalent of the classical tax system for companies retaining all profits. Under this scenario corporate profits are taxed first at the corporate level and then again at the personal level through capital gains tax. Therefore, they will also favour the distribution of imputation credits through cash or stock dividends.

Since total personal taxes are minimised when imputation credits are paid out, an "optimal" dividend policy for a company would be to distribute the maximum possible fully imputed dividends[8]. Companies adopting a dividend policy payout ratio below 100% of after-tax earnings (e.g. growth companies who retain a large proportion of earnings for reinvestment) may not be able to follow this "optimal" dividend policy[9] and imputation credits will accumulate. The imputation tax benefits especially in growth companies may not be realised for many years, therefore, the present value of the imputation tax benefits would be minuscule.

Taxable stock dividends are a valuable tool for releasing imputation tax benefits as shareholders only obtain the tax benefits once they are distributed. As already discussed in section one, issuing taxable stock dividends enables shareholders to realise the tax benefits without selling their shares as well as accelerating the distribution of imputation credits which maximises their present value. Given the information content of a taxable stock dividend one would expect positive abnormal returns around the announcement date if investors place value on the undistributed imputation credits. The methodology and data employed to test the above proposition and whether the reaction

---

8 For a full discussion on the proposition that corporates should pay the maximum possible fully imputed dividends see Howard and Brown (1992) and Hamson and Ziegler (1990).

9 An alternative method of distributing accumulated credits for no or low dividend pay-out companies would be to adopt a compulsory dividend reinvestment plan within its constitution. It was also suggested by the referee that it would be tax advantageous to pay an imputed dividend and then claw it back through the use of a rights issue.

to stock dividend announcements in NZ is consistent with overseas markets is presented in sections three and four respectively.

3.0 Methodology

The share price reaction to stock dividend announcements is estimated using the market model event study methodology. The estimation of the basic daily abnormal return for each share on day *t* is estimated using the following market model[10]:

$$A_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j^* \times R_m\right) \qquad (3)$$

where R_{jt} is the observed arithmetic return on the equal-weighted market index and A_{jt} is the excess return for firm *j* at day *t*. The coefficient $\hat{\alpha}_j$ is the ordinary least squares (OLS) estimate of the intercept of the market regression.

A number of companies listed on the NZSE and from within the sample itself are characterised by thin trading which can lead to the problem of non-synchronous trading. Brailsford, Faff and Oliver (1997) suggest that this is a particularly significant problem when dealing with smaller shares within New Zealand and Australian equity markets. Typically the standard OLS beta for thinly traded shares will have a downward bias, thereby underestimating the expected return A_{jt}.

---

10 The mean adjusted returns methodology was also used for comparison and the results are not dissimilar in magnitude and significance. While this method does not make any explicit adjustment for risk it is not faced with beta estimation problems presented by thin trading.

This paper uses Scholes-Williams (1977)[11] betas to adjust for the problems arising from thinly traded shares. Bartholdy, Fox, Gilbert, Hibbard, McNoe, Potter, Shi and Watt (1996) found that the Lag and Scholes-Williams methods offered a significant improvement in the explanatory powers of future returns over the standard OLS method for New Zealand companies. Hence, the slope of the regression $\hat{\beta}_j^*$ is estimated using equation 4 where *j* denotes the individual firm and the superscripts $^{-1}$ and $^{+1}$ represent time lags.

$$\hat{\beta}_j^* = \frac{\hat{\beta}_j^{-1} + \hat{\beta}_j + \hat{\beta}_j^{+1}}{1 + 2\hat{\rho}_m} \qquad (4)$$

The estimates of the intercept and slope of the market regression are calculated over the estimation period of 200 trading days prior to the event window of -20 to +20 with day 0 assigned the date of the stock dividend announcement.

The cumulative average abnormal returns (CAAR) for each window surrounding the event date is the sum of the mean average abnormal return for each day within each window. The standard parametric t-statistics are generated for both the AARs and CAARs. When a sample is small, problems can arise with parametric tests since the assumption of the returns being normally distributed is less likely to hold than when the sample is large. As the subsamples within this study are relatively small, Corrado's

---

11 The Scholles Williams beta is used to adjust for problems arising from thin trading. It requires three ordinary least squares (OLS) regressions and the estimate of the correlation coefficient between today's return and yesterday's return (first-order serial correlation coefficient of market return). The β^{-1} is the OLS regression of company returns against a one period lagged market return. The other two OLS regressions employ contemporaneous market returns and a one period lead on market returns.

(1989) rank test statistic was used in conjunction with the standard parametric tests[12] to test both the AARs and CAARs. The rank test treats the estimation period and the event period as a single time series and assigns a rank (K_{jt}) to each daily return for each firm in the sample.

The rank test suggested by Corrado (1989) is useful for detecting abnormal returns on a single day or small event windows when the sample is small. However, the usefulness of the rank test is sensitive to the length of the event window and caution should be used when examining abnormal returns for large event windows. The event window test statistic is:

$$\text{Rank Test Statistic} = \frac{\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt} - \overline{K}\right)}{S(K)} \qquad (5)$$

Where $\overline{K}$ is the average rank [13]and *S(K)* is the standard deviation for each subsample over the entire estimation and event window periods which is given by:

$$S(K) = \sqrt{\frac{1}{241}\sum_{t=-220}^{+20}\left(\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt} - \overline{K}\right)\right)^2} \qquad (6)$$

Finally, in order to test the null hypothesis, H_1 (see below) which compares the two subsamples of taxable and non-taxable stock dividends the Wilcoxon rank sum test is used:

---

12 The event studies and statistics discussed to this point were generated using EVENTUS® which is an event study methodology package designed to run in conjunction with SAS.

13 The average rank is half the observed returns over the entire estimation and event window period plus one half (Corrado, 1989). In this study $\overline{K}$ is therefore 121.

$$z = \frac{T - \mu_T}{\sigma_T} \quad (7)$$

where: T is the sum of the ranks in taxable sample,

$$\mu_T = \frac{n_1(n_1 + n_2 + 1)}{2} \quad (8)$$

and $$\sigma_T = \sqrt{\frac{n_1 n_2(n_1 + n_2 + 1)}{12}} \quad (9)$$

H_1: The abnormal returns around the announcement date (day 0 and day 1) of taxable stock dividends is equal to the abnormal returns for non-taxable stock dividend announcements.

4.0 Data

The sample comprises stock dividend announcements made by companies listed on the New Zealand Stock Exchange (NZSE) between January 1988 and December 1997. This period captures the total population of taxable stock dividends in New Zealand with the first such announcement occurring on the 22nd November 1989. The NZSE Weekly Diary was used to determine the announcement date, establish the tax status and determine whether other announcements (e.g. cash dividends, profit and mergers etc.) were made in the week surrounding the stock dividend announcement.

A total of 60 stock dividend announcements (40 non-taxable and 20 taxable) were made by New Zealand companies over the 10 year period. Eight announcements were removed due to lack of share price data over the full estimation period leaving 52 announcements of which 33 were non-taxable and 19 taxable stock dividends.

Stock dividend announcements are often contaminated by other company specific information around the event window. In most cases this problem is controlled by either testing a subsample of non-contaminated announcements (Grinblatt et al., 1984) or employing a matching pairs methodology (Liljeblom, 1984).

However, due to the small sample size in this study it is not feasible to use only pure announcements or adopt Liljeblom's (1989) matching pairs methodology. Therefore, a control group of non-contaminated announcements will be used to determine any significant differences between the control group and total sample. Although this is not optimal, the majority of all previous research on stock dividends has discovered no significant differences between the pure and contaminated samples (McNichols and Dravid, 1990)[14].

A non-contaminated control group of 15 announcements of the 52 announcements were found which had no other new information released in the week surrounding the stock dividend announcement. The control group contained both taxable and non-taxable stock dividends in similar proportions to the total sample.

Of the 52 announcements in the sample 71% are 1 for 10 stock dividends (10%) and all remaining announcements are greater than 10% stock dividends[15]. Therefore the entire

---

14 One exception is Grinblatt, et al. (1984) who found a significantly higher abnormal return for pure announcements than their total sample. However, McNichols and Dravid (1990) found no significant difference between the two samples when they examined a later time period.

15 Forty-five announcements would be considered small stock dividends (less than 25% or 1 for 4) and the remaining seven would be characterised as large stock dividends (or in some cases categorised as share splits) on the New York Stock Exchange (NYSE). These have not been separated for analysis due to the small sample size especially once they are split between taxable (4) and non-taxable (3) announcements.

sample (and all subsamples) can be compared directly with the McNichols and Dravid (1990) sample of all stock dividends ≥ 10%.

The daily share prices and the NZSE All Ordinary Gross Index data were obtained from Datastream Inc. The share prices are adjusted for capital reconstructions and dividends.

5.0 Empirical Results

The first subsection outlines key results from the event studies and compares the results to international findings of the stock dividend announcement effect. The results are then compared to the control group of non-contaminated announcements. The second subsection tests H_1 in order to determine whether the abnormal returns for taxable and non-taxable stock dividends are significantly different.

5.1 Event Studies

Table 2 summarises the daily average abnormal returns (AAR) for the total sample as well as the subsamples of non-taxable and taxable stock dividends. The cumulative AAR for the event day (2.24%) and the day following the event day (1.24%) for the entire sample is 3.48% which is significant at the 1% level for both the parametric and non-parametric tests. Included in the total sample is an outlier which experienced a 33% per cent return[16] on the announcement day. The mean two day return drops to 2.92% (still significant at the 1% level) if the outlier is excluded from the sample. The NZ announcement effect is consistent with international studies which have found returns ranging from 2% (Masse, et al., 1997) to 3.8% (McNichols and Dravid, 1990). Although, determinants of this general announcement effect is not a focus of this study,

16 The outlier's large day 0 return can partially be attributed to a simultaneous announcement of a slight profit increase, magnified by the fact that it was a thinly traded share and a very small capitalisation share.

previous research as detailed in section one has broadly related this to signalling about future cash flows and risk characteristics.

{Insert Table 2 About Here}

The announcement effect compares to a 3.72% (10% significance) return for the 20 trading days prior to the announcement and -0.19% return which is not significant for the event window +2 to +20 days. McNichols and Dravid (1990) found similar results with positive abnormal returns leading up to the announcement day for their sample of stock dividends ≥ 10% and then negative returns following the announcement.

The control group of non-contaminated announcements had a significant (1% level) two day return of 2.72%. This return is not significantly different when compared with the remaining contaminated announcements (whether the outlier is included in the sample or not) using the Wilcoxon sum rank test[17]. Overall, the results are not skewed by a few outliers. Of the entire sample 79% (see Table 2) experience positive abnormal returns on the event day compared to 80% for the control group, which is again not significantly different to the entire sample. As the differences between the total sample and the non-contaminated control group are not significantly different, the positive abnormal returns found can be predominantly attributed to the stock dividend announcement itself rather than other contaminating announcements.

---

17 The difference is significant at the 5% level using parametric tests when the outlier is included but is insignificant when this outlier is excluded using the same test. As the samples are small the non-parametric test is likely to be more robust as it is not manipulated by outliers to the same extent as the standard parametric test.

5.2 Taxable versus Non-taxable Stock Dividends

Of greater interest is the difference in returns between the non-taxable and taxable stock dividend samples as shown in Table 3. The non-taxable stock dividend sample has a two day CAAR of 2.96% including the outlier mentioned earlier. If the outlier is removed the CAAR for day 0 (1.32%) and day 1 (0.73%) is 2.05%. This compares to a mean 2.19% return on the event day and 2.20% day 1 return for taxable stock dividends giving a cumulative return of 4.39%.

{Insert Table 3 About Here}

The null hypothesis H_1 is rejected using Wilcoxon sum rank test[18]. The 1.43% (2.34% excluding outlier) higher abnormal return around the announcement day (day 0 and Day 1) for the taxable sample is significant at the 1% level. The consistently higher abnormal return is further highlighted in Table 2 with 95% of the taxable sample experiencing positive returns on the announcement day compared to 70% from the non-taxable sample. Figure 1 provides a visual view of the cumulative abnormal returns for both taxable and non-taxable stock dividends surrounding the announcement day.

{Insert Figure 1 About Here}

These results are consistent with expectations and provides evidence that investors capitalise imputation tax benefits into share prices. The announcement effect discovered for taxable bonus issues suggests that the value investors place on "capitalised" imputation credits is increased when stock dividends are issued. This is consistent with

---

18 The use of the Wilcoxon sum rank test reduces the bias of outliers and does not rely on the assumption of the returns being normally distributed. Therefore, when comparing small samples (19 and 33) the Wilcoxon sum rank test strengthens the parametric tests which also show that the returns around the announcements between the two samples are significantly different.

Givoly and Hayn (1992), as a stock dividend increases the present value of the tax benefits (timing) and investors are now certain of utilising accumulated imputation tax benefits (likelihood of settlement).

6.0 Summary And Implications

Using event study methodology this paper found that New Zealand's stock dividend announcement effect to be consistent with international findings. Of greater interest was the insight gained into the tax effects of on corporate valuation given NZ's particular type of imputation tax system and the existence of both taxable and non-taxable stock dividend during the period examined.

As total taxes on corporate income are minimised in NZ's tax system when the maximum possible fully imputed dividends are distributed, shareholders after-tax return and wealth is maximised when the utilisation rate of imputation credits is maximised. Taxable stock dividends accelerate shareholder utilisation of imputation credits for companies that may not be able to distribute them through the normal channel of cash dividends. Therefore, all else being equal, taxable stock dividends should have a greater positive announcement effect over non-taxable stock dividends as the present value of tax benefits to shareholders is increased.

The results are consistent with expectations. Evidence was found to suggest that investors value imputation credits (tax benefits) held at the corporate level and supports the proposition the investors view future tax effects in both terms of timing and the likelihood of settlement. The magnitude and speed of price adjustment (fully encapsulated on the event day and the day after) to stock dividend announcements in the small NZ sharemarket is consistent with US findings. Future research into the "drop

off" rates on taxable stock dividend ex-dates will provide further insight into the value investors place on accumulated imputation tax benefits.

Taxable stock dividends should be an important tool for corporates (e.g. growth firms) that accumulate imputation credits due to their current dividend payout policy. The importance of it as a tool to maximise shareholder wealth is evident in the fact that it maximises the present value of tax benefits by accelerating shareholders' utilisation rates of imputation credits.

There are also important implications for income tax policymakers. Increasing the highest marginal tax rate above the corporate tax rate would lead to a large proportion of shareholders facing a tax liability on taxable stock dividends[19]. Therefore, this class of investors would very strongly discourage corporates from using taxable stock dividends, thereby effectively eliminating their use as a tool for transferring accumulated imputation tax credits. This could lead to a tax-induced discrimination against growth companies in favour of mature companies who have the ability to pass on imputation credits via their typically high dividend payout ratio. Further research is required to determine whether particular imputation tax regimes favour certain companies.

---

19 For example, given a corporate tax rate of 33%, then increasing the top personal marginal tax rate of 39% would lead to a tax liability of six cents in every dollar of stock dividend received for this class of investors. The same tax liability would arise when cash dividends are paid. However, unlike cash dividends shareholders do not receive any monetary compensation with stock dividends to offset the extra tax burden. Also the capitalisation theorists would argue that the extra personal tax costs associated with cash dividends would be capitalised within share prices (Auerbach 1979).

Table 1
Investors' Tax Induced Dividend Policy Preferences

Investors' tax induced dividend policy preference for either retention or fully imputed cash and taxable stock dividends is deduced using equation two which assumes that investors will prefer the option that maximises their after-tax return.

Tax Status of Investor	Marginal Tax Rate of 33%	Marginal Tax Rate of 19.5%
Capital Gains Tax at 0%	Indifferent	Dividend
Capital Gains Tax at 33%	Dividend	Dividend

Table 2
Daily Abnormal Returns and Percentage of Positive Abnormal Returns on a Given Day for New Zealand Stock Dividends: January 1988 to December 1997

	Total Sample (n=52)		Non-taxable Sample (n=33)		Taxable Sample (n=19)	
Day	AAR (%)	% of return > 0	AAR (%)	% of return > 0	AAR (%)	% of returns > 0
-10	-0.40	0.48	-0.64	0.48	0.03	0.47
-9	-0.48	0.50	-0.17	0.45	-1.01*	0.57
-8	0.64*	0.52	1.18**	0.57	-0.29	0.42
-7	0.43	0.56	0.39	0.54	0.49	0.57
-6	-0.03	0.50	-0.32	0.39	0.49	0.68
-5	-0.02	0.58	0.05	0.60*	-0.12	0.52
-4	0.16	0.50	0.11	0.48	0.24	0.52
-3	0.42	0.56	0.22	0.42	0.76	0.79*
-2	0.35	0.58	-0.01	0.51	0.99	0.68
-1	0.14	0.48	0.35	0.51	-0.22	0.42
0	2.24***	0.79***	2.27***	0.70**	2.19***	0.95***
1	1.24***	0.63**	0.69***	0.54	2.20***	0.79**
2	0.45	0.52	0.59	0.54	0.21	0.47
3	-0.07	0.46	-0.07	0.39	-0.07	0.57
4	0.51	0.48	0.61	0.45	0.34	0.52
5	0.16	0.50	0.22	0.45	0.04	0.57
6	-0.57	0.56	-0.46	0.54	-0.77	0.57
7	0.15	0.42	0.25	0.42	-0.03	0.42
8	-0.15	0.44	-0.10	0.48	-0.24	0.37
9	-0.02	0.52	-0.08	0.51	0.08	0.52
10	0.02	0.54	-0.08	0.51	0.21	0.57

Notes:
The daily abnormal returns for the total sample and two subsamples split into taxable and non-taxable stock dividends is calculated using event study methodology.

* Significant at the 0.10 level
** Significant at the 0.05 level
*** Significant at the 0.01 level

Table 3
Cumulative Average Abnormal Returns for Taxable and Non-taxable Stock Dividends
January 1988 to December 1997

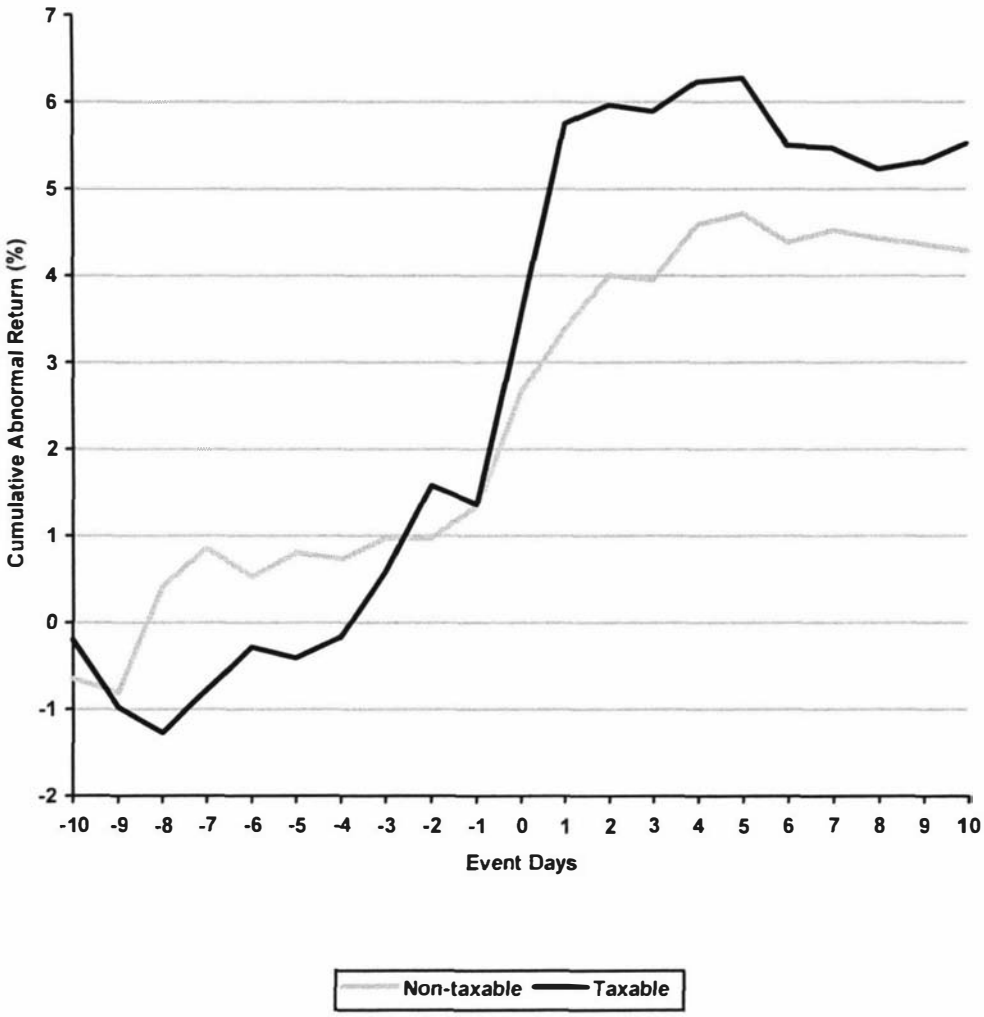
Event Window	Non-taxable Stock Dividends (n=32)			Taxable Stock Dividends (n=19)		
	CAAR (%)	t-statistic	rank statistic	CAAR (%)	t-statistic	rank statistic
[-20,-1]	5.03	2.89**	2.36*	1.44	0.64	0.78
[-10,-1]	1.15	0.93	2.15*	1.35	0.84	1.53
0	2.27	7.58***	5.19**	2.19	4.30***	4.58***
1	0.69	1.77	1.11	2.20	4.33***	3.10**
[0,1]	2.96	5.38***	5.57**	4.39	6.10***	5.43***
[+2,+10]	0.86	0.74	-0.67	-0.21	0.14	-0.65
[+2,+20]	0.21	0.12	1.19	-0.89	-0.41	-0.35

Notes:
For each event window the cumulative average abnormal returns for the non-taxable and taxable samples are the sums of the daily abnormal returns calculated using event study methodology. The outlier has been excluded from the non-taxable results. The removal of the outlier reduces the day 0 and [0,1] event window t-statistics but does not change the degree of significance.

* Significant at the 0.10 level
** Significant at the 0.05 level
*** Significant at the 0.01 level

Figure 1
Cumulative Average Abnormal Returns Surrounding Stock Dividend Announcements

The cumulative abnormal returns 10 days prior to stock dividend announcements to 10 trading days after are shown in this figure. The total sample is split between taxable stock dividend announcements (n=19) and non-taxable stock dividend announcements (n=33).



CHAPTER TWO

APPENDIX ONE

The following appendix looks the role of taxable bonus issues (stock dividends) in distributing accumulated imputation tax credits to shareholders. It then examines the implications of increasing the highest personal marginal tax rate to 39% in New Zealand on the use of bonus issues. The appendix is the 2001 *Auckland University Business Review* article reproduced here in its entirety as detailed in Chapter One, Section 5.0. The essay's reference list is reproduced in the last section of this thesis.

TAXABLE BONUS ISSUES: AN IMPORTANT TOOL FOR DISTRIBUTING ACCUMULATED IMPUTATION TAX CREDITS

Abstract

Imputation credits are beneficial to shareholders only once they have been distributed. Typically, this is achieved by paying cash dividends. Companies that retain a large proportion of after-tax earnings for reinvestment, such as growth companies, will accumulate imputation credits. Shareholders can still benefit from accumulated tax credits if the company issues a taxable bonus issue. However, a change in the highest marginal tax rate to 39 per cent may eliminate taxable bonus issues as a key tool for delivering valuable imputation credits to shareholders.

1.0 Introduction

Imputation credits distributed to shareholders are valuable as the credits reduce shareholders' personal tax liability on dividend income, unless that liability is already zero. However, companies experiencing growth may not be able to distribute imputation credits via the normal method of paying cash dividends as growth companies tend to retain a large proportion of earnings in order to fuel the growth. This can lead to the accumulation of imputation credits.

An alternative method of distributing accumulated imputation credits without paying cash dividends is to issue taxable bonus issues. Taxable bonus issues accelerate the distribution of imputation credits to shareholders which increases the present value of the tax benefits associated with the credits[1].

The following section outlines New Zealand's (NZ) company and imputation tax environment and the impact this has on investors with differing marginal tax rates. The case is then made for the value of taxable bonus issues followed by an examination of the possible impact of an increase in the top marginal tax rate to 39% on both bonus issues and cash dividends.

---

2 As the nominal value of imputation credits do not change over time, the potential tax benefits of a $1 imputation credit distributed today will have a higher present value than the same $1 distributed in say 5 years time.

2.0 New Zealand's Company Tax Environment

New Zealand introduced an imputation system in April 1988, which was designed to eliminate the double taxation of corporate profits. Prior to that, corporate profits were taxed at the corporate level and then again as dividend income at the personal level. After the imputation system was introduced any domestic tax paid by a company could be passed onto its shareholders as a tax credit. In addition, in NZ capital gains are tax free except for investors deemed to be traders who must treat capital gains and losses as part of normal operating income, and in which case any capital gains are taxed at investors marginal tax rate[2].

Under NZ's imputation system, tax paid at the corporate level "*is not really company tax but rather a collection of personal tax at the company level*" (Officer, 1994, p.4). Therefore assuming all imputation credits are distributed and can be utilised by shareholders the total government tax take on corporate profits is effectively shareholders' personal marginal tax rates.

In NZ, cash dividends and taxable bonus issues are treated equally for tax purposes. Shareholders must gross up any dividends they receive (denoted as D), to include the imputation tax credits. Assuming companies distribute fully imputed dividends, then the gross dividend for personal income tax purposes is $D/(1 - t_c)$. Where shareholders'

---

3 Although, the gains and losses are treated as normal operating income for those deemed to be traders, for the purposes of this article the gains and losses are categorised to be capital gains. This allows us to distinguish between those who face no taxes on share price changes and those deemed to be traders who are taxed on capital gains arising from share price changes.

marginal tax rate t_p is higher (lower) than the corporate tax rate t_c a personal tax liability (tax credit[3]) arises.

If investors had the option of receiving either a $1 cash dividend or an equivalent $1 capital gain ($CG$), investors would prefer dividends if the after-tax value of dividends are greater than the after-tax value of capital gains. Investors' preference for fully imputed dividends over an equivalent capital gain can be calculated as follows (where t_{cg} represents capital gains tax):

$$\frac{D}{(1-t_c)}(1-t_p) > CG(1-t_{cg})$$

Table 1 uses the above formula to demonstrate that low marginal tax rate investors (t_p = 19.5%) and those facing capital gains tax (i.e. those deemed to be traders) prefer fully imputed distributions (either cash dividends or bonus issues). For the past decade the NZ corporate tax rate and the highest personal tax rate have been the same, therefore these investors were indifferent between receiving dividends or taxable bonus issues and capital gains. Investors earning over $60,000 per annum will now be subject to a top tax rate of 39% and as shown in Table 1 will prefer capital gains over fully imputed distributions such as cash dividends and bonus issues unless they pay capital gain taxes.

Low marginal tax rate investors will continue to prefer imputed distributions (either cash dividends or bonus issues) until the ratio of imputation credits attached, multiplied by the company tax rate, falls below their marginal tax rate. While those facing capital gains tax will only become indifferent between dividends and capital gains when zero imputation credits are attached to dividends regardless of their marginal tax rate.

---

4 The tax credit can be used to offset tax payable on other income. If the investor has no other taxable income the tax credit is grossed up and carried forward as a tax loss thereby reducing future income tax payable. However, it should be noted that if the investor derives future income solely from fully imputed dividends then they will be unable to utilise this tax loss carried forward.

Table 1
Investors' Tax Induced Dividend Policy Preferences

Tax Status of Investor	*Marginal Tax Rate of 19.5%*	*Marginal Tax Rate of 33%*	*Marginal Tax Rate of 39%*
Zero Capital Gains Tax	Dividends	Indifferent	Capital Gains
Capital Gains Tax at Investors' Marginal Tax Rate	Dividends	Dividends	Dividends

Note: Investors' tax induced preference for either capital gains or fully imputed dividends is shown above based on the assumption that investors will prefer the option that maximises their after-tax return.

Investors subject to capital gains tax (those deemed to be traders) face the equivalent of the classical tax system (i.e. prior to the imputation system) for companies retaining all profits. Under this scenario corporate profits are taxed first at the corporate level and then again at the personal level through capital gains tax. Therefore, they will also favour the distribution of imputation credits through cash dividends.

The proportion of investors facing capital gains tax can be substantial. For example, the management of Nuplex Industries Limited stated at the announcement of their 21st October 1996 taxable bonus issue that,

> "*89% of its shares were held by those subject to capital gains tax and therefore these investors could take advantage of the accumulated imputation credits attached to the bonus issue*" (Reuters, 21 October 1996).

3.0 The Case For Taxable Bonus Issues

As can be seen in Table 2, bonus issues are merely cosmetic accounting changes to the number of issued shares and as such bonus issue announcements should not affect shareholder wealth. However, previous studies have discovered positive abnormal returns surrounding bonus issue announcements but this is likely to be as a result of the information content of the bonus issue about future cash flows (e.g. dividends) and risk (e.g. share price volatility)[4]. For example, many firms maintain the same dividend per share after a bonus issue and therefore the total dividends paid increase.

Table 2
Bonus Issue Example

A bonus issue is an issue of new shares to shareholders. The shares are issued free of charge in proportion to their existing shareholding in the company. For example, Investor Y owned 2000 shares in Company Z which had a current market value of $5.00 per share. If Company Z then announced a 1 for 4 bonus then Investor Y will receive one new share for every for they already own. Investor Y would see the following changes their investment in Company Z.

Before Bonus Issue:	
Number of shares	2,000
Value per share	$5.00
Total market value of investment	$10,000

After 1 for 4 Bonus Issue:	
Number of shares	2,500
Value per share	$4.00
Total market value of investment	$10,000

As can be seen the shareholder's total investment in the firm does not change only the number of shares which proportionally reduces the share price. Since there are more shares outstanding, each share is now simply worth less.

---

5 For a discussion on these issues see Foster and Vickery (1978) on the information content of bonus issues, McNichols and Dravid (1990) on signalling effect. For the impact on betas following stock splits and bonus issues see Brennan and Copeland (1988) and for liquidity changes to stock undertaking bonus issues and stock splits see Copeland (1979) and Murray (1985).

Bonus issues have been a popular management tool in the past to try and increase the liquidity and marketability of their company's shares by returning the share price to an optimal trading range[5]. Managers have also used bonus issues to "reward" shareholders typically during growth periods when there has been an inability to distribute a large proportion of earnings as dividends. These often quoted benefits of bonus issues (for example see Kimmell and Marquette, 1991) are still applicable but taxable bonus issues in New Zealand up until April 2000 were more valuable to shareholders due to the imputation credits attached.

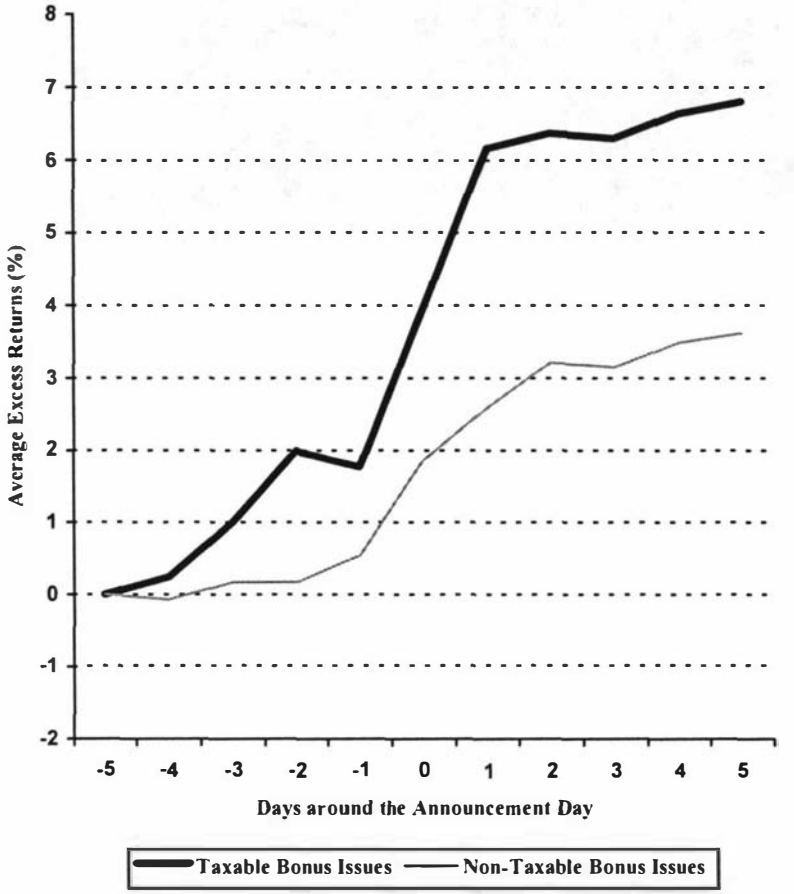
The benefit of using taxable bonus issues to distribute imputation credits was investigated by Anderson, Rose & Cahan (1999) who examined the impact on share prices of bonus issue announcements. They found positive returns on average around the announcement of all bonus issues, however, the taxable bonus issue announcement return was significantly higher than non-taxable bonus issues[6]. An excess risk adjusted return over the sharemarket on the day of the announcement plus the following day of 4.39% for taxable bonus issue announcements was significantly higher than the 2.05% for non-taxable bonus issues (see Figure 1 for a graphical representation).

---

6 Lakonishok and Lev (1987) provide some evidence that many US companies do increase the number of shares through bonus issues or stock splits in order to keep the share price within a desirable trading range. However, it is less likely that the same argument could apply in New Zealand where the average share price is significantly lower than in the US.

7 Bonus issues are often announced at the same time as other information such as earning and cash dividends. In order to control for possible contamination of other information Anderson, Rose & Cahan (1999) test a control sample of bonus issues that had no confounding information released at the same time. They found slightly lower but statistically insignificant difference between the control sample excess return and a contaminated sample.

Figure 1
Excess Share Price Returns Surrounding Bonus Issue Announcements



The significantly higher excess returns around the announcement of taxable bonus issues indicate that certain shareholders are willing to pay a premium in order to obtain the tax benefits associated with the imputation credits[7]. Therefore, even those who were

8 The value of imputation credits is not insignificant as identified by several Australian studies that attempted to determine the value shareholders place on imputation credits. Hathaway and Officer (1992, 1996) estimate that the market value of $1 of imputation credits is approximately 50 cents. While Bruckner, Dews and White (1994) estimated values from 33.5 cents and increasing to 68.5 cents in a later sub-period. Both studies agree that the value of imputation credits is significantly higher than zero. The value of $1 of imputation credits in the market will be affected by the relationship between the different personal marginal tax rates and the corporate tax rate.

tax indifferent between receiving taxable bonus issues or not (where marginal tax rate = 33%), benefit through a higher share price.

4.0 Impact of a Top Tax Rate of 39%

During the weeks prior to the tax rate change on 1 April 2000, many companies employed a number of techniques to ensure that shareholders gained the maximum tax benefits from accumulated imputation credits. A number of companies including The Warehouse and Restaurant Brands issued taxable bonus issues. While others paid special dividends (e.g. Independent Newspapers Limited) or brought forward their normal dividend payment date (e.g. Contact Energy Limited). One of the anonymous referees also noted that:

> "*...companies did rush to get dividend imputation (credits) used before the tax rates rose, and this was very strong for unlisted companies. I know of bonus issues of '2000 for 1' made to utilise imputation credits.*"

The increase in the highest marginal tax rate for individuals could eliminate the only avenue (i.e. taxable bonus issues) some companies have to distribute valuable imputation credits in a timely manner. Issuing taxable bonus issues under this taxation scenario will lead to certain shareholders incurring an unnecessary tax liability for NO monetary benefit.

For example, an investor with a top personal marginal tax rate of 39% would lead to a 6% personal tax liability for high tax rate investors. Unlike cash dividends, bonus issues have no monetary benefits to offset the extra 6% tax liability. Australia has operated for a number of years under a similar scenario where the top personal tax rate is higher than the company tax rate. This lead Brealey, Myers, Partington and Robinson (2000) to make the observation that in many cases there were tax disadvantages to bonus issues and this has lead to a dramatic decrease in the use of bonus issues.

However, high tax rate investors subject to zero capital gains taxes will be disadvantaged by both bonus issues and cash dividends (see investors' tax induced dividend policy preferences in Table 1). Therefore, they now have an incentive to avoid this disadvantage by either (1) selling and buying around the ex-date, or (2) encouraging a company to change its dividend policy to suit them, or (3) sell and reinvest in a company whose dividend payout policy suits their needs. The choice between these three alternatives will depend on the costs of each alternative, the likely success of the second alternative and whether an applicable investment substitute exists for the third[8].

Should management continue to distribute bonus issues, then under alternative (1) the high tax rate investor can sell their shares to shareholders who can utilise the imputation credits and then repurchase the shares on the taxable bonus issue ex-date. The economic impact of the exercise is the transaction costs incurred in buying and selling the shares. As shown in the Anderson, Rose and Cahan (1999) study some investors are willing to pay a premium for the shares in order to obtain the imputation credits. The premium should partially offset the transaction costs incurred.

Australian sharebrokers allow trading in cum-dividend shares after the official ex-dividend date has passed as the books closing date is seven days after the ex-dividend date (Walker and Partington, 1999). By simultaneously selling shares with the dividend attached and then repurchasing the shares at the ex-dividend price, high tax rate investors avoid income tax on dividends while maintaining their investment in the company. This practice removes the risk of adverse share price movement (other than price changes relating to the dividend) between the last cum-dividend date and the first ex-dividend date. Interestingly, this practice may become plausible for New Zealand companies should the proposed merger between the New Zealand Stock Exchange and the Australian Stock Exchange proceed.

The likely success of alternative (2) will be related to the proportion of high tax rate investors that make up of the company's share ownership, and/or the impact of their

---

9 If the cost of each of the three alternatives outweighed the extra tax liability arising then the investor would simply pay the higher tax.

withdrawal from ownership. If this class of investor[9] is able to discourage management from issuing bonus issues and/or reduce cash dividends then imputation credits will accumulate. This in turn would disadvantage low marginal tax rate investors who will not receive the valuable imputation tax credits.

Alternative (3) relates to the creation of a clientele effect whereby firms attract investors who find their dividend policy appealing for tax reasons. High tax rate investors, facing zero capital gains taxes would therefore seek out companies with low or no dividend policy. Bartholdy and Brown (1999) found the presence of tax clientele effects in New Zealand between 1982 and 1985 when companies were allowed to issue both taxed and non-taxed dividends. Further research examining the period before and after the 1 April 2000, would determine whether the increase in the top tax rate to 39% has reduced dividend payout in line alternative (2) and/or whether tax clienteles (alternative 3) have been created.

5.0 Conclusion

The primary purpose of the imputation tax regime was to eliminate the double taxation of corporate profits. Companies that retain a large proportion of profits for reinvestment are unable to distribute imputation credits via the normal method of paying cash dividends. Taxable bonus issues provide managers with an alternative method of accelerating distribution and therefore shareholder utilisation of valuable imputation credits. The increase in the top marginal tax rate to 39% could eliminate the use of taxable bonus issues in the future as well as impacting on dividend payout policies and/or tax clienteles.

---

10 With the ability to create trusts and companies for large (and not so large) investment vehicles the dominant marginal tax rate investor in the sharemarket is still likely to be 33%. Hence, it is therefore possible that high tax rate investors will be relatively small players in the overall market and wield little power in both management decisions and market price determination.

6.0 Executive Summary

- Imputation credits are only beneficial to shareholders once they have been distributed and typically this is achieved by paying cash dividends.
- Companies who retain a large proportion of after-tax earnings for reinvestment (e.g. growth companies) will accumulate imputation credits.
- Shareholders can still realise the tax benefits from accumulated tax credits if the company declares a taxable bonus issue.
- However, a change in the highest marginal tax rate to 39% may eliminate taxable bonus issues as a key tool for delivering valuable imputation credits to shareholders.

Chapter Three

Essay Two

The second essay on shareholder wealth effects of stock dividend ex-dates is provided in this chapter. An overview of the stock dividend ex-date literature is provided along with a discussion of the cash dividend ex-date literature under an imputation tax environment. An event study is conducted to examine the stock dividend ex-date effect in New Zealand between 1983 and 2000. Regression analysis is also conducted to examine the relationship between stock dividend size and ex-date returns. This paper is reproduced in its final accepted form for a forthcoming publication in the *Journal of Business Finance and Accounting* as outlined in Chapter One Section 5.0. The essay's reference list is reproduced in the last section of this thesis.

ODD-LOT COSTS AND TAXATION INFLUENCES ON STOCK DIVIDEND EX-DATES

Abstract

Past research has revealed significant abnormal ex-date returns for stock dividends even though the ex-date is known in advance and the distribution contains no new information. Various researchers have suggested that the higher transaction cost of selling odd-lot share parcels compared to round-lot share parcels is a key driver in the abnormal returns. However, no study to date has directly compared the ex-date price reaction of stock dividends distributed when odd-lot transaction costs were charged to those issued when odd-lot costs were not evident. As odd-lot trade costs were eliminated from the New Zealand Stock Exchange on the 1st October 1991, the New Zealand market provides a unique opportunity to directly test the role, if any, that odd-lot transactions costs have in explaining stock dividend ex-date returns. We find that prior to October 1991 stock dividend ex-dates exhibit significantly positive returns, however we do not find any significant ex-date return once the higher odd-lot transaction costs were removed. The New Zealand market also enables us to examine an imputation tax based argument of the ex-date price reaction and we find evidence that imputation tax credits have a value greater than zero.

Keywords

Stock Dividends; Ex-Dates, Imputation Tax; Odd-lot Costs

JEL Classification: G14, G35, G38

ODD-LOT COSTS AND TAXATION INFLUENCES ON STOCK DIVIDEND EX-DATES

1.0 Introduction

A stock dividend ex-date is known well in advance and therefore should contain no new information. As such, one would not expect any significant shareholder wealth impact on stock dividend ex-dates. However, studies in the US find positive abnormal returns on the ex-date. For example, Grinblatt, Masulis and Titman (1984), Woolridge (1983) and Eades, Hess and Kim (1984) examining the ex-dates of stock dividends find significant positive abnormal returns on the ex-date. In an attempt to reconcile these findings with the non-effect predicted by information theory, various researchers have suggested that odd-lot transaction costs explain the ex-date returns. Stock dividends may result in investors holding an odd-lot share parcel. The odd-lot transaction cost argument is based on the premise that investors trading behaviour around an ex-date may be influenced in order to avoid the higher execution costs when selling odd-lot share parcels compared to round-lot share parcels. Also, in the few studies investigating stock dividend ex-dates outside of the US, taxes are suggested as the key driver of the ex-dates returns. Therefore, the key explanations put forward to explain the positive ex-date effects found in different countries are transaction costs and taxes.

To date no study has directly compared the ex-date return of stock dividends issued when odd-lot transaction costs were charged to those issued when no extra costs were incurred for selling odd-lot share parcels. New Zealand provides an opportunity to directly make this comparison as well as examining the tax impact on stock dividend[1] ex-date returns. We examine both non-taxable and taxable stock dividends between 1983 and 2000. On the 1st October 1991 the higher trading costs for sale of odd-lot

---

1 In New Zealand the terminology for stock dividend is bonus issue.

share parcels was discontinued on the New Zealand Stock Exchange (NZSE). Therefore our sample period covers both a period when odd-lot transactions costs were evident and another when they were absent.

Using the market model methodology we find significant positive ex-date returns for stock dividends issued during the period of odd-lot transaction costs. We also find evidence that these returns are related to stock dividend size. No significant abnormal return is evident for issues after odd-lot trade charges were discontinued. This is consistent with the odd-lot transaction cost argument. We also find significant negative returns on the ex-date for taxable stock dividends. Our findings support the view that imputation tax credits have a value greater than zero (Hathaway and Officer 1992, 1996, Bruckner, Dews and White 1994) and extends the work of Anderson, Cahan and Rose (2001).

The remainder of this paper is structured as follows. Section 2 examines the key stock dividend ex-date studies and the New Zealand market and tax environment is described in Section 3. This enables us to develop testable hypotheses about the expected stock dividend ex-date effect in New Zealand. Section 4 outlines the data and process used to select the samples to test the different hypotheses. Section 5 details the research method, while the results and conclusions are presented in Sections 6 and 7 respectively.

2.0 Overview of Literature

In the US, anomalies of positive abnormal returns on the ex-date of stock dividends have been consistently documented. Grinblatt *et al.* (1984) examine the ex-dates of stock dividends distributed between 1967 to 1976 and find an average abnormal one-day return of 1.1 percent on the ex-date. To control for possible contamination, they also examine the abnormal returns for a sample where any stock dividends that had coincidental cash dividend ex-dates were removed. They find no distinguishable

difference between the contaminated and non-contaminated samples. Thus, the stock dividend ex-date effect remained after controlling for possible contaminating information relating to cash dividends.

Woolridge (1983) found a 0.986 percent abnormal ex-date return and postulates that the ex-date effect could arise from market imperfections such as taxes and odd-lot transaction costs. However, stock dividends were tax neutral during the periods examined in the US studies. Therefore, Woolridge (1983) argues that stock dividends result in more shareholders holding odd-lot rather than round-lot parcels of shares and this leads to higher trade execution costs. Eades, Hess and Kim (1984) report significantly positive ex-date returns by companies listed on the New York Stock Exchange during the period 1962 – 1980 in a sample containing both stock dividends and stock splits.

Conroy and Daves (1991) find positive ex-date returns for stock dividends and develop a model of trading around the ex-date based on odd-lot transaction costs to explain the abnormal return. Because stock dividends result in certain shareholders holding odd-lot share parcels, these shareholders will be faced with higher costs when they sell. Therefore, sellers may be motivated to sell before the ex-date, while buyers may postpone their purchase until after the ex-date. Conroy and Daves (1991) find a positive relationship when they regress the ex-date returns with a series of proxies for the level of odd-lot costs. They conclude that odd-lot costs are associated with the positive stock dividend ex-date return in the US.

Evidence of investor buying pattern changes around the ex-dates of other stock distribution types is consistent with the odd-lot cost argument that buyers may delay purchases until the ex-date. Lamoureux and Poon (1987) report evidence of US stock split ex-date returns being related to investor buying pressure on the ex-date, while Maloney and Mulherin (1992) also find evidence of an abnormal number of trades occurring at the ask price on the ex-date for stock splits. This phenomenon continues for

eleven trading days following the stock split ex-date. Recent order flow evidence around cash dividend ex-dates also supports the notion that some investors postpone the purchase of stocks until after dividend distributions to avoid reinvestment costs associated with receiving dividends (Frank and Jagannathan, 1998, Jakob and Ma, 2002).

There have only been a few stock dividend ex-date studies outside the United States. Athanassakos and Smith (1996) examine the impact of stock dividends on the Toronto Stock Exchange during a period where there were differing tax regimes but no odd-lot transaction costs. Odd-lot transactions were eliminated from the Toronto Stock Exchange in 1977 when a computerised assisted trading system was introduced. As in the US, the tax treatment of stock dividends for the period between the 1st April 1977 to 23rd May 1985 was tax neutral in Canada. After 23rd May 1985, stock dividends were treated as cash dividends for tax purposes in Canada.

During the tax neutral and no odd-lot cost period, Athanassakos and Smith (1996) find a small but insignificant negative ex-date return which supports the argument that positive abnormal returns found in the United States are related to odd-lot costs. But, Athanasskos and Smith (1996) also find a significantly positive 2.115 percent ex-date return for stock dividends issued after the 23rd May 1985. They argue that this abnormal return is compensation for investors who faced higher taxes on stock dividends during the period[2].

Dhatt, Kim and Mukherji (1993) report positive ex-date returns of 1.58 percent in Korea and 2.06 percent in Japan. There were no odd-lot transaction costs in these two

---

2 In subsequent correspondence between the authors and Professor Smith, he confirmed that during the period examined investors' top personal marginal taxes exceeded any tax credits attached to the taxable stock dividends. Therefore, a tax liability did exist for certain Canadian investors receiving a stock dividend.

countries during the period examined, and therefore, the positive abnormal returns experienced could not be explained by odd-lot transaction costs. The authors contend that the ex-date effect is related to buying pressure on the ex-date. However, Athanassakos and Smith (1996) assert that the positive abnormal returns found by Dhatt, Kim and Mukherji (1993) are a result of investors seeking compensation for the higher taxation of stock dividends as stock dividends are taxed at a higher rate than capital gains in Korea and Japan. Even so, both arguments are not entirely independent. If Athanassakos and Smith (1996) are correct, then this will result in selling pressure prior to the ex-date and buying pressure on the ex-date as existing shareholders trade away the taxation costs and new buyers delay trading until the ex-date.

Therefore, the predominant explanation of the ex-date effect from the literature can be summarised as primarily due to investor trading behaviour around the stock dividend ex-dates, irrespective of whether that behaviour is induced by investors trying to avoid transactions costs or taxes. We now turn to the New Zealand market and tax environment, and the development of testable hypotheses regarding the expected price reaction on stock dividend ex-date in the New Zealand market.

3.0 The New Zealand Market and Stock Dividends

In 1991 the New Zealand Stock Exchange (NZSE) installed a computerised trading system. This resulted in the elimination of any premium or discount charged on the transfer of odd-lot parcels between buyers and sellers. Thus, for the period in our study up to and including the 30th September 1991, higher trade charges were incurred for odd-lot transactions. On the 1st October 1991 these extra costs were discontinued.

Also prior to the 1st April 1988, New Zealand had a classical tax system that resulted in the double taxation of corporate profits; once at the company level and then again at shareholders' marginal tax rates. From the 1st April 1988, New Zealand replaced its classical tax regime with a full imputation tax system. The impact was to tax corporate profits at a rate equivalent to shareholders' personal marginal tax rates. The highest

personal marginal tax rate from the time the imputation tax system was introduced until 31st March 2000 was equivalent to the company tax rate of 33 percent. In addition over the time period, capital gains were tax free in New Zealand except for investors who are deemed to be traders. These investors must treat capital gains and losses as part of normal operating income in which case the capital gains are taxed at their marginal tax rate. Therefore, from the 1st April 1988 to the 31st March 2000, earnings retention was not favoured over dividends as the after personal tax value of capital gains was the same as the after personal tax value of dividends when imputation credits were attached. Further, investors whose marginal tax rate is lower than 33 percent will prefer dividends to retention in order to obtain the imputation tax credits.

The New Zealand imputation regime is an account-based system[3] where the amount of dividends with imputation credits attached are determined by the balance in the imputation account. This in turn is determined by the amount of domestic tax paid by the company and from imputation credits attached to dividends received from other companies. Therefore, a company can only pay imputed dividends if it has paid New Zealand corporate taxes (Consultative Document on Full Imputation, 1987) or received imputed dividends. While cash dividends are the most common way to distribute imputation tax credits to shareholders, issuing a taxable stock dividend is an alternative distribution method.

---

3 A similar account-based system operates in Australia and differs from the compensatory tax system such as the United Kingdom's advanced corporation tax (ACT) system. Under the ACT system whenever a company pays a dividend it is required to pay an amount of ACT equal to the credits given to shareholders to the Inland Revenue. In contrast an account based system, dividends only have imputation credits attached if the company has paid domestic taxes or has received credits from other companies.

Prior to the 1st April 1988, stock dividends were not taxable in the hands of investors[4] under New Zealand's tax laws. Since the introduction of the imputation tax system, companies listed on the NZSE have distributed both taxable and non-taxable stock dividends. If a company issues a stock dividend, they can elect for it to be a taxable stock dividend and it is then treated as taxable income in the hands of investors[5]. Taxable stock dividends must have either imputation tax credits attached or withholding tax deducted.

Every taxable stock dividend issued to date in New Zealand has had full imputation tax credits attached. Therefore, no additional tax liability arose for any investor receiving a taxable stock dividend as the top personal marginal tax rate equalled the rate at which imputation tax credits were attached to the stock dividend[6]. However, to certain investors there was a tax benefit from receiving taxable bonus issues as the imputation

---

4 During the period examined in this paper this statement is true. However, a brief summary of the taxation of stock dividends in New Zealand below shows that was not always the case. Prior to 1958, all dividends in New Zealand were non-assessable income for tax purposes. In 1958, dividends including stock dividends received by individuals became liable for income tax. In 1965 shareholders were completely relieved from any tax liability of stock dividends. However, the issuing company faced a tax liability of 17.5 percent of the value of the stock dividend. During 1982 the company tax liability for stock dividends was eliminated, effectively making stock dividends non-taxable. Finally, in 1988 stock dividends were classified as either "taxable" or "non-taxable". For a more detailed history of the taxation of New Zealand stock dividends see Mancer and Veal (1996).

5 See the election procedure in s CF8 *(3(3))* of the New Zealand Income Tax Act (1994).

6 At the time of writing this paper no taxable stock dividend had been issued in New Zealand after the highest personal marginal tax rate was lifted above the corporate tax rate on the 1st April 2000. If a taxable stock dividend was declared and issued in New Zealand after the 1st April 2000 high tax rate investors would have incurred a tax liability equal to six percent of the stock dividend value.

tax credits received can be used to offset taxes on other income[7]. Therefore, certain investors are likely to place value on the imputation credits. The ultimate value will be affected by the relationship between the different personal marginal tax rates and the corporate tax rate.

The value of imputation credits may be significant as identified by several Australian studies that attempted to determine the value shareholders place on imputation credits. Hathaway and Officer (1992, 1996) estimate that the market value of $1 of imputation credits is approximately 50 cents, while Bruckner, Dews and White (1994) estimate values from 33.5 cents, increasing to 68.5 cents in a later sub-period. Both studies agree that the value of $1 of imputation credits is significantly higher than zero but less than $1. Other studies have examined the drop-off ratio of cash dividends in an imputation tax environment, and although the studies are somewhat varied, generally the recent studies find that imputation tax credits have a market value greater than zero and that drop-off rates are affected by an imputation tax system (Alaganar, Partington and Stevenson, 1999 and Walker and Partington, 1999). Using New Zealand data, Anderson, Cahan and Rose (2001) find evidence that the value of imputation tax credits is impounded in a firm's share price. This leads us to hypothesise that the abnormal ex-date returns around taxable stock dividends in New Zealand are explained by a "value argument" outlined below.

As already discussed, the abnormal returns have been positive in previous studies where taxes are used to explain the stock dividend ex-date effect. In New Zealand there was no tax liability for any investor from taxable stock dividends and in some cases a tax benefit resulted, so the ex-date returns are unlikely to be explained using the Athanassakos and Smith (1996) argument. We know that when a firm distributes

---

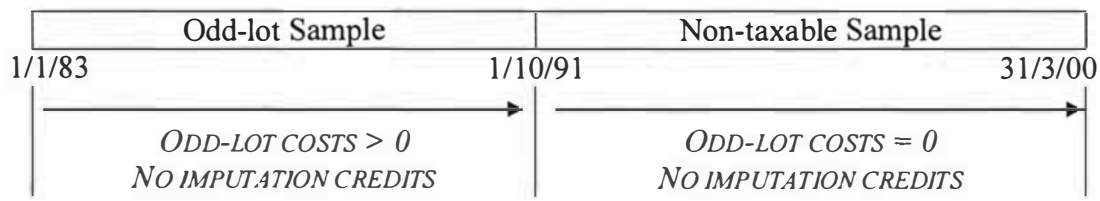
7 If the investor has no other taxable income the tax credit is grossed up and carried forward as a tax loss thereby reducing future income tax payable. However, it should be noted that if the investor derives future income solely from fully imputed dividends, then they would not be able to utilise this tax loss carried forward.

something of value such as cash dividends the firm's value and share price falls. If imputation credits have a market value greater than zero as previous studies suggest, one would expect negative abnormal returns to occur on taxable New Zealand stock dividend ex-dates. We argue that the negative return is attributable to the fact that on the stock dividend ex-date the company is distributing imputation credits to shareholders that have been impounded in the share price. To examine the odd-lot and value arguments, we identify three different samples based on time-period and tax status as shown in Figure 1.

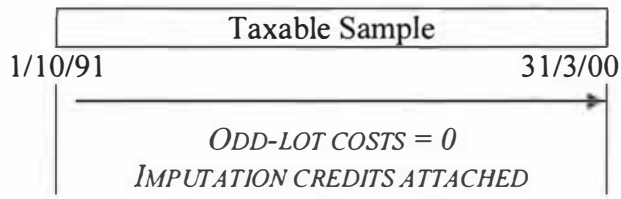
Figure 1
Samples Used in Study

The following figure identifies the three samples used in this study based on the time-period and tax status of the stock dividends.

STOCK DIVIDENDS NOT TAXED



STOCK DIVIDENDS TAXED



For the stock dividends that are not taxed, the Odd-lot and Non-taxable samples differ based on odd-lot costs. Specifically, before 1st October 1991, odd-lot costs were positive whereas after that date, odd-lot costs were equal to zero. For the stock dividends that were taxed, the Taxable sample had imputation costs attached and no odd-lot costs. Thus, the Taxable and Non-taxable samples differ only in terms of imputation credit presence or non-presence.

Ideally, it would be useful to identify a further taxable sample based on stock dividends that had imputation credits attached and had positive odd-lot costs. This would consist of taxable stock dividends issued after 1st April 1988 when the imputation system came into effect but before 1st October 1991 when the odd-lot costs were eliminated. However, as discussed in the next section, there were only two taxable stock dividends distributed during this period so we were not able to form this sample.

Based on the odd-lot transaction cost and value arguments presented in this section, we test five hypotheses.

H_1: The mean abnormal ex-date return for shares distributing non-taxable stock dividends in New Zealand during the period 1st January 1983 to 30th September 1991 (i.e., the Odd-lot sample) is equal to zero.

Based on the odd-lot cost argument where extra trading costs are incurred for the sale of odd-lot share parcels until 30th September 1991, we expect that the mean ex-date stock dividend return for Odd-lot sample will be positive. Therefore we expect to reject hypothesis H_1.

On the other hand, because there were no odd-lot transaction costs from 1st October 1991, we expect that ex-date returns for the Non-taxable sample will not be significantly different to zero. More formally, we hypothesise:

H_2: The mean abnormal ex-date return for shares distributing non-taxable stock dividends in New Zealand during the period 1st October 1991 to 31st March 2000 (i.e., the Non-taxable sample) is equal to zero.

Further, we examine the effect of odd-lot costs on a relative basis. Because the additional odd-lot costs were positive prior to 1st October 1991 but not after, we predict that the two samples will be significantly different. The null hypothesis is stated below:

H_3: The mean abnormal ex-date returns for the Odd-lot sample are equal to the Non-taxable sample mean abnormal ex-date returns.

Based on the odd-lot costs argument we would expect to reject this hypothesis, with significantly higher returns anticipated for the Odd-lot than the Non-taxable sample.

To investigate the value argument, we focus on the taxable stock dividends issued between 1st October 1991 and the 31st March 2000. The null hypothesis for Taxable sample is.

H_4: The mean abnormal ex-date returns for shares distributing taxable stock dividends in New Zealand during the period 1st October 1991 to 31st March 2000 (i.e., the Taxable sample) is equal to zero.

As the imputation credits attached to taxable stock dividends are most likely to have a value greater than zero (as evident in previous research) and because no extra tax liability will arise for any investor in this period, we predict that the hypothesis H_4 will be rejected.

Finally, we further examine the value argument by comparing the Taxable and Non-taxable samples. The only difference between the two samples is the imputation credits attached to the taxable stock dividends. In other words, since neither sample is affected by odd-lot costs, any difference will be due to a tax effect, that is:

H_5: The mean abnormal return for the Taxable sample is equal to the Non-taxable sample mean abnormal ex-date return.

Since we anticipate a negative tax effect on the ex-date for the Taxable sample and no ex-date reaction to the Non-Taxable sample, we expect to reject the null that the mean ex-date returns for the Taxable and Non-taxable samples are equal.

The next section outlines the sample and data selection process to test the above hypotheses, followed by the methodology employed to determine the abnormal returns around New Zealand stock dividend ex-dates.

4.0 Data

In order to identify all stock dividends issued by companies listed on the NZSE we searched the Weekly Diary and NZSE Yearbook. A total of 179 stock dividends were selected after applying the following filters:

i. The share must trade on both the ex-date and the last cum-date. This lessens the impact of thin trading and reduces the possibility of including confounding events.

ii. There were no major announcements as identified in the NZSE Weekly Diary on the last cum-date, ex-date and the day after the ex-date.

iii. The stock dividend must be an issue of ordinary shares. Therefore, we exclude stock dividend issues of preference shares and warrants[8] from the final sample.

While it would be useful to create a fourth sample for testing taxable stock dividends issued during the odd-lot transactions cost period, there were only two taxable stock dividends issued in this period. Thus the two taxable stock dividends that occurred prior

---

8 In New Zealand warrants are referred to as options.

to 1st October 1991 were deleted from the sample. This reduced the final sample of usable stock dividend ex-dates to 177.

In order to ensure that the ex-date was not being affected by a concurrent cash dividend ex-date or stock split we reviewed the Weekly Stock Exchange Diary for the period 1st January 1989 to 31st March 2000. For the period 1st January 1983 to the end of 1988, the adjustment factors used to convert the unadjusted shares prices into gross share prices were examined. Where the adjustment factor on the ex-date was greater than the adjustment required for the stock dividend we conclude that a cash dividend was concurrently paid on the ex-date. A total of 19 cases were identified, but the exclusion of these cases does not significantly change the reported results so the 19 cases were retained. Our decision is consistent with Grinblatt et al. (1984) who found that the ex-date behaviour of stock dividends with coincidental cash dividends was indistinguishable from the rest of their sample. The limited number of coincidental cash dividends is also consistent with Athanassakos and Smith (1996) who only found one out of their sample of 80 stock dividend ex-dates had a concurrent cash dividend.

Table 1 outlines the three sub-samples that were constructed. It presents the date coverage, sample sizes and hypotheses to be tested.

{Insert Table 1 About Here}

To reduce the possibility of confounding events that may occur during the ex-date it is preferable to use the close of business share price on the last cum-date to the opening trade on the actual ex-date (close-to-open share prices). However, data availability for early periods is a major obstacle faced by studies based around shares traded on the New Zealand Stock Exchange. In order to obtain data over the entire sample period, we had to use close of business share price on the last cum-date to the close of business share price on the actual ex-date (close-to-close share prices). However, the impact is likely to be minimal as we have controlled for confounding events over the ex-date

within the firm[9]. Also Athanassakos and Smith (1996) report consistent levels of returns when comparing the use of close-to-open and close-to-close share prices around stock dividend ex-dates. Athanassakos and Smith (1996) find that using close-to-close prices reduced the size of their t-statistics. Therefore, it will likely be more difficult to reject the null hypothesis.

For all stock dividends occurring in the calendar years from 1983 through to the end 1988, the daily adjusted (for capital reconstructions and dividends) close-to-close share and market price data were obtained from the University of Otago's Department Finance & Quantitative Analysis Database. For the period from 1989 onward, the daily adjusted price data were obtained from Datastream Inc. The NZSE All Ordinaries Gross Index was used where possible in order to be consistent with the use of adjusted daily share prices. The All Ordinaries Gross Index commenced on the 30th June 1986. So for any stock dividend prior to this date we used the NZSE40 Capitalisation Index instead.

5.0 Methodology

The ex-date abnormal returns are estimated using the market model event study methodology. We estimate the basic daily abnormal return A_{jt}, for each share on day t by using the following market model:

$$A_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j^* \times R_m\right) \qquad (1)$$

where R_{jt} is the observed arithmetic return for firm j at day t and R_m is the return on the market index at day t. The coefficient $\hat{\alpha}_j$ is the ordinary least squares (OLS) estimate of the intercept of the market regression.

---

9 We have not identified or eliminated any confounding events that may have occurred during the ex-date within the market as a whole.

Non-synchronous trading problems arising from thin trading are likely to be significant in a small equity market such as New Zealand. A major concern is that the standard OLS beta for thinly traded shares will be downward biased[10]. Bartholdy, Fox, Gilbert, Hibbard, McNoe, Potter, Shi and Watt (1996) found that the Lag and Scholes-Williams methods offered a significant improvement in the explanatory powers of future returns over the standard OLS method for New Zealand companies. Hence, the slope of the regression is estimated using the Scholes-Williams Beta (1977) as follows:

$$\hat{\beta}_j^{\bullet} = \frac{\hat{\beta}_j^{-1} + \hat{\beta}_j + \hat{\beta}_j^{+1}}{1 + 2\hat{\rho}_m}. \qquad (2)$$

Three OLS regressions and the estimate of the correlation coefficient between the return at day t and the return at t^{-1} are required (i.e., the first-order serial correlation coefficient of market return, ρ_m). The β^{-1} is the OLS regression of company returns against a one-period lagged market return. The other two OLS regressions employ contemporaneous market returns and a one-period lead on market returns.

A visual examination of the data and investigation of the standard OLS beta confirms that thin trading is very likely to be evident in the total sample. The mean of the standard OLS beta for the entire sample is 0.61, and as expected, the Scholes-William's adjustment increases the mean beta to 0.73.

---

10 The impact of a downward biased beta is to overestimate the abnormal return A_{jt} when the stock return and the market return are either both positive or both negative. Conversely, a downward biased beta is likely to underestimate the abnormal return A_{jt} when either the stock is negative and the market return positive or visa versa.

The estimates of the intercept and slope of the market regression are calculated over an estimation period of 200 trading days prior to the event window of -30 to +30 where day 0 is the ex-date of the stock dividend.

The sample average abnormal return AAR_t on each day is calculated as follows:

$$AAR_t = \frac{\sum_{j=1}^{N} A_{jt}}{N} \quad (3)$$

where *t* is defined as the trading days relative to the stock dividend ex-date. While the cumulative average abnormal return for the sample between a beginning trading date T_1 and an ending trading day T_2 is:

$$CAAR_{T_1,T_2} = \frac{\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} A_{jt}}{N}. \quad (4)$$

The Patell (1976) test statistic, known as the *standardised abnormal return test*, assumes cross-sectional independence. Standardised abnormal returns are estimated by dividing the daily abnormal return A_{jt} for each stock dividend by the estimated forecast standard deviation in order to determine whether the abnormal return on event day *t* is equal to zero, i.e.,

$$SAR_{jt} = \frac{A_{jt}}{s_{A_{jt}}} \quad (5)$$

where

$$s^2_{A_{jt}} = s^2_{A_j}\left[1 + \frac{1}{T} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{k=T_{Db}}^{T_{De}} (R_{mk} - \bar{R}_m)^2}\right]. \quad (6)$$

The number of days in the estimation period is denoted as T.

There are several potential problems with the standard parametric tests of significance in this particular study. This includes the possibility of variance shifts caused by the stock dividend ex-date[11] as well as the relatively small samples sizes for both the Taxable (n=27) and Non-taxable samples (n=30).

Boehmer, Musumeci and Poulsen (1991) find that if an event causes increases in variance, the standard tests of significance often erroneously reject the null hypothesis. Boehmer, Musumeci and Poulsen's z-statistic compensates for possible increases in variance of returns around the event by first estimating the standardised residuals as described above in the Patell method and then applying the *ordinary cross-sectional method*. The ordinary cross-sectional method uses the event-day cross-sectional standard deviation rather than the variance calculated in the estimation period. The Boehmer, Musumeci and Poulsen (1991) test statistic is calculated as:

$$z-\text{statistic} = \frac{\frac{1}{N}\sum_{j=1}^{N} SAR_{jt}}{\sqrt{\frac{1}{N(N-1)}\sum_{j=1}^{N}\left(SAR_{jt} - \sum_{j=1}^{n}\frac{SAR_{jt}}{N}\right)^2}}. \qquad (7)$$

As mentioned above, the Taxable and Non-taxable samples in this study are relatively small, and as such the assumption that the returns are normally distributed may not hold. Therefore, non-parametric rank tests are used in conjunction with the parametric tests of significance detailed above. Corrado (1989) describes the rank test that is correctly specified even when the cross-sectional excess returns are skewed. It is also less affected by increases of variance on the event-date. The rank test procedure treats the combined estimation period (200 days) and event period (61 days) as a single set of

---

11 Changes in return volatility on the ex-date of stock distributions such as stock dividends and stock splits have been documented by Ohlson and Penman (1985), Dravid (1987) and Koski (1998).

returns and assigns a rank K_{jt} to each firm's daily return in the time series of 261 excess returns (where 1 is the rank for the smallest number). This can be written as:

$$\text{Rank test statistic} = \frac{\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt} - 131\right)}{S(K)} \tag{8}$$

where the standard deviation S(K) is calculated using the entire 261 day sample period:

$$S(K) = \sqrt{\frac{1}{261}\sum_{t=-230}^{+30}\left(\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt} - 131\right)\right)^2} \quad . \tag{9}$$

The tests of significant differences between sub-samples will be computed using the standard parametric two-sample *t* test as well as the non-parametric Wilcoxon two-sample rank sum test. To determine whether the samples' abnormal event day returns are significantly different (i.e., H_3 and H_5). The two-sample *t* statistic is shown below:

$$t = \frac{AAR_1 - AAR_2}{\sqrt{\left(\frac{1}{N_1} + \frac{1}{N_2}\right)\frac{(N_1 - 1)\sigma_1^2 + (N_2 - 1)\sigma_2^2}{N_1 + N_2 - 2}}} \tag{10}$$

while the Wilcoxon rank sum test statistic is estimated as follows:

$$z \text{ statistic} = \frac{SR - \frac{N_1(N_1 + N_2 + 1)}{2}}{\sqrt{\frac{N_1 N_2 (N_1 + N_2 + 1)}{12}}} \tag{11}$$

where SR is the sum of the ranks in the first sample.

The next section presents the results and discussion of the five hypotheses tested.

6.0 Results and Discussion

6.1 Stock Dividend Ex-day Abnormal Returns

The results of the average abnormal returns surrounding stock dividend ex-dates are shown in Table 2. Figure 2 contrasts the abnormal returns for the three samples by plotting the cumulative abnormal returns in the days immediately surrounding the ex-date. Table 2, panel A presents the results for the non-taxable stock dividends distributed during the period 1st January 1983 to 30th September 1991. On the ex-date, a positive abnormal return of 1.84 percent is found and this is significant at the 1 percent level under all the test statistics. Over the two-day event window (days 0 and +1), a cumulative abnormal return of 2.17 percent is found which is also significant at the 1 percent level for the two parametric tests and at the 5 percent level for the rank test. Consequently, this supports hypothesis H_1 which predicts that the ex-date return for the Odd-lot sample is positive. The ex-date return is similar to the ex-date return of 1.1 percent found by Grinblatt *et al.* (1984) as well as the returns that Woolridge (1983) and Eades, Hess and Kim (1984) document.

{Insert Table 2 About Here}

{Insert Figure 2 About Here}

Figure 3 plots the cumulative abnormal returns for 30 trading days on either side of the ex-date. This longer time frame enables us to detect any consistent movement in returns leading up to the ex-date and any post ex-date drift. A significant abnormal run-up over the 30 trading days prior to the ex-date of 4.47 percent is found for the Odd-lot sample. The abnormal run-up is to be expected and is well documented in the stock dividend

announcement literature[12]. However, what is less documented in previous stock dividend studies[13] is the abnormal run-down that we find after the ex-date. The positive ex-date return of 1.84 percent disappears after ten trading days, and there is a significant run-down return of 4.86 percent for the event window of day +2 to +30. The post ex-date run-down is experienced by over two thirds of the companies and, therefore, is unlikely to be influenced by outliers. While it is not discussed in Grinblatt *et al.* (1984), one can determine from their tables that a cumulative market adjusted return of just over –1.4 percent exists for the window +2 to +15 and that return persists through to day +30. A similar conclusion can be drawn from Woolridge (1983) where there are cumulative negative abnormal returns evident in the 20 days following the ex-date. While the positive ex-date returns in these earlier studies all but disappear in the subsequent 10 to 15 trading days, neither paper discussed the post ex-date drift and it is not possible to say whether the abnormal return run-down is significant. But Lamourex and Poon (1987) show that the positive ex-date price response for stock splits[14] is eliminated within 11 days of the ex-date.

{Insert Figure 3 About Here}

The post ex-date negative abnormal return found in the Odd-lot sample is consistent with the transaction cost argument where buyers are said to delay purchasing stock until after the ex-date to avoid holding odd-lots. The price impact of any such delay is more

---

12 For example, see Grinblatt *et al.* (1984), and McNichols and Dravid (1990) for studies on the US stock markets, and Anderson, Cahan and Rose (2001) for the New Zealand stock market.

13 This is primarily due to the smaller event windows used in previous ex-date studies, for example, Athanassakos and Smith (1996) only examine three days after the ex-date.

14 While the literature agrees stock splits and stock dividends are different "events", they have very similar price reactions on the announcement and ex-dates.

likely to be of a temporary rather than permanent nature. Therefore, the post ex-date drift found in our study is consistent with the odd-lot transaction cost argument.

Table 2, panel B presents the non-taxable returns issued between the 1st October 1991 and 31st March 2000. An ex-day return of -0.07 percent for non-taxable stock distributions during this period and a cumulative two day return of 0.00 percent is found. Thus, the null hypothesis that the return is not significantly different from zero cannot be rejected. This is consistent with hypothesis H_2 that predicts a zero ex-date return. As expected from the stock dividend announcement literature, a pre ex-date run-up of 5.62 percent exists. This is significant at the 5 percent and 10 percent levels using the Patell (1974) and the Boehmer *et al.* (1991) test statistics respectively. In order to confirm whether or not the run up is due to the announcement affect, it was possible to determine the announcement date from the NZSE Weekly Diary for this sample (and the Taxable sample). Using this data we found that 83 percent of the stock dividends had 30 trading days or less between their announcement and ex-dates. Therefore, the run-up experienced is consistent with the New Zealand stock dividend announcement returns reported by Anderson, Cahan and Rose (2001). Similar to the Odd-Lot Sample, there is also a run-down of returns following the ex-date. Over the period +2 to +30, the cumulative abnormal return is –2.64 percent, but this is not significant using any of the test statistics employed in this study.

Assuming everything else being equal, the only difference between the Odd-lot and Non-taxable samples is that those stock dividends issued prior to the 1st October 1991 may incur increased transactions costs if the stock dividend resulted in holding an odd-lot share parcel. While the rejection of H_1 lends support to the odd-lot transaction cost argument, comparing the returns used to test H_1 and H_2 provides a stronger test of the argument put forward by Conroy and Daves (1991) and Athanassakos and Smith (1996). Table 3 presents the test statistics between the three samples used in this paper. The standard t statistic of 2.19 indicates that Odd-lot sample's return is significantly greater than the Non-taxable sample's return and this difference is significant at the 5 percent level. Based on the Wilcoxon sum rank test, the null that the medians for the

Odd-lot and Non-taxable samples are the same is rejected at the 10 percent level. Therefore, our evidence supports the odd-lot transaction cost argument put forward in the earlier US studies and argued more recently by Athanassakos and Smith (1996).

{Insert Table 3 About Here}

Table 2, panel C presents the abnormal returns surrounding the taxable stock dividend ex-dates issued between the 31st October 1991 and 31st March 2000. On the ex-date we find an average abnormal return of –0.97 percent with 71 percent of the companies experiencing negative ex-date returns. The abnormal return is significant at the 1 percent level using the Patell (1974) and rank tests and at the 5 percent level using the Boehmer *et al.* (1991) test statistic. Therefore, we find support for hypothesis H_4 at the 5 percent level. Specifically, the ex-date return for shares distributing taxable stock dividends is significantly less than zero. Consistent with the findings of Anderson, Cahan and Rose (2001), positive run-up in cumulative returns of 2.48 percent exists over the period -30 to -1 for the Taxable Sample (3.57 percent for the period $t_{-30\text{ to }-3}$). Comparing the number of trading days between the announcement and ex-dates for the taxable stock dividends, it was found that 74 percent had 30 trading days or less, and therefore, the run-up can be explained by the announcement effect. However, this run-up is only significant at the 5 percent level and 10 percent level using the Patell (1974) and Boehmer *et al.* (1991) test statistics respectively. In the two days prior to ex-date, cumulative negative returns of just under 1 percent exist, but a closer examination indicated that this effect was driven by a small number of outliers and only 52 percent of the stock dividends experienced negative cumulative returns on days –2 and –1. Interestingly, there is a negative downward drift of –2.48 percent that is similar to the Non-taxable sample though this return is not significant.

As expected, the ex-date return for the Taxable sample is negative and lends support for the value argument discussed earlier in this paper. By comparing the ex-date returns for the Taxable and Non-taxable samples we can determine whether the market considers

these ex-dates to be different "events". Table 3 shows that the taxable and non-taxable stock dividends are significantly different at the 5 percent level based on the t-test and at the 10 percent using the Wilcoxon sum rank test. Consistent with hypothesis H_5, this suggests that investors value imputation credits, and as one would expect when firms distribute something of value, the share price is negatively impacted. Our findings are consistent with the value argument and with the findings of Hathaway and Officer (1992, 1996), Bruckner, Dews and White (1994), and Walker and Partington (1999) who argue that the value of imputation credits is significantly higher than zero.

6.2 Impact of Stock Dividend Size on Ex-date Returns

As discussed in Section 2 of this paper, Woolridge (1983) argues that the existence of market imperfections such as transaction costs and taxes cause the positive abnormal ex-date returns experienced in the US. Woolridge (1983) writes that the source of transactions is the possibility that prices cannot fully adjust on the US organised stock exchanges. For example, if the stock dividend is not divisible by ⅛ (.125) then the share price cannot fully adjust since trading occurs in $0.125 intervals[15]. Examining a sample containing stock dividends under 25 percent (or 1 for 4), Woolridge (1983) reports evidence that stock dividends less than or equal to 6 percent had higher abnormal returns than larger stock dividends.

During the period examined in this paper, trades on the New Zealand Stock Exchange could be executed in one-cent intervals. So while the market imperfection of indivisibility may have contributed to the positive ex-date effect in the US, it is unlikely to have any explanatory power in our study. Due to data constraints Woolridge (1983) is

---

15 During the period examined by Woolridge (1983) divisibility was an issue. However, shares listed on US stock exchanges can now trade in one-cent intervals with the NYSE and AMEX the first to convert all stocks to decimal trading on the 29th January 2001 followed by the Nasdaq on 9th April 2001 (see Chung, Van Ness and Van Ness, 2001, and Rendine, 2001).

unable to separate the odd-lot transaction cost and the indivisibility effects, and he contends that small stock dividends may result in more holders of odd-lot parcels and by inference increased odd-lot costs than for large stock dividends.

If small stock dividends result in a greater proportion of investors holding odd-lot share parcels than large stock dividends, then stock dividend size may be related to our Odd-lot sample's ex-date return. To extend Woolridge (1983), for each of the three samples we examine whether the abnormal ex-date returns vary across each sample in relation to stock dividend size. We estimate the following ordinary least squares (OLS) regression with the White (1980) correction for heteroskedasticity[16]:

$$AR_i = \alpha_0 + \alpha_1 SIZE_i + e_i, \qquad (12)$$

where

AR_i is the ith stock dividend's abnormal ex-date return,

$SIZE_i$ is the ith stock dividend's percentage[17], and

e_i is the ith stock dividend's error term.

Based on Woolridge's (1983) supposition that small stock dividends may have a larger impact on the number of investors holding odd-lot share parcels than large stock dividends, we expect a negative sign for the coefficient on *SIZE* for the Odd-lot sample. That is, the abnormal ex-date return for stock dividends issued during the odd-lot

---

16 Karafiath (1994) finds that heteroskedasticity is a potential problem in regression of abnormal returns in the presence of event clustering and event induced change in variance. The last problem is of particular importance in this paper as changes in variances around the ex-dates of stock distributions such as stock dividends and stock splits are documented by Ohlson and Penman (1985), Dravid (1987) and Koski (1998).

17 For example, a 1 for 10 stock dividend is equivalent to 1 divided by 10 or a 10 percent stock dividend. In New Zealand the terminology for stock dividend is bonus issue.

transaction cost period is inversely related to stock dividend size. However, we expect the coefficient *SIZE* will not be related to the abnormal ex-date returns for the Taxable and Non-taxable samples as these two samples have neither of the indivisibility or odd-lot transaction cost market imperfections. Table 4, presents the regression estimates for each sample.

{Insert Table 4 About Here}

As expected the sign for *SIZE* in the Odd-lot sample is negative and significant at the five percent level. While, the Non-taxable sample's sign for *SIZE* is negative, it is not significant. The *SIZE* variable is also not significant for the Taxable sample. Therefore, *SIZE* is only significant for stock dividends issued during the period when odd-lot share parcels attracted higher execution costs. The stock dividend size effect that Woolridge (1983) finds, appears to exist in our Odd-lot sample. Since our sample was not affected by the indivisibility problem we find some support for Woolridge's proposition that smaller stock dividends may result in more investors holding odd-lot share parcels thereby facing higher transaction costs than for larger stock dividends. While we cannot conclude that indivisibility partially explains the ex-date returns found in the US, our results provide further support for the odd-lot transaction cost argument.

7.0 Conclusion

This paper investigates the stock dividend ex-date effect in the New Zealand environment from the beginning of 1983 to the end of March 2000. Investigating this period in New Zealand provides a unique opportunity to examine the role, if any, of the transactions costs argument put forward by US studies (Grinblatt *et al.* 1984, Conroy and Daves 1991). The transactions cost theory argues that some investors do not like stock dividends as it will result in a holding of odd-lot share parcels which can attract higher trading costs. Therefore, those investors will try to postpone the purchase of shares until after the ex-date. We are able to examine non-taxable stock dividends

distributed during a period when extra costs were incurred for odd-lot parcels and compare the ex-date returns to non-taxable stock dividends issued after the discontinuation of trade charges on odd-lots. We find a significant positive ex-date return for stock dividends issued during the period of odd-lot trade charges. Further, we find evidence that stock dividend size is related to ex-date returns during the odd-lot period. In contrast, no significant abnormal return is found for stock dividends issued after odd-lot trade charges were discontinued.

These findings support the transactions cost argument put forward by Grinblatt *et al.* (1984), Conroy and Daves (1991), and Athanassakos and Smith (1996). Recent order flow evidence around cash dividend ex-dates supports the notion that some investors postpone the purchase of stocks until after dividend distributions to avoid costs associated with receiving dividends (e.g. the reinvestment decision and costs). This investor behaviour may lead to an upward bias in the measurement of ex-day closing prices (Frank and Jagannathan, 1998, Jakob and Ma, 2002). However, due to the unavailability of transactional data for a considerable period in our study, we are unable to confirm whether an order imbalance does occur around stock dividend ex-dates.

We also have the unique opportunity to test whether taxable and non-taxable stock dividends distributed during the same time period react differently on the ex-date. We find significant negative returns on the ex-date for taxable stock dividends. Our findings are consistent with the value argument, which posits if imputation credits have a value greater than zero, the share price will fall once the imputation credits have been distributed. This finding also supports work on the value of imputation credits by Hathaway and Officer (1992, 1996), and Bruckner, Dews and White (1994).

Further insight into the ex-date effect could be gleaned in the future by examining taxable stock dividends distributed after April 2000. On the 1st April 2000, the top personal marginal tax rate was raised to 39 percent. If New Zealand companies distribute stock dividends after the 1st April 2000 certain investors will face an extra tax

liability. Therefore, the ex-date effect for taxable stock dividends after April 2000 is unlikely to be consistent with our findings of negative abnormal returns. In fact, there is likely to be increased selling pressure prior to and buying pressure on the ex-date by high tax rate investors trying to avoid the extra tax liability in the imputation tax environment. Therefore, the ex-date effect is likely to be more consistent with Athanassakos and Smith (1996) who found positive ex-date returns of just over 2 percent for stock dividends.

Applying Jakob and Ma's (2002) methodology of investigating order flows around the ex-date to the above area and future international stock dividend ex-date studies could help determine if the abnormal returns are principally due to investor trading behaviour around the stock dividend ex-dates, or whether or not that behaviour is induced by investors trying to avoid a personal tax liability or transactions costs. For, while researchers have explained the ex-date effect using either transactions cost or taxation based arguments, both explanations are based on investors' trading behaviour around the ex-date.

Table 1
Breakdown of Stock Dividend Sub-Samples

Stock dividends are included in a sample if it is a distribution of ordinary shares, the stock traded on both the ex-date and cum-date, and there were no major announcements one day either side of the ex-date. The table identifies the name of each sample, sample size, and hypotheses that each sample is used to test.

Sample Name	Details	Hypotheses Tested	Sample Size
Odd-lot Sample	Includes non-taxable stock dividends distributed between 1st January 1983 to 30th September 1991	H_1 & H_3	120
Non-Taxable Sample	Includes non-taxable stock dividends distributed from the 1st October 1991 to the 31st March 2000	H_2, H_3 & H_5	30
Taxable Sample	Includes taxable stock dividends distributed from the 1st October 1991 to the 31st March 2000	H_4 & H_5	27

Table 2
Daily Abnormal Returns and Percentage of Positive Abnormal Returns Surrounding New Zealand Stock Dividend Ex-Dates.

Panels A, B and C present the results for the samples of 120 non-taxable stock dividends issued during the period of odd-lot transactions costs (Odd-lot sample), 30 non-taxable stock dividends occurring during the period of no odd-lot transactions costs (Non-Taxable sample), and 27 taxable stock dividend (Taxable sample) respectively. The average abnormal returns are calculated using the market model methodology and were based on a parameter estimation period from 230 to 31 days prior to the stock dividend ex-date. The traditional parametric z-statistic based on Patel (1976), as well as Boehmer, Musumeci and Poulsen's (1991) standardised cross-sectional test statistic that adjusts for event induced variance increases, and the non-parametric rank test are presented.

Panel A: Odd-lot Sample

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Statistic	Proportion of returns > 0
-5	0.33	2.61***	1.56	0.79	0.48
-4	0.59	2.20**	1.76*	2.32**	0.56
-3	0.14	0.63	0.48	-0.04	0.48
-2	0.03	1.71*	1.42	1.45	0.47
-1	0.00	0.45	0.35	-0.58	0.47
0	1.84	11.04***	3.36***	3.00***	0.64
1	0.33	1.72	1.04	0.20	0.47
2	-0.38	-1.04	-0.54	0.24	0.46
3	-0.18	1.68*	-0.85	-0.42	0.48
4	-0.21	-2.97***	-1.91*	-1.60	0.46
5	-0.12	0.93	-0.60	-0.92	0.45
[0,+1]	2.17	9.03***	3.44***	2.25**	0.63
[-30,-1]	4.47	5.40***	3.85***	2.23**	0.61
[+2,+30]	-4.86	-4.12***	-3.03***	-4.21***	0.33

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Panel B: Non-Taxable Sample

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Test	Proportion of returns > 0
-5	0.38	0.72	0.63	0.35	0.56
-4	0.39	0.78	0.75	0.54	0.43
-3	0.17	1.11	1.14	-0.05	0.47
-2	0.33	1.04	1.06	1.04	0.50
-1	-0.37	-0.78	-0.37	0.34	0.43
0	-0.07	0.47	0.39	-0.46	0.47
1	0.07	-0.42	-0.39	-0.17	0.53
2	-0.57	-0.86	-0.86	-0.7	0.43
3	-0.01	-0.17	-0.21	-0.55	0.43
4	0.18	0.28	0.45	0.15	0.47
5	-0.39	-0.65	-0.54	-0.62	0.43
[0,+1]	0.00	0.03	-0.03	-0.44	0.50
[-30,-1]	5.62	2.33**	1.75*	0.42	0.63
[+2,+30]	-2.64	-1.31	-1.45	-1.64	0.40

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Panel C: Taxable Sample

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Test	Proportion of returns > 0
-5	0.34	1.05	1.26	1.58	0.63
-4	-0.02	-0.16	-0.17	-0.89	0.44
-3	-0.15	-0.32	-0.34	-0.41	0.41
-2	-0.52	-1.48	-1.52	-1.08	0.41
-1	-0.42	-0.63	-0.61	-0.48	0.44
0	-0.97	-3.01***	-2.48**	-2.67***	0.29
1	-0.44	-0.98	-0.47	-0.84	0.41
2	0.44	0.84	0.81	0.60	0.52
3	-0.24	-1.22	-0.88	-0.69	0.48
4	0.49	0.71	0.57	0.57	0.44
5	-0.30	-0.57	-0.49	-0.58	0.41
[0,+1]	-1.41	-2.83***	-2.10**	-2.48**	0.26
[-30,-1]	3.34	2.35**	1.93*	0.37	0.63
[+2,+30]	-2.48	-1.05	-0.83	-1.68	0.41

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Table 3
Significance Levels of Differences Between the Samples' Abnormal Ex-Date Returns

Table 3 presents the results for tests of significance between the differences in the abnormal ex-date returns for the Odd-lot, Non-taxable and Taxable samples. The average abnormal ex-date returns for each sample are calculated using the market model methodology. Both the Wilcoxon Sum Rank Test and the standard t statistic are used to examine the difference between ex-date returns of the samples.

Samples Compared	Wilcoxon Sum Rank Test	t Statistic
Non-taxable and Odd-lot (H_3)	-1.87*	2.19**
Taxable and Non-taxable (H_5)	-1.75*	-2.09**
Taxable and Odd-lot	-2.86***	-2.35**

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Table 4
Regression Analysis of Stock Dividend Ex-Date Abnormal Returns

Table 4 presents the results for the OLS regression results for each sample based on model: $AR_i = \alpha_0 + \alpha_1 SIZE_i + e_i$, where AR_i is the stock dividend's abnormal ex-date return and the variable *SIZE* is the stock dividend's percentage size. Panels A, B and C present the results for the samples of 120 non-taxable stock dividends issued during the period of odd-lot transactions costs (Odd-lot sample), 30 non-taxable stock dividends occurring during the period of no odd-lot transactions costs (Non-Taxable sample), and 27 taxable stock dividend (Taxable sample) respectively. The test statistics are presented using the White (1980) correction for heteroskedasticity.

Panel A: Odd-lot Sample

Variable	*Coefficient*	*Test Statistic*
INTERCEPT	0.0221	3.68***
SIZE	-0.0112	-2.24**

Panel B: Non-taxable Sample

Variable	*Coefficient*	*Test Statistic*
INTERCEPT	0.0009	0.16
SIZE	-0.0088	-0.35

Panel C: Taxable Sample

Variable	*Coefficient*	*Test Statistic*
INTERCEPT	-0.0107	-2.41**
SIZE	0.0041	0.76

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively.

Figure 2
Cumulative Abnormal Stock Dividend Ex-date Return

The cumulative abnormal returns on and immediately surrounding the stock dividend ex-dates shown in this figure are calculated using standard event study methodology.

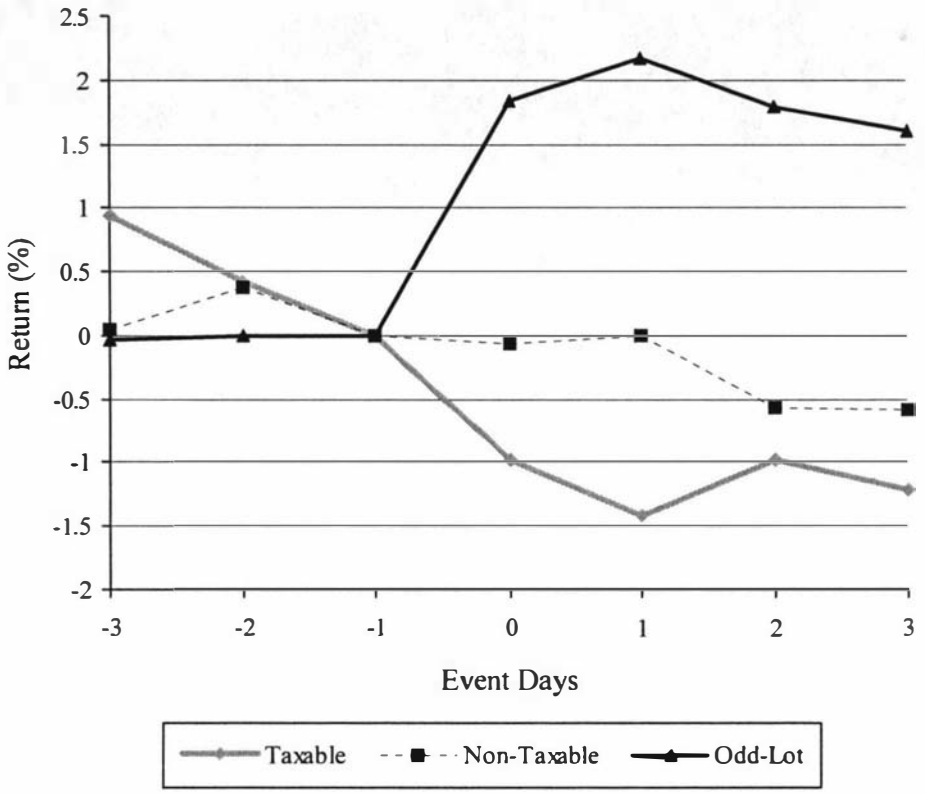
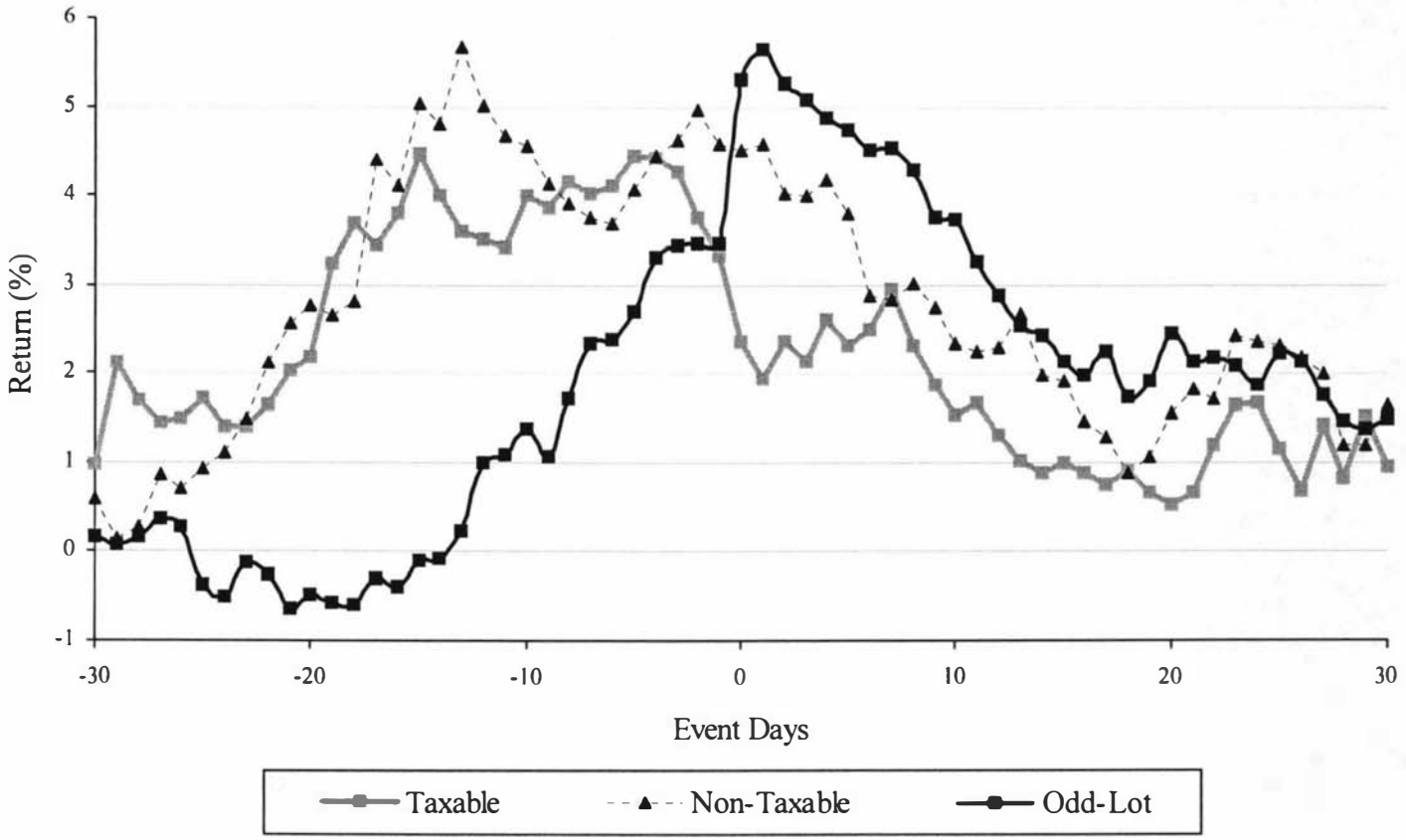


Figure 3
Cumulative Abnormal Stock Dividend Ex-date Return

The cumulative abnormal returns for the 30 trading days either side of the stock dividend ex-dates shown in this figure are calculated using standard event study methodology.



Chapter Four

Essay Three

Chapter Four presents the final essay of this thesis. The essay investigates shareholder wealth effects of private placement announcements by companies listed on the New Zealand Stock Exchange. The essay provides an overview of New Zealand's regulatory environment governing the issue of new shares by private placements. An overview of the seasoned equity literature is provided along with the key theories that have been put forward to explain the announcement reaction. An event study of the announcement returns and trading volume is completed along with cross-sectional analysis of the private placement announcement returns. The essay's reference list is reproduced in the last section of this thesis.

Differential Shareholder Wealth Effects of Private Equity Placements in New Zealand

Abstract

The New Zealand market allows us to explore the effect of a less restrictive private placement regulatory environment compared to the US and other countries where private placements have already been examined. Examples include no resale restrictions on shares purchased through private placements and no restriction on discount size. We find a strong positive relationship between abnormal announcement returns and the price at which shares are placed, suggesting that placement price conveys important information regarding firm quality and value. Private placements issued at a premium exhibit a permanent positive impact on firm value. In contrast, those placed at a discount experience negative announcement returns and show a significant run-down in returns following the announcement. We also find evidence that purchasers of discounted private placements may be taking advantage of relatively weak regulations governing private placements in New Zealand by immediately selling the new shares for a profit.

Key words

Seasoned Equity; Private Placements

JEL Classification: G14, G35, G38

DIFFERENTIAL SHAREHOLDER WEALTH EFFECTS OF PRIVATE EQUITY PLACEMENTS IN NEW ZEALAND

1.0 Introduction

In this paper we investigate the stock price announcement reaction of private seasoned equity placements in New Zealand. The three main mechanisms for issuing seasoned equity are public offerings, rights issues and private placements. Public offerings result in newly issued shares being sold to the general public while a rights issue allows existing shareholders the opportunity to purchase newly issued shares. In contrast private equity placements are issues of new stock to a small number of investors. Typically, New Zealand firms issue seasoned equity through the two mechanisms of rights issues and private placements. While Marsden (2000) investigated New Zealand rights issues, no study to date has examined private placements in New Zealand.

Examining New Zealand private placements allows us to explore the consequence, if any, of a weaker regulatory environment governing the private equity placements in comparison to the United States (US) and other countries where private placements have already been studied. For instance, in New Zealand there are no restrictions on the immediate resale of shares purchased through a private placement and no limit to the size of discount to market price that an issue can be placed. This has led to disgruntled comments from market commentators regarding the potential abuse by issuers and the purchasers of discounted private placements to immediately on-sell at a profit including the following extract regarding a private placement.

> "*The small investors are aggravated by the flooding of new shares on to the market. In February, 11 million new shares were privately issued at a 10% discount to market price ... There was no restriction of trading imposed on the new issues. As a result the shares were quickly sold into the market making instant gains for those who had access to the private placements – deals done at the expense of unsuspecting investors.*" (Bryant, 2000, p7)

Investigating trading behaviour and share price reaction surrounding New Zealand private placements will help determine whether there is any basis to the media's conjecture that New Zealand's weak regulatory environment is being abused.

In earlier seasoned equity offerings studies the US find a marked asymmetry between the share price reactions for private and public seasoned equity offerings. Public equity offerings including rights issues exhibit significantly negative abnormal announcement returns, while a positive announcement reaction is evident for private placements announcements (Eckbo and Masulis, 1995). For example, Wruck (1989) and Hertzel and Smith (1993) document positive market reaction to private placements in the US. International evidence of rights issue valuation effects is mixed with some countries experiencing negative or no reaction to others a positive reaction[1]. Likewise the few international private placement studies also reveal no consistent announcement effect across countries[2].

We find that the price at which a private placement is sold conveys important information to the stock market regarding firm quality. The strong positive relationship between abnormal announcement returns and placement price is consistent with the firm quality argument originally put forward by Heinkel and Schwartz (1986) for seasoned equity offerings and the findings of Tan, Chng and Tong (2002) in the Singapore market. We also find a significantly higher abnormal increase in traded volumes in the five days subsequent to discounted private placements announcement compared to those placed at a premium. This lends support for the market commentators' inference that

---

1 Tan, Chng and Tong (2002) find positive returns in Singapore, while Loderer and Zimmerman (1988) find insignificant returns in Switzerland to rights issue announcements. In contrast negative abnormal returns are experienced in Australia (Hou and Meyer, 2002) and New Zealand (Marsden, 2000).

2 For example, Chen, Ho, Lee and Yeo (2002) examine the Singapore Exchange and find a negative announcement reaction. However, Kato and Schallheim (1993) find positive announcement effects in Japan.

purchasers of discounted private equity placements in New Zealand may be immediately selling the shares into the market. Information of the purchasers on-selling their shares will further reinforce the negative firm quality signal imparted by the discounted private placement which may explain the significant run-down in returns we find for those placed at a discount.

The remainder of this paper is structured as follows. The next section outlines New Zealand's regulatory environment relating to private placements. Section 3.0 reviews the relevant literature, while Sections 4.0 and 5.0 present the data and methodology for testing the announcement reaction. The results and explanatory cross-sectional analysis is presented in Section 6.0 and Section 7.0 concludes.

2.0 Private Placements and New Zealand's Regulatory Environment

A private placement is a new stock issue to a small number of institutions or high wealth investors. The issuing firm is not required to prepare and distribute a prospectus and as a mechanism for raising equity it can be executed very quickly. However, as private placements are issued to a small number of investors the existing non-participating shareholders will experience a dilution in their proportional ownership and therefore to their claim of future cash flows. Therefore to ensure the non-participating shareholders' rights are not neglected stock exchanges typically have specific regulations governing the issue of private placements.

Table 1 compares key regulatory characteristics of private placements in New Zealand with the US, Australia and Singapore. In New Zealand the amount of equity raised through private placements is normally restricted to 10% of a company's stock within a

12 month period as shareholder approval is required for larger equity issues (NZSE[3] Listing Rules – Section 7.3.5[4]). A similar 10% restriction exists in Singapore, and in Australia the issue size is restricted to 15%. While no size restriction is evident in the US there are certain restrictions on private placement purchasers on-selling those securities onto the stockmarket. Resale restrictions are not evident in New Zealand, Australia or Singapore. Of the four countries examined only Singapore has a restriction on the size of the discount to the current market price[5] that a private placement can be sold for. While all four countries disallow directors acquiring a parcel of shares through a private placement, Singapore has a further restriction that private placements cannot be sold to existing substantial shareholders[6]. This restriction prevents large shareholders pressuring management into acquiring shares at an attractive discounted price.

Overall, New Zealand and Australia have a very similar private placement regulatory environment which, at least on the face of it, is relatively less stringent than that in the US and Singapore. Therefore private placements could potentially be more open to managerial abuse in New Zealand than in either the US or Singapore as there is neither a restriction on discount size or on the ability of purchasers to on-sell the securities into the stockmarket for an immediate profit.

---

3 The New Zealand Stock Exchange (NZSE) was demutualised on the 1st January 2003 and then rebranded itself as the New Zealand Exchange (NZX) on the 30th May 2003. This paper refers to the New Zealand stock market using its old name of NZSE as that was the actual market name for the entire period covered in this paper.

4 On the 29th October 2003 the NZSE changed Listing Rule 7.3.5 by raising the maximum size restriction from 10% to 15%.

5 The maximum discount is 10% of the last transacted price on the Singapore Stock Exchange either at the time or immediately preceding the signing of the private placement.

6 The US has a similar restriction in that the shares cannot be sold to an existing blockholder.

{Insert Table 1 About Here}

Announcements of seasoned equity issues including private placements by NZSE listed companies must be made in the first instance to the NZSE as soon as the information becomes available [NZSE Listing Rules – Section 10.8.1 (a)]. It is then disseminated to stockbrokers and media. The following information must be made in the initial announcement by a New Zealand firm issuing new securities, a) class or type of security, b) number of securities issued, c) issue or subscription price, d) the reason or purpose of the issue, e) any terms or conditions of the issue, f) total number of securities of that class after completion of the issue, and g) the date of acquisition [NZSE Listing Rules – Section 7.12.1].

The Companies Act 1993 describes directors' duties in relation to issuing new shares. In particular Section 47 (1) (c) states that "*Before the board of a company issues shares...the board must resolve that, in its opinion the consideration for and terms of the issue are fair and reasonable to the company and all existing shareholders*". Also all directors voting in favour of the new share issue must sign a certificate stating as much [Section 47 (2) (d)].

3.0 Literature Review

3.1 Announcement Effects of Seasoned Equity Issues

The use of rights issues in the United States has been virtually superseded by the use of public offerings in the form of the firm commitment underwritten offers. US studies consistently reveal significant negative abnormal returns for firm commitment underwritten offers in the order of –3.0% (Myers and Majluf, 1984; Masulis and Kowar, 1986; Elliot, Prevost and Rao, 2002). While firm commitment underwritten offers and rights issues are different mechanisms of issuing seasoned equity, both can be considered public offerings especially if the rights issue is renounceable where existing

shareholders can either execute their right to buy the new shares or sell their rights to new investors. There are several US studies that specifically examine rights including Smith (1977) who does not find any significant announcement returns for 94 rights issues during the 1971-1975 period. However, the study used monthly data and Eckbo and Masulis (1992) examining 192 US rights issues over the 1963 to 1981 period using daily data finds significant negative abnormal returns.

Although rights issues are not a common mechanism for issuing seasoned equity in the US it is still the dominant form of seasoned equity financing in many other countries[7] including New Zealand. However the announcement effect found is not consistent across countries. For instance, Tan, Chng and Tong (2002) find positive abnormal returns for rights issues in Singapore, Loderer and Zimmerman (1988) report insignificant announcement returns for rights issues in Switzerland, while significant negative abnormal returns have been reported for Australian rights issues (Hou and Meyer, 2002). Similar to Australia, Marsden (2000) finds that New Zealand rights issues during the 1976 to 1984 period experienced a significant cumulative abnormal 2-day announcement return of -1.01%.

In comparison to the plethora of studies into public offerings of seasoned equity, relatively little research has focused on private placements. The initial US announcement effects study by Wruck (1989) reveals a significant positive reaction of around 4.5% for 99 private placements on the NYSE and AMEX stock exchanges. Examining relatively smaller firms listed on the NASDAQ, Hertzel and Smith (1993) report a positive 1.72% for 106 private placements over the 1980 to 1987 period.

---

7 For example, Singapore (Tan, Chng and Tong, 2002), Korea (Dhatt, Kim and Mukherji, 1996, Kang, 1990), Norway, (Bohren, Eckbo and Michalsen, 1997), Greece (Tsangarakis, 1996), UK (Marsh, 1979) and Loderer and Zimmerman (1998) in Switzerland.

Similar to rights issues the announcement effect of private placements outside of the US is not consistent. In examining 76 private placements in Japan, Kato and Schallheim (1993) report very similar results to Wruck (1989) with abnormal announcement returns of close to five percent. However, Tan, Chng and Tong (2002) examine 67 private placements on the Singapore Exchange over the 1988 to1996 period and find significantly positive return run-up during the 21 days prior to the announcement but insignificant announcement day returns. In contrast, Chen, Ho, Lee and Yeo (2002) also examine the Singapore stockmarket from 1988 to 1993 and report a significant negative return of –0.89% for their sample of 53 private placement announcements.

A number of theories have been put forward to explain the impact of new seasoned equity offering announcements on stock prices. These are discussed below.

3.2 Information Signalling Hypothesis

The seasoned equity offering literature reveals that the information signalling hypothesis is one of the dominant explanations for observed negative price reactions to public equity announcements in the US. Miller and Rock (1985) theorise that unexpected external financing requirements are indicative of unexpectedly lower current cash flows. The Miller and Rock model implies that any unexpected external financing (whether equity or debt[8]) sends a negative signal to the market about current and future expected cash flows and that the larger the issue the more negative the signal. Further, Myers and Majluf (1984) develop a model that shows that share prices are expected to fall when managers have superior information and equity is used to finance investment.

However, the cross-sectional evidence of the systematic relationship between the announcement returns and issue size is mixed. Masulis and Korwar (1986) in the US

---

8 Bondholders would view a negative outlook on current future earnings negatively as the risk of default increases.

and Marsden (2000) in New Zealand find an inverse relationship between issue size and announcement impact while Tan Chng and Tong (2002) find a significant positive relationship for rights issues in Singapore but an insignificant relationship for private placements.

3.3 Investment Opportunities Hypothesis

In contrast to the negative information effect described by Miller and Rock (1985), seasoned equity offerings can also be viewed as positive information about the firm's business opportunities. The investment opportunities argument implies that a firm's discovery of positive net present value projects will result in a positive revaluation of the firm's share price. McConnell and Muscarella (1985) find a positive reaction to simultaneous investment opportunities (new projects) and seasoned equity announcements. Tan, Chng and Tong (2002) also find share prices react positively to joint announcements of rights issues and new projects; however they found no significant reaction to simultaneous private placement and new project announcements.

3.4 Wealth Transfer Hypothesis

Also competing with the Miller and Rock (1985) model is the wealth transfer hypothesis, which argues that unexpected issues of equity reduce the risk of a firm's outstanding debt leading to positive abnormal returns for bondholders (Elliot, Prevost and Rao, 2002). Therefore under the wealth transfer hypothesis announcements of equity issues redistribute wealth from shareholders to the bondholders. As such, a decrease in shareholder wealth is expected when a private placement is used to repay debt.

3.5 Price Pressure Hypothesis

The price pressure hypothesis argues that while long-term demand curves for securities may be perfectly elastic, in the short-term they may be less so (Scholes, 1972). Downward sloping demand curves would imply a negative price reaction to an

unexpected increase in supply through a seasoned equity offering. Loderer and Zimmerman (1988) find that a 1% increase in equity security supply leads to a 0.1% negative stock price reaction in the Swiss market. However, Tan, Chng and Tong (2002) find no evidence to support the price pressure hypothesis for either rights issues or private placements. Their finding of no support for private placements is unsurprising as in Singapore they are predominantly sold at a premium. Therefore, the actual increase in free float[9] is likely to be unchanged on the announcement day. In fact Chen, Ho, Lee and Yeo (2002) find that there is on average 25 days between the announcement date and the share issue date.

The price pressure hypothesis is only likely to have explanatory power for private placements if the new shares are sold at a discount and regulations permit on-selling the new shares directly into the secondary market. Under such a scenario, private placement purchasers could on-sell the shares on the secondary market for an immediate profit leading to an increase in the free float supply.

3.6 Firm Quality Hypothesis

Theoretically the subscription price for renounceable rights issues is irrelevant as the larger the discount the greater the value that the right becomes. However, Heinkel and Schwartz (1986) argue that it signals company quality and the deeper the discount the more negative the signal. The same line of thought would apply to private placements where managers and the private placement purchasers are assumed to have greater knowledge of the firm's future prospects. The purchasers are institutional and/or high net wealth investors who theoretically are sophisticated stock market participants. As such, when a purchaser pays a premium, it signals to the market that they believe the

---

9 Free float represents the amount of shares that are available for trade after removing the closely held shares of large long term investors. If the shares are sold at a premium to current market price then the placement purchaser is unlikely to on-sell the new shares directly into the secondary market even if regulations permit.

stock is currently undervalued based on the firm's future prospects. A discounted private placement would imply that the firm is currently overvalued and the deeper the discount the more negative the signal. Marsden (2000) and Tan, Chng and Tong (2002) find no evidence of discount size impacting on announcement reaction to rights issues. In contrast, Tan, Chng and Tong (2002) find a positive relationship between abnormal return and price premiums found in their sample of private placements, which supports the firm quality argument.

3.7 Information Asymmetry Hypothesis

The information asymmetry hypothesis implies that information effects should be larger for placements where the potential degree of undervaluation is high. Based on Myers and Majluf's (1984) information asymmetry model, Hertzel and Smith (1993) suggest that firms may use private placements to signal that the firm is undervalued. Hertzel and Smith (1993) use book-to-market (BM) as a proxy for measuring the degree of potential firm undervaluation, where a lower BM ratio implies a greater potential for undervaluation. Hertzel and Smith (1993) find that for low BM ratios, private placements tend to be executed to larger discounts and have more positive announcement returns over their 4 day (day t_{-3} to t_0) announcement period window[10]. However, using the same BM proxy, Tan, Chng and Tong (2002) find no support that private placements signal firm undervaluation.

3.8 Ownership Concentration

Changes in ownership concentration have also been put forward as an explanatory variable of private placement announcement reaction. Wruck (1989) argues that firm

---

10 Both Wruck (1989) and Hertzel and Smith (1993) use the announcement window day –3 to the announcement day 0. Wruck (1989) finds the largest abnormal returns on days –3 and –2 and argues that firms do not report the sale until close to or at completion of the private placement, thereby leading to possible information leakage.

value increases when the change in ownership concentration aligns management with shareholder interests[11]. Low levels of ownership concentration make it easier for management to pursue their own interests while a high level of ownership makes it easier for shareholders to exert influence on the management (Mitchell, 1983). This suggests that an increase in ownership concentration will lead to an increase in firm value as it enables shareholders to have greater influence over management decisions, thereby more closely aligning management with shareholder interests.

Wruck (1989) examined changes in ownership concentration after a private placement sale and found that the percentage change in ownership concentration is the single most significant variable in explaining the announcement returns in her sample. The findings support the proposition that firm value increases with increases in ownership concentration.

However, Hertzel and Smith (1993), examining private placements by smaller NASDAQ stocks, find only limited evidence for the ownership concentration hypothesis. They argue that for smaller firms resolving the information asymmetry is more important than ownership changes in explaining the announcement reaction of private placements. In Singapore, Chen, Ho, Lee and Yeo (2002) find higher abnormal announcement returns (or less negative) for firms with ownership concentration levels greater than 75%. They argue that this is due to perceived increases in stock liquidity in the future and find a small increase (significant at the 10% level) in traded volumes in a post announcement period. For all other levels of ownership Chen, Ho, Lee and Yeo (2002) do not find any significant relationship between changes in ownership concentration and announcement reaction.

---

11 For an indepth discussion on the impact of ownership concentration and management ownership see Jensen and Meckling (1976) and Fama and Jensen (1983).

4.0 Data

A total of 98 private placements[12] for the period from 1st January 1990 to 31st December 2002 were identified in the announcements section of the New Zealand Stock Exchange (NZSE) Weekly Diary. A final sample of 70 private placements issued by 55 firms were selected after applying the following filters:

i. Seasoned equity issues by mining and financial institutions are excluded from the sample[13].

ii. At a minimum the stock must trade on either the announcement date or the day following (as identified using volume data).

iii. There were no major announcements as identified in the NZSE Weekly Diary on the announcement day[14].

A breakdown of the private placements by year is shown in Table 2. The average proceeds from private placements are NZ$22.9 million (US$11.1 million) and represents on average 7.9% of the firm market value. This compares with an average private placement size of US$11.48 million in Hertzel and Smith's (1993) US study. The average discount at which the shares are placed relative to the closing share price t_{-5}

---

12 At the time of collecting the sample, all private placement announcements of securities other than common stock (i.e. capital notes, warrants, preference shares and debt securities) were excluded from the initial sample of 98.

13 Very small mining and exploration companies that adopt different capital structure to industrial firms made most of the private placements rejected through this criterion (average placement size for the mining and exploration companies rejected was NZ$2.8 million). A majority of those rejected were also thinly traded and would have been rejected by the second filter.

14 Consistent with previous studies we include announcements of major capital acquisitions (new projects) and capital restructuring which are commonly announced simultaneously with fund raising activities. Announcements of this type are identified and examined in the cross-sectional analysis section of this paper.

is 10.2% with a maximum premium of 27% and a maximum discount of 58%. Nineteen announcements were placed at a premium (27% of the sample) and 51 at a discount (73%). This is in contrast to Singapore, which has a private placement regulatory environment similar to New Zealand's. In Singapore Chen, Ho, Lee and Yeo (2002) find that private placements enjoy on average a 13.7% premium with over 76% being placed at a premium. Of the final sample, the funds from 34 placements were used for capital expenditure or new projects, 16 for refinancing and 20 for net working capital requirements.

The usage of private placements as a mechanism of raising seasoned equity has grown in importance from 1999 onwards. Marsden (2000), examining the period from 1976 to 1994, states that rights issues are the most common method of raising equity finance in New Zealand[15]. In order to compare the importance of private placements as a method of seasoned equity financing with rights issues in New Zealand we complete an exploratory study over the sample period. We confirm that the frequency of rights issues does dominate private placements in the earlier period of our study. However, from 1999 onwards private placements become the dominant form of seasoned equity issues in New Zealand. For example, for the period from 1999 to 2002 there are 46 private placement announcements totalling $1,043.2 million compared to 21 rights issues totalling $907.5 million[16]. Although the average private placement size during this period of $22.7 million is considerably smaller than the $43.2 million raised through rights issues. Interestingly, we do not find any private placements of ordinary shares during 1998. The Asian crisis may be one possible reason for the lack of private

---

15 Marsden (2000) does not compare rights issue frequency with other methods such as private placements; however anecdotal evidence does support the author's argument that rights issues are the dominant form of equity issues during the 1976 to 1994 period.

16 Our comparison sample of rights issues of common stock applies the sample selection filter (i); however, no rights issues were removed for the last two filters. As such, the frequency of rights issues in our comparison sample may be overstated relative to our private placement sample in any given year.

placements during this period, resulting in management not being willing (or unable) to issue seasoned equity through private placements due to the depressed market.

The increasing importance of private placements as the preferred choice of seasoned equity financing is consistent with Wu (2000) who examines the use of public versus private offerings by high-tech firms in the US. Wu (2000) finds that firms issuing private placements are more likely to have fewer equity analysts and institutional investors, plus have relatively lower trading volumes than firms using public offerings. These are all common characteristics of many New Zealand firms.

{Insert Table 2 About Here}

The daily adjusted (for capital reconstructions and dividends) close-to-close stock price data is obtained from the University of Otago's Department of Finance & Quantitative Analysis Database. The database acquires its share data directly from the NZSE. The NZSE All Ordinaries Gross Index is used in order to be consistent with the use of adjusted daily share prices. All volume and financial statement accounting data from the beginning of 1990 to the end of 1999 is also obtained from the University of Otago's Department of Finance & Quantitative Analysis Database. The remainder of the financial statement accounting data and all concentration of ownership data is obtained from Datex Services Limited.

5.0 Event Study Methodology

This paper employs event study methodology to estimate the abnormal risk-adjusted returns surrounding private placement announcements. The following market model estimates the daily abnormal return A_{jt}, for each share on day *t* model:

$$A_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j^{*} \times R_m\right) \qquad (1)$$

where R_{jt} is the observed arithmetic return for firm *j* at day *t*. The coefficient $\hat{\alpha}_j$ is the intercept of the market regression and R_m is the return on the market index at day *t*.

In New Zealand's small equity market non-synchronous trading patterns are evident which lead to biased and inconsistent estimates of beta. Thinly traded shares result typically in the standard OLS beta being downward biased while those traded frequently are upward biased. Bartholdy, Fox, Gilbert, Hibbard, McNoe, Potter, Shi and Watt (1996) find that the Lag and Scholes-Williams methods were the best estimators of future returns for New Zealand companies. The Scholes-Williams beta is also adopted as the measure of systematic risk in a number of other private placement studies (Hertzel and Smith, 1993, Chen, Ho, Lee and Yeo, 2002 and Tan, Chng and Tong, 2002). As such, the firm beta $\hat{\beta}_j^*$ is estimated using the Scholes-Williams beta.

The Scholes-Williams beta shown below uses three OLS regressions and the correlation coefficient between the return at day *t* and the return at t_{-1} are required (i.e., the first-order serial correlation coefficient of market return, ρ_m). The β^{-1} is the OLS regression of company returns against a one-period lagged market return. The other two OLS regressions employ contemporaneous market returns and a one-period lead on market returns.

$$\hat{\beta}_j^* = \frac{\hat{\beta}_j^{-1} + \hat{\beta}_j + \hat{\beta}_j^{+1}}{1 + 2\hat{\rho}_m}. \qquad (2)$$

The estimates of the intercept and slope of the market regression are calculated over an estimation period of 200 trading days prior to the event window of -30 to +30 where day 0 is the announcement date.

The sample average abnormal return AAR_t on each day is calculated as follows:

$$AAR_t = \frac{\sum_{j=1}^{N} A_{jt}}{N} \quad (3)$$

where *t* is defined as the trading days relative to the private placement announcement and N is the number of firms in the sample. While the cumulative average abnormal return for the sample between a beginning trading date T_1 and an ending trading day T_2 is:

$$CAAR_{T_1,T_2} = \frac{\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} A_{jt}}{N}. \quad (4)$$

The Patell (1976) test statistic, known as the standardised abnormal return test, assumes cross-sectional independence. Standardised abnormal returns are estimated by dividing the daily abnormal return A_{jt} for each private placement by the estimated forecast standard deviation in order to determine whether the abnormal return on event day *t* is equal to zero, i.e.,

$$SAR_{jt} = \frac{A_{jt}}{s_{A_{jt}}} \quad (5)$$

where

$$s^2_{A_{jt}} = s^2_{A_j}\left[1 + \frac{1}{200} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{T_{-230}}^{T_{-30}} (R_{mk} - \bar{R}_m)^2}\right]. \quad (6)$$

The market return on day t is denoted R_{mt} and $\bar{R}_m$ is the average market return over the 200 day estimation period. While $s^2_{A_j}$ is estimated as follows:

$$\frac{\sum_{T_{-230}}^{T_{-30}} A^2_{jk}}{200 - 2}. \quad (7)$$

Each SAR_{jt} follows the student's *t* statistic distribution with T-2 degrees of freedom.

The possibility of changes in stock return variance following the announcement and the relatively small sample sizes in this paper are potential problems for standard parametric tests of significance. As such the Boehmer, Musumeci and Poulsen's z-statistic is also used which compensates for possible changes in returns variance around the announcement by first estimating the standardised residuals as described above in the Patell method and then using the event-day cross-sectional standard deviation rather than the variance calculated in the estimation period. The Boehmer, Musumeci and Poulsen (1991) test statistic is calculated as:

$$z-\text{statistic} = \frac{\frac{1}{N}\sum_{j=1}^{N} SAR_{jt}}{\sqrt{\frac{1}{N(N-1)}\sum_{j=1}^{N}\left(SAR_{jt} - \sum_{j=1}^{n}\frac{SAR_{jt}}{N}\right)^2}}. \qquad (8)$$

Corrado's non-parametric rank test is also used, as the relatively small sample sizes means that returns may not be normally distributed. Corrado (1989) describes the rank test that is correctly specified even when the cross-sectional excess returns are skewed. It is also less influenced by changes in variance of returns on the event-date than the standard parametric test. The rank test procedure treats the combined estimation period (200 days) and event period (61 days) as a single set of returns and assigns a rank K_{jt} to each firm's daily return in the time series of 261 excess returns (where 1 is the rank for the smallest number). This can be written as:

$$\text{Rank test statistic} = \frac{\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt} - 131\right)}{S(K)} \qquad (9)$$

where the standard deviation S(K) is calculated using the entire 261 day sample period:

$$S(K) = \sqrt{\frac{1}{261}\sum_{t=-230}^{+30}\left(\frac{1}{N}\sum_{j=1}^{N}\left(K_{jt}-131\right)\right)^2} \quad . \qquad (10)$$

6.0 Analysis of Private Placement Announcement Effects

6.1 Private Placement Announcement Effects

The results for the average abnormal returns for 5 days either side of the private placement announcements and cumulative average abnormal returns (CAAR) for several windows are presented in Table 3.

{Insert Table 3 About Here}

On average there is an increase in shareholder wealth over the five day period prior to a private placement announcement. For the days –5 to –1 the cumulative abnormal return is 3.94% which is significant at the 5% level or above using the parametric tests and at the 10% level using the rank test. This is consistent with previous studies which find a positive abnormal return leading up to private placement announcements (Wruck, 1989, Hertzel and Smith, 1993, and Tan, Chng and Tong, 2002). However, unlike earlier studies, the magnitude of abnormal run-up and the period of run-up for New Zealand private placements are smaller. For example, in the US, Wruck (1989) finds significant CAARs up to 15 days prior to the announcement date, while Tan, Chng and Tong, (2002) find a significant 8.63% abnormal return over the 30 day period prior to private placement announcement in Singapore.

There is no significant announcement return for the entire sample[17]. This differs to Wruck (1989) who finds a 1.88% announcement return in the US, while Kato and Schallheim (1993) find a 4.98% announcement return in Japan. However, New Zealand's announcement returns are consistent with evidence from the Singapore stock exchange where studies have either found no significant announcement reaction (Tan, Chng and Tong, 2002) or a small negative abnormal return of –0.89% (Chen, Ho, Lee, and Yeo, 2002).

A significant run-down in abnormal returns is evident following private placement announcements that persists for the 30 trading days after the announcement date. As shown in Table 3 the ${}_{+30}^{+2}$CAAR is –8.55% which is significant at the 5% level or above for all three statistical tests presented. This finding is in sharp contrast to all other private placement studies except Kato and Schallheim (1993) who also report a run-down in returns subsequent to private placement announcements.

We examine the run-down in returns closer by splitting the total sample into private placements issued at a premium or discount to price day[18] t_{-5}. As reported in Section 4, 19 are placed at or above the trading price t_{-5} and 51 are placed at a discount. Figure 1 shows a comparison between the cumulative abnormal returns of those placed at a

---

17 It is possible that the "hot" private placement period announcement reaction from 1999 to 2002 is different from the earlier period in our study. Therefore, we also re-run the event-study methodology on the subsamples split between those private placements from 1990 to 1997 and from 1999 to 2002. The results between the subsamples are qualitatively very similar. In both subsamples there is a significant run-up in returns up to five days prior to the announcement and neither subsample experiences a significant announcement day return. However, the run-down in return appears to be more pronounced in the 1999 to 2002 period with a ${}_{+30}^{+2}$CAAR of –10.12% compared to –5.54 for the earlier period. This may be explained by the higher proportion of discounted placements (76%) in the later period compared to the earlier period (67%).

18 We also divide the sample based on t_{-10} and t_{-1} and find that the results are not qualitatively different.

premium and those at a discount from days –10 to +30. The premium subsample has an announcement day return of 6.04% that is significant at the 1% level. One possible explanation to the positive abnormal return is that private placements are usually sold to high net worth individuals or institutions who are assumed to have expertise in valuing firms, and their willingness to pay a premium suggests that the issuing firms are currently undervalued. This announcement reaction provides support for the firm quality argument put forward by Heinkel and Schwartz's (1986) theoretical paper on announcement reaction to seasoned equity offerings. The discount subsample has an announcement day return of –1.62% (significant at the 1% level for the parametric tests and at 5% for the rank test). The two subsamples' announcement day returns are also significantly different at the 1% level using the Wilcoxon rank test[19].

When comparing the two subsamples for the run-down in returns found in the total sample we find that the run-down is only evident in the discount subsample which has a ${}_{+30}^{+2}$CAAR of –10.86% significant at the 1% level for all three statistical tests presented. Therefore placements issued at a premium attain a permanent increase in wealth while those placed at a discount continue to exhibit weakness throughout the post period. This is consistent with the signalling of firm quality through pricing of new seasoned equity issues as argued by Heinkel and Schwartz (1986). The continued weakness in the post-announcement period experienced by discounted placements may be explained by New Zealand's relatively weak regulations controlling private placement pricing and the resale of shares acquired through private placements. Purchasers of discounted private

---

19 To determine whether the premium and discount subsamples' abnormal announcement day returns are significantly different the Wilcoxon rank test statistic is estimated as follows:

$$z-\text{statistic} = \frac{SR - \frac{N_1(N_1+N_2+1)}{2}}{\sqrt{\frac{N_1N_2(N_1+N_2+1)}{12}}}$$

where SR is the sum of the ranks in the first sample.

placements may be able to immediately sell the shares on the market at profit. We further explore this issue in Section 6.2 by examining volume changes surrounding private placement announcements.

{Insert Figure 1 About Here}

Next we split the total sample based on the intended purpose or use of the funds raised through the private placement. As stated in Section 4, there are 34 private placements to fund new projects, 20 for working capital requirements and a further 16 related to financial restructuring through debt repayment. The abnormal returns and selected CAARs for each of the funds usage subsamples are shown in Table 4. Although all three statistical tests described in the methodology section are shown in Table 4 the following discussion will be based the non-parametric rank test due to the subsample sizes.

{Insert Table 4 About Here}

For the new project sample presented in Panel A of Table 4 there is a positive 1.55% abnormal return on the announcement day that is significant at the 10% level. This is inconsistent with the Miller and Rock (1985) argument that the market views seasoned equity offerings negatively irrespective of the intended use of the proceeds. However, consistent with other seasoned equities studies (McConnell and Muscarella, 1985 and Tan, Chng and Tong, 2002) the announcement reaction does lend support for the positive signalling effect related to a firm's investment opportunity set.

We find a significant negative announcement reaction of –2.43% when private placement proceeds are earmarked for working capital requirements (see Panel B of Table 4). Outliers do not drive this reaction with 17 (85%) of the 20 working capital announcements exhibiting negative abnormal returns on the announcement day. Investments in working capital requirements are less likely to signal to the market positive information about new investment opportunities. In contrast it is likely to

provide a negative signal that the firm's current operating activities are unable to meet existing working capital requirements. As such the negative announcement reaction for the working capital subsample is consistent with Miller and Rock (1985).

Finally the financial restructuring sample exhibits no significant change in wealth on the announcement date as indicated in Panel C. This is inconsistent with the wealth transfer hypothesis where a negative share price reaction is expected when seasoned equity proceeds are applied to debt repayments.

The above analysis provides some insight into the explanatory power of the competing theories of private placement announcement effects. We find that the placement price is an important factor in announcement reaction, which suggests that the price conveys information to the market about the value of the firm as perceived by both the firm's management and the private placement purchaser. We also find some support for the investment opportunity effects hypothesis. The following subsection provides further insight in the announcement effects by examining the impact private placement announcements have on daily trading volumes.

6.2 Trading Volume Effects

New Zealand's relatively lenient regulatory environment for private placements is one possible explanation for the run-down in abnormal returns for discounted private placements. As detailed in Section 2.0, New Zealand does not place any restrictions on either the resale of shares purchased through a private placement, or on the discount size. Therefore when shares are placed at a discount, the purchaser could immediately sell the shares on the market for a profit. If purchasers of discounted private placements are directly on-selling their shares into the market for an immediate profit then traded volumes would rise significantly in the post announcement period. We test this idea by examining the abnormal trading volumes surrounding private placement announcements and comparing the subsamples of 51 discounted placements with the 19 placed at a premium.

We use the volume event study methodology outlined by Gupta and Misra (1988) and Etebari and Duncan (1997) to analyse changes in trading volumes surrounding private placement announcements. To analyse trading volumes during the event period a measure of abnormal trading volume for each announcement is calculated using the following procedures.

The abnormal volume (AV) for each announcement on day *t* is calculated as:

$$AV_{j,t} = \frac{V_{j,t}}{EV_j} - 1 \tag{11}$$

where EV is expected volume (EV) based on the daily trading volume (V) for the same firm calculated during the estimation period as shown in equation 12.

$$EV = \frac{\left[\sum_{t=-230}^{-31} V_{j,t}\right]}{200} \tag{12}$$

The average abnormal volume on a given trading day *t* is calculated by summing the abnormal volume for each announcement in the sample and dividing by the number of sample announcements. The cumulative abnormal traded volumes are also constructed in the normal manner for specified event windows.

The t-statistic is calculated as follows:

$$t - \text{statistic} = \frac{AAV_t}{\frac{\sqrt{\sum_{j=1}^{N} \sigma_{j,pre}^2}}{N}} \tag{13}$$

where $\sigma_{j,pre}$ is the standard deviation of security specific volume of each announcement estimated during the pre-event measurement period as follows:

$$\sigma_{j,pre} = \sqrt{\frac{\sum_{t=-230}^{-31} AV_{j,t}^2}{200 - 1}}. \tag{14}$$

The results for selected average abnormal volumes and cumulative average abnormal volumes (CAAV) surrounding private placement announcements are shown in Table 5. For the entire sample we find that abnormal announcement day volume (AV) is 2.05 times (or 205% increase) the expected volume, which is significant at the 1% level. Four out of the six days in the event window (0 to +5) show highly significant increases in abnormal trading volumes. However increases in trading volume overall do not provide support for the proposition that purchasers of discounted placements may be directly selling onto the market. As such we compare the trading volume around the two subsamples of discounted and premium private placement announcements.

{Insert Table 5 About Here}

Panel B of Table 5 shows that there is no significant change in traded volumes on the announcement day for the premium sample, and while the ${}_{+5}^{0}CAAV$ window is 4.68 times higher than normal traded volume (or equivalent to a daily average increase of 78%), this cumulative increase is not significant with a t-statistic of 1.39. According to the firm quality argument, private placements sold at a premium will send a positive signal to the market with respect to how management and institutional or high wealth investors perceive the firm's future prospects and value. This information is therefore likely to see a re-rating in the share price as seen in Section 6.1 where a permanent increase in firm value was evident after premium private placement announcements. While this re-rating leads to an increase in traded volumes during the six day window (${}_{+5}^{0}CAAV$), the increase is not significant.

In contrast to the premium sample we find a significant increase in traded volumes on the announcement day of 2.36 times normal traded volume for the discounted sample. The traded volume for the ${}_{+5}^{0}CAAV$ window is 14.11 times more than the expected trading volume, which is significant at the 1% level. This represents an average daily increase in trading volume of 2.35 times (or 235% increase) over expected or normal

volume levels for each day in this six day window. For the event windows subsequent to day t_{+5} we find no significant change in traded volumes. This is clearly demonstrated in Figure 2 where the cumulative average abnormal volumes for both subsamples are plotted over the entire –30 to +30 event window. Leading up to the announcement day there are no significant AAV's or CAAV's while the five days following the announcement show dramatic increases in traded volumes. However, as can be seen in Figure 2, after day t_{+5} the trading volume is not significantly different to normal trading volume[20].

The differences in trading volume changes between the subsamples on the announcement day and the ${}_{+5}^{0}$CAAV event window are significant at the 1% and 5% levels using the Wilcoxon rank test. The dramatic and significant increase in traded volumes immediately after the announcement for the discounted subsample lends support for the proposition that less stringent regulation in New Zealand may lead to private placement purchasers profiting by immediately on-selling the new shares. If private placement purchasers are in fact selling then this is likely to reinforce the negative signal about firm quality originally given by the discounted issue and may help explain the significant run-down in returns that is only evident in the discounted sample. The next section provides a cross-sectional analysis of the abnormal announcement returns.

6.3.1 Multivariate Analysis of Announcement Impact

To help differentiate between the various hypotheses and identify explanatory factors of private placement announcement returns the following cross-sectional analysis is conducted. For a summary of the variables and the expected relationship with the discount-adjusted abnormal returns please refer to Table 6.

---

20 During the period t_{+6} to t_{+30} there are three t-statistics that are significant at the 5% level on days t_{+10}, t_{+12} and t_{+29} for the premium subsample. While for the discount sample days t_{+8}, t_{+11} and t_{+23} are significant at the 10% level.

{Insert Table 6 About Here}

In order to distinguish between the information signalling hypothesis and the investment opportunities argument we use the independent variables PROMV and INV. PROMV is the natural logarithm ratio of the seasoned equity issue proceeds to firm market value where the market value is determined on day t_{-5}[21]. Based on the Miller and Rock (1985) model there would be a negative relationship between issue size (PROMV) and announcement returns. However, the sign would be positive under the investment opportunity effects argument for those with simultaneous new capital investment announcements. In accordance with the NZSE listing rules, an equity issue announcement must outline the intended use of the funds. Those issues ear-marked for new projects or capital investment opportunities in the samples are denoted by the dummy variable (INV) and set at 1, otherwise it is 0. Assuming companies only invest in positive net present value projects then such an announcement signals a revised investment opportunities set and as such we hypothesise there will be a positive relationship between INV and the announcement reaction.

In line with Hou and Meyer (2002) we examine the wealth transfer argument using the dummy variable FIN, which is 1 for those announcements where the proceeds were

---

21 This methodology is in line with previous studies. However, it differs from the market value at t_{-30} employed by Tan, Chng and Tong (2002) and Tssangarakis (1996). Meyers and Hou (2002) determine market value at t_{-10} and they argue that a shorter time period is more meaningful when a firm determines the rights issue price. Further, we believe it is logical to examine values closer to private placement announcements as the potential purchasers are typically only approached within several days of the actual announcement. Therefore, the more recent prices are likely to be an important consideration to private placement purchasers.

We ran the regression analysis using t_{-10} and t_{-1} as the current price for the variables PROMV, PEQ and BM and find qualitatively similar results to those reported in Section 6.3.2.

earmarked for debt repayment, otherwise it is 0. In accordance with the wealth transfer argument we hypothesise that there will be a negative sign for FIN.

We adopt Tan, Chng and Tong's (2002) methodology for testing the price pressure hypothesis by using a volume measure as a proxy for liquidity and variance of stock returns. The liquidity proxy is the ratio of the average daily trading volume calculated over the estimation period $t_{-230 \text{ to } -31}$ to the total number of share outstanding prior to the private placement (VOL). Firms with higher liquidity should have flatter demand curves and therefore the extra supply of shares will have a smaller negative short-term pricing impact than a thinly traded security. As such we hypothesise that there will be a negative relationship between VOL and the abnormal returns surrounding private placements.

The variance of stock returns (VAR) is the average daily stock return variance from t_{-230} to t_{-31}. According to Loderer, Cooney and Van Drunen (1991) higher variance of returns increases the compensation demanded by risk adverse investors to hold more shares, which implies a price decline for additional seasoned equity offerings. We expect a negative relationship between VAR and the abnormal announcement returns.

To test the pricing effects and firm quality argument we use a similar methodology to Tan, Chng and Tong (2002) based on Heinkel and Schwartz's (1986) theory where PEQ is the ratio of offer price to the closing stock price on day t_{-5}. The deeper the discount the more negative the signal will be regarding the value and quality of the firm as perceived by both management and the placement purchaser. While seasoned equity placed at a premium will send a positive signal to the market regarding firm quality. As such we hypothesise a positive relation between PEQ and abnormal returns surrounding private placement announcements.

Hertzel and Smith (1993) argue that private placements may be used to signal under-valuation and the announcement reaction should be larger where the potential for under-

valuation is higher. Following Hertzel and Smith (1993) the book to market equity ratio (BM) is used as a proxy for under-valuation[22]. A low BM ratio signifies a high proportion of market value attributable to intangible assets and the higher the value of intangible assets the greater the potential for under-valuation. Consequently we hypothesise a negative relationship between BM and the abnormal private placement announcement returns.

Wruck (1989) found evidence that changes in ownership concentration levels may help explain the announcement returns. In later studies Hertzel and Smith (1993) and Chen, Ho, Lee and Yeo (2002) find a weak relationship while and Tan, Chng and Tong (2002) do not find any significant relationship between returns and ownership concentration. We use Tan, Chng and Tong's (2002) methodology by measuring change in level of ownership concentration (CON) from before to after the private placement announcement, where ownership concentration is defined as the combined percentage holding of those shareholders with a 5% or greater ownership[23].

We test the above effects using the following multivariate regression equation:

$$ {}^{0}_{+1}\mathrm{AdjCAAR}_j = \alpha_0 + \alpha_1 \mathrm{PROMV}_j + \alpha_2 \mathrm{INV}_j + \alpha_3 \mathrm{FIN}_j + \alpha_4 \mathrm{VOL}_j + \alpha_5 \mathrm{VAR}_j + \alpha_6 \mathrm{PEQ}_j + \alpha_7 \mathrm{BM}_j + \alpha_8 \mathrm{CON}_j + \varepsilon_j \quad (15) $$

---

22 We use the book value of equity from the annual financial statements immediately preceding the private placement announcement and the market value of equity is based on the closing stock price on day t_{-5}.

23 Like Chen, Ho, Lee and Yeo (2002), Tan, Chng and Tong (2002) and Marsden (2000) we use annual financial statements before and after the private placement to extract changes in levels of ownership concentration. However it should be noted that this is a fairly crude estimate of changes in ownership as it ignores other block purchases or sales activities during the year that are unrelated to the private placement. Therefore any relationship between CON and the adjusted returns is likely to be harder to detect.

where ${}^{0}_{+1}$AdjCAAR is the two day cumulative abnormal return from Section 6.1 adjusted for compensation effects from the private placement purchaser (Wruck, 1989)[24]. We use the following formula as described by Wruck (1989) and Tan, Chng and Tong (2002) to adjust the abnormal returns for the compensation effects as shown below:

$$ {}^{0}_{+1}\text{AdjCAAR}_i = \left\{ \left[\frac{1}{1-\chi_i} \; {}^{0}_{+1}\text{CAAR}_i \right] + \left[\left(\frac{\chi_i}{1-\chi_i} \right) \left(\frac{P_{t-5} - P_p}{P_p} \right) \right] \right\} \qquad (16) $$

where χ_i is the ratio of new shares issued to the total number of shares on issue after the private placement. P_{t-5} is the closing price on day t_{-5}, while P_p is the price at which the new shares were placed.

6.3.2 Findings: Multivariate Analysis of Private Placements

Table 7 presents the descriptive statistics for the independent variables contained in equation 15 (Panel A) and the Pearson Correlation Coefficients Matrix is shown in Panel B. All correlations between the independent variables are between 0.50 and –0.50 except FIN and INV (-0.5290), which is expected, as the two variables are mutually exclusive[25] in our sample. We test for multicollinearity between the independent variables by using variance inflation factors. The size of the variance inflation factors

---

24 Wruck (1989) details how private placement abnormal returns to non-participating shareholders can be divided into two components. The first is the new information that causes the market to reassess firm value, while the second represents compensation to the purchaser for contributions to firm value or promoting management entrenchment.

25 The use of private placement proceeds is divided into three categories, new project, financial restructuring and working capital. Therefore, if an announcement has a dummy variable INV of 1 then it must also have a dummy variable of 0 for FIN and vice-versa. Alternatively if a private placement is ear-marked for working capital purposes then both INV and FIN would have dummy variables of 0.

ranges from 1.09 (CON) to 1.86 (VOL), which suggests that multicollinearity is not adversely affecting the multiple regression model[26].

{Insert Table 7 About Here}

Table 8 contains the cross-sectional analysis results for New Zealand private placements. The regression model explains 23.29% of the variation in the two day cumulative abnormal announcement return. The adjusted R^2 is 13.23% and the model's F-statistic is significant at the 5% level[27].

{Insert Table 8 About Here}

The variable PROMV has a positive coefficient and is statistically significant at the 1% level. This is contrary to the Miller and Rock (1985) information signalling hypothesis where larger issues of seasoned finance are expected to produce more negative abnormal returns. While a positive PROMV coefficient lends support to the investment opportunities argument the INV variable has the expected sign but is insignificant which suggests that the positive reaction to issue size is not solely related to simultaneous new project announcements[28]. This is consistent with the subsample event study results

---

26 Multicollinearity is considered a significant problem when the variance inflation factors for independent variables are greater than 10 (Webster, 1995).

27 While the purpose of this section is to explore whether the variables put forward in other papers provide any explanatory power for private placement announcement returns in New Zealand we also identify the regression model with the greatest explanatory power using the backward stepwise regression method to eliminate insignificant variables (See Page and Meyer, 2000). The model with the most explanatory power with an adjusted R^2 of 16.86% has the independent variables PROMV, VOL, PEQ and CON.

28 The investment opportunities hypothesis only applies if the private placement relates to new investments. Therefore we re-run the regression model with the variable PROMV*INV. The sign is negative which is inconsistent with the investments opportunity hypothesis.

where half of the financial restructuring subsample experienced positive announcement returns. We also find no evidence supporting the wealth transfer hypothesis with the dummy variable FIN being insignificant.

Both of the price pressure variables tested, VOL and VAR, show the expected sign but are insignificant[29]. This finding does not support the price pressure hypothesis but is consistent with Tan, Chng and Tong (2002) who also find no evidence supporting the price pressure hypothesis.

The coefficient of variable PEQ has a positive sign and is significant at the 1% level, that is, the larger the discount (premium) the larger the negative (positive) abnormal announcement returns. This is consistent with the signalling of firm quality argument (Heinkel and Schwartz, 1986) and our earlier findings of announcement reaction comparison between private placements issued at a discount versus those placed at a premium. As such it appears New Zealand investors view the placement price relative to recent market prices as an important determinant in firm quality. This is consistent with the strong positive relationship Tan, Chng and Tong (2002) found between abnormal return and the issue price.

While the variable BM exhibits the correct sign it is insignificant and therefore does not provide support for Hertzel and Smith's information asymmetry argument (1993) that private placements signal under-valuation. Our finding of no significant relationship between the adjusted abnormal return and BM is consistent with Tan, Chng and Tong (2002).

---

29 The expected negative sign for VOL for price pressure hypothesis only applies for discounted private placements. Therefore we refine the VOL variable by multiplying it by a dummy variable of 1 if it is placed at a discount and 0 if placed at a premium. Similar to the VOL the new variable VOL*DISC exhibits the expected negative sign but is insignificant.

Finally the variable CON is also insignificant. This contrasts with Wruck (1989) but is in line with the findings of Hertzel and Smith (1993), and Tan, Chng and Tong (2002) who find much smaller changes in ownership concentration after a private placement than reported by Wruck (1989). For instance Wruck (1989) reports a negative 7.7% change in ownership concentration compared to Hertzel and Smith (1993) of positive 1.0% and Tan, Chng and Tong (2002) of negative 0.66%. The change in ownership concentration in our sample is also relatively smaller than Wruck (1989) at –1.88%.

7.0 Conclusion

This paper investigates the effects of private placement announcements in the New Zealand market from the beginning of 1990 to the end of 2002. While papers on private equity placements in the US find a positive information effect, the announcement reaction is less clear in other international markets. A positive reaction is found in Japan (Kato and Schallheim, 1993), while in Singapore Tan, Chng and Tong (2002) find no significant abnormal announcement return and Chen, Ho Lee and Yeo (2002) who also examine the Singapore market find a negative abnormal announcement return.

The New Zealand stock market allows us to explore the impact of comparatively less stringent regulation surrounding the issue of private equity placements compared to the US and other countries where private placement studies have previously been conducted. In particular, the regulation in New Zealand is less restrictive on both the resale of shares purchased through a private placement and the size of discount at which a private placement can be issued. This creates the opportunity for purchasers of discounted New Zealand private placements to immediately on-sell the new shares into the market at a profit.

Overall we find no significant announcement reaction to private placements in the New Zealand market. However, when the sample is split between those placed at a premium and those at discounted price, we find a marked difference in wealth effects. The private

placements issued at a premium experience a significant positive abnormal announcement effect, which has a permanent impact on firm value. In comparison, those placed at a discount have a significant negative announcement effect and also demonstrate a run-down in returns over the 30 trading days after the announcement.

These abnormal return event study results coupled with the multivariate regression analysis provide support for Heinkel and Schwartz's (1986) signalling of firm quality hypothesis through pricing. Using a volume event study we show that there is an increase in volume traded immediately following private placement announcements. However, the increase in volume traded for the discounted sample is nearly ten fold more than the volume increase in the premium sample.

The volume results support market commentators' conjecture that some private placement purchasers are taking advantage of the relatively weak regulatory controls on private placements and immediately selling the new shares onto the market for an instant profit at the expense of less sophisticated or connected investors. New Zealand gained a 'cowboy market' reputation amongst international investors in the late 1980's. Unfortunately when international investors see comparatively weaker investor protection it becomes difficult to shrug the cowboy market tag (McMillan, 2003). Any perception, whether real or imagined, of closed shop deals transacted with a few privileged investors can only reinforce the cowboy market impression. Interestingly, the NZSE further loosened the private placement regulatory controls protecting non-participating shareholders on the 29th October 2003 by allowing issuers to raise up to 15% of capital in any given year without shareholder approval.

Future research could examine private equity placements made by companies listed on the Australian Stock Exchange (ASX), which would provide further evidence on the impact of relatively weak controls on issuers and purchasers of private placements. As highlighted in Table 1 the ASX has an almost identical regulatory environment for private placements as New Zealand.

Table 1
A Country Comparison of Regulatory Characteristics of Private Placements

This table summarises the key regulatory characteristics of New Zealand private placements two other Australasian countries and the United States.

Regulatory Characteristic	New Zealand	United States	Australia	Singapore
Issue Size	Maximum 10% in a 12 month period without shareholder approval	No Restriction	Maximum 15% in a 12 month period without shareholder approval	Maximum 10% in a 12 month period without shareholder approval
Pricing	No regulatory restriction	No regulatory restriction	No regulatory restriction	A maximum 10% discount to current market price
Resale Restriction	No regulatory restriction	Unregistered security placements may initially only be traded among other high net value investors	No regulatory restriction	No regulatory restriction
Purchasers	Cannot be sold to directors or associated persons.	Fewer than 35 sophisticated investors, including existing substantial shareholders.	Cannot be sold to directors or associated persons	Cannot be sold to directors or substantial shareholders

The information sources for each country are as follows: New Zealand, The New Zealand Stock Exchange Listing Rules, United States, Wruck (1989), Grinblatt and Titman (2002), Australia, Australian Stock Exchange Listing Rules, and Singapore, Chen, Ho, Lee and Yeo (2002).

Table 2
Descriptive Statistics of Private Placements

This table presents the issue characteristics for the sample private placements announced by those firms listed on the NZSE during the 1990 to 2002 period. The final sample of 70 was identified after controlling for: i. private placements by mining and financial institutions were excluded, ii. at a minimum the stock traded on either the announcement day or the day following, and iii. there were no major announcements as identified in the NZSE Weekly Diary on the announcement day. The comparison $US dollar conversion is based on the average exchange rate during each year (source: www.rbnz.govt.nz/statistics).

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Number of Observations	1	3	3	2	3	1	6	5	0	10	16	13	7	70
Percent of Sample	1.4%	4.3%	4.3%	2.8%	4.3%	1.4%	8.6%	7.1%	0%	14.3%	22.9%	18.6%	10%	100.0%
Value of New Equity Raised (NZ$ in millions)	0.8	395.4	6.9	14.5	49.3	7.8	44.0	37.6	0	146.9	197.1	557.1	142.9	1,600.3
Average Issue Size	0.8	131.8	2.3	7.2	16.4	7.8	7.3	7.5	0	14.7	12.3	42.9	20.4	22.9
Value of New Equity Raised (US$ in millions)	0.5	229.0	3.7	7.8	29.3	5.1	30.3	25.0	0	77.8	90.2	234.4	66.33	779.3
Average Issue Size (US$ in millions)	0.5	76.3	1.2	3.9	9.8	5.1	5.05	5.0	0	7.8	5.6	18.0	9.5	11.1

Table 3
Daily Abnormal Returns and Proportion of Positive Abnormal Returns Surrounding New Zealand Private Placement Announcements.

Table 2 presents the results for the sample of 70 New Zealand private placement announcements between 1st Januray 1990 to 31 December 2002. The average abnormal returns are calculated using the market model methodology and are based on a parameter estimation period from 230 to 31 days prior to the announcement date. Adjustment for thin trading is done via the Scholes-Williams (1977) methodology. The traditional parametric z-statistic based on Patel (1976), as well as Boehmer, Musumeci and Poulsen's (1991) standardised cross-sectional test statistic that adjusts for event induced variance increases, and the non-parametric rank test are presented.

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Statistic	Proportion of returns > 0
-5	0.90	1.67*	1.65*	2.05**	0.61
-4	0.75	0.73	0.70	-0.01	0.44
-3	0.40	0.76	0.75	-0.41	0.53
-2	1.22	1.66*	1.31	0.89	0.51
-1	0.68	1.37	0.96	0.38	0.43
0	0.46	0.78	0.33	-0.09	0.44
1	-0.31	-0.60	-0.54	-1.27	0.41
2	-0.60	-0.56	-0.54	-1.38	0.43
3	0.18	0.72	0.67	1.27	0.51
4	0.28	0.61	0.88	1.20	0.59
5	-0.07	-0.11	-0.13	-0.07	0.49
[-30,-1]	-1.00	-0.35	-0.39	-0.49	0.47
[-5,-1]	3.94	2.72***	2.03**	1.71*	0.59
[0,1]	0.15	0.13	0.07	-0.96	0.43
[+2,+20]	-5.05	-2.16**	-2.55**	-2.47**	0.34
[+2,+30]	-8.55	-2.53**	-2.77***	-3.19***	0.31

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Table 4
Daily Abnormal Returns Surrounding New Zealand Private Placement Announcements Divided By Use of Funds Raised

Table 4 presents the results for three subsamples based on what the funds raised are to be applied to where Panel A represents funds raised for new projects (n=34), Panel B for working capital (n=20) and Panel C for financial restructuring (n=16). The average abnormal returns are calculated using the market model methodology and are based on a parameter estimation period from 230 to 31 days prior to the announcement date. Adjustment for thin trading is done via the Scholes-Williams (1977) methodology. The traditional parametric z-statistic based on Patel (1976), as well as Boehmer, Musumeci and Poulsen's (1991) standardised cross-sectional test statistic that adjusts for event induced variance increases, and the non-parametric rank test are presented.

Panel A: New Projects

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Statistic	Proportion of returns > 0
-5	1.78	2.44**	2.31**	2.35**	0.62
-4	0.86	0.37	0.35	-0.33	0.44
-3	0.09	-0.42	-0.51	-1.14	0.41
-2	0.55	0.39	0.36	0.18	0.50
-1	-0.56	-0.84	-0.65	-1.06	0.41
0	1.55	2.67***	1.76*	1.69*	0.62
1	-0.19	-0.17	-0.08	-0.89	0.44
2	-0.18	0.46	0.41	-0.29	0.44
3	-0.38	0.58	0.58	1.03	0.53
4	0.04	0.08	0.13	0.61	0.53
5	-0.70	-0.81	-0.90	-0.68	0.44
[-30,-1]	-4.41	-1.38	-1.59	-1.59	0.35
[-5,-1]	2.72	0.86	0.78	0.00	0.56
[0,+1]	1.36	1.81*	0.87	0.53	0.47
[+2,+20]	-7.69	-2.37**	-3.40***	-2.23**	0.32
[+2,+30]	-11.70	-2.60***	-2.70***	-2.73***	0.35

Panel B: Working Capital

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Statistic	Proportion of returns > 0
-5	0.20	0.19	0.19	0.84	0.55
-4	0.51	0.99	1.14	1.53	0.60
-3	1.08	0.80	0.60	0.22	0.50
-2	1.69	1.14	0.85	0.36	0.45
-1	2.29	2.63***	1.92*	1.87*	0.60
0	-2.43	-2.51**	-2.44**	-2.21**	0.15
1	-0.74	-0.77	-1.14	-1.04	0.30
2	-0.87	-0.53	-0.56	-1.03	0.45
3	2.31	2.46**	2.30**	2.31**	0.60
4	0.91	0.85	1.00	1.35	0.65
5	0.91	1.29	1.43	1.03	0.60
[-30,-1]	1.99	0.49	0.52	0.83	0.55
[-5,-1]	5.77	2.56**	1.88*	2.28**	0.60
[0,+1]	-3.18	-2.33**	-2.52**	2.30**	0.25
[+2,+20]	0.32	0.68	0.60	0.03	0.45
[+2,+30]	-6.48	-0.30	-0.27	-1.22	0.35

Panel C: Financial Restructuring

Event Day	AAR percent	Patel (1976)	Boehmer et al. (1991)	Rank Statistic	Proportion of returns > 0
-5	-0.11	-0.41	-0.64	-0.28	0.31
-4	0.82	-0.13	-0.11	-1.23	0.25
-3	0.22	1.29	1.37	0.59	0.38
-2	2.04	1.61	1.06	1.10	0.63
-1	1.29	1.14	0.66	-0.08	0.44
0	1.77	0.54	0.15	-0.10	0.50
1	-0.03	-0.23	-0.24	-0.09	0.50
2	-1.16	-1.25	-1.26	-1.18	0.44
3	-1.30	-2.08**	-2.01**	-1.53	0.44
4	-0.01	0.22	0.32	0.01	0.50
5	0.07	-0.51	-0.71	-0.30	0.44
[-30,-1]	2.51	0.73	0.78	0.42	0.44
[-5,-1]	4.26	1.57	0.89	0.05	0.56
[0,+1]	1.74	0.23	0.09	-0.13	0.50
[+2,+20]	-6.15	-1.83*	-3.30***	-1.69*	0.25
[+2,+30]	-4.44	-1.17	-3.49***	-1.01	0.19

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Table 5
Daily Average Abnormal Volume Surrounding New Zealand Private Placement Announcements

Table 5 presents the results for the volume analysis surrounding all private placement announcements as well as two subsamples split between those issues placed at a premium (n=19) and those place at a discount (n=51) to closing price t_{-5}. AAV and CAAV figures represents the number of times that actual volume exceeds expected volume (for example an AAV of 0 would mean the actual volume was the same as expected volume while an AAV of 1 means it is double the expected volume).

Panel A: All Private Placements

Event Period	AAV & CAAV	t-statistic
0	2.053	4.69***
[0,+1]	2.567	2.93***
[0,+5]	12.879	4.90***
[+6,+30]	3.988	0.36
[+11+30]	1.510	0.17

Panel B: Premium Sample

Event Period	AAV & CAAV	t-statistic
0	-0.017	-0.03
[0,+1]	0.695	0.62
[0,+5]	4.682	1.39
[+6,+30]	3.364	0.31
[+11+30]	0.699	0.06

Panel C: Discount Sample

Event Period	AAV & CAAV	t-statistic
0	2.363	5.20***
[0,+1]	2.848	3.14***
[0,+5]	14.107	5.18***
[+6,+30]	3.931	0.35
[+11+30]	1.631	0.18

Notes:
The symbols *, ** and *** denote statistical significance at the 10 percent, 5 percent and 1 percent levels respectively, using a two-tail test.

Table 6
Hypotheses and Variable Definitions

Hypothesis	Announcements and Variables	Definition	Expected Reaction or Relationship
Information Signalling Hypothesis	All Announcements	Abnormal return on Day 0 and Cumulative Abnormal return on days (0,1) for all 70 private placements.	Negative market reaction
Information Signalling Hypothesis	PROMV	The natural logarithm of the ratio of private placement proceeds to market value of firm on day t_{-5}.	(-)
Information Signalling Hypothesis	INV	1 if proceeds of private placement used for new projects or capital investments; otherwise 0.	(-)
Investment Opportunities Hypothesis	New Project Announcements	Abnormal return on Day 0 and Cumulative Abnormal return on days (0,1) for the 34 private placements used for new investment opportunities.	Positive market reaction
Investment Opportunities Hypothesis	PROMV	The natural logarithm of the ratio of private placement proceeds to market value of firm on day t_{-5}.	(+)
Investment Opportunities Hypothesis	INV	1 if proceeds of private placement used for new projects or capital investments; otherwise 0.	(+)
Wealth Transfer Hypothesis	Financial Restructuring Announcements	Abnormal return on Day 0 and Cumulative Abnormal return on days (0,1) for the 16 private placements used for repaying debt.	Negative market reaction
Wealth Transfer Hypothesis	FIN	1 if proceeds of private placement used for repaying debt; otherwise 0.	(-)
Price Pressure Hypothesis	VOL	Ratio of average daily trading volume from $t_{-230\text{ to }-31}$ to the number of shares outstanding before the private placement.	(-)
Price Pressure Hypothesis	VAR	Variance of daily stock returns from $t_{-230\text{ to }-31}$.	(-)
Firm Quality Hypothesis	Premium Announcements	Abnormal return on Day 0 and Cumulative Abnormal return on days (0,1) and for all private placements sold at a premium to the stock price t_{-5}.	Positive market reaction
Firm Quality Hypothesis	Discount Announcements	Abnormal return on Day 0 and Cumulative Abnormal return on days (0,1) for all private placements sold at a discount to the stock price t_{-5}.	Negative market reaction
Firm Quality Hypothesis	PEQ	Ratio of the offer price to the closing stock price on day t_{-5}.	(+)
Information Asymmetry Hypothesis	BM	Book to market equity ratio.	(-)
Ownership Concentration	CON	Change in level of ownership concentration from before to after the private placement announcement, where ownership concentration is defined as the combined percentage holding of those shareholders with a 5% or greater ownership.	(+)

Table 7
Independent Variable Descriptive Statistics and Pearson Correlation Matrix

Table 7 presents descriptive statistics of the independent variable used in the multivariate regression model (equation 15). PROMV is the natural logarithm of the ratio of private placement proceeds to market value of firm on day t_{-5}. INV and FIN are dummy variables where simultaneous announcements for new investment opportunities or repayment of debt (respectively) are announced at the time of the private placement. The variable VOL is the ratio of average daily trading volume from $t_{-230\text{ to }-31}$ to the number of shares outstanding before the private placement, while VAR is Variance of daily stock returns from $t_{-230\text{ to }-31}$. PEQ is the ratio of the offer price to the closing stock price on day t_{-5}. BM is the equity book value to market value on day t_{-5} and CON represents the difference between ownership concentration levels before and after the private placement. The sample consists of 70 private placements during the period from 1990 to 2002.

Panel A: Descriptive Statistics

Variable	Mean	Standard Deviation	Median	Maximum	Minimum
PROMV	-2.4194	1.1107	-2.5127	1.0110	-4.6963
INV	0.4857	.05034	0	1	0
FIN	0.2286	0.4229	0	1	0
VOL	0.0292	0.0069	0.0108	0.0470	0.0004
VAR	0.0017	0.0016	0.0012	0.0065	0.0001
PEQ	0.8976	0.1554	0.9132	1.2706	0.4177
BM	0.7577	0.8149	0.6078	4.9512	-0.2356
CON	-0.0187	0.1372	-0.0188	0.6798	-0.2775

Panel B: Pearson Correlation Matrix

	PROMV	INV	FIN	VOL	VAR	PEQ	BM	CON
PROMV	1.0000							
INV	-0.1791	1.0000						
FIN	0.1604	-0.5290	1.0000					
VOL	0.4900	-0.2101	-0.0147	1.0000				
VAR	0.4110	-0.0826	-0.2205	0.3906	1.0000			
PEQ	-0.1537	0.0953	0.0059	-0.0437	-0.2711	1.0000		
BM	0.3035	-0.2153	0.2310	0.4726	-0.0656	0.1138	1.0000	
CON	-0.1072	-0.0232	0.1001	-0.0839	-0.1276	0.2118	0.0303	1.0000

Table 8
Multivariate Regression Results

Table 8 presents the multivariate regression results for equation 15. The two day cumulative adjusted return $_{+1}^{0}$AdjCAAR is regressed on the variables PROMV, INV, FIN, VOL, VAR, PEQ, BM and CON. PROMV is the natural logarithm of the ratio of private placement proceeds to market value of firm on day t_{-5}. INV and FIN are dummy variables where simultaneous announcements for new investment opportunities or repayment of debt (respectively) are announced at the time of the private placement. The variable VOL is the ratio of average daily trading volume from $t_{-230\text{ to }-31}$ to the number of shares outstanding before the private placement, while VAR is Variance of daily stock returns from $t_{-230\text{ to }-31}$. PEQ is the ratio of the offer price to the closing stock price on day t_{-5}. BM is the equity book value to market value on day t_{-5} and CON represents the difference between ownership concentration levels before and after the private placement. The sample consists of 70 private placements during the period from 1990 to 2002. The estimated coefficients and t-statistics, and p-values are presented along with summary regression statistics of the equation.

Variable	Parameter Estimate	Expected Sign	t-test	p-value
Intercept	-0.08805		-0.963	0.3395
PROMV	0.03577	+/-	2.642 ***	0.0105
INV	0.01233	+/-	0.415	0.6795
FIN	0.02915	(-)	0.798	0.4279
VOL	-3.32847	(-)	-1.424	0.1596
VAR	-2.05204	(-)	-0.217	0.8286
PEQ	0.25292	(+)	3.052 ***	0.0034
BM	-0.01558	(-)	-0.859	0.3939
CON	-0.06397	(+)	-1.236	0.2212

Regression Statistics				
	R^2	0.2329	F-statistic	2.32
	Adjusted R^2	0.1323	p-value	0.0307

Note:
The signs for independent variables PROMV and INV are expected to be negative under the information asymmetry hypothesis but positive for the investment hypothesis.

Figure 1
Cumulative Abnormal Return Private Placement Announcement Return

The cumulative abnormal returns 10 days prior to private placement announcements to 30 trading days after are shown in this figure. The abnormal returns are calculated using standard event study methodology and adjustment for thin trading is done via the Scholes-Williams (1977) methodology. The total sample is split between those placed at a premium (n=19) and those at a discount (n=51) to the share price t_{-5}.

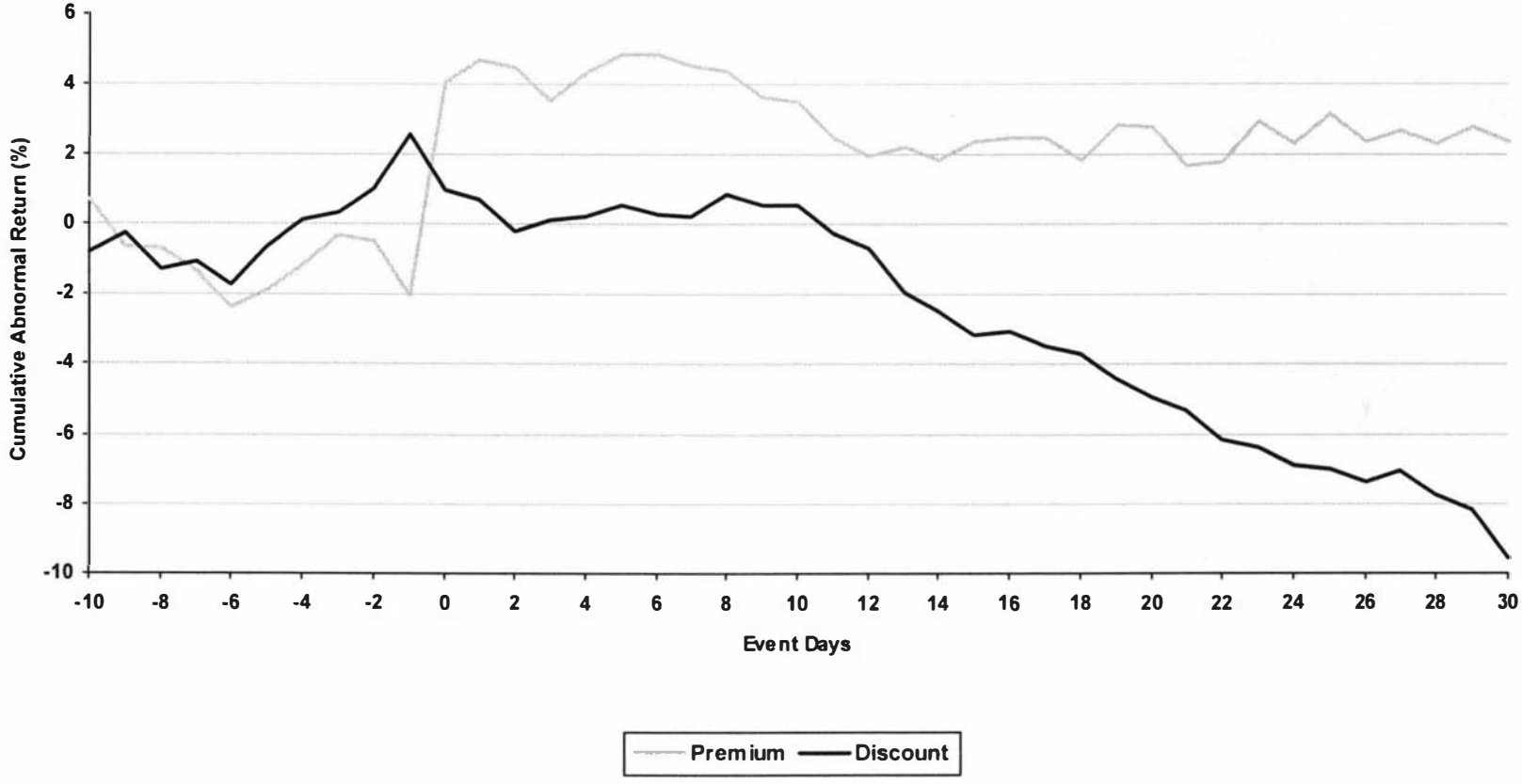
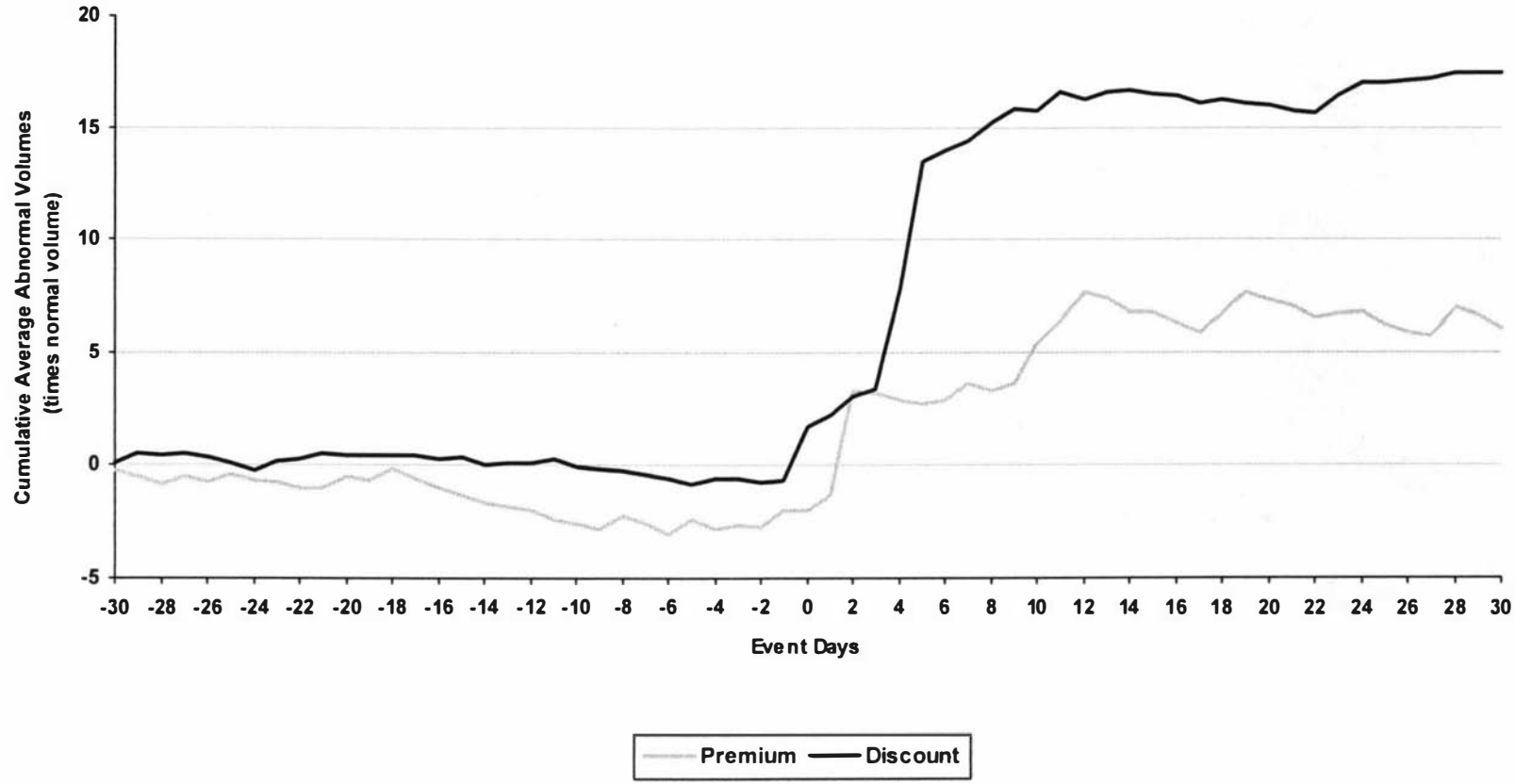


Figure 2
Cumulative Average Abnormal Volume Surrounding Private Placements

The cumulative abnormal returns 30 days prior to private placement announcements to 30 trading days after are shown in this figure. The total sample is split between those placed at a premium (n=19) and those at a discount (n=51) to the share price t_{-5}.



Chapter Five

Conclusion

The following chapter concludes the thesis by briefly summarising the key findings from each of the three essays. A discussion of the implications of these findings is presented followed by an examination of potential areas for further research. While each essay contains a small note on future areas of research, this chapter expands on those by providing more depth on how the issues might be examined.

CONCLUSION

1.0 Major Findings and Implications

The first essay in this thesis found that New Zealand's stock dividend announcement effect is consistent with international studies. Firms issuing stock dividends in New Zealand experience positive abnormal returns in the vicinity of 3% around the announcement. A two-day announcement return of close to 4.4% is found for taxable stock dividends compared to around 2% for non-taxable stock dividends. The evidence demonstrates that imputation tax credits attached to the taxable stock dividends have a value greater than zero to investors. This contributes to the existing literature on capitalisation theory that argues future personal tax effects are assumed to be impounded in the share price.

The usefulness of taxable stock dividends as a tool for maximising shareholder wealth is evident in the fact that it maximises the present value of future tax benefits by accelerating shareholders' utilisation rates of imputation credits. The findings also suggest that issuing new shares through the mechanism of taxable stock dividends is an important tool for certain types of firms. For instance, growth firms tend to adopt a zero or low dividend policy. This leads to the accumulation of imputation credits, which are only beneficial once the credits are distributed to shareholders. Taxable stock dividends are the only option growth firms have to continue their reinvestment policy and distribute the valuable imputation credits to shareholders. However, the increase in the top marginal tax rate to 39% has all but eliminated the use of taxable

stock dividends in New Zealand[1]. This could lead to a tax-induced discrimination against growth companies in favour of mature companies who have the ability to pass on imputation credits via their typically high dividend payout ratio.

The second essay of the thesis examined stock dividend ex-dates in the New Zealand market. A stock dividend ex-date is an event that is known in advance and contains no new information regarding the company. So while there is no information-based reason for an ex-date effect there was an abnormal ex-date return of over 1.8% for the sample of stock dividends from January 1983 to the end of September 1991. This finding is consistent with a number of US studies, several of which argued that the ex-date effect can at least be partially explained by the odd-lot transaction cost theory. The transaction cost theory is based on the premise that odd-lot parcels of shares incur higher transaction costs than round lots, therefore investors try to avoid odd-lot parcels of shares that arise from receiving stock dividends.

Examining the New Zealand market allows a direct comparison of stock dividend ex-date effects during a period when odd-lot transactions incurred higher costs with the stock dividend ex-date returns once odd-lot transaction costs were discontinued. As already highlighted, during the odd-lot period the ex-date return was 1.8% but no significant ex-date return remains during the period when odd-lot costs were removed. Further, we find evidence that stock dividend size is only related to ex-date returns during the odd-lot period. In contrast, no significant abnormal return is found

---

1 This line of thought was initially argued in the short paper in Chapter Two, Appendix One of this thesis. It has since been proven to be correct. In the period after the top marginal tax rate was increased to 39% only two taxable stock dividends have occurred on the NZSE. Mainfreight Limited issued the first taxable stock dividend on the 20th August 2002 (Reuters, 2002). Cedenco Foods Limited also announced a taxable stock dividend on the 9th August 2003 (The Press). However, Cedenco's taxable stock dividend was to ensure all accumulated imputation tax credits were released to shareholders before a takeover of the firm was completed. The takeover would have resulted in the total loss of the accumulated imputation credits.

for stock dividends issued after odd-lot trade charges were discontinued. These findings are an important contribution to the literature on the odd-lot transaction cost theory.

The second essay also adds to the body of knowledge on the value of imputation credits. We find a significant negative ex-date return for a sample of taxable stock dividends. This is consistent with the value argument, which posits if imputation credits have a value greater than zero, the share price will fall once the imputation credits have been distributed.

The final essay of this thesis investigated shareholder wealth effects of private placement announcements in the New Zealand market. Compared to the US and other markets where private placements have already been investigated, New Zealand has weaker regulations controlling the issues of shares by private placement. The regulations are less restrictive compared to the US with regard to the resale of shares by private placement purchasers. Also there is no restriction on discount size which provides the opportunity for purchasers of discounted private placements to immediately on-sell the new shares at a profit.

We find an asymmetric shareholder wealth effect between private placements issued at a premium (higher than current market price) and those at a discount. Premium placements experience a significant positive abnormal announcement effect, which has a permanent impact on firm value. The discounted placements have a significant negative announcement effect. However, in contrast to premium placements the effect is not confined to the announcement day with discounted placements exhibiting a significant run-down in returns over the 30 trading days after the announcement. As such, placement price, even crudely split between premium and discounted placements, appears to convey important information to the New Zealand market participants, leading to a reassessment of firm value. Further, multivariate

regression analysis also confirms the importance of placement price which supports Heinkel and Schwartz's (1986) firm quality hypothesis.

We find evidence of dramatically increased trading volumes following discounted private placements. This lends weight to past market commentators' inference that some issuers and purchasers may be taking advantage of weak regulatory controls in New Zealand resulting in purchasers immediately selling for a quick profit. The perception whether real or imagined that some investors are getting favourable secret deals that disadvantage non-participating shareholders is unlikely to help New Zealand's 'cowboy market' reputation as perceived by international investors in the late 1980's.

In the short term, less restrictive regulations governing new share issues may help managers to speedily raise new capital. However, a small capital market like New Zealand relies on international investors to provide new capital and international investors tend to be wary of investing in markets with weak investor protection regulation or weak enforcement agencies. Therefore in the long term, less restrictive regulation controlling the issue of new shares may have a detrimental effect on New Zealand firms' ability to raise new capital.

2.0 Future Areas Of Research

The research contained in this thesis highlights several areas of research that may prove fruitful. The essay included in Chapter 2 and the appendix to the same chapter on stock dividend announcements highlights the possibility that the relationship between personal marginal tax rates and the company tax rate may favour certain companies under an imputation tax system. For instance, many investors would have a tax-induced preference for mature companies with high dividend payout ratios when their top personal marginal tax rate is equal or lower than the company tax rate.

High dividend payout firms are able to pass on the valuable imputation tax credits to shareholders thereby maximising shareholders' after-tax returns. In comparison growth companies may be disadvantaged by the same tax regime as earnings are ploughed back into the firm rather than being paid as dividends. This could lead to a tax-induced discrimination against growth companies in favour of mature companies who have the ability to pass on imputation credits via their typically high dividend payout ratio. Further research is required to determine whether particular imputation tax regimes favour certain companies, and if they do, whether this is at least partially offset by the formation of shareholder clienteles.

An examination of dividend drop-off rates in New Zealand during the 1988 to 2000 period when the top marginal tax rate was equal to the top personal tax rate may be useful in providing further evidence on the value of imputation credits. While dividend drop-off studies have been completed in the Australian market, New Zealand provides a 'cleaner' tax system during this period in which to examine the impact of imputation credits on dividend drop-off rates. For instance, as the top corporate and marginal tax rates were the same during this period no investor had a tax induced bias for capital gains over dividends. Therefore, high-tax rate investors during this period had no need to conduct tax-avoiding trading around dividend ex-dates.

A comparison of drop-off rates between high and low dividend payout companies may provide insight into whether tax-based shareholder clienteles formed during this period. If tax based shareholder clienteles formed[2] during this period then the

---

2 Low tax rate and/or capital gains taxed investors would be attracted to companies with a high fully imputed dividend payout policy. Therefore, if tax induced shareholder clienteles formed during the 1988 to 2000 period this group of investors would avoid low payout companies. Whereas, investors whose marginal tax rate is equal to the company tax rate do not have a tax induced dividend preference. As such they would have no tax reason for not investing in low payout companies.

dividend drop-off rates should be greater for high-payout ratio companies compared to low-payout companies. This would be due to the shareholder clientele of high-payout companies placing a higher value on the attached imputation credits. Increasing the top personal tax rate above the company tax rate on the 1st April 2000 also provides a useful comparison on how this impacted on dividend payout ratios and the drop-off effect.

Applying Jakob and Ma's (2002) methodology of investigating order flows around stock dividend ex-date could help determine if the abnormal returns are principally due to investor trading behaviour around the stock dividend ex-dates. In particular this methodology would help determine whether or not the ex-date behaviour is induced by investors trying to avoid a personal tax liability or transaction costs. This would allow the transaction costs and taxation based arguments to be disentangled as both of these explanations are based on investors' trading behaviour.

The final essay in this thesis revealed that some private equity placement purchasers might be taking advantage of relatively weak regulations surrounding the issue of shares in New Zealand. We found evidence of dramatic increases of trading volume following discounted placements that suggests purchasers are immediately selling the new shares onto the market for a profit. As the Australian market has almost identical private placement regulations a similar study examining ASX listed companies would be useful in exploring the findings of the third essay further. The question of the immediate on-selling of discounted placements for a profit could be more closely examined on the ASX.

SIRCA (Securities Industry Research Centre of Asia-Pacific) an Australasian financial database established for the primary purpose of academic research, collects and compiles the entire order book data from the ASX. Part of SIRCA's database

includes CHESS[3] (Clearing House Electronic Subregister System) which identifies all buyers and sellers in each trade. This would enable a direct study of trading behaviour around private placement announcements and identify whether the purchasers are immediately selling discounted placements for a profit in the Australian market. The SIRCA database also identifies the exact time and date an announcement becomes publicly available which will enable an examination of intra-day price changes around private placements. This in itself would be a unique feature in an ASX study of private placements.

---

3 Information contained in CHESS is obviously commercially and privately sensitive. As such applications to use CHESS information must be made to SIRCA and the application is then screened by the ASX. This generally requires only academic uses of the database in the form of aggregated information.

References

The final section of this thesis contains the references all papers directly or indirectly referred to in this thesis. While the three papers are all examine shareholder wealth effects surrounding new seasoned share issues on the New Zealand stock exchange, each essay was produced as a standalone paper. As such the references for each paper (chapters 2 to 4) plus Chapter 1 and 5 are reproduced here and are shown by chapter.

Chapter 1

Asquith, P., and Mullins, D. (1983). The impact of initiating dividend payments on shareholder's wealth. *Journal of Business*, 56, 369-382.

Athanassakos, G., and Smith, B. F. (1996). Odd-lot costs, taxes and the ex-date price effects of stock dividends: evidence from the Toronto Stock Exchange. *Journal of Business Finance and Accounting*, 23(7).

Auerbach, A.J. (1979). Share valuation and corporate equity policy. *Journal of Public Economics*, 11, 291-305.

Bradford, D. (1981). The incidence and allocation effects of a tax on corporate distributions. *Journal of Public Economics*, 15, 1-22.

Brennan, M., and Copeland, T. (1988). Beta changes around stock splits: a note. *Journal of Finance*, 43, 1009-1013.

Chen, S., Ho, K.W., Lee, C., and Yeo, G.H. (2002). Wealth effects of private equity placements: evidence from Singapore. *The Financial Review*, 37, 165-184.

Copeland, T.E. (1979). Liquidity changes following stock splits. *Journal of Finance*, 115-141.

Conroy, R., and Daves, P. (1991). *Ex-date Returns on Stock Dividends and Trading Activity,* Working Paper, June.

Davis, M. (1990). Differential market reaction to pooling and purchase methods. *The Accounting Review*, 65, 696-709.

Dhatt, M.S., Kim, Y.H., and Mukherji, S. (1993). *The ex-day effect of stock dividends: Evidence from the Japanese and Korean Markets.* Working Paper, August.

Ecko, B.E., and Musulis, R.W. (1995). Seasoned equity offerings: A survey, in R.Jarrow, V., Maksimovic, and Ziemba, W.T. eds. *Finance, Handbooks in Operations Management and Management*, Science North-Holland, Amsterdam, The Netherlands.

Elliot, W.B., Prevost, A.K., and Rao, R.P. (2002). *The announcement impact of seasoned equity offerings on bondholder wealth.* Working Paper, Department of Finance, Ohio University.

Emanuel, D.M. (1979). Capitalisation changes and share price movements: New Zealand Evidence. *Australian Journal of Management*, 4 (2), 97-104.

Fama, E.F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 383-417.

Fama, E.F. (1976). *Foundations of Finance*, Basic Books: New York.

Fields, T.D., Lys, T.Z., and Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics,* 31, 255-307.

Foster, T. and Vickrey, D. (1978). The information content of stock dividend announcements. *The Accounting Review*, 54, 360-370.

Grinblatt, M.R., Masulis, R., and Titman, S. (1984). The valuation effects of stock splits and stock dividends. *Journal of Financial Economics*, 13, 461-490.

Heinkel, R., and Schwartz, E.S. (1986). Rights versus underwritten offerings: An asymmetric information approach. *Journal of Finance,* 41, 1-18.

Hong, H., Kaplan, R.S., and Mandelker, G. (1978). Pooling vs. Purchase: The effect of accounting for mergers on stock prices. *Accounting Review*, 31-47.

Kato, K., and Schallheim, J.S. (1993). Private equity financing in Japan and corporate grouping (keiretsu). *Pacific-Basin Finance Journal,* 1, 287-307.

Loderer, C., and Zimmermann, H. (1988). Stock offerings in a different institutional setting: The Swiss case. *Journal of Banking and Finance,* 12, 353-378.

Marsden, A. (2000). Shareholder wealth effects of rights issues: evidence from the New Zealand capital market. *Pacific Basin Finance Journal,* 8, 419-442.

McConnell, J.J., and Muscarella, C.J. (1985). Corporate capital expenditure decisions and the market value of the firm. *Journal of Financial Economics*, 3, 187-221.

McNichols, M., and Dravid, A. (1990). Stock dividends, stock splits, and signalling. *Journal of Finance*, 45, 857-879.

Miller, M., and Rock, K. (1985). Dividend policy under asymmetric information. *Journal of Finance,* 40, 1031-1052.

Murray, D. (1985). Further evidence on the liquidity effects of stock splits and stock dividends. *Journal of Financial Research*, 8(1), 59-67.

Myers, S.C., and Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics,* 3, 187-221.

Tan, R.S.K., Chng, P.L., and Tong, Y.H. (2002). Private placements and rights issues in Singapore. *Pacific-Basin Finance Journal*, 10, 29-54

Woolridge, J.R. (1983). Stock dividends as Signals. *Journal of Financial Research*, 13, 1-12.

Wruck, K.H. (1989). Equity ownership concentration and firm value. *Journal of Financial Economics,* 23, 3-28.

Zodrow, G. (1991). On the traditional and new views of dividend taxation. *National Tax Journal*, 44(4), 497-509.

Chapter 2

Auerbach, A.J. (1979). Share valuation and corporate equity policy. *Journal of Public Economics,* 11, 291-305.

Bartholdy, J., Fox, K., Gilbert, C., Hibbard, R., McNoe, W., Potter, M., Shi, J., and Watt, K. (1996). Estimating beta for New Zealand Companies. *The New Zealand Investment Analyst*, 17, 14-22.

Bradford, D. (1981). The incidence and allocation effects of a tax on corporate distributions. *Journal of Public Economics*, 15, 1-22.

Brailsford, T., Faff, R., and Oliver, B. (1997). *Research design issues in the estimation of beta,* (McGraw-Hill).

Brennan, M., and Copeland, T. (1988). Beta changes around stock splits: a note. *Journal of Finance*, 43, 1009-1013.

Brown, P., and Clarke, A. (1993). The ex-dividend day behaviour of Australian share prices before and after dividend imputation. *Australian Journal of Management*, 18(1), 1-40.

Clarke, A. (1992). The ex-dividend day behaviour of Australian share prices pre and post imputation. *Managerial Finance*, 18(1), 34-48.

Corrado, C. (1989). A non-parametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 14, 3-25.

Consultative Document on Full Imputation. (1987) Wellington, New Zealand. December.

Foster, T., and Vickrey, D. (1978). The information content of stock dividend announcements. *The Accounting Review*, 54, 360-370.

Givoly, D., and Hayn, C. (1992). The valuation of the deferred tax liability: evidence from the stock market. *The Accounting Review*, 67, 394-410.

Grinblatt, M.R., Masulis, R., and Titman, S. (1984). The valuation effects of stock splits and stock dividends. *Journal of Financial Economics*, 13, 461-490.

Hamson, D., and Ziegler, P. (1990). The impact of dividend imputation on firms' financial decisions. *Accounting and Finance*, 30, 29-53.

Howard, P.F., and Brown, R.L. (1992). Dividend imputation and capital structure under the imputation system: some clarifying comments. *Accounting and Finance*, 32, 51-61.

Lakonishok, J., and Lev, B. (1987). Stock splits and stock dividends: why, who and when. *Journal of Finance*, 42, 913-932.

Liljeblom, E. (1989). The informational impact of announcements of stock dividends and stock splits. *Journal of Business Finance and Accounting*, 16, 681-697.

Masse, I., Hanrahan, J., and Kushner, J. (1997). The effect of Canadian stock splits, stock dividend and reverse splits on the value of the firm. *Quarterly Journal of Business and Economics*, 36, 51-62.

McNichols, M., and Dravid, A. (1990). Stock dividends, stock splits, and signalling. *Journal of Finance*, 45, 857-879.

Menyah, K. (1993). Ex-dividend equity pricing under UK tax regimes. *Journal of Business Finance and Accounting*, 20(1), 61-81.

Murray, D. (1985). Further evidence on the liquidity effects of stock splits and stock dividends. *Journal of Financial Research*, 8(1), 59-67.

Officer, R. (1994). The cost of capital of a company under an imputation tax system. *Accounting and Finance*, 34(1), 1-20

Poterba, J., and Summers, L. (1983). Dividend taxes, corporate investment, and "Q". *Journal of Public Economics,* 22, 135-167.

Scholes, M., and Williams, J. (1977). Estimating betas from non-synchronous data, *Journal of Financial Economics*, 5, 309-327.

Zodrow, G. (1991). On the traditional and new views of dividend taxation. *National Tax Journal*, 44(4), 497-509.

Chapter 2, Appendix 1

Anderson, H., Rose, L., and Cahan, S. (1999). Bonus Issues: Announcement Effects in an Imputation Tax Environment. *Department of Finance, Banking and Property Working Paper Series*. Massey University. WP99.1

Bartholdy, J., and Brown, K. (1999). Ex-dividend day pricing behaviour in New Zealand. *Accounting and Finance*, 39(2), 111-129.

Brealey, R., Meyers, S., Partington, G., and Robinson, D. (2000). *Principles of Corporate Finance*, Australia, Irvin McGraw-Hill.

Brennan, M., and Copeland, T. (1988). Beta changes around stock splits: a note. *Journal of Finance*, 43, 1009-1013.

Bruckner, K., Dews, N., and White, D. (1994). *Capturing Value From Dividend Imputation*, McKinsey and Company.

Copeland, T. (1979). Liquidity changes following stock splits. *Journal of Finance*, 115-141.

Foster, T., and Vickrey, D. (1978). The information content of stock dividend announcements. *The Accounting Review*, 54, 360-370.

Hamson, D., and Ziegler, P. (1990). The impact of dividend imputation on firms' financial decisions. *Accounting and Finance*, 30(2), 29-53.

Hathaway, N.J., and Officer, R.R. (1992, 1996). The value of imputation tax credits, *Graduate School of Management, University of Melbourne Working Paper Series,* Revised and extended 1996.

Howard, P., and Brown, R. (1992). Dividend imputation and capital structure under the imputation system: some clarifying comments. *Accounting and Finance*, 32(1), 51-61.

Kimmell, S., and Marquette, P. (1991). Stock splits and stock dividends - management motivation and market response. *Akron Business and Economic Review*, 20-33.

Lakonishok, J., and Lev, B. (1987). Stock splits and stock dividends: why, who and when. *Journal of Finance*, 42, 913-932.

McNichols, M., and Dravid, A. (1990). Stock dividends, stock splits, and signalling. *Journal of Finance*, 45, 857-879.

Murray, D. (1985). Further evidence on the liquidity effects of stock splits and stock dividends. *Journal of Financial Research*, 8(1). 59-67.

Officer, R. (1994). The cost of capital of a company under an imputation tax system. *Accounting and Finance*, 34(1), 1-17.

Walker, S., and Partington, G. (1999). The value of dividends: Evidence from cum-dividend trading in the ex-dividend period. *Accounting and Finance*, 39(3), 275-296.

Chapter 3

Alaganar, V.T., Partington, G.H., and Stevenson, M. (1999). Do ex-dividend drop-offs differ across markets? Evidence from internationally traded (ADR) stocks. *School of Finance and Economics Working Paper Series*, No. 92, University of Technology, Sydney.

Anderson, H.D., Cahan, S., and Rose, L.C. (2001). Stock dividend announcement effects in an imputation tax environment. *Journal of Business Finance and Accounting*, 28(5&6), 653-669.

Athanassakos, G., and Smith, B. F. (1996). Odd-lot costs, taxes and the ex-date price effects of stock dividends: evidence from the Toronto Stock Exchange. *Journal of Business Finance and Accounting*, 23(7).

Bartholdy, J., Fox, K., Gilbert, C., Hibbard, R., McNoe, W., Potter, M., Shi, J., and Watt, K. (1996). Estimating beta for New Zealand Companies. *The New Zealand Investment Analyst*, 17, 14-22.

Boehmer, E., Musumeci, J., and Poulsen, A.B. (1991). Event-study methodology under conditions of event-induced variance. *Journal of Financial Economics*, 30, 253-272.

Bruckner, K., Dews, N., and White, D. (1994). *Capturing Value From Dividend Imputation.* McKinsey and Company.

Chung, K., Van Ness, B., and Van Ness, R. (2001). Are Nasdaq stocks more costly to trade than NYSE stocks? Evidence after decimalization. *Social Science Research Network Electronic Library*, SSRN ID277817.

Conroy, R., and Daves, P. (1991). *Ex-date Returns on Stock Dividends and Trading Activity.* Working Paper, June.

Corrado, C. (1989). A non-parametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 14, 3-25.

Consultative Document on Full Imputation. (1987). Wellington, New Zealand. December.

Dhatt, M.S., Kim, Y.H., and Mukherji, S. (1993). *The ex-day effect of stock dividends: Evidence from the Japanese and Korean Markets.* Working Paper, August.

Dravid, A. (1987). A note on the behaviour of stock returns around ex-dates of stock distributions. *Journal of Finance*, 42, 163-168.

Eades, K.M., Hess, P.J., and Kim, E.H. (1984). On interpreting security returns during the ex-dividend period. *Journal of Financial Economics*, 3-34

Frank, M., and Jagannathan, R. (1998). Why do stock prices drop by less than the value of the dividend? Evidence from a country without taxes. *Journal of Financial Economics,* 52, 68-74

Grinblatt, M.R., Masulis, R., and Titman, S. (1984). The valuation effects of stock splits and stock dividends. *Journal of Financial Economics*, 13, 461-490.

Hathaway, N.J., and Officer, R.R. (1992, 1996). The value of imputation tax credits, *Graduate School of Management, University of Melbourne Working Paper Series,* Revised and extended 1996.

Jakob, K., and Ma, T. (2002) Order imbalance on ex-dividend days. *Journal of Financial Research,* Forthcoming.

Karafiath, I. (1994). On the efficiency of least squares regression with security abnormal returns as the dependent variable. *Journal of Financial and Quantitative Analysis*, 29, 279-300.

Koski, J.L. (1998). Measurement Effects and the variance of returns after stock splits and stock dividends, *Review of Financial Research*, 11, 143-162.

Lamoureux, G.G., and Poon, P. (1987). The market reaction to stock splits. *Journal of Finance*, 42, 1347-1370.

Maloney, M.T., and Mulherin, J.H. (1992). The effects of splitting on the ex: A microstructure reconciliation. *Financial Management*, 21 44-59.

Mancer, C.J., and Veal, J.A. (1996). *Staples' Guide to New Zealand Tax Practice*, 56th Edition, Wellington Brooker's.

McNichols, M., and Dravid, A. (1990). Stock dividends, stock splits, and signalling. *Journal of Finance*, 45, 857-879.

Ohlson, J.A., and Penman, S.H. (1985). Volatility increases subsequent to stock splits: An empirical aberration. *Journal of Financial Economics*, 14, 251-266.

Patell, J.M. (1976). Corporate Forecasts of earnings per share and stock price behaviour: Empirical tests. *Journal of Accounting Research*, 12(2), 246-274.

Scholes, M., and Williams, J. (1977). Estimating betas from non-synchronous data. *Journal of Financial Economics*, 5, 309-327.

Rendine, B. (29 January 2001). The American Stock Exchange successfully launches fourth phase of decimalization. *The American Stock Exchange,* Press Release.

Walker, S., and Partington, G. (1999). The value of dividends: Evidence from cum-dividend trading in the ex-dividend period. *Accounting and Finance*, 39(3), 275-296.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817-838.

Woolridge, J.R. (1983). Stock dividends as Signals. *Journal of Financial Research*, 13, 1-12.

Chapter 4

Bartholdy, J., Fox, K., Gilbert, C., Hibbard, R., McNoe, W., Potter, M., Shi, J., and Watt, K. (1996). Estimating beta for New Zealand Companies. *The New Zealand Investment Analyst*, 17, 14-22.

Boehmer, E., Musumeci, J., and Poulsen, A.B. (1991). Event-study methodology under conditions of event-induced variance. *Journal of Financial Economics*, 30, 253-272.

Bohren, O., Eckbo, B.E., and Michalsen, D. (1997). Why undertake rights offerings? Some new evidence. *Journal of Financial Economics*, 46, 223-261

Bryant, N. (2000). High and dry investors angry over drained Aquaria. *The National Business Review*, May 12, 7.

Chen, S., Ho, K.W., Lee, C., and Yeo, G.H. (2002). Wealth effects of private equity placements: evidence from Singapore. *The Financial Review*, 37, 165-184.

Corrado, C. (1989). A non-parametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 14, 3-25.

Dhatt, M.S., Kim, Y.H., and Mukherji, S. (1996). Seasoned equity issues: The Korean experience. *Pacific-Basin Finance Journal,* 4, 31-43.

Ecko, B.E., and Musulis, R.W. (1992). Adverse selection and the rights offer paradox. *Journal of Financial Economic,* 32, 293-332.

Ecko, B.E., and Musulis, R.W. (1995). Seasoned equity offerings: A survey, in R.Jarrow, V., Maksimovic, and Ziemba, W.T. eds. *Finance, Handbooks in Operations Management and Management*, Science North-Holland, Amsterdam, The Netherlands.

Elliot, W.B., Prevost, A.K., and Rao, R.P. (2002). The announcement impact of seasoned equity offerings on bondholder wealth. *Working Paper Department of Finance, Ohio University.*

Etebari, A., and Duncan, K. (1997). The efficiency of insider trading laws. Evidence from the NZ stock market. *The New Zealand Investment Analyst*, 18, 17-26.

Fama, E.F., and Jensen, M.C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26, 301-325.

Grinblatt, M., and Titman, S. (2002). *Financial Markets and Corporate Strategy*. 2nd Edition, McGraw-Hill Higher Education, New York.

Gupta, A., and Misra, L. (1988). Illegal insider trading: Is it rampant before corporate takeovers? *The Financial Review*, 23 (4), 453-464.

Heinkel, R., and Schwartz, E.S. (1986). Rights versus underwritten offerings: An asymmetric information approach. *Journal of Finance,* 41, 1-18.

Hertzel, M., and Smith, R.L. (1993). Market discounts and shareholder gains for placing equity privately. *Journal of Finance,* 48, 458-485.

Hou, J.D., and Meyer, T.O. (2002). Shareholder wealth effects of rights issues in Australian Stock Market. *Department of Commerce, Massey University Working Paper.*

Jensen, M.C., and Meckling, W.H. (1976). Theory of the firm: Managerial behaviour, agency costs and capital structure. *Journal of Financial Economics*, 3, 305-360.

Kang, H. (1990). Effects of seasoned equity offerings in Korea. *Pacific-Basin Capital Markets Research,* 1, 265-282.

Kato, K., and Schallheim, J.S. (1993). Private equity financing in Japan and corporate grouping (keiretsu). *Pacific-Basin Finance Journal,* 1, 287-307.

Loderer, C., and Zimmermann, H. (1988). Stock offerings in a different institutional setting: The Swiss case. *Journal of Banking and Finance,* 12, 353-378.

Loderer, C., Cooney, J.W., and Van Drunen, L.D. (1991). The price elasticity of demand for common stock. *Journal of Finance*, 46, 621-651.

Marsden, A. (2000). Shareholder wealth effects of rights issues: evidence from the New Zealand capital market. *Pacific Basin Finance Journal,* 8, 419-442.

Marsh, P. (1979). Equity rights issues and the efficiency of the UK stock market. *Journal of Finance,* 34, 839-862.

Masulis, R.W., and Korwar, A.N. (1986). Seasonal equity offerings. *Journal of Financial Economics,* 15, 91-118.

McConnell, J.J., and Muscarella, C.J. (1985). Corporate capital expenditure decisions and the market value of the firm. *Journal of Financial Economics*, 3, 187-221.

McMillan, V. (2003). NZ still tarnished by 'cowboy' image. *The Independent*, 30 July, p 29.

Miller, M., and Rock, K. (1985). Dividend policy under asymmetric information. *Journal of Finance,* 40, 1031-1052.

Myers, S.C., and Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics,* 3, 187-221.

Page, C., and Meyer, D. (2000). *Applied Research Design for Business and Management*, McGraw-Hill Companies Inc. Sydney.

Patell, J.M. (1976). Corporate Forecasts of earnings per share and stock price behaviour: Empirical tests. *Journal of Accounting Research*, 12(2), 246-274.

Scholes, M.S. (1972). The market for securities: Substitution versus price pressure and the effects of information on share price. *Journal of Business*, 45 179-211.

Scholes, M., and Williams, J. (1977). Estimating betas from non-synchronous data. *Journal of Financial Economics,* 5, 309-328.

Smith Jr., C.W. (1977). Alternative methods for raising capital: Rights versus underwritten offerings. *Journal of Financial Economics,* 5, 273-307.

Tan, R.S.K., Chng, P.L., and Tong, Y.H. (2002). Private placements and rights issues in Singapore. *Pacific-Basin Finance Journal*, 10, 29-54

Tsangarakis, N.V. (1986). Shareholder wealth effects of equity issues in emerging markets: Evidence from rights offerings in Greece. *Financial Management,* 25, 21-32.

Webster, A.L. (1995). *Applied Statistics for Business and Economics*, Irwin Inc. Chicago.

Wruck, K.H. (1989). Equity ownership concentration and firm value. *Journal of Financial Economics,* 23, 3-28.

Wu, Y. (2000). The choice between public and private equity offerings. *Graduate School of Business, The University of Chicago Working Paper Series.*

Chapter 5

Cedenco bonus issue, (2003) *The Press*. 9th August 2003, Edition 2, p9.

Heinkel, R., and Schwartz, E.S. (1986). Rights versus underwritten offerings: An asymmetric information approach. *Journal of Finance,* 41, 1-18.

Jakob, K., and Ma, T. (2002) Order imbalance on ex-dividend days. *Journal of Financial Research,* Forthcoming.

Mainfeight announces bonus issue. (2002). *Reuters*, 20 August 2002.