

Payout Policy Changes around a Tax Reform:

Do Owners or Payout Policy Adjust?

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Work in process. Comments are welcome.

ABSTRACT

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KEYWORDS: tax reform, dividends, share repurchases, ownership clienteles

JEL Classification

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Tax reforms which affect the taxation of corporate dividends offer excellent opportunities to study dividend clientele effects. We study payout policy changes (dividends and share repurchases) around a major tax reform in Finland in 2004. Contrary to e.g. survey results by Brav et al (2005), who report that executives believe that dividend policies have little impact on their investor clientele, and that tax considerations play a secondary role, we find that firms adjust their dividend policies in line with the preferences of their main shareholders. We also find that dividend preferences play a significant role in explaining ownership structures in Finnish firms.

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1. Introduction

Despite more than 40 years of studies of corporate dividend policies, questions such as whether potential dividend clienteles affect corporate payout decisions are largely unanswered. Even the existence of dividend clienteles is an unclear issue. Most earlier studies have focused on price and volume reactions around dividend events, and at best produced mixed indirect evidence on more permanent dividend clienteles. Recently, more direct evidence on the existence of dividend clienteles has been provided by studies of the holdings of either institutional investors as in Dhaliwal et al (1999) and Grinstein and Michaely (2005), of retail investors as in Graham and Kumar (2006), or of half of an entire market as in Dahlquist et al (2006). But do firms take clienteles into account, or is it mainly the investors who adjust through their portfolio choices? Pérez-Gonzales (2003) argue that the tax preferences of large shareholders influence dividend payout policies in the U.S. Chetty and Saez (2005) and Brown et al (2007) offer support for the impact of owner and managerial / managerial incentives when setting the firm's dividend / payout policy around a tax reform. Contrarian results are provided by Brav et al (2005), whose survey responses strongly indicate that firms are reluctant to change their dividend policies to reflect taxational changes which affect their major shareholders.

In this paper, we search for evidence on whether firms and / or investors adjust to changes in taxation (firms by changing their payout policy, owners by changing their portfolio allocations), i.e. we look at the *interactions* between these two. We do so by studying actual corporate dividend and share repurchase decisions around a major tax reform, on a market with varying, but on average substantially more concentrated ownership than in the U.S. Using financial and ownership data for listed firms, we find results contrary to the survey results by Brav et al (2005), who indicate that firms would mainly not adjust their dividend policies, and to those of Brown et al (2007), who found that individual ownership did not boost dividends while executive ownership did. We find significant evidence for firms (rather than investors) adjusting their payout levels both for dividends as well as for share repurchases, and that especially when

dividends are concerned, firms take into account the taxation of large shareholders. We also find that payout variables are significant determinants for ownership structures in listed firms.

In Europe, share ownership is much more concentrated as compared to the U.S. Firms are therefore more likely to be dependent on some large, influential owners – and therefore more likely to adjust their dividend policies to reflect the preferences of such investors. We study ownership and dividend policy changes around the Finnish tax reform of 2004, which radically changed the dividend preferences of taxed domestic investors. We contribute to the prior literature firstly by looking both at changes in payout policy (dividends and share repurchases) when controlling for ownership, and ownership when controlling for payout policy and its tax treatment, i.e. we aim to provide a study of the *interactions* between these two around a major tax reform. Secondly, we study a market with substantial variation in ownership concentration, which provides an opportunity to test whether firms are more likely to adjust their payout policies, when ownership is concentrated and more taxationally homogeneous. Thirdly, contrary to most studies of dividend clienteles, our payout policy variables include information on both dividends as well as share repurchases.

The structure of this report is as follows. In section 2, we discuss related literature. In section 3, we present the main features of the 2004 tax reform in Finland. In section 4, the data is presented. Empirical results are reported in section 5, and summary and conclusions are given in section 6.

2. Literature review

Allen and Michaely (2002) discuss two strands in tax-related dividend literature: static dividend models and dynamic trading models. Many papers offer support for dynamic

tax-induced trading (abnormal volumes) around the ex-dividend day.¹ If tax effects could entirely be eliminated by such trading, tax aspect might not at all influence actual portfolio holdings outside such dates. However, empirical evidence on ex-dividend price drops different from the size of the dividend indicate that this is not the case.² This leads to the question of whether dividends influence long-run portfolio investment strategies. In static dividend models, the focus is on the determinants of the stocks in a buy-and-hold portfolio strategy, i.e. the existence of dividend clienteles. Evidence for such clienteles can be either found by studying the determinants of individual portfolio holdings, firms' dividend policies, or changes (and interactions) in these.

Prior studies of either firms or investors actions include first of all studies of investors' trading behavior around changes in dividend policy, such as dividend changes, initiations or omissions. In these studies (since the firm has already made its decision), the focus is mostly on whether the investors adjust. Weak or mixed evidence on investor adjustment around dividend events has been provided by Richardson et al (1986), Michaely et al (1995) and Seida (2001), as well as by Graham and Kumar (2006). Binay (2001) in turn found significant changes in institutional ownership after dividend omissions and initiations. Looking at both institutional ownership and payout policy adjustments (both dividends as well as share repurchases) over a longer time period, Grinstein and Michaely (2005) provide a more thorough study of the interactions both ways in the U.S. between 1980 and 1996. They find that despite the result that institutional owners in the U.S. seem to prefer dividend-paying firms, the level of dividends does not matter, and so firms that increase their dividends do not attract significantly more institutional holdings. However, changes in the firm's repurchasing activity may affect institutional ownership in the same direction as the change. On the other hand, they found no evidence that an increase in

¹ See e.g. Lakonishok and Vermaelen (1986) and Michaely and Vila (1996) for the U.S., Kato and Lowenstein (1995) for Japan, and Michaely and Murgia (1995) for Italy. For a more detailed analysis of the identity of such traders, see e.g. Koski and Scruggs (1998) for the U.S., and Felixson and Liljebloom (2008) for Finland.

² See e.g. Elton and Gruber (1970), Eades, Hess, and Kim (1984), Green and Rydqvist (1999), and Graham, Michaely and Roberts (2003).

institutional ownership, or ownership concentration, would lead to further increases in dividends, repurchases, or total payout.

Annual dividend changes can however be rather marginal, as well as less permanent, in order to significantly affect investor holdings. Studying the interactions between firms' payout policy choices, and the changes in investor holdings over a long period of time, is also problematic since there are also typically time trends in both. More radical one-time effects are likely to be caused by tax regime changes, which affect investors' preferences concerning dividends versus capital gains. Tax regime changes are also changes undertaken by an external factor, making it possible to study the subsequent reactions of both the firms as well as the investors. Are the effects of such changes mainly captured by the investors, who have the ability to trade their shares, and exit firms with dividend policies now less preferable from a tax perspective? Or do also the firms adjust their payout policies in order to hold on to certain investor groups? For the U.S., where share ownership is typically more widely dispersed than in Europe, Perez-Gonzales (2003) studied changes in firms' dividend policies around the tax reforms during 1981 to 1999. He found some support for firms adjusting their policies in line with investor preferences. Firms' dividend policies increased (decreased) in years when dividends had a smaller (larger) tax disadvantage relative to capital gains, but only in firms where the large shareholders were affected by the tax reforms. Evidence of tax reform related adjustment in the U.S. is also provided by Poterba (2004), Chetty and Saez (2005), Graham and Kumar (2006), and Brown et al (2007). Poterba (2004) found a significant relationship between dividend payouts and average marginal tax rates during 1935 to 2002. Chetty and Saez (2005) document a 20% increase in dividend payments by nonfinancial, nonutility listed firms after the U.S. tax cut in 2003. The response to the tax cut was strongest in firms with strong principals whose tax incentives changed. Brown et al (2007) document that managerial holdings explain cross-sectional differences in how the firms in the U.S. reacted in 2003. Interestingly, they find that high *individual* ownership did not boost dividends in response to the 2003 tax cut, but that *executive ownership* did. One of their contribution is that by looking at share repurchases, they find evidence

strongly suggesting a partial substitution between dividends and share repurchases. Finally, Graham and Kumar (2006) studied retail investors' portfolio dividend yields (PDYs) around the tax reform of 1993. Although their main result was obtained using portfolio holdings (which only offers an indirect way to test who – the firm or the investor - reacts), a specification test looking at purchases gives qualitatively similar (albeit weaker) results, indicating that the result is at least partly based on investors rather than firms adjusting.

In summary, the evidence on firm's actually adjusting their payout levels is scarce especially outside the U.S. There are also not many studies of the simultaneous reactions of the firms (their payout decisions) on one hand, and the investors' choices (to enter or exit based on dividends as one argument for stock selection) on the other hand, since it is difficult to study such interactions during periods of stable dividend policies and tax regimes. Understanding the interactions is however important for the firms when tailoring their payout policies. Also, studies of such interactions may help e.g. in understanding potential capital flows in and out of specific stocks.

3. Finland's 2004 Tax Reform

The taxation of dividends and corporate profits changed substantially when a tax reform bill became effective in January 2005 in Finland. Since 1993, the time of the previous major reform, all capital income and corporate profits were taxed at a single flat rate, which first was 25% (in 1993), and then successively raised to 28% (in 1996), and further to 29% (in 2000). Furthermore, a full imputation (avoir fiscal) system was applied to the taxation of distributed corporate profits (dividends), which effectively made dividends tax-free at the personal level. The 2004 reform changed both the tax rates applied at the corporate and personal income level and more importantly replaced the full imputation system by a partial double taxation.

After the reform, the corporate profits tax rate was lowered from 29% to 26% and the capital income tax-rate from 29% to 28%. The abandoning of the full imputation system and the introduction of a partial double taxation introduced the capital income tax also for 70% of the dividends received (57%, during the adjustment period of 2005). Therefore, the effective tax-rate on dividends after the reform is 19.6% (0.7 times 0.28) and 15.96% (0.57 times 0.28) during the adjustment year of 2005, while it as a result of the full imputation was zero before the reform. The reform treats dividends received from a unlisted firm differently from a listed one, and these dividends are tax free up to a limit of 90 000 euros per physical recipient. Also for unlisted firms, dividends exceeding 90 000 euros are taxed according to the main rule. However, for listed equities that are our main interest in this study, dividends are always taxed at the personal level.

As described above, the 2004 tax reform introduced a substantial tax on dividends received from listed firms. However, there are several exceptions to the rule, and these exceptions introduce differential tax treatment for different types of investors. First, in the tax code, several institutions are tax exempted including e.g. mutual funds, personnel funds and several institutions close to the state such as the Bank of Finland. Second, to avoid multiple taxation, dividends received by a corporation from another corporation are not taxed. However, for dividends received from a listed firm, this rule applies only when the recipient is another listed firm, or when the equity stake held by the receiving corporation is more than 10% of outstanding shares. Finally, the tax treatment of dividends paid to foreign investors was not amended in the reform. Foreign investors are subject to a source tax most commonly on the level of 15% for the dividends received from a Finnish firm.

The exceptions included in the reform are exemplified by our ownership data that shows that on average 48.3% of the top five shareholders at the end of year 2004 fall within the exceptions and therefore only 51.7% on average are effected by the reform.

Finally, open market share repurchases have been possible in Finland since 1997, and thus constitute an alternative form of profit distribution. The choice between share repurchases versus dividends has been analyzed in Liljeblom and Pasternack (2006). We include share repurchases also in this study, and hence not only study potential changes in cash dividend policies, but also in the companies' share repurchasing activity.

4. The Data

4.1. The sample

The dividend data is obtained from the Helsinki Stock Exchange, consisting of complete information on all dividends paid during the years 2003 to 2006 for all companies listed on the exchange. The dividends paid during 2003 to 2006 are based on corporate profits for years 2002 to 2005. Data on share repurchases is gathered from press releases submitted through the exchange. In Finland companies are obliged to submit data on completed share repurchases on an ex-post basis. Ownership data is collected from Pörssitieto manuals (holdings and investor type of top five shareholders) and from the Finnish Central Securities Depository (level of foreign ownership). Financial statement data and stock return and price data are obtained from the Datastream International dataservice.

The number of firms listed on the Helsinki Stock Exchange during the investigated years is: 144 (2003), 136 (2004), 137 (2005) and 131 (2006), summing to 548 data points. Our final sample size is slightly reduced due to some missing data points and delistings, and the final full sample consists of 524 firm-year observations for 148 firms. We further loose some observations when we use the lagged dividend payout ratio as an explanatory variable, and when we restrict the analysis to less extreme payout ratios due to small divisor, leading to a sample size of 468 for the main dividend regression. To avoid a

larger fallout we use a substitution method to replace missing data points for our control variables (firm characteristics). In the substitution method a missing data point is replaced by the year average for the data item. As mentioned this method is only used in a few cases and for the control variables only, and we are confident that the potential bias introduced is small or negligible.

4.2. Dependent variables

Our main focus is in the interaction between payout levels around the tax reform, and firm ownership / potential ownership changes. We perform panel regressions both separately for dividend payouts and share repurchases, and also simultaneous equations for dividends, share repurchases, and ownership. In the panel regressions, we use the dividend payout ratio (total dividends per share / earnings per share) for cash dividends, and measure share repurchasing activity by share repurchases to total payable equity (free equity). Since the tax reform affected only part of the shareholders, we create a measure for that affected category by calculating the percentage of shares, held by the 5 largest shareholders, which belong to owners affected by the tax reform (the variable is called “Taxed of 5 Largest Shareholders”).³ See Table 1 for variable definitions.

4.3. Basic model and tax variables

For the dividend equation, we start by a basic behavioral dividend model of the Lintner (1956) type, i.e. we model the dividend payout rate as a function of its lagged value and a measure for corporate profits, the return on assets (ROA). As further explanatory variables, we include different tax variables.

³ We do unfortunately not have such detailed data on all shareholders, which would allow us to calculate the percentage of affected owners out of all owners. However, with high ownership concentration in many firms, our main ownership variable should capture the main cross-sectional variation in the degree to which the tax reform affected the firms’ owners.

Since the reform was well known in advance, we include a dummy for the year 2003 (the last year when the *avoir fiscal* system was in use) to test for a tendency to temporarily increase dividends while still untaxed, prior to the reform. Also separate dummies for the first two years after the reform, 2004 and 2005, are included. Finally, to test for whether firms with a large proportion of affected owners, we include our Taxed of 5 Largest Shareholders variable, as well as an interaction variable (Taxed of 5 Largest * 2003, which is the Taxed of 5 Largest Shareholders variable multiplied by the year dummy for 2003). For share repurchases, we likewise test for an increase after the tax reform by the inclusion of a similar interaction variable, now for the years 2004 to 2005.

Finally, we estimate a separate model for ownership, where the ownership share of the taxationally affected large owners as percentage of the shares owned by all the 5 large owners (our Taxed of 5 Largest Shareholders variable) is used as a dependent variable.

4.4. Control variables

Our control variables for the payout regressions include first of all variables related to traditional determinants for corporate payout policy, i.e. variables proxying for the signaling and agency cost motives.

The signaling motive can be expected to be stronger if the firm is perceived to be undervalued by its insiders. We therefore include the Past 6 month Return (the past stock return) as well as the Market-to-Book variable. In both payout models (for dividends as well as for share repurchases), also ROA as a profitability measure is naturally included (in the dividend model, as a part of the *Basic model*). If payouts are used to signal future (or current) profitability, there may be a positive association between these variables and

our payout variables.

The Free Cash Flow variable, measured as EBIT plus depreciation and amortization expenses over sales, is included to test for a tendency for higher payouts in firms with a higher free cash flow, in order to reduce potential agency costs in line with Jensen (1986).

Earlier empirical results for the Finnish market (see e.g. Liljeblom and Pasternack 2006) show that for share repurchases, foreign ownership seems to be the single most important explanatory variable, one potential reason being that the withholding tax of typically 15% on dividends to foreigners puts an additional burden on dividends as compared to share repurchases. We therefore include Foreign Ownership as one explanatory variable in the share repurchase equation, and, for symmetry, also in one specification for the dividend model.

Finally, we include some traditional control variables in the dividend and share repurchase models. Since larger and more mature firms may have more established payout policies, and also larger levels due to smaller growth opportunities, we include *Size* measured as the logarithm of sales. Since financially constrained firms may have lower payout levels, we also include *Leverage* defined as total long-term debt to total assets.

The model where the ownership by the taxationally affected owners acts as a dependent variable is somewhat different from the previous two models. Studies of cross-sectional ownership patterns, mainly ownership concentration, often follow Demsetz and Lehn (1985), who provide evidence of the endogeneity of corporate ownership. They

use size, control potential, operationalized by different risk measures, and regulation, captured by dummies for certain industries, as explanatory variables for ownership concentration in the U.S. Similar variables are later used e.g. by Demsetz and Villalonga (2001), where they also included leverage and firm performance.

We will start with a model similar to Demsetz and Lehn (1985) and Demsetz and Villalonga (2001), but excluding firm specific risk, which was not significant in Demsetz and Villalonga (2001), and is likewise not expected to explain private ownership at least with a negative sign in Finland, where many of the small (and family controlled) firms are within or related to the IT-sector.

We include *Size*, measured as the logarithm of sales, to capture the fact that with restricted wealth, taxationally affected ownership (to a large part private) can hardly be that large in very large firms. Following Demsetz and Villalonga (2001), we also include *Leverage* defined as total long-term debt to total assets. Leverage was a significant determinant with a negative sign in their study, and they argued that if creditors do add to the monitoring capability of a firm, their presence may discourage attempts by management to entrench through share ownership. Our dependent variable is not management ownership, but if control by creditors may be a substitute for private control, a negative sign may be expected also in our model specification. Since family ownership has been observed to be related to higher profitability and firm valuation (see e.g. Maury 2006 for Europe), we also include *ROA*, i.e. return on assets, and *Market-to-Book*.

Finally, as more novel features in such a model, we include our payout variable *Pay-Out Ratio*, to test for a higher preference for dividends by this owner category, and the interaction variable *Pay-Out Ratio* 2004-05*, to test for a change in this preference after

the tax reform. Also similar variables for share repurchases are included in the basic model for them.

4.5. Descriptive statistics

Descriptive statistics for our main variables as well as for some alternative specifications of the payout and profitability variables are reported in Table 2, both for the full sample as well as for two subsamples (firms with a below or above median percentage of taxationally affected large owners). The table shows that the time period has been one of high dividends, with mean payout ratios of 1.4 and a mean dividend yield of 4.54%. The ownership by the taxationally affected top 5 owners amounts to approximately 55% of the total ownership by the five largest owners, with substantial variation (averages of 21% and 88% in the two subgroups). Out of the total equity of the firm, these taxationally affected large owners own on average 25%, i.e. ownership is highly concentrated, Foreign ownership is on average at 18%, with variation between the MIN and MAX values of zero and 93%.

5. Empirical analysis

The development of in dividend payouts, dividend yields, and share repurchases is reported in Table 3, separately for two groups of firms: firms where the percentage of taxationally affected owners ownership of equity is less than 30% of the aggregated equity owned by the 5 largest shareholders (where our Taxed of 5 Largest Shareholders variable takes a value lesss than 30%), and for the rest of the firms. The cut-off point of 30% for the ownership variable is arbitrarily drawn in order to identify some level of reasonably large influence by the tax-affected owners. Since the dividend payout variable is highly positively skewed, exhibiting some extreme values due to small

denominators (high dividends despite a small EPS), we have first of all truncated it at the level of 10. In Table 3, Panel A, we report dividend payout ratios for the full (truncated) sample, as well as for a restricted sample, where payouts higher than 8 have been excluded.⁴ Key statistics are also illustrated in Figure 1.

The table and Figure 1 illustrate several interesting features. First, we see many indications of higher initial dividends (in 2002) in the group with more tax-affected owners: a higher median payout (despite an insignificantly smaller average) for the full sample, higher mean and median payouts in the restricted sample, and a substantially higher dividend yield. The difference in dividend yields (5.57% versus 3.7%) is significant at the 5% level (with a t-values of 2.28). This is in line with our prior expectations: the tax-affected owners are largely individual owners, and private owners are typically observed to prefer dividends (Dong et al (2003), Graham and Kumar (2004)). The results indicate that private owners also in Finland have a preference for dividends when dividend and capital gains are neutrally taxed (prior to the tax reform of 2004).

Second, dividends increase in 2003 in both groups prior to the (in advance known) reform of 2004, but the increase is much higher for the group of firms with more tax affected owners (all changes in within-group means over time are, however, insignificant when analysed at this level). In 2003, the differences between the payout ratios for the two groups in the restricted sample (a difference of 0.5841), and the dividend yields for the two groups (a difference of 2.34%) are significant at the 1% level (with t-values of 3.21 and 2.68, respectively).

Third, the dividends fall after the reform in both groups, and the ultimate payouts and dividend yield levels in 2005 are insignificantly different for the two groups (payouts of

⁴ Our later dividend regressions reported in this table are based on the restricted dividend sample, to provide more robust results, i.e. results not driven by some extreme outliers.

0.66 and 0.59 in the restricted group, dividend yields of 3.54% versus 3.97%). The same pattern also typically holds for the medians.

For share repurchases, there is likewise a difference prior to the reform, with more share repurchases taking place in firms dominated by owners (such as foreign / institutional owners) not affected by the reform. The difference is however not significant (a t-value of 1.41). After the reform, there is an increase in share repurchases in both groups, but the changes are not quite significant, not even for the group of more than 30% of taxationally affected owners (a t-value of 1.62). Ultimately, the average levels of share repurchases in the two groups are more close to each other (1.2% versus 0.8%) than in 2002.

Next, we analyze separately the determinants for dividends, share repurchases and tax clientele ownership structure around the tax reform of 2004 by means of (unbalanced as well as balanced) panel regressions. We use the dividend Pay-Out Ratio, the Share Repurchases to Total Payable and the Taxed of 5 Largest Shareholders, as dependent variables in these models. Finally, we estimate a simultaneous equation model including the all three equations, in order to test whether it is the firm only, or also the owners, who adjust. The estimated models, and the obtained results, are in more detail discussed below.

5.1. Results for the dividend payout

Most empirical tests on dividends or cash distribution are based on Lintner's (1956) early and highly influential work. Lintner's partial adjustment model assumes that dividends include signals regarding the quality of the firm's earnings, and that firms use stable pay-out ratios and are very reluctant to lower these ratios. As a result, dividend policy is not changed until managers can see that new earnings levels are sustainable. In the partial adjustment model, the change in dividend is explained by the prior dividend and the current profit (both expected to receive positive coefficients) and a positive

constant term (to catch the empirical observation that firms in general are reluctant to reduce dividends).

We base our cross sectional analysis of changes in dividend payout ratios around the 2004 tax reform on an application of the Lintner's model. In the most basic test (Displayed in Table 4, Panel A.) we do this by regressing the current dividend payout ratio on the lagged payout ratio and the firm's return on assets i.e. ROA. We find that dividend payout ratios in our sample are, as expected, positively and highly significantly related to prior payout ratios and the firm profit (as proxied by ROA). We also find a significant positive constant term as predicted by Lintner.

We analyse changes in dividend payout ratios around the 2004 tax reform by regressing the firm's dividend payout ratios for the financial years of 2002 to 2005 (paid out in 2003 to 2006) on a number of variables designed to catch the time-variability and dividend clientele effects imposed by the reform: the dummies for the years from 2003 to 2005, our ownership variable (Taxed of 5 Largest Shareholders), as well as an interaction variable (Taxed of 5 Largest Shareholders times the year dummy for 2003). Furthermore, we also include in the basic dividend model the tax variables described above, and a number of control variables that are used to control for variation in the cross-section. In order to exclude extreme outliers in the dependent variable, the sample is restricted to include firm-years where the dividend payout ratio is less than 8. We expect that firms would 1.) pay out higher dividends prior to the reform, 2.) pay out lower dividends after the reform, and 3.) that this behaviour would be especially markedly present in firms with shareholders suffering from the reform (i.e. we expect a positive coefficient for the dividend interaction variable).

The results of these analyzes are displayed in Table 4, Panel B and C. The results show the firms in general significantly reduce dividend payout ratios after the tax reform. This is indicated by the dummy variable for year 2004 that displays a negative and highly

significant coefficient in both specifications. Firms also seem to continue to decrease payouts later, as indicated by the negative sign for the dummy variable for year 2005. Its coefficient is however lower than for 2004, and much less significant.⁵ These results indicate that firms in general adjusted their payout to reflect the higher tax rate introduced by the 2004 reform. This result is further emphasized by the fact that the investigated time period is a time of financial recovery for Finnish listed firms indicated by e.g. the fact that the average ROA increased from 0.1% for year 2002 to 7.6% for 2005.

The results for our ownership variables are in line with expectations. The taxationally affected owners i.e. above all private owners are typically observed to prefer dividends. The coefficient for our Taxed of 5 Largest Shareholders variable is positive although insignificant (Panel B). The interaction variable in turn is also positive as expected, and both tax variables become significant (at the 10% level) when all control variables are included (Panel C). This result indicates that firms held by a larger fraction of affected owners paid out more of the free equity in dividends prior to the tax reform.

The control variables all have expected signs; negative for the Past 6 m Return and Market-to-Book, in line with the signalling motive for undervalued firms; positive for Size, and Free Cash Flow (in line with the agency costs motive concerning the latter); and negative for Leverage, indicating lower dividends for financially constrained firms. However, only size and Free Cash Flow are significant at the 10% level.

In summary, the results displayed in Table 4 indicate that Finnish listed firms clearly adjusted their dividend payout ratios around the 2004 tax reform, and that the tax clientele had an effect on this adjustment.

⁵ First, when using the Lintner specification, part of the adjustment is already captured by the lagged payout ratio variable. Secondly, the fiscal year of 2004 was a year of transition, when the dividend tax was not yet set at its later full value. Thus, some gradual adjustment can therefore also be expected.

5.2. Results for share repurchases

To further test the changes in cash distribution around the 2004 tax reform, we analyse share repurchases for the two-year period before and after the tax reform. This is executed by regressing the share repurchases on dummy variables for the different years, variables measuring the effect of tax clienteles and finally on a number of control variables designed to capture motives for share repurchases as well as to control for cross-sectional variation in distribution policy. The results of this analysis are displayed in Table 5 for the full sample.⁶

The results in Panel B and C are displayed separately in order to control for the relatively high correlation (-0.34) between the tax clientele variable and foreign ownership variable (foreign ownership is excluded from the analysis in Panel B).

As shown by the results in Table 5, we find that in general firms do more share repurchases during the latter part of the investigated period, as compared to the base year of 2002 (positive coefficients for all year dummies). The coefficient is however much larger for the year after the tax reform as compared to the slightly positive one for 2003, especially in the full model. This coefficient is however only significant for the year after the tax reform (2004), and we interpret that this as a signal of a switch in payout policy, from dividends to share repurchases, after the tax reform. However, as shown in Table 5, we fail to find any evidence of a tax clientele effect regarding the share repurchases around the 2004 tax reform (insignificant ownership and interaction variables).

Again, our control variables mainly obtain the expected signs, with the exception of the the insignificant Market-to-Book variable. Again, Size is significant in one specification,

⁶ Results for a restricted sample equalling that for the dividend regression are essentially the same.

and also the Foreign Ownership variable, once included, in line with earlier findings for share repurchases on the Finnish market.

5.3. Ownership and payouts

Next, we study the endogeneity of ownership by the taxationally affected owners, and to what degree that is dependent of the firm's dividend policy. We estimate the ownership equation both with and without share repurchases, since we are cautious of the reasonably high correlations between share repurchases and foreign ownership (a positive correlation of 0.23) on one hand, and the negative correlation between Taxed of 5 Largest Shareholders and Foreign Ownership (a negative correlation of -0.34), making share repurchases as one kind of proxy for internationalized firms with ownership by others than the taxationally affected owners.⁷ The results for the ownership model are reported in Table 6.

The results in Table 6 show that *Size*, *Leverage*, and *Market-to-Book* significantly explain ownership by the taxationally affected owners, with the expected signs (a negative one for the first two, and a positive for *Market-to-Book*), while *ROA* is insignificant. Of the payout variables, only share repurchases is significant in specification 1 (Panel A), but when two quite insignificant variables are dropped, *Pay-Out Ratio* is significant at the 1% level with a positive sign. When share repurchases is dropped (due to its strong negative relationship to Foreign Owners), the significance of *Pay-Out Ratio* is further increased. None of the interaction terms are significant, but the interaction dummy for *Pay-Out Ratio* has an expected sign (we expected a lower interest in dividends after the tax reform).

⁷ Hence part of the explanatory power of share repurchases may come just out of the fact that they are more common in firms with large foreign ownership (driven by the preferences of such owners), and in such firms, private ownership is already at a low level (was often so even before open market share repurchases became possible in Finland).

5.4. Testing for interactions: results from 3SLS

To further test the causality of changes in distribution policy, i.e. to which extent not only firms but also owners adjust, we use simultaneous estimation (3SLS) to regress a equation system where the explanatory variables are: 1) the dividend Pay-Out Ratio (Table 7, Panel A), 2) Share Repurchases to Total Payable (Table 7, Panel B), and 3) Taxed of 5 Largest Shareholders (Table 7, Panel C). In the model specifications, we included the most important control variables for each model: Past 6 m Return, Size, and Free Cash Flow for dividends, Size, Leverage, and Foreign Ownership for share repurchases, and Size, Market-to-Book, and Leverage for Ownership. In the second specification in Table 7 Panel A, we have left out Size (which is the most important determinant for Ownership, but also included in the dividend and share repurchase models as an explanatory variable), in order to improve identification of the system.

The results of the 3SLS estimation are in line with the previous results displayed in Tables 4, 5 and 6. The results especially for the dividend Pay-Out Ratio are surprisingly similar to the stand alone analysis, and give even stronger support for the fact that firms both decrease their dividend payout in general after the tax reform, and that the adjustment is dependent on the tax clientele. In the simultaneous analysis, the multiplicative dummy for the taxed owners for the last year before the reform shows that there is a positive and significant relationship between this variable and the dividend payout, indicating that firms with more owners affected by the reform paid out even more dividend prior to the tax reform.

Panel B shows results for share repurchases, which in general are in line with the findings displayed earlier in Table 5. The switch to share repurchases in 2004 is significant, while the tax interaction variable is as before negative but insignificant. The results are robust also for Leverage being excluded as a control variable for share repurchases (not reported

here), now the t-value of the dummy for 2004 is reduced to 1.92.

Finally, results in Panel C show that the owners affected by the tax reform (mainly private owners) populate firms with above average dividend payout ratio and a high market-to-book ratio. The result is especially strong for the payout ratio (a z-statistic in excess of 4), this variable being the single most significant determinant for ownership clienteles, and this result is in line with international evidence on individuals preferring dividends (e.g. Dong et al 2003, Graham and Kumar 2006). Furthermore, the results show that these owners are less represented in firms with above average Size (log of sales) and above average Market-to-Book.

Based on the simultaneous analysis it seems that firms adjust dividends around the tax reform, taking into account the tax clienteles of their shareholders. We also find evidence suggesting that payout policy is an important determinant for ownership. The interaction between these will further be studied in robustness tests in the next section.

5.4. Robustness tests

We perform several types of robustness tests. First, we rerun the dividend and share repurchase models using a random effects model. The results are largely in line with those reported in tables 4 to 5, and e.g. our Taxed of 5 Largest * 2003 interaction variable is significant in the dividend models, with t-values clearly in excess of 2, indicating significantly higher dividends prior to the reform in companies with more tax-affected shareholders. The year dummies for the years after the reform are also, as before, negative in the dividend model, and positive in the share repurchase model, and significant in all but two cases (which occur for the 2005 dummy in the share repurchases model⁸), both in the basic specification as well as in the final specification with all the

⁸ The year dummy for 2005 was also insignificant in the earlier share repurchase model (Table 5).

control variables.⁹ Results for our key test variables, for the full model specification with all the control variables, are reported in column 1 in Table 8.

Next, we estimate firm fixed-effect models for both dividends (restricting for extreme values for the Pay-Out Ratio variable as before) as well as share repurchases. Results for our key test variables, for the full model specification with all the control variables, are reported in column 2 in Table 8. Firm fixed-effects estimations give stronger results for our tax interaction variables.¹⁰ The year dummies behave as in the random effects model described above, significant in all but 2 cases for the 2005 dummy in the share repurchase model.

Finally, we estimate the firm fixed-effects model using a balanced panel of 82 and 111 firms (328 and 444 firm-years) for the dividend and share repurchase models (the smaller sample size for the dividend model again being due to data availability concerning the lagged dividend, and elimination of extreme observations in the dependent variable). These results are reported in column 3 in Table 8, and are in line with the previous, albeit with lower significance for the year dummies in the full dividend model, now when the sample size is reduced to 328 firm-year observations.

For the ownership equation (results reported in Panel C of Table 8), the results are stronger in all specification tests as the initial results in Table 6. Now the interaction variable for dividends is significant in all cases, with a negative coefficient sign larger in absolute terms than the positive one for Pay-Out Ratio, indicating that the preference for dividends hardly would exist after the tax reform. These results for the coefficients also

⁹ The z-value for the year dummy for 2005 in the share repurchase model now varies between 1.66 and 1.85.

¹⁰ We run the fixed effects models both with and without the Taxed of 5 Largest Shareholders variable, which largely seems to pick up the same (rather constant over time) effect on dividend policy as the firm dummies in a firm fixed-effects model. The results for the interaction dummy are robust to these changes in model specification.

hold when these model specifications are estimated without the share repurchase variable (with may proxy for foreign ownership).¹¹

The results for the ownership equation suggest that payout policy is an important determinant for our taxationally affected ownership category, and that the tax reform has significantly changed the preferences of this category. The evidence from the payout regressions indicate that the firms are aware of this, and are adjusting their payout policies. But are such adjustments sufficient, or do the owners also change their portfolio holdings? In order to test for this, we looked at changes in the ownership fraction of this category, and performed several additional tests. The results indicate that the owners do not significantly change their holdings. When the ownership change (change in our Taxed of 5 Largest Shareholders variable) during the last fiscal year before the reform was regressed on the change in the total payout ratio between that year and the year before that, the coefficient is positive but insignificant (a t-value of 1.35). When this sample of 107 firm-years for the fiscal year of 2003¹² is further divided into large and small payout ratio increases, the relationship between ownership changes and payout ratio increases is positive and significant for the 42 payout ratio increases in excess of 15% (a t-value of 1.78). In the first year after the reform, the relationship between ownership changes and payout is negative but insignificant. The same holds if the ownership change is measured e.g. by the change in the taxationally affected large owners plus the total domestic free float. In summary, we do not find strong evidence on owners changing their holdings.

¹¹ Results not reported here.

¹² Again excluding extreme observations for the Pay-Out Ratio.

5.5. *Extraordinary dividends*

We finally also look at the probability to pay extraordinary dividends. In Finland, firms typically pay dividends once a year. However, a firm can at an extraordinary general meeting, obtain the permission to pay out a second, extraordinary dividend. Typically, extraordinary dividends are rare. During our sample period, excluding the year 2003, extraordinary dividends were paid out by 19 firms out of 524 (a probability of 3.6%). The overall probability (i.e. including all sample years) is 9.7%, but heavily influenced by events prior to the reform: in 2002 and 2003, 12 and 32 firms (out of 141 and 134) paid an extraordinary dividend, as compared to 2 and 5 (out of 130 and 119) after the reform. The percentage of firms paying dividends in 2003 was thus 23.9%. Assuming that extraordinary dividends were random events following a Binomial distribution with the overall probability of 9.7% as the “success rate”, the probability of getting as many as 32 events out of 134 in 2003 is highly significant at the 1% level (with a prob-value of 0.0000).

Extraordinary dividends were also more frequently paid out by firms with owners affected by the tax reform. The average value for the variable Taxed of 5 Largest Shareholders is 67% in the group of firms which paid extraordinary dividends, as compared to 53% for firms not paying extraordinary dividends. The difference between the averages is statistically significant (with a t-value of 2.96, assuming different standard deviations in the two groups). These results from the analysis of extraordinary dividends strengthen our conclusions concerning firms adjusting to the tax reform, by paying excess dividends just prior to the reform, and more so if the firms largest owners are affected by the reform.

6. Summary and Conclusion

Tax regime changes offer excellent opportunities to study how firms as well as investors react. We provide evidence on changes in dividend and well as share repurchase policies, as well as changes in large portfolio holdings, around a major dividend tax reform in Finland in 2004. Controlling for ownership by large owners affected by the tax reform (holding on average 54.6% of the shares owned by the 5 largest owners, and 25% of total equity, with a large cross-sectional variation from 0% to 100%), we find that firms increased dividends the last year when dividends still were untaxed at the investor level (in advance of the known tax reform), significantly more so in firms with more taxationally affected large owners. After the reform, there is a highly significant decline in dividends across all firms. The dividend preferences of the owners affected by the tax reform are weaker after the reform, as indicated by both a convergence in payout ratios across firms, as well as by a significant negative dividend interaction term in our ownership equation (in the specification tests), of a magnitude cancelling the coefficient for dividend preference. We also find a significant increase in share repurchases after the reform, and some convergence in repurchasing activity, although here the interaction term still indicates a difference between the two groups of owners.

We also provide evidence on the determinants of ownership, and ownership changes. Payout policy variables also appear as significant determinants to ownership shares of the taxationally affected large owners. However, while firms react to the tax reform, we do not find significant evidence of investors doing so. Only in firms with extreme dividends, did the change in taxationally affected owners show a weakly significant, positive correlation with the dividend change.

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Table 1. Definition of variables

Descriptions of the variables used in the analyses. The dividend data is obtained from the Helsinki Stock Exchange, consisting of complete information on all dividends paid during the years 2003-2006 for all companies listed on the exchange. The dividends paid during 2003-2006 are based on corporate profits for years 2002-2005. Data on share repurchases is gathered from press releases submitted through the exchange. In Finland companies are obliged to submit data on completed share repurchases on an ex-post basis. Ownership data is collected from Pörssitieto manuals (holdings and investor type of top five shareholders) and from the Finnish Central Securities Depository (level of foreign ownership). Financial statement data and stock return and price data are obtained from the Datastream International dataservice.

Variable	Description
Pay-Out Ratio	Total dividend per share / Earnings per share. If dividends are more than 10 times earnings or earnings are negative the variable gets the value 10.
Pay-Out Ratio * 2004-05	Interaction variable, generated as the Pay-Out Ratio times a dummy for the years 2004 to 2005.
Share Repurchases to Total Payable	Share repurchase in euro / Free Equity.
Share Repurchases to Total Payable * 2004-05	Interaction variable, generated as the Share Repurchases to Total Payable times a dummy for the years 2004 to 2005.
Taxed of 5 Largest Shareholders	% of shares held by 5 largest shareholders that became taxed in the tax reform divided by total % of shares held by 5 largest shareholders.
Taxed of 5 Largest * 2003 Taxed of 5 Largest * 2004-05	Interaction variables, generated as the Taxed of 5 Largest Shareholders times the year dummy for either 2003, or 2004 to 2005.
Past 6 m Return	Change in market value of the company share for the last 6 months of the year.
Size	The natural logarithm of sales.
Market-to-Book	Market value of equity / book value of equity.
Free Cash Flow	(EBIT + depreciation and amortization expenses) / Sales.
ROA	Net profit / total assets.
Leverage	Long-term debt / total assets.
Foreign Ownership	Foreign ownership measured as the fraction of shares held by non-domestic shareholders.
Y2003 to Y2005	The year dummies Y2003 to Y2005 equal 1 for years 2003 to 2005, and zero otherwise.

Table 2. Descriptive statistics

The sample focuses on firm payouts during the time period from 2003 to 2006, and consists of firms traded on the Helsinki Stock Exchange (HEX). Panel A presents summary statistics for the full sample, whereas Panel B includes the sample with the below median % affected shareholders by the 2004 tax reform (in effect in 2005), and Panel C the above median % affected shareholders. The full sample includes 524 firm-year observations. See Table 1 for variable definitions.

Panel A. Full sample	Mean	Std. Dev.	Min	Max
Dividend Yield	0.0454	0.0468	0.0000	0.3475
Pay-Out Ratio	1.4166	2.5261	0.0000	10.0000
Share Repurchases to Total Payable	0.0080	0.0474	0.0000	0.7804
Dividends to Total Payable	0.1752	0.3760	0.0000	6.4304
Dividend Yield (ordinary dividend)	0.0398	0.0364	0.0000	0.2266
Dividends to Total Payable (ordinary dividend)	0.1577	0.3548	0.0000	6.4304
Pay-Out Ratio (ordinary dividend)	1.3286	2.4621	0.0000	10.0000
Lagged Pay-Out Ratio	1.2941	2.3195	0.0000	10.0000
Taxed of 5 Largest Shareholders	0.5464	0.3672	0.0000	1.0000
Past 6 m Return	0.1074	0.3490	-0.7970	3.8500
Size	3.8824	2.0652	-3.4420	10.5763
Market-to-Book	2.0891	4.2429	-29.7741	83.6589
EBIT to Sales	0.0618	0.5509	-6.1888	3.5226
ROA	0.0399	0.1809	-2.1378	1.4360
ROE	0.1396	2.1080	-9.5653	46.8750
Free Cash Flow	0.1729	0.4950	-5.6747	2.7294
Leverage	0.1686	0.1972	0.0000	2.3825
Foreign Ownership	0.1774	0.2130	0.0000	0.9317
Dummy for Negative EPS	0.2252	0.4181	0.0000	1.0000

Panel B. Statistics for below median % taxationally affected large owners	Mean	Std. Dev.	Min	Max
Dividend Yield	0.0420	0.0398	0.0000	0.2733
Pay-Out Ratio	1.5068	2.7445	0.0000	10.0000
Share Repurchases to Total Payable	0.0120	0.0626	0.0000	0.7804
Dividends to Total Payable	0.1670	0.4406	0.0000	6.4304
Dividend Yield (ordinary dividend)	0.0385	0.0335	0.0000	0.2041
Dividends to Total Payable (ordinary dividend)	0.1562	0.4311	0.0000	6.4304
Pay-Out Ratio (ordinary dividend)	1.4310	2.6646	0.0000	10.0000
Lagged Pay-Out Ratio	1.3654	2.5308	0.0000	10.0000
Taxed of 5 Largest Shareholders	0.2131	0.1556	0.0000	0.5347
Past 6 m Return	0.1022	0.2972	-0.6667	1.5373
Size	4.2003	2.1743	-2.7646	10.5763
Market-to-Book	1.6427	2.6714	-29.7741	6.6324
EBIT to Sales	0.0424	0.5897	-6.1888	2.1318
ROA	0.0444	0.1675	-0.9167	1.4360
ROE	0.2629	2.9079	-3.7478	46.8750
Free Cash Flow	0.1819	0.5320	-5.6747	2.4519
Debt to Assets	0.1866	0.2339	0.0000	2.3825
Foreign Ownership	0.2365	0.2380	0.0000	0.9317
Dummy for Negative EPS	0.2023	0.4025	0.0000	1.0000

Table 2 cont.

Panel C. Statistics for above median % taxationally affected large owners	Mean	Std. Dev.	Min	Max
Dividend Yield	0.0488	0.0526	0.0000	0.3475
Pay-Out Ratio	1.3265	2.2887	0.0000	10.0000
Share Repurchases to Total Payable	0.0039	0.0234	0.0000	0.2803
Dividends to Total Payable	0.1835	0.2985	0.0000	1.7902
Dividend Yield (ordinary dividend)	0.0411	0.0391	0.0000	0.2266
Dividends to Total Payable (ordinary dividend)	0.1591	0.2576	0.0000	1.7692
Pay-Out Ratio (ordinary dividend)	1.2261	2.2418	0.0000	10.0000
Lagged Pay-Out Ratio	1.2247	2.0964	0.0000	10.0000
Taxed of 5 Largest Shareholders	0.8797	0.1515	0.5347	1.0000
Past 6 m Return	0.1126	0.3945	-0.7970	3.8500
Size	3.5644	1.9014	-3.4420	7.9845
Market-to-Book	2.5355	5.3419	-9.9000	83.6589
EBIT to Sales	0.0811	0.5095	-3.6046	3.5226
ROA	0.0355	0.1936	-2.1378	1.1587
ROE	0.0163	0.6464	-9.5653	0.6807
Free Cash Flow	0.1639	0.4559	-3.1792	2.7294
Leverage	0.1505	0.1501	0.0000	1.0014
Foreign Ownership	0.1183	0.1651	0.0000	0.7308
Dummy for Negative EPS	0.2481	0.4327	0.0000	1.0000

Table 3. Payouts in two ownership categories

Table 3 displays annual descriptive statistics (means, medians, standard deviation, and number of observations) for dividend payouts both with and without large payouts (payouts greater than 8), payouts being measured as total dividends per share divided by earnings per share (Panel A), dividend yields, measured as dividend per share over the share price at the year-end (Panel B) and share repurchases over total payable, measured as the annual share repurchases in euro over free equity (also in Panel B). Each measure is reported for two types of firms: companies where the owners affected by the tax reform own less than 30% of the total amount of shares owned by the 5 largest shareholders, and firms where that ownership category owns more than 30%. The sample focuses on firm payouts during the time period from 2003 to 2006, and consists of firms traded on the Helsinki Stock Exchange (HEX). The full sample includes 524 firm-years, and the restricted sample 487 firm-years.

Panel A.		Dividend Pay-Out, Full sample		Dividend Pay-Out, Pay-Outs < 8	
		Taxed of 5 Largest < 30%	Taxed of 5 Largest > 30%	Taxed of 5 Largest < 30%	Taxed of 5 Largest > 30%
2002	Mean	1.5175	1.3988	0.6475	0.9364
	Median	0.5000	0.7500	0.4531	0.7333
	St.dev.	2.8766	2.2764	0.8915	1.1076
	OBS	43	98	39	93
2003	Mean	2.0897	2.2921	0.6326	1.2167
	Median	0.5128	1.2903	0.4967	1.0722
	St.dev.	3.4929	3.1120	0.6996	1.2571
	OBS	45	89	38	78
2004	Mean	0.6817	0.8518	0.4699	0.6314
	Median	0.4112	0.4962	0.4070	0.4848
	St.dev.	1.5466	1.5617	0.6184	0.6387
	OBS	45	85	44	83
2005	Mean	1.2651	1.1052	0.6557	0.5896
	Median	0.4580	0.5128	0.4514	0.4898
	St.dev.	2.5033	2.2279	0.9402	0.5760
	OBS	46	73	43	69

Panel B.		Dividend Yield		Share Repurchases to Total Payable	
		Taxed of 5 Largest < 30%	Taxed of 5 Largest > 30%	Taxed of 5 Largest < 30%	Taxed of 5 Largest > 30%
2002	Mean	0.0370	0.0557	0.0084	0.0015
	Median	0.0398	0.0463	0	0
	St.dev.	0.0365	0.0596	0.0308	0.0130
	OBS	43	98	43	98
2003	Mean	0.0403	0.0637	0.0101	0.0021
	Median	0.0342	0.0548	0	0
	St.dev.	0.0409	0.0589	0.0418	0.0096
	OBS	45	89	45	89
2004	Mean	0.0279	0.0410	0.0206	0.0112
	Median	0.0300	0.0380	0	0
	St.dev.	0.0235	0.0357	0.1166	0.0509
	OBS	45	85	45	85
2005	Mean	0.0354	0.0397	0.0120	0.0081
	Median	0.0332	0.0336	0	0
	St.dev.	0.0322	0.0408	0.0466	0.0381
	OBS	46	73	46	73

Table 4. Dividend payout regressions

Table 4 displays least squares regressions where the dependent variable is the dividend Pay-Out Ratio. The sample focuses on firm payouts during the time period from 2003 to 2006, and consists of firms traded on the Helsinki Stock Exchange (HEX). Panel A shows estimation results from a basic Lintner dividend payout model, Panel B also includes dummy variables for years 2003-2005 and variables measuring the fraction of shareholders affected by the 2004 tax reform, and finally Panel C furthermore includes control variables. In order to exclude extreme outliers in the dependent variable, the sample is restricted to include firm-years where the dividend payout ratio is less than 8. The final sample of unbalanced panel data includes 468 firm-year observations. T-values significant at least at the 5% level (one-sided tests) are denoted with boldface. Prob-values are for two-sided tests.

	Panel A.			Panel B.			Panel C.		
	Coef.	t-stat	Prob.	Coef.	t-stat	Prob.	Coef.	t-stat	Prob.
<i>Basic model</i>									
Lagged Pay-Out Ratio	0.1101	5.42	0.000	0.1324	6.53	0.000	0.1246	6.10	0.000
ROA	0.5991	2.68	0.008	0.7591	3.50	0.001	0.5898	2.48	0.014
<i>Tax Variables</i>									
Y2003				-0.1746	-0.94	0.346	-0.1130	-0.58	0.560
Y2004				-0.5365	-4.69	0.000	-0.4977	-4.28	0.000
Y2005				-0.2950	-2.54	0.011	-0.2312	-1.94	0.053
Taxed of 5 Largest Shareholders				0.1943	1.52	0.128	0.2230	1.65	0.099
Taxed of 5 Largest * 2003				0.4080	1.63	0.103	0.4696	1.88	0.061
<i>Control Variables</i>									
Past 6 m Return							-0.1796	-1.32	0.187
Size							0.0424	1.87	0.063
Market-to-Book							-0.0032	-0.35	0.729
Free Cash Flow							0.1612	1.93	0.055
Leverage							-0.1028	-0.48	0.634
Foreign Ownership							0.0461	0.21	0.835
Constant	0.6276	13.03	0.000	0.6810	6.15	0.000	0.4780	3.08	0.002
Adjusted R-squared	0.0753			0.1519			0.161		
Number of Observations	468			468			468		
F-statistic	20.00			12.95			7.89		

Table 5. Share repurchase regressions

Table 5 displays least squares regressions where the dependent variable is Share Repurchases to Total Payable, measured as the share repurchases in euro divided by the total capital available for distribution (free equity). The sample focuses on firm payouts during the time period from 2003 to 2006 (the accounting years of 2002 to 2005), and consists of firms traded on the Helsinki Stock Exchange (HEX). Panel A shows estimation results from a model including dummy variables for accounting years of 2003 to 2005, and variables measuring the fraction of shareholders affected by the 2004 tax reform. Panel B includes control variables but excludes Foreign Ownership due to large correlation (-0.34) with the variable measuring the fraction of taxationally affected shareholders. The final sample of unbalanced panel data includes 524 firm-year observations. T-values significant at least at the 5% level (one-sided tests) are denoted with boldface. Prob-values are for two-sided tests.

	Panel A.			Panel B.			Panel C.		
	Coef.	t-stat	Prob.	Coef.	t-stat	Prob.	Coef.	t-stat	Prob.
<i><u>Tax Variables</u></i>									
Y2003	0.0101	0.18	0.859	0.0070	1.04	0.298	0.0057	0.86	0.392
Y2004	0.0157	1.85	0.065	0.0176	2.04	0.042	0.0156	1.83	0.068
Y2005	0.0100	1.18	0.237	0.0125	1.45	0.149	0.0099	1.16	0.246
Taxed of 5 Largest Shareh.	-0.0092	-1.19	0.236	-0.0069	-0.89	0.375	-0.0017	-0.22	0.827
Taxed of 5 * 2004-2005	-0.0096	-0.85	0.396	-0.0105	-0.93	0.351	-0.0090	-0.81	0.421
<i><u>Control Variables</u></i>									
Past 6 m Return				-0.0105	-1.48	0.141	-0.0091	-1.27	0.203
Size				0.0031	3.02	0.003	0.0016	1.43	0.154
Market-to-Book				0.0003	0.67	0.504	0.0003	0.68	0.498
Free Cash Flow				0.0020	0.46	0.643	0.0019	0.45	0.654
Leverage				-0.0148	-1.31	0.191	-0.0146	-1.30	0.194
ROA				0.0029	0.23	0.820	0.0011	0.09	0.932
Foreign Ownership							0.0382	3.42	0.001
Constant	0.0089	1.49	0.138	-0.0044	-0.53	0.593	-0.0071	-0.88	0.381
Adjusted R-squared	0.0116			0.0316			0.0515		
Number of Observations	524			524			524		
F-statistic	2.23			2.55			3.36		

Table 6. Ownership regressions

Table 6 displays least squares regressions where the dependent variable is Taxed of 5 Largest Owners, measured as the proportion of shares owned by the taxationally affected large owners in relationship to the shareholdings of all the 5 largest owners. The model focuses on the explanatory power of firm payouts during the time period from 2003 to 2006 (the accounting years of 2002 to 2005), and the sample consists of firms traded on the Helsinki Stock Exchange (HEX). Panel A and B shows estimation results from a model including both dividend and share repurchases variables, as well as dividend and share repurchases interaction variables, while Panel C shows the model with dividend variables as the only payout variables. The sample of unbalanced panel data including 487 firm-year observations. Observations where Pay-Out Ratio takes extreme values are excluded. T-values significant at least at the 5% level (one-sided tests) are denoted with boldface. Prob-values are for two-sided tests.

	Panel A			Panel B			Panel C		
	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.
<i><u>Payout variables</u></i>									
Pay-Out Ratio	0.0857	1.50	0.134	0.0880	2.97	0.003	0.0944	3.19	0.002
Share Repurchases to Total Payable	-0.6476	-1.93	0.054	-0.6486	-1.94	0.053			
Pay-Out Ratio * 2004-05	-0.0415	-0.67	0.501	-0.0449	-1.47	0.143	-0.500	-1.63	0.103
Share Repurchases to Total Payable * 2004-05	-0.0030	-0.04	0.965						
<i><u>Control Variables</u></i>									
Size	-0.0303	-3.64	0.000	-0.0308	-3.81	0.000	-0.0335	-4.18	0.000
Market-to-Book	0.0094	2.52	0.012	0.0095	2.54	0.011	0.0094	2.51	0.013
Leverage	-0.2361	-2.72	0.007	-0.2269	-2.74	0.006	-0.2179	-2.63	0.009
ROA	-0.0325	-0.33	0.738						
Constant	0.6697	14.25	0.000	0.6686	15.44	0.000	0.6714	15.47	0.000
Adjusted R-squared	0.0706			0.0742			0.0689		
Number of Observations	487			487			487		
F-statistic	5.61			7.49			8.19		

Table 7. Simultaneous equations

Table 7 displays 3SLS estimation results for 3 simultaneous equations: Panel A where the dependent variable is Pay-Out Ratio, Panel B where the dependent variable is Share Repurchases to Total Payable, measured as the share repurchases in euro divided by the total capital available for distribution (free equity), and Panel C where the dependent variable is % Taxationally affected of Top 5 Owners. The sample focuses on firm payouts during the time period from 2003 to 2006, and consists of firms traded on the Helsinki Stock Exchange (HEX). The final sample of unbalanced panel data includes 468 firm-year observations. T-values significant at least at the 5% level (one-sided tests) are denoted with boldface. Prob-values are for two-sided tests.

Panel A. Pay-Out Ratio	Coeff.	z-stat	Prob.	Coeff.	z-stat	Prob.
Lagged Pay-Out Ratio	0.1023	5.48	0.000	0.1083	5.76	0.000
ROA	0.4539	2.25	0.025	0.5977	2.97	0.003
Y2003	-0.1422	-0.81	0.417	-0.1886	-1.06	0.289
Y2004	-0.4101	-3.95	0.000	-0.4392	-4.19	0.000
Y2005	-0.1936	-1.86	0.064	-0.2137	-2.02	0.044
Taxed of 5 Largest Shareh.	1.0543	7.72	0.000	0.9575	6.96	0.000
Taxed of 5 Largest * 2003	0.4543	1.95	0.051	0.4915	2.08	0.038
Past 6 m Return	-0.1638	-1.39	0.166	-0.1576	-1.31	0.189
Size	0.0718	3.49	0.000			
Free Cash Flow	0.1192	1.64	0.100	0.1340	1.82	0.069
Constant	-0.0959	-0.69	0.492	0.2263	2.03	0.042
R-squared	0.0752			0.0783		
Chi-squared	178.99			158.55		
Panel B. Share Rep. to Total Payable	Coeff.	z-stat	Prob.	Coeff.	z-stat	Prob.
Y2003	0.0023	0.36	0.718	0.0024	0.38	0.706
Y2004	0.0165	2.08	0.038	0.0163	2.05	0.040
Y2005	0.0109	1.35	0.176	0.0107	1.33	0.183
Taxed of 5 Largest * 04-05	-0.0115	-1.38	0.168	-0.0121	-1.34	0.181
Size	0.0018	1.45	0.147	0.0022	1.77	0.077
Leverage	-0.0146	-1.31	0.189	-0.0144	-1.29	0.196
Foreign Ownership	0.0420	3.47	0.001	0.0419	3.46	0.001
Constant	-0.0074	-1.10	0.271	-0.0090	-1.33	0.183
R-squared	0.0710			0.0708		
Chi-squared (prob.=0.0047)	37.07			39.64		
Panel C. Taxed of 5 Largest Shareholders	Coef.	z-stat	Prob.	Coeff.	z-stat	Prob.
Pay-Out Ratio	0.2241	4.52	0.000	0.2178	4.40	0.000
Size	-0.0391	-4.17	0.000	-0.0258	-3.03	0.002
Market-to-Book	0.0080	2.19	0.029	0.0083	2.25	0.024
Leverage	-0.1205	-1.42	0.156	-0.1175	-1.37	0.171
Constant	0.5394	9.70	0.000	0.4925	9.12	0.000
R-squared	-0.1234			-0.1149		
Chi-squared (prob.=0.0000)	40.12			34.10		

Table 8. Specification tests

Table 8 displays results for sensitivity tests for our three main equations, i.e. using Pay-Out Ratio as the dependent variable in Panel A, Share Repurchases to Total Payout in Panel B, and the Taxed of 5 Largest Shareholders in Panel C. We report results from three alternative estimations where a full set of control variables equal to those in tables 4, 5 and 6 has been used (for the ownership equation, without the insignificant ROA): a random effects model (first column), firm fixed-effect estimations (second column), and firm fixed-effect estimations using a balanced sample (third column). For the dividend model, we exclude as before extreme values (greater than 8) for the Pay-Out Ratio variable, giving sample sizes of 468 as maximum, and 328 firm-years (82 firms) in the balanced sample. For share repurchases, we use our full data set of 524 firm-year observations, unless restricting to a balanced sample of 111 firms (444 firm-years). For the ownership equation, we exclude observations with extreme values (greater than 8) for the Pay-Out Ratio, leaving 487 firm-years (328 in the balanced sample). For both payout models, we report the coefficient estimates and t-values (within parenthesis) for the year dummies for 2004 and 2005 (i.e. after the reform), and our tax variables: our Taxed of 5 Largest*2003 variable for the dividend model (to test for higher dividends prior to the reform), and for the share repurchase model, the Taxed of 5 Largest*2004-2005 (to test for still persisting differences between the two types of firms). For the ownership equation, we report the coefficients for the payout variables and only the dividend interaction variable (i.e. the model has been estimated without the other interaction variable as in Panel B of Table 6).

Panel A. Results from sensitivity tests of the dividend model	Random effects	Firm fixed effects	Firm fixed effects, balanced sample
Y2004	-0.4037 (-4.09)	-0.3288 (-3.26)	-0.1746 (-1.50)
Y2005	-0.2386 (-2.35)	-0.2863 (-2.68)	-0.2337 (-2.01)
Taxed of 5 Largest * 2003	0.5312 (2.52)	0.5225 (2.77)	0.7781 (3.23)
R-squared	0.1704	0.0167	0.0067
F-statistic / Wald Chi Square	73.57	4.00	4.22
Number of observations	468	468	328
Panel B. Results from sensitivity tests of the share repurchase model	Random effects	Firm fixed effects	Firm fixed effects, balanced sample
Y2004	0.0174 (2.24)	0.0201 (2.48)	0.0236 (2.53)
Y2005	0.0115 (1.47)	0.0145 (1.73)	0.0177 (1.85)
Taxed of 5 * 2004-2005	-0.0126 (-1.24)	-0.0188 (-1.79)	-0.0220 (-1.86)
R-squared	0.0720	0.0126	0.0101
F-statistic / Wald Chi Square	30.97	1.38	1.34
Number of observations	524	524	444
Panel C. Results from sensitivity tests of the ownership model	Random effects	Firm fixed effects	Firm fixed effects, balanced sample
Pay-Out Ratio	0.0423 (2.81)	0.0367 (2.41)	0.0538 (2.91)
Share repurchases to Total Payable	-0.6106 (-3.15)	-0.5944 (-3.02)	-0.8424 (-2.07)
Pay-Out Ratio * 2004-05	-0.0543 (-3.82)	-0.0574 (-4.05)	-0.0721 (-4.16)
R-squared	0.0409	0.0088	0.0081
F-statistic / Wald Chi Square	31.27	4.89	4.12
Number of observations	487	487	328

Figure 1.

Figure 1 displays median Pay-Out Ratios (in Panel A), measured as total dividend per share over earnings per share, average Dividend Yields (in Panel B), measured as total dividend per share over the stock price at the year-end, and average Share Repurchases to Total Payout (in Panel C), measured as the share repurchases in euro over free equity, for firms with taxationally affected owners owning either less than 30%, or over 30%, of the shares held by the five largest shareholders at the year-end. The sample focuses on firm payouts during the time period from 2003 to 2006 (the accounting years of 2002 to 2005, as used in the figures), and consists of firms traded on the Helsinki Stock Exchange (HEX). The figures are based on data for the full sample of 524 firm-years.

