Dividend Payout and Executive Compensation: Theory and evidence from New Zealand

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Abstract

Using a model based on Bhattacharyya (2007), we predict a positive (negative) relationship between the earnings retention ratio (dividend payout ratio) and managerial compensation. We use a tobit regression to analyze data for New Zealand firms' dividend payouts over the period 1997-2015 and find results consistent with Bhattacharyya (2007). These results hold when the definition of payout is modified to incorporate both common dividends and common share repurchases. Our results indicate that corporate dividend policy among New Zealand firms is perhaps best understood by considering the dividend payout ratio, rather than the level of, or changes in, cash dividends alone.

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1. Introduction

Dividend policy has been a premier puzzle in finance. In the words of Black (1976) ". . . the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together" (p. 5). Brealey, Myers and Allen (2017) list dividends as one of the ten important unsolved problems in finance.

There are three principal paradigms to explain the dividend puzzle. Clientele theory, advanced by Miller and Modigliani (1961), posits that investors select portfolios with reference to their marginal tax rates. Changes in dividends alter tax positions of shareholders and induces trading as a result of rebalancing of portfolios. Signaling theory (e.g., Bhattacharya, 1979; Miller and Rock, 1985; John and Williams, 1985) relies on asymmetric information and dividends as vehicles to transmit managerial private information to investors. The free cash flow hypothesis of Easterbrook (1984) and Jensen (1986) suggests that dividends are used as a device to remove cash from the hands of managers to the pockets of investors.

Bhattacharyya (2007) uses the principal agent paradigm to develop a model of dividends where uninformed principals (shareholders) use a set of screening contracts to screen agents according to productivity type (which is privately known to the agent) and establish a monotonic relationship between agent productivity and information rent. Empirically, Bhattacharyya's model predicts a structural relationship where dividend payout and managerial compensation are negatively related. We perform tobit analyses of managerial compensation and dividend payout in New Zealand (NZ) firms over the period 1997-2013. Our results are consistent with the predictions of Bhattacharyya's model.

The rest of the paper is organized as follows. The next section presents Bhattacharyya's dividend payout model. Then, the sample data and results of empirical analyses are presented. Finally, conclusions are drawn.

2. Dividends and Executive Compensation – Bhattacharyya (2007) Model

Bhattacharyya (2007) sets up dividends as resolving the issue of agency costs in a screening game framework where shareholders set up a set of screening contracts to establish a monotonic relationship between productivity of agents and their compensations. This results in a structural non-linear relationship between dividend payout ratio and executive compensation. The econometrically testable relationship that results from this model is Equation (1) below.

$$ln(1\text{-}PAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVIDEND + \beta_3 LNINCOME + \varepsilon \quad (1)$$

where *PAYOUT* is cash dividends declared to common shareholders divided by net income available to common shareholders (i.e., net income less preferred dividend requirement); *COMPENSATION* is compensation earned by the manager; *DIVIDEND* is cash dividends declared to common shareholders; and *LNINCOME* is the log of net income available to common shareholders. Prior studies of executive compensation and dividend payout have found evidence consistent with Bhattacharyya's screening model using Canadian (Bhattacharyya *et al.*, 2008a) and US data (Bhattacharyya *et al.*, 2008b).[1] Bhattacharyya and Elston (2011) and Bhattacharyya *et al.* (2014) found that the model works in Germany and Italy respectively.

This study examines dividend policy for publicly listed firms in New Zealand (NZ). The NZ market is a smaller, less regulated environment that operates with a lower degree of financial development (Beck and Levine, 2002) but strong legal enforcement (Wurgler, 2000). Weaker pay-performance sensitivity combined with less CEO compensation disclosure (Boyle and Roberts, 2013) means the association between dividend policy and managerial compensation may differ from studies that use data from larger, more developed markets.

[1] The details of the model and the resulting analysis can be found in Bhattacharyya (2007) and Bhattacharyya *et al.* (2008a and 2008b).

3. Empirical Tests

3.1. Data

Executive compensation data was hand collected from firm annual reports.[2] Most firm-specific accounting variables were downloaded from Datastream with some additional items for some firms collected by hand. Our sample began with a total of 1,393 firm-year observations. Firms in the financial sector were deleted (81 firm-years), as well as firm-years with negative or missing shareholders' equity (15 firm-years) and negative total assets (one firm-year). In addition, we restrict our analysis to firms with payout ratios that are (1) non-negative because of difficulty in interpreting a negative payout ratio; and (2) less than one, since our dependent variable is ln(1 – Payout) which is undefined for values of dividend payout greater than or equal to one. These deletions reduced our sample size to 743.

A preliminary analysis of the data revealed the presence of some extreme values in many of the variables in our sample. To mitigate the effect of these extreme values on our results, we eliminated observations falling within the top and bottom one percent of values of the following variables: CEO compensation (total and cash only), market-to-book ratio, capital expenditures and beta. In addition, we eliminated the top one percent of values of the debt-equity ratio, dividends and income available to common shareholders; and the bottom one percent of values of the logarithm of earnings retention, the distribution of which was skewed to the left. Trimming the data in this way

[2] Not all listed firms in New Zealand disclose the base salary separately from the short-term cash incentives that are awarded based on achieving key performance indicators as stated in the compensation contract. For this reason only total cash compensation can be used in the empirical tests.

reduced the final sample to 711 company-years for the simple tobit analyses (reported in Table 3) and 676 company-years for the more restricted analyses (reported in Table 4).[3]

Descriptive statistics on the remaining sample are presented in Table 1. The mean (median) firm-year in our sample has total assets of $753.9 million ($222.2 million, all amounts are in New Zealand dollars). The mean (median) total annual CEO compensation (*TOTCOMP*) is $711,830 ($517,050), while mean (median) total annual cash compensation (*CASHCOMP*) was $673,330 ($510,520). On average, cash compensation accounted for over 94% of total compensation. This stands in sharp contrast with US CEO compensation where total salary and bonus account for approximately 30% of total compensation (Bhattacharyya et al, 2008b).[4] The mean (median) dividend payout ratio is 0.53 (0.57). The minimum and maximum values of the payout ratio (0 and 0.98, respectively) result from the restrictions imposed on the payout ratio as described above.

[Insert Table 1 here]

A correlation matrix of the variables in the sample is presented in Table 2. None of the correlations between independent variables exceeds 0.70.

[Insert Table 2 here]

3.2. Tobit regression results

Bhattacharyya models dividend payout as a function of dividends (D_j), cash (C_j) and managerial compensation (ϖ_j). In our empirical tests of this model, we use dividends declared as D_j and compensation figures as ϖ_j. We use earnings available to common shareholders as the

[3] To check the robustness of our results, we also ran the tobit regressions reported here with two other treatments of extreme values: (1) winsorizing the sample at 1% and 99%; and (2) not adjusting for outliers at all. The winsorized sample results were virtually identical to those obtained for the trimmed sample. Results for the unadjusted sample were qualitatively similar to those of the simple model results reported in Table 3. For the full model, the coefficients on the compensation variables were positive as predicted but not statistically significant.

[4] Note that because of the mandated disclosure requirements under the New Zealand Companies Act equity compensation is very hard to identify and value. Hence part of this difference can be attributed to the lack of transparency associated with managerial compensation disclosure.

empirical proxy for C_j for three reasons. First, the dividend payout ratio is traditionally defined as dividends divided by earnings available to common shareholders. Second, dividend payouts are often constrained by earnings-based covenants (e.g., times-dividends-earned). Finally, earnings are frequently used as a measure of the long run cash-generating potential of a firm.

We estimate two sets of tobit regression models. The first is a direct test of equation (1) and is operationalized as:

$$ln(1\text{-}PAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVIDEND + \beta_3 LNINCOME + \varepsilon \quad (2)$$

where *PAYOUT* is cash dividends declared to common shareholders divided by net income available to common shareholders (i.e., net income less preferred dividend requirement); *COMPENSATION* is either total compensation or total cash compensation; *DIVIDEND* is cash dividends declared to common shareholders; and *LNINCOME* is the log of net income available to common shareholders.[5] We repeated all of our analyses with alternate specifications of "dividends," and all specifications yielded qualitatively consistent results. These alternate specifications are described later in this paper.

The results of estimating equation (2) are presented in Table 3. The pseudo R^2 for the regressions is around 4%. As predicted by Bhattacharyya (2007), the compensation coefficient β_1 is positive and strongly significant for total compensation and for cash compensation. The coefficients β_2 and β_3, on dividends and income, respectively, are both negative and significant as predicted by Bhattacharyya. The intercept coefficient, β_0, is theoretically indeterminate but is negative and not statistically significant in both models.

[Insert Table 3 here]

[5] *LNINCOME* also serves as a proxy for size, as it is highly correlated (Pearson r = 0.89) with ln of total assets (*LNASSETS*). The results are qualitatively similar to those presented here when both *LNINCOME* and *LNASSETS* are included as independent variables although the coefficient on *LNASSETS* is not statistically significant.

The results in Table 3 provide strong support for the Bhattacharyya model. However, some or all of these results could be due to excluded variables that other studies have found to be related to dividend policy (e. g., White, 1996). In order to test this possibility, we estimate the following tobit regression model.

$$ln(1\text{-}PAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVIDEND + \beta_3 LNINCOME + \beta_4 DEBTEQ + \beta_5 MKTBOOK + \beta_6 CAPEXP + \beta_7 BETA + \eta_1 \ldots \eta_{25} + \varepsilon \quad (3)$$

where *COMPENSATION*, *DIVIDEND* and *LNINCOME* are as defined in equation (2) above. *DEBTEQ* is long-term debt divided by common shareholders' equity, and is used here as a measure of firm leverage and a proxy for closeness to debt covenant restrictions. High leverage, with its associated financial risk and debt-servicing requirements, should be associated with lower dividend payout. In addition, leverage can motivate managers to avoid negative NPV investments (Tirole, 2006) and could therefore provide the incentive ascribed to compensation contracts in our model. Including leverage as an independent variable in our analysis controls for this potentially confounding effect.

MKTBOOK is the market value of the firm's common shares divided by the book value of common shareholders' equity, both at fiscal year-end. The market-to-book ratio is frequently used to proxy for investment opportunities available to the firm, regardless of the quality of the manager. We expect a higher market-to-book ratio to be associated with lower dividend payout. *CAPEXP* is capital expenditures for the year as reported on the cash flow statement, and controls for the possible effects of the firm's normal investment/capital asset replacement cycle. We expect capital expenditures to be negatively associated with dividend payout. *BETA* is the monthly fundamental beta, calculated for a 60-month period ending in the month of the firm-year's fiscal year end. We expect riskier firms to be more reluctant to pay out dividends and, therefore, expect *BETA* to be

negatively associated with dividend payout. η_1 through η_{25} are 25 dummy variables included to control for the effects of the eighteen years and seven Thomson Reuters Business Classification economic sectors in our sample (with one year and one industry effect captured by the intercept).

Tobit regression results for equation (3) are presented in Table 4 (note that the coefficients for the year and sector dummy variables are not reported). The pseudo R^2 for the different versions of the model is approximately 9%. As in Table 3, all of the compensation variables are significantly and negatively (positively) associated with dividend payout (earnings retention).

[Insert Table 4 here]

Dividends declared and the natural logarithm of income are both negatively (positively) associated with earnings retention (dividend payout), consistent with the results in Table 3. The capital expenditures (*CAPEXP*) and firm beta (*BETA*) coefficients are both negatively associated with dividend payout, as expected, and are statistically significant in both regressions. The coefficient on the debt-to-equity ratio (*DEBTEQ*), on the other hand, is negatively associated with dividend payout but not statistically significant. Contrary to our expectations, the market-to-book ratio (*MKTBOOK*) is positively associated with dividend payout. Perhaps one of the other control variables (capital expenditures, for example) more effectively proxies for growth opportunities as they affect dividend policy.

While the indicator variables were included only to control for potential industry and year effects, it is noteworthy that three of the seven sector indicator variables were statistically significant in both tobit models. After controlling for the other variables, companies in the Basic Materials, Industrial and Consumer Cyclicals sectors had significantly higher dividend payout ratios than did those in the other sectors. None of the fiscal year dummy variables were

statistically significantly, implying that New Zealand firm dividend policy has been relatively consistent over the period of our sample.

3.3. Sensitivity analysis

Cash dividends are not the only vehicle available to managers for distributing income to shareholders. Many firms frequently engage in share repurchases as a way of distributing excess cash to shareholders while avoiding the "stickiness" associated with increased dividends (see, for example, Jolls, 1998; Kahle, 2002; and Weisbenner, 2000). Grullon and Michaely (2002) find evidence that US firms have gradually substituted repurchases for dividends. Ignoring share repurchases, therefore, risks misspecifying the cash distribution parameter in Bhattacharyya (2007).

To address this issue, we compute a new payout variable, *DIVPURCH*, which is defined as the sum of cash dividends on common stock declared and total expenditure on repurchase of common shares. The payout ratio associated with *DIVPURCH* is *DPPAYOUT*, defined as *DIVPURCH* divided by net income available to common shareholders. We redo the analyses presented in tables 3 and 4, using *DIVPURCH* and *DPPAYOUT* in place of *DIVIDEND* and *PAYOUT*, respectively.

The results of these supplementary analyses are presented in tables 5 and 6. In all regressions, the results concerning the effect of compensation on retention are qualitatively similar to those reported in tables 3 and 4. These results provide strong additional support for the Bhattacharyya model in which share repurchases serve the same objective as dividend payouts.

As a supplementary check, we identified and deleted from our sample all firm-years reporting share repurchase activity on the cash flow statement. The tobit results obtained from this reduced

sample (not tabulated) are qualitatively the same as those reported in Table 4, i.e., total compensation and cash compensation are significantly and negatively associated with dividend payout of non-repurchasing firms.

Because it is a one-period model, Bhattacharyya (2007) assumes that the compensation effects of dividend and investment decisions are realized in the same period that those decisions are made. It is possible, however, that current managerial performance is rewarded (or punished) in subsequent periods through lagged adjustments to compensation (Fama, 1980). To test for this possibility, we ran our regressions using next year's (i.e., year $t+1$) compensation variables in place of this year's (year t) compensation. The results are qualitatively similar to those reported in Tables 3 and 4.

We used three different approaches to ensure that heteroscedasticity did not affect our results. First, we use Huber/White heteroscedasticity-consistent standard errors in computing all tobit t-statistics. In addition, we divided all variables by total assets and performed the tobit procedure on the deflated variables. Finally, we performed tobit analyses using standard errors clustered by firm. In all cases, the results are qualitatively similar to those reported in Tables 3 and 4.

4. Conclusion

This study examines dividend policy using data for publicly listed firms from the smaller, less regulated NZ market. The weaker pay-performance sensitivity documented among NZ firms combined with less CEO compensation disclosure may affect the previously documented association between dividend policy and managerial compensation as reported by Bhattacharrya et al. (2008a, 2008b, 2011, 2014). The limited transparency of CEO equity disclosure means that the main estimation of the relationship between payout and CEO compensation is performed using cash compensation measures.

First, we estimate a tobit regression model of the relationship between the earnings retention ratio, CEO compensation, cash dividends and net income available to common shareholders. Consistent with the Bhattacharyya (2007) model, we find a strong, positive association between cash dividends, total and cash compensation. Dividends and shareholder income each have negative and significant coefficients, as hypothesized by Bhattacharyya (2007). Higher levels of CEO pay are associated with higher earnings retention ratios for NZ firms.

Second, to control for omitted variables we modify our model to include four additional independent factors, and industry and year effects. After controlling for the debt-to-equity ratio, the firm's market-to-book ratio, annual capital expenditures and the firm's beta the compensation variables are still significantly and positively associated with earnings retention.

Finally, we extend the definition of the dividend payout measure to include share repurchases and cash dividends. The results concerning the effect of compensation on retention are qualitatively similar to those reported for the cash dividends only measure. All the models are estimated using Huber/White heteroscedasticity-consistent standard errors and all tobit models are estimated using standard errors clustered by firm. The results indicate that even in the smaller NZ market there is a strong association between dividend policy and managerial compensation. As empirically predicted by the Bhattacharyya's model, dividend payout and managerial compensation are negatively related.

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Table 1

Descriptive statistics

Our sample includes firm-years from the period 1997-2015. *DIVIDENDS* is the cash dividends declared to common shareholders during the year. *INCOME* is net income available to common shareholders (i.e., after preferred dividends). *PAYOUT* is dividends divided by income available to common shareholders. *TOTCOMP* is total CEO compensation. *CASHCOMP* refers to CEO cash compensation. *ASSETS* is total assets as at fiscal year-end. *DEBT-EQUITY* is the ratio of long-term debt to common shareholders' equity as at fiscal year-end. *MARKET-BOOK* is the market value of firms' common shares divided by common shareholders' equity, both as at fiscal year end. *CAPEX* refers to capital expenditures (additions to fixed assets) for the year as reported on the cash flow statement. Assets, debt-equity ratio and market-book ratio are as at fiscal year end; All variables excluding *ASSETS*, *DEBT-EQUITY* and *MARKET-BOOK* are for the fiscal year. *BETA* is the monthly market beta calculated for a 60-month period; the *BETA* for the year is the mean beta for each of the twelve calendar months in the fiscal year.

Variable	N	Mean	Median	Std dev.	Minimum	Maximum
DIVIDENDS ($m)	711	23.8	8.7	40.2	0	366.0
INCOME ($m)	711	42.5	17.2	65.9	10	467.0
PAYOUT	711	0.5	0.6	0.3	0	1.0
TOTCOMP ($000)	711	717.3	523.0	584.8	135.0	4,449.5
CASHCOMP ($000)	711	678.4	512.5	509.3	135.0	3,137.3
ASSETS ($m)	711	760.3	222.6	1,376.6	4.4	8,989.4
DEBT-EQUITY	676	0.3	0.2	0.3	0	2.3
MARKET-BOOK	676	2.1	1.7	1.4	0.4	8.6
CAPEX ($m)	676	40.9	11.6	90.2	0.2	764.0
BETA	676	0.8	0.8	0.3	0.2	1.5

Table 2
Correlation matrix

PAYOUT is cash dividends declared to common shareholders divided by net income available to common shareholders. *TOTCOMP* is total CEO compensation for the (fiscal) year. *CASHCOMP* is total CEO cash compensation for the fiscal year. *DIVIDEND* is cash dividends to common shareholders declared during the year. *LNINCOME* is the log of income available to common shareholders for the year. *LNASSETS* is log of total assets as at year-end. *DEBTEQ* is long-term debt divided by common shareholders' equity as at year-end. *MKTBOOK* is the market value of the firm's common shares divided by common shareholders' equity as at year-end. *CAPEXP* is capital expenditures for the year. Beta is the monthly market beta calculated for a 60-month period; the *BETA* for the year is the mean beta for each of the twelve calendar months in the fiscal year.

	1	2	3	4	5	6	7	8	9	10
1. *PAYOUT*	1.00									
2. *TOTCOMP*	0.12**	1.00								
3. *CASHCOMP*	0.10**	0.95**	1.00							
4. *DIVIDEND*	0.31**	0.66**	0.60**	1.00						
5. *LNINCOME*	0.26**	0.60**	0.61**	0.66**	1.00					
6. *LNASSETS*	0.16**	0.63**	0.64**	0.67**	0.89**	1.00				
7. *DEBTEQ*	-0.07	0.14**	0.16**	0.11**	0.08**	0.31**	1.00			
8. *MKTBOOK*	0.18**	-0.00	-0.02	0.02	0.04	-0.15**	-0.27**	1.00		
9. *CAPEXP*	0.08**	0.55**	0.52**	0.68**	0.51**	0.60**	0.36**	-0.11**	1.00	
10. *BETA*	-0.05	0.29**	0.27**	0.21**	0.23**	0.29**	0.04	0.07	0.22**	1.00

** Correlation is significantly different from zero at $p < 0.05$.

Table 3
Tobit results for earnings retention (no control variables)

$$ln(1\text{-}PAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVIDEND + \beta_3 LNINCOME + \varepsilon$$

PAYOUT is cash dividends declared to common shareholders divided by net income available to common shareholders. *COMPENSATION* is one of the following annual items, in thousands of $NZ: TOTCOMP is total CEO compensation; *CASHCOMP* is total CEO cash compensation. *DIVIDEND* is cash dividends on common shares declared during the year. *LNINCOME* is the log of income available to common shareholders for the year. Pseudo R^2 is McFadden's pseudo R^2. The F-statistic tests the null hypothesis that the Compensation, *DIVIDEND* and *LNINCOME* coefficients are all zero.

Independent Variable	Expected sign	Coefficients (*t-statistics*) Model I	Model II
CONSTANT	?	-0.47	-0.38
		(-1.28)	(-1.05)
TOTCOMP[a]	+	3.50	
		(4.32***)	
CASHCOMP[a]	+		3.77
			(3.99***)
DIVIDEND[a]	-	-0.09	-0.09
		(-5.75***)	(-5.22***)
LNINCOME	-	-0.06	-0.07
		(-1.42*)	(-1.65**)
Pseudo R^2		0.04	0.04
F (3 df ,708 df)		19.9***	18.1***
N		711	711

*, **, and *** indicate that the statistic is statistically significant at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively (using Huber/White heteroscedasticity-consistent standard errors for the tobit coefficient t-tests). All p-values are for one-tailed tests unless the expected sign of the coefficient is ambiguous (denoted by "?"), in which case the test is two-tailed.
a (b) indicates that the coefficient has been multiplied by 10^4 (10^3).

Table 4

Tobit results for earnings retention (control variables included)

$ln(1\text{-}PAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVIDEND + \beta_3 LNINCOME + \beta_4 DEBTEQ + \beta_5 MKTBOOK + \beta_6 CAPEXP + \beta_7 BETA + \eta_1 \ldots \eta_{25} + \varepsilon$

PAYOUT is cash dividends declared to common shareholders divided by net income available to common shareholders. COMPENSATION is one of the following annual items, in thousands of $NZ: TOTCOMP is total CEO compensation; CASHCOMP is total CEO cash compensation. DIVIDEND is cash dividends on common shares declared during the year. LNINCOME is the log of income available to common shareholders for the year. DEBTEQ is long-term debt divided by common shareholders' equity as at year-end. MKTBOOK is the market value of firms' common shares divided by common shareholders' equity as at year-end. CAPEXP is capital expenditures for the year. η_i are coefficients for dummy variables indicating one of seven Thomson Reuters Business Classification economic sectors or one of eighteen fiscal years. Beta is the monthly market beta calculated for a 60-month period; the BETA for the year is the mean beta for each of the twelve calendar months in the fiscal year. Pseudo R^2 is McFadden's pseudo R^2. The F-statistic tests the null hypothesis that the Compensation, DIVIDEND and LNINCOME coefficients are all zero.

Independent Variable	Expected Sign	Coefficients (*t-statistics*) Model I	Model II
CONSTANT	?	-0.40	-0.32
		(-0.93)	(-0.74)
TOTCOMP[a]	+	1.99	
		(2.16**)	
CASHCOMP[a]	+		2.64
			(2.46***)
DIVIDEND[a]	-	-0.10	-0.10
		(-5.67***)	(-5.61***)
LNINCOME	-	-0.08	-0.09
		(-1.98**)	(-2.20**)
DEBTEQ	+	0.04	0.03
		(0.36)	(0.27)
MKTBOOK	+	-0.10	-0.09
		(-3.17)	(-3.17)
CAPEXP[a]	+	0.02	0.02
		(2.89***)	(2.79***)
BETA	+	0.42	0.42
		(2.41***)	(2.46***)
Industry controls		Yes	Yes
Year controls		Yes	Yes
Pseudo R^2		0.09	0.09
F (3 df , 644 df)		17.6***	17.3***
N		676	676

*, **, and *** indicate that the statistic is statistically significant at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively (using Huber/White heteroscedasticity-consistent standard errors for the tobit coefficient t-tests). All p-values are for one-tailed tests unless the expected sign of the coefficient is ambiguous (denoted by "?"), in which case the p-value is two-tailed.

a (b) indicates that the coefficient has been multiplied by 10^4 (10^3).

Table 5
Tobit results for earnings retention (no control variables): Payout is cash dividends plus common share repurchases

$$ln(1\text{-}DPPAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVPURCH + \beta_3 LNINCOME + \varepsilon$$

DPPAYOUT is the sum of cash dividends declared on common stock and total expenditure on repurchase of common stock, divided by net income available to common shareholders. . COMPENSATION is one of the following annual items, in thousands of $NZ: TOTCOMP is total CEO compensation; CASHCOMP is total CEO cash compensation. DIVPURCH is sum of cash dividends on common stock declared and total expenditure on repurchase of common stock. LNINCOME is the log of income available to common shareholders for the year. Pseudo R^2 is McFadden's pseudo R^2. The F-statistic tests the null hypothesis that the Compensation, DIVIDEND and LNINCOME coefficients are all zero.

Independent Variable	Expected sign	Coefficients (*t-statistics*) Model I	Model II
CONSTANT	?	-0.40	-0.34
		(-1.09)	(-0.91)
TOTCOMP[a]	+	3.60	
		(4.38***)	
CASHCOMP[a]	+		3.89
			(4.02***)
DIVPURCH[a]	-	-0.09	-0.08
		(-5.24***)	(-4.57***)
LNINCOME	-	-0.06	-0.07
		(-1.59*)	(-1.75**)
Pseudo R^2		0.04	0.04
F (3 df, 701 df)		18.2***	15.6***
N		704	704

*, **, and *** indicate that the statistic is statistically significant at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively (using Huber/White heteroscedasticity-consistent standard errors for the tobit coefficient t-tests). All p-values are for one-tailed tests unless the expected sign of the coefficient is ambiguous (denoted by "?"), in which case the test is two-tailed.
a (b) indicates that the coefficient has been multiplied by 10^4 (10^3).

Table 6

Tobit results for earnings retention (control variables included): Payout is cash dividends plus common share repurchases

$ln(1\text{-}DPPAYOUT) = \beta_0 + \beta_1 COMPENSATION + \beta_2 DIVPURCH + \beta_3 LNINCOME + \beta_4 DEBTEQ + \beta_5 MKTBOOK + \beta_6 CAPEXP + \beta_7 BETA + \eta_1 \ldots \eta_{26} + \varepsilon$

DPPAYOUT is the sum of cash dividends declared on common stock and total expenditure on repurchase of common stock, divided by net income available to common shareholders. COMPENSATION is one of the following annual items, in thousands of $NZ: TOTCOMP is total CEO compensation; CASHCOMP is total CEO cash compensation. DIVPURCH is the sum of cash dividends on common stock declared and total expenditure on repurchase of common stock. LNINCOME is the log of income available to common shareholders for the year. DEBTEQ is long-term debt divided by common shareholders' equity as at year-end. MKTBOOK is the market value of firms' common shares divided by common shareholders' equity as at year-end. CAPEXP is capital expenditures for the year. ηi are coefficients for dummy variables indicating one of seven Thomson Reuters Business Classification economic sectors or one of eighteen fiscal years. Beta is the monthly market beta calculated for a 60-month period; the BETA for the year is the mean beta for each of the twelve calendar months in the fiscal year. Pseudo R^2 is McFadden's pseudo R^2. The F-statistic tests the null hypothesis that the Compensation, DIVIDEND and LNINCOME coefficients are all zero.

Independent Variable	Expected Sign	Coefficients (*t-statistics*) Model I	Model II
CONSTANT	?	-0.47	-0.41
		(-1.11)	(-0.97)
TOTCOMP[a]	+	2.07	
		(2.23**)	
CASHCOMP[a]	+		2.61
			(2.40***)
DIVPURCH[a]	-	-0.10	-0.09
		(-5.18***)	(-4.98***)
LNINCOME	-	-0.09	-0.10
		(-2.23**)	(-2.38***)
DEBTEQ	+	0.06	0.06
		(0.55)	(0.48)
MKTBOOK	+	-0.09	-0.09
		(-2.70)	(-2.69)
CAPEXP[a]	+	0.02	0.02
		(2.81***)	(2.72***)
BETA	+	0.36	0.37
		(2.11**)	(2.19**)
Industry controls		Yes	Yes
Year controls		Yes	Yes
Pseudo R^2		0.09	0.09
F (3 df, 635 df)		15.4***	14.9***
N		668	668

*, **, and *** indicate that the statistic is statistically significant at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively (using Huber/White heteroscedasticity-consistent standard errors for the tobit coefficient t-tests). All p-values are one-tailed tests unless the expected sign of the coefficient is ambiguous (denoted by "?"), in which case the p-value is two-tailed.

a (b) indicates that the coefficient has been multiplied by 10^4 (10^3).