The cash flow sensitivity of cash dividends in different dividend tax regimes [1]

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Abstract

This paper investigates the influence of tax policy on the sensitivity of cash flow on firm cash dividend policy. Using a cross-country study, we find dividend policy of firms in a single dividend taxation regime (relative to a double dividend tax system) is more sensitive to cash flow. Specifically, these firms respond more to cash flow as measured by the propensity to initiate a cash dividend, propensity to pay a cash dividend, and in the size of the cash dividend. Overall, the study provides evidence that the cash flow sensitivity of cash dividends is higher in single relative to double dividend tax regimes.

1 Introduction

Dividend taxation policies differ by sovereign state. For example, in the United States firms pay corporate tax on profit, distribute dividends from the after-tax profit, and then individuals pay personal taxes on the dividends received. We refer to the dividend tax regime in the United States as a double tax regime. In contrast, New Zealand and Australia use an imputation tax system where an individual pays the difference between the personal and corporate tax rate on cash dividends.[2] Pattenden and Twite (2008) studied the changes to firm dividend policy as the taxation regime changed from a double taxation to an imputation taxation regime in Australia. They find that cash dividends increased under this regime, but do not address the cash flow sensitivity of cash dividends. Using a cross-country study, we investigate the influence of tax policy on the sensitivity of cash flow on firm cash dividend policy.

We contribute to the literature in several ways. Denis and Osobov (2008) investigate the international evidence on why firms pay dividends, but omit in their study a country with an imputation tax system. In addition, Pattenden and Twite (2008) study the effect of an imputation system in a natural experiment setting in Australia. Thus, we offer new evidence on dividend policy in a cross-country setting. Lastly, the central question of our study, which is the influence of tax policy on the cash flow sensitivity of cash dividends, is novel.

Our study reveals that the dividend policy of firms in a single dividend taxation regime (relative to a double dividend tax system) is more sensitive to cash flow. Specifically, firms in tax imputation regimes respond more aggressively to cash flow as measured by the propensity to initiate a cash dividend, propensity to pay a cash dividend, and in the size of the cash dividend. Our identification strategy is to compare firms in New Zealand to firms in the United States and firms in Australia to firms in the United States. In every case, the interactions between a country dummy variable (New Zealand or Australia) and firm cash flow is positive, statistically significant at less than the 1% level, and economically important in explaining the propensity to initiate and pay dividends as well as the size of the dividend. Overall, our results advance that the tax system has an important effect on dividend policy, which is a factor omitted from the study of Denis and Osobov (2008).

[2] This condition holds for fully imputated dividends.

In our empirical tests, we control for a number of firm characteristics including engagement in research in development, sales growth, size as measured by total assets, book debt, industry, and year. Despite these controls there might be an omitted variable that is correlated with the interaction of cash flow and the country dummy. If the omitted variable was correlated with either the New Zealand or Australian interaction terms, then we would expect to see different coefficient estimates for each country. We separately test using New Zealand and Australia firms against the United States and find qualitatively identical results. Thus, if there is an omitted variable it must be correlated with both the New Zealand and Australian interactions; otherwise, we would not observe qualitatively identical results. Although we can not rule out this possibility, the idea that our results support causality rather than correlation is reinforce by Denis and Osobov (2008), who use the enactment of an imputation tax system in Australian as a natural experiment.

The remainder of the paper is structured as follows. Section 2 reviews the literature on dividend payments and its determinants. Section 3 shows the difference in taxation policy between a single and double tax regime as well as develops hypotheses. Section 4 describes the dataset and variable construction. Section 5 details the methodology used in our analysis and tests the hypotheses. Section 6 concludes.

2 Literature Review

Analysis of dividend policy in several finance textbooks is motivated by the dividend irrelevance proposition of Miller and Modiglani (MM) (1961). They demonstrate that in a frictionless market, i.e zero taxation and transaction costs, investors are not concerned with the firm's dividend policy as they can choose to sell a portion of their portfolio if they wanted to for cash (homemade dividends). This allows investors to replicate the payout of a firm that pays dividends (provided both firms are identical in all aspects apart from the dividend policy). Since the payouts are the same, the investor is indifferent and the value of the firm remains unchanged according to the MM proposition, making firm dividend policies irrelevant. However, most firms spend a significant amount of resources investing in a good stable dividend policy that benefits both the firm and its shareholders. The propensity of firms to pay dividends is known as the

"Dividend Puzzle" (Black, 1976). This section explores why firms pay dividends, the effect of taxes on a firm's dividend policy and the determinants of dividend smoothing.

2.1 Why do firms pay dividends?

Black's (1976) "Dividend Puzzle" precipitated many theories on why firms pay a dividend. The more widely accepted theories include signalling, the Jensen (1986) agency theory and the DeAngelo and DeAngelo (2006) life cycle theory. Each theory aims to fulfil a different set of objectives for both managers and shareholders.

The theory on dividend signaling suggests that managers elect to pay a dividend to communicate information on the firm's performance to investors. Companies increase dividend payouts to act as an indicator that the firm is doing well. Signalling is often a costly way of communicating this information. Brav, Graham, Harvey, and Michaely (2005) found that managers were willing to raise capital or forgo positive Net Present Value (NPV) projects to meet dividend expectations. As such companies that are not as strong or able to pay a dividend would be filtered out of the market as they might not meet the ability to pay future payouts, leaving only strong companies paying out large or stable dividends. Many studies have been conducted to test the validity of this hypothesis.

The Jensen's agency theory suggests that managers may not act in the best interest of shareholders. Shareholders wish for management to act in a way that increases shareholder wealth. Managers however may aim to maximize their own utility, either by growing the company to increase power and compensation packages or by funding other private benefits like a company jet. As such managers may use free cash flows to achieve these objectives. As a result, conflicts of interest arise between managers and shareholders as to what to do with the excess cash flows. Jensen (1986) advocates that firms with free cash flows take on debt and distribute excess cash through dividends. Taking on debt gives the shareholders recipient of the debt the right to take the firm into bankruptcy court should the firm not uphold its promise of interest and principal payments. This, in turn, reduces the amount of free cash available to the manager. The additional debt causes managers to be more efficient. The control function of debt plays a bigger role in larger firms with large cash flows and low growth prospects. The result of wasting cash flows on uneconomical projects are most serious (Jensen, 1986).

DeAngelo and DeAngelo (2006) suggest that the optimal payout policy is driven by the need to distribute firm's free cash flow. DeAngelo and DeAngelo (2006) proposed a life cycle theory based on the Jensen (1986) agency theory, Fama and French (2001) and Grullon, Michaely, and Swaminathan (2002) firms opportunity set theory. DeAngelo and DeAngelo (2006) suggest that firms pay fewer dividends when investment opportunity exceeds internal capital. Later when internal capital exceeds investment opportunity, firms payout to prevent free cash flows from going to waste. Consistent with the life cycle theory, DeAngelo and DeAngelo (2006) find that the propensity to pay dividends is positively related to the ratio of retained earnings to equity, their primary proxy for a firm's life cycle stage.

Denis and Osobov (2008) look into the evidence on the determinants of dividend policies. Traditionally, firms pay out dividends in a desire to communicate information on the firm's performance to investors. Denis and Osobov (2008) found that the propensity to pay dividends is higher among larger more profitable firms and those for which retained earning comprise a large fraction of total equity. Their findings also support DeAngelo, DeAngelo, and Skinner (2004) who cast doubt on signalling and clientele (the more traditional reasons for paying dividends) as first order determinants. They found that dividends are paid by firms that are in the least need of signalling, such as those with the highest earning.

Fama and French (2001) saw a decline in the number of firms in the USA paying dividends. The decline was in part due to the change in characteristics of the firms, as more firms began exhibiting characteristics of firms that did not pay dividends. Despite controlling for this, they saw that the propensity to pay was still declining. Denis and Osobov's (2008) paper shows that the likelihood of paying dividends is associated with firm size, growth opportunity and profitability. There is also a strong association with the ratio of retained earnings to total equity. While Denis and Osobov (2008) explore the reasons firms pay dividends, little attention is given to the effect of taxation policies on the propensity to pay dividends.

2.2 Taxes and dividend policy under alternative taxation regimes.

Taxes play an important role in firms' financial decisions. Taxation policies lay outside the control of firms and investors, and vary between nations. Firms aim to maximize shareholder wealth. One way of achieving this goal is by minimizing the taxation impact for both firm and

investors. As such, how a firm chooses to distribute free cash is important. Primary methods include share buybacks and dividend payments. Share buybacks have become increasingly popular in countries with a higher taxation on dividends than capital gains. This method allows shareholders to receive more of the dividends than they otherwise would (Pattenden and Twite, 2008). Dividend imputations help to reduce the effect of taxation on dividends through a credit system that also avoids double taxation on the firm's profits.

Pattenden and Twite (2008) explain the changes to dividend policy under alternative taxation regimes. This paper looks at the changes in dividend policy during the introduction of the imputation system in Australia. Under a dividend imputation system, shareholders are given credits for the corporate taxes paid. This can then be used to offset their personal income tax on the dividend income (Pattenden and Twite, 2008). Their findings are consistent with taxation preferences for the distribution of dividends under imputations. The study finds that dividend initiations, payout measures and dividend reinvestment plans increase with the introduction of imputations. The gross payout levels tend to be more volatile than they were pre-imputation. Dividends paid from earnings that have been taxed at the full Australian corporate tax rate are termed franked dividends and include imputation credit (Pattenden and Twite, 2008). The higher level of franking credits affects the level of payout (Pattenden and Twite, 2008). Miller and Scholes (1978) show that in a world where both dividend and capital gain are taxed at the investor level, preferences lies in the relative taxation rules governing possible taxation arbitrage.

Twite (2001) provides evidence that the introduction of dividend imputations affects the firms financing choice. Firms shift away from debt and retained earnings towards new equity. Twite (2001) attributes this move to the increase in dividend reinvestment plans and script dividends that give investors a greater taxation advantage. This move also allows managers to use retained earnings for future investments. Other countries like UK and Canada have had similar results with imputations. Pattenden and Twite (2008) measure the gross dividend payout ratio as the sum of regular cash dividend, scripts dividend, bonus share-plan, special dividend, special script dividend and repurchases. Pattenden and Twite (2008) find that gross, regular and net dividend payout ratios and dividend initiations increased subsequent to imputations. Overall, imputations have overall increased dividend payouts.

The use of Australian data allowed Pattenden and Twite (2008) to examine dividend policies under two different taxation regimes; before and after the introduction of imputations. Their study gives insight into the magnitude of which dividend policies change under different taxation regimes. Pattenden and Twite (2008) also state that when studies were done in USA around the 1986 taxation reform, it was difficult to capture the taxation effects on dividend policy. The conflicting results of these studies show that a significant change in the taxation system such as the introduction of imputations is required for significant changes to a firm's dividend policy.

2.3 Dividend smoothing

Lintner (1956) was one of the first to investigate the distribution of dividends. Despite having conducted this study over 50 years ago with a very small number of firms, Lintner's findings appear to still hold true for a wide set of firms in more recent times. Managers believe that the market places a high premium on firms that had a stable dividend policy. Brav, Graham, Harvey, and Michaely (2005) finds that dividend smoothing is costly when managers are willing to raise capital or forgo positive NPV projects to meet dividend expectations.

Leary and Michaely (2011) look at the determinants of dividend smoothing and document the increase in dividend smoothing over the last 80 years. Their paper's findings show that smaller and younger firms with lower dividend yields, volatile earnings and returns as well as firms with fewer more disperse analyst forecast smooth less. Leary and Michaely (2011) show that dividend smoothing is most common among firms that are not financially constrained.

Leary and Michaely (2011) reveal the importance of dividend smoothing but little evidence of its determinants. Their study shows that many firm managers believe target dividend levels are very different from what they were 50 years ago. However the ability to observe a target dividend level is questionable. As such Leary and Michaely (2011) use an alternative measure instead of Litner's Speed Of Adjustment model. Leary and Michaely (2011) also provide evidence on the increase in dividend smoothing despite the rise in share repurchases. Their study used panel regression and a constant firm sub sample. It showed that dividend smoothing cannot be attributed to the changing nature of traded firms. Leary and Michaely (2011) look at determinants based on factors they deemed relevant. Factors include market friction associated with choices of dividend levels such as asymmetric information, agency cost and external finance

cost (Leary and Michaely, 2011). Leary and Michaely (2011) also show that smoothing is also a function of the time series property of a firm's earnings. More persistent earnings smooth less and more cyclical earnings smooth more.

3 Taxation policy and hypothesis development

3.1 Taxation policies

Table 1 provides three scenarios of a firm, who earns $100 in profit, and chooses to distribute the entire profit as a cash dividend under tax different tax regimes. Without loss of generality, we assume there is one investor with one share. Column (2) represents the New Zealand imputation tax regime, Column (3) represents a counter-factual of New Zealand taxes without imputation, and Column (4) represents the tax regime in the United States.

Under an imputation regime the investor receives tax credits for the taxes paid by the firm on profits. As a result, the investor only pays the difference between her personal tax rate and the corporate tax rate as shown in Column (2). As such, the investor receives 67% of the total firm's profits. In comparison, under the New Zealand counter-factual double taxation regime in Column (3), the investor only receives 48% of the firm's profits. This is because the investor pays 33% tax on the dividend she receives, which is in addition to the firm paying tax on its profits. This results in the investor only receiving 48% of the firms original profits, which in absolute terms 19% less than that of an investor under an imputation regime.

The USA uses a double dividend taxation regime. Dividends are incorporated into an investor's annual income and then is the dividend income subjected to a taxation rate of 15%. Column (4) of Table 1 provides an example of an investor living in the US with an annual income of at least 40,000 $US, which places the investor in the 25% marginal tax bracket where the 15% dividend tax applies. For illustrative purposes, we assume a 35% corporate tax rate. In the double taxation regime of the USA, the investor in the USA receives 55% of the firms profits. As a result, dividends in the USA are effectively taxed twice. This makes cash dividends less attractive for investors in the USA as compared to investors in dividend tax imputation systems.

3.2 Hypotheses

Our example in Table 1 motivates our hypotheses. In summary, if a NZ firm with $100 in profit chooses to distribute that profit as cash, the New Zealand investor nets $67. In contrast, if a US firm with $100 in profit chooses to distribute that profit as cash, the US investor nets $55. The $12 difference illustrates that the distribution of firm profits through cash dividends is relatively less costly in dividend imputation tax regimes than in double dividend tax regimes. From this perspective, we posit that the sensitivity of cash flow to firm dividend policy is higher in tax imputation regimes than in double dividend tax regimes. This idea leads to the following hypotheses:

Hypothesis 1. *The sensitivity to cash flow in explaining dividend initiations is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus.*

Hypothesis 2. *The sensitivity to cash flow in explaining the propensity to pay dividends is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus.*

Hypothesis 3. *The sensitivity to cash flow in explaining the dividend size is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus.*

4 Data and Variable Construction

4.1 Data

We construct the dataset using annual accounting data from Compustat collected via Wharton Research Database Services (WRDS). Data includes information on dividend payment, total assets, number of outstanding shares and also common equity. We follow filters used in prior literature. To be included in this analysis total assets of a firm must be positive. Accordingly, records with negative or incomplete data for total assets were removed from the dataset investigated. Negative revenue is attributed to "poor accounting standards" or incomplete data. In keeping with the methodology of Fama and French (2001), we eliminate financial companies (SIC codes 6000-6999). While Fama and French (2001) also eliminate utility companies (SIC codes 4900-4949) from their analysis, the significant size and contribution of utility companies in New Zealand precludes their removal as it would eliminate approximately 25% of the New

Zealand observations. After completing these filters, out dataset includes 1,980 New Zealand firm-year observations, 23,055 Australian firm-year observations and 143,939 USA firm-year observations with a data from 1988 to 2015.

Please refer to Table 2 for variable definitions and to Table 3 for summary statistics, which are broken out for New Zealand, Austrailian, and US firms.

4.1.1 Dependent Variables

To test the sensitivity of cash flow on the propensity to pay dividends, we use the variable *Pay Dividend* as the independent variable. A value of 0 is assigned if the firm does not pay a dividend or if the firm has a positive value for assets but no dividend data. A value of 1 is assigned if the firm paid a dividend. Table 3 shows that 57.51% of New Zealand firms pay a dividend, whereas only 30.85% of firms in the USA pay a dividend. The summary statistics in Table provide an early indication that the propensity to pay dividends is higher in a dividend imputation taxation regime compared to a double taxation regime.

To test the sensitivity of cash flow on the propensity to initiate a dividend, we construct the variable *Initiate Dividend*. A value of one is assigned when the firm pays a dividend in year t, but did not pay a dividend in year $t-1$. All other firm-year values are set to zero, including for the initial firm-year observation. Table 3 shows that 5.97% of New Zealand firms initiate a dividend, 3.97% of Australian firms initiate a dividend, and 3.26% of USA firms initiate a dividend.

To test the sensitivity of cash flow on the size of the dividend, we follow HellstrÃűm and Inagambaev (2012) and adopt the *Dividend Payout Ratio* (DPR) as a measure of the size of the dividend. The DPR is calculated by dividing the dividend per share (DPS) by the earnings per share (EPS). Thus the DPR measures total dividend payout as a percentage of net income. An alternative measure for the size of dividends is dividend yield. Dividend yield is calculated by dividing the DPS by the firm's stock price. Previous studies show that the DPR and dividend yield measure different attributes of a firm's payout policy, and as such lead to different insights (HellstrÃűm and Inagambaev, 2012). Because the stock price is not within the control of management, McManus et.al (2004) advances that the DPR is a better measure than the dividend yield. We adopt the DPR as an appropriate measure for this project as our key

question relates to the relationship between profitability and dividend payouts under various taxation regimes. Table 3 shows the *Dividend Payout Ratio* is 28.1% for New Zealand firms, 19.5%% for Australian firms, and 5.81% for US firms.

4.1.2 Variable of Interest

To test the sensitivity of cash flow on cash dividend policy, we use *Operating Income to Assets* as our main proxy for cash flow. In robustness tests, we also explore profit as an alternative measure to OIA. Anil and Kapoor (2008) show that OIA is the primary characteristic that influences both the propensity of a firm to pay dividends and the DPR. In addition, relative to our research question OIA represents cash that might be distributed by the firm to shareholders. In robustness tests, we also use profit to show the similarity between OIA and profit. OIA is measured by the ratio of operating income before depreciation to total assets. Profit is measured as the ratio of earnings before interest but after tax to the book value of total assets. Table 2 provides a description of all the variables used in the paper.

To test the sensitivity of cash flow to dividend policy, we create New Zealand and Australian dummy variables. We then interact those variables with *Operating Income to Assets* in our primary tests and with profit as a robustness test. The coefficient associated with the interaction term represents the sensitivity of cash flow to dividend policy in an single versus double dividend tax regime.

4.1.3 Control Variables

Our control variables are research and development (R&D), growth, and firm size. These variables along with OIA and profit have been widely recognised as determinants of dividend payments. We adopt the measures used by Denis and Osobov (2008) and measure company size as the book value of total assets and measure growth opportunity as the percentage change in total assets over the year. We also control for industry and year in all regressions.

5 Testing Approach and Results

To test Hypotheses 1 and 2, we estimate a logistic regression where the dependent variable is *Initiate Dividends (0/1)* and *Pay Dividends (0/1)*, respectively. To test Hypothesis 3, we estimate an OLS regression where the dependent variable is *Dividend Payout Ratio*.

The general structure of the regressions is:

$$Y_{it} = f(\alpha + \beta_1 OIA_{it} + \beta_2 Country + \beta_3 OIA_{it} * Country + X_{i,t}\beta + \epsilon_{it}), \quad (1)$$

where Y is either *Initiate Dividends (0/1)*, *Pay Dividends (0/1)*, or *Dividend Payout Ratio*. $Country$ is the dummy variable for either New Zealand or Australia. The variable of interest is the interaction term $OIA_{it} * Country$ where β_3 represents the cash flow sensitivity of the firm in a dividend imputation regime relative to a double taxation regime. $X\beta$ represents the matrix of controls discuss earlier including year and industry. Lastly, $f(.)$ represents the functional form, α represents the constant term in the regression, i represents the firm and t represents year, and ϵ_{it} is the error term. We cluster standard errors by firm.

5.1 Dividend Initiation

The results shown in Table 6 provide strong support that the sensitivity to cash flow in explaining dividend initiations is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus. Specifically, the coefficients associated with the interaction terms are positive and significant at less than the 1% level.

5.2 Propensity to Pay Dividends

The results shown in Table 6 provide strong support that the sensitivity to cash flow in explaining the propensity to pay dividends is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus. Specifically, the coefficients associated with the interaction terms are positive and significant at less than the 1% level.

5.3 Dividend Payout Ratio

The results shown in Table 6 provide strong support that the sensitivity to cash flow in explaining dividend size is higher in single dividend tax regimes than in double dividend tax regimes, ceterus paribus. Specifically, the coefficients associated with the interaction terms are positive and significant at less than the 1% level.

6 Conclusions

While much research has been conducted into the determinants of dividend smoothing, little has been conducted in the area of taxation regimes and dividend smoothing. While Pattenden and Twite (2008) investigated and explain changes to dividend policy under alternative taxation regimes, primarily pre and post imputations in Australia, they do not explain the reasoning behind this. This paper attempts to bridge this gap. To test the hypothesis that both the propensity to pay dividends and the size of the dividends is higher in a dividend imputation taxation regime compared to a double taxation regime, dividend payments in the USA and New Zealand were compared. We focus on OIA to see how responsive firms are to changes OIA when making dividend payment decisions across the various taxation regimes. New Zealand adopts an imputation system while the USA does not. In the USA, dividend income is included in an investor's annual income before being taxed at 15% on average. Payment of dividends is more favourable in an imputation environment where it provides an efficient mechanism to distribute shareholder wealth when compares to an environment without imputations, where a sizeable portion of dividends are lost to taxation.

In closing, this paper investigates the influence of tax policy on the sensitivity of cash flow on firm cash dividend policy. Using a cross-country study, we find dividend policy of firms in a single dividend taxation regime (relative to a double dividend tax system) is more sensitive to cash flow. Specifically, these firms respond more to cash flow as measured by the propensity to initiate a cash dividend, propensity to pay a cash dividend, and in the size of the cash dividend. Overall, the study provides evidence that the cash flow sensitivity of cash dividends is higher in single relative to double dividend tax regimes. From a policy perspective, the paper confirms that a dividend imputation policy incentivises the return of cash flow to stockholders through cash dividend.

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Table 1: Dividends under alternative tax regimes: This table provides a numerical illustration of an investor receiving a dividend under the various taxation regimes. The first column illustrates how firms transfer profits under an imputation regime. Under an imputation regime the investor receives tax credits for the taxes paid by the firm on profits. As a result the investor only pays the difference between his personal tax rate and the corporate tax rate as shown in the example below. As such the investor receives 67% of the total profits. In comparison under a double taxation regime, the investor only receives 48% of the firms profits. This is because the investor pays 33% tax on the dividend he receives in addition to the firm paying tax on its profits. This results in the investor only receiving 48% of the firms original profits, which in absolute terms 19% less than that of an investor under an imputation regime. In the double taxation regime of teh USA, the investor in the USA receives 55% of the profits, which is 12% less in absolute terms than that of an investor under an imputation regime.

Item	Imputation	Double Taxation	USA Taxation
Total profits	\$100	\$100	\$100
Corporate Tax Rate	28%	28%	35%
Corporate Taxes	\$28	\$28	\$35
Declared dividends	\$72	\$72	\$65
Investor receives	\$72	\$72	\$65
Gross dividend = Dividend + Imputation Credit	\$100	\$72	\$65
Individual personal tax rate	33%	33%	15%
Personal Taxes (Pre-imputation)	\$33	\$23.76	\$10
Imputation Credit	\$28	\$0	\$0
Personal Taxes (Post-imputation)	\$5	\$24	\$10
Investor receives	\$67	\$48	\$55
Percentage of profits investor receives	67%	48%	55%

Table 2: This table provides the definition of all variables used in the paper.

Variables	*Definition*
Dividend	Cash dividends paid by firm
Pay Dividend	1 if firm pays dividend. 0 if firm did not pay dividend
Initiate	1 if a firm starts paying a dividend. 0 if they do not start paying a dividend
Gross Dividend Paid	Ratio of cash dividends to EBITDA
Dividends Per Share	Ratio of cash dividends to common shares outstanding
Earnings Per Share	Ratio of EBITDA to common shares outstanding
Dividend Pay Out Ratio	Ratio of dividends per share to earnings per share
Operating Income to Assets	Ratio of operating income before depreciation to total assets
Profit	Ratio of EBITDA to total assets
R&D to TA	Ratio of research and development expense to total assets
Growth	Percentage change in total assets of the year
Total Assets	Log of total assets
Book Equity	Common/Ordinary equity
Long Term Book Debt to Assets	Ratio of long term debt to total assets
EBITDA	Earnings before interest
EBIT	Earnings before interest and tax
NZ	New Zealand dummy variable. 1 if New Zealand firm. 0 otherwise
*OIA*NZ*	Represents the interaction between OIA and New Zealand firms

Table 3: Summary statistics by country

	New Zealand				Australia				United States			
Variables	mean	sd	min	max	mean	sd	min	max	mean	sd	min	max
Dividend	34.36	75.52	0	497	28.36	77.84	0	533.9	23.54	93.74	0	693
Pay Dividend	0.576	0.494	0	1	0.266	0.442	0	1	0.311	0.463	0	1
Initiate dividend	0.0597	0.237	0	1	0.0397	0.195	0	1	0.0326	0.178	0	1
Gross Dividend Paid	0.242	2.25	-65.07	34.42	0.0393	16.71	-1,500	291.1	0.0677	3.56	-600	675.3
Dividends Per Share	0.144	0.234	0	4.606	0.115	0.284	0	11.88	666.8	16,878	0	693,000
Earnings Per Share	0.456	1.371	-1.842	34.38	0.186	3.065	-17.24	336.8	5,529	101,167	-66,060	4.02E+06
Dividend Pay Out Ratio	0.281	0.366	-1.711	1.777	0.195	0.459	-2.459	2.062	0.0581	0.15	-0.0901	0.97
Operating Income to Assets	0.0202	0.239	-1.536	0.442	-0.142	0.347	-1.77	0.421	-0.0537	0.334	-2.06	0.369
Profit	0.0644	0.236	-1.334	0.517	-0.109	0.348	-1.767	0.494	-0.00324	0.327	-2.059	0.434
R&D to TA	0.0193	0.0764	0	0.588	0.0158	0.0665	0	0.532	0.0614	0.145	0	1.28
Growth	0.0343	0.37	-2.543	0.937	-0.00129	0.752	-8.568	0.999	0.0359	0.422	-3.335	0.916
Total Assets	4.777	2.201	-3.65	9.492	3.419	2.207	-6.215	9.041	4.714	2.537	-4.2	10.34
Long Term Book Debt to Assets	0.173	0.212	0	3.142	0.0976	0.43	0	46.21	0.215	0.84	0	169.3
EBITDA	92.19	232.5	-22.89	1,524	35.62	136.5	-50.42	984.9	178	567.2	-66.06	4,015
EBIT	56.81	134.7	-54.59	857	21.83	92.17	-75.89	654.9	115.1	385.4	-113	2,727

Table 4: Propensity to Initiate Dividends: This table shows the logistic regression results regarding the propensity to initiate dividends for firms between 1988-2015. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Initiate Dividends (0/1)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Operating Income to Assets	3.299***	4.252***	0.676***	0.669***	0.591***
	(0.710)	(0.261)	(0.0910)	(0.0907)	(0.0893)
New Zealand (0/1)				0.315***	
				(0.119)	
*Operating Income to Assets * NZ*				2.456***	
				(0.683)	
Australia (0/1)					0.114**
					(0.0464)
*Operating Income to Assets * AUS*					4.060***
					(0.239)
R&D to TA	-0.848	-1.474	-0.792***	-0.806***	-0.958***
	(1.502)	(1.592)	(0.266)	(0.265)	(0.267)
Growth	0.626	-0.0602	0.306***	0.313***	0.192***
	(0.488)	(0.0731)	(0.0669)	(0.0663)	(0.0578)
Total Assets	-0.0214	0.0813***	-0.0143*	-0.0136*	0.00616
	(0.0531)	(0.0169)	(0.00731)	(0.00722)	(0.00658)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,959	22,919	143,915	145,934	167,243
chi ^{2}	145.7	1204	526.4	591.9	1150
Pseudo R-Square	0.101	0.152	0.0175	0.0185	0.0287

Table 5: Propensity to Pay Dividends: This table shows the logistic regression results regarding the propensity to pay dividends for firms between 1988-2015. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Pay Dividends (0/1)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Operating Income to Assets	7.998***	8.278***	2.529***	2.523***	2.416***
	(1.425)	(0.347)	(0.149)	(0.148)	(0.147)
New Zealand (0/1)				1.180***	
				(0.150)	
*Operating Income to Assets * NZ*				5.155***	
				(1.456)	
Australia (0/1)					0.611***
					(0.0543)
*Operating Income to Assets * AUS*					6.587***
					(0.361)
R&D to TA	-4.787*	1.077	-1.351***	-1.364***	-1.528***
	(2.867)	(1.161)	(0.369)	(0.368)	(0.363)
Growth	0.166	-0.418***	-0.401***	-0.391***	-0.379***
	(0.239)	(0.0623)	(0.0272)	(0.0272)	(0.0258)
Total Assets	0.501***	0.755***	0.386***	0.386***	0.403***
	(0.0921)	(0.0299)	(0.0109)	(0.0108)	(0.0100)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,979	23,055	143,915	145,934	167,243
χ^2	193.5	1691	3541	3649	4772
Pseudo R-Square	0.385	0.536	0.269	0.271	0.289

Table 6: Dividend Payout ratio (DPR): This table shows the regression results regarding the firm characteristics that affect a firms DPR between 1988-2015. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Dividend Payout Ratio (DPR)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Operating Income to Assets	0.517***	0.369***	0.0424***	0.0425***	0.0402***
	(0.118)	(0.0322)	(0.00267)	(0.00268)	(0.00293)
New Zealand (0/1)				0.172***	
				(0.0215)	
*Operating Income to Assets * NZ*				0.451***	
				(0.105)	
Australia (0/1)					0.137***
					(0.00674)
*Operating Income to Assets * AUS*					0.413***
					(0.0264)
R&D to TA	0.307	0.263	0.00736**	0.00725**	0.00704*
	(0.339)	(0.164)	(0.00343)	(0.00345)	(0.00360)
Growth	-0.0429	0.0739***	-0.0118***	-0.0119***	-0.00390
	(0.0498)	(0.0218)	(0.00114)	(0.00115)	(0.00265)
Total Assets	0.0140	0.00352	0.00798***	0.00801***	0.00771***
	(0.00952)	(0.00385)	(0.000437)	(0.000437)	(0.000460)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,275	8,037	139,061	140,336	147,098
R-squared	0.067	0.072	0.128	0.141	0.132

Table 7: Propensity to Initiate Dividends: This table shows the logistic regression results regarding the propensity to initiate dividends for firms between 1988-2015 using profit. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Initiate Dividends (0/1)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Profit	3.039***	3.918***	0.641***	0.635***	0.554***
	(0.650)	(0.218)	(0.0868)	(0.0865)	(0.0854)
New Zealand (0/1)				0.257**	
				(0.130)	
*Profit * NZ*				2.106***	
				(0.607)	
Australia (0/1)					-0.00655
					(0.0484)
*Profit * AUS*					3.738***
					(0.200)
R&D to TA	-0.869	-1.601	-0.834***	-0.848***	-1.004***
	(1.508)	(1.475)	(0.264)	(0.264)	(0.266)
Growth	0.724	-0.00732	0.332***	0.340***	0.230***
	(0.495)	(0.0796)	(0.0665)	(0.0660)	(0.0585)
Total Assets	-0.0139	0.0777***	-0.0127*	-0.0119*	0.00666
	(0.0533)	(0.0171)	(0.00727)	(0.00717)	(0.00655)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,960	22,919	143,919	145,939	167,247
$\chi2$	145.7	1234	526.7	592.6	1271
Pseudo R-Square	0.100	0.151	0.0174	0.0183	0.0287

Table 8: Propensity to Pay Dividends: This table shows the logistic regression results regarding the propensity to pay dividends for firms between 1988-2015 using profit. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Pay Dividends (0/1)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Profit	7.387***	7.302***	2.365***	2.359***	2.296***
	(1.299)	(0.302)	(0.140)	(0.140)	(0.140)
New Zealand (0/1)				1.082***	
				(0.169)	
*Profit * NZ*				4.354***	
				(1.272)	
Australia (0/1)					0.487***
					(0.0572)
*Profit * AUS*					5.519***
					(0.319)
R&D to TA	-5.072*	0.443	-1.485***	-1.497***	-1.644***
	(2.868)	(1.150)	(0.369)	(0.367)	(0.362)
Growth	0.366*	-0.293***	-0.314***	-0.302***	-0.284***
	(0.217)	(0.0576)	(0.0262)	(0.0262)	(0.0245)
Total Assets	0.519***	0.745***	0.391***	0.391***	0.406***
	(0.0949)	(0.0299)	(0.0109)	(0.0108)	(0.0100)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,980	23,055	143,919	145,939	167,247
$\chi2$	190.9	1758	3554	3652	4843
Pseudo R-Square	0.384	0.529	0.268	0.271	0.287

Table 9: Dividend Payout ratio (DPR): This table shows the regression results regarding the firm characteristics that affect a firms DPR between 1988-2015 using profit. Variables used in this regression are explained in Table 2. Clustered standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

	Dependent Variable: Dividend Payout Ratio (DPR)				
	(1)	(2)	(3)	(4)	(5)
Explanatory Variables	NZ	AUS	USA	NZ/USA	AUS/USA
Profit	0.488***	0.370***	0.0400***	0.0400***	0.0385***
	(0.135)	(0.0312)	(0.00276)	(0.00276)	(0.00294)
New Zealand (0/1)				0.155***	
				(0.0284)	
*Profit * NZ*				0.439***	
				(0.125)	
Australia (0/1)					0.121***
					(0.00717)
*Profit * AUS*					0.407***
					(0.0264)
R&D to TA	0.161	0.228	0.00413	0.00391	0.00455
	(0.327)	(0.164)	(0.00348)	(0.00351)	(0.00366)
Growth	-0.00743	0.0797***	-0.01000***	-0.0100***	-0.00166
	(0.0472)	(0.0210)	(0.00111)	(0.00111)	(0.00255)
Total Assets	0.0154	0.00294	0.00814***	0.00819***	0.00780***
	(0.00950)	(0.00390)	(0.000440)	(0.000441)	(0.000463)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	1,275	8,037	139,063	140,338	147,100
R-squared	0.063	0.073	0.127	0.140	0.131