

# Influence of a Tax Reform on Dividend Clienteles

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## **Abstract**

This paper investigates the tax clientele theory for dividends. In a 10-year panel of dividend payouts of firms listed on the Oslo Stock Exchange in Norway over the period between 1989 and 1998 which includes two different tax regimes, I find that, in the tax regime where dividends are taxed at a lower relative rate, dividend payout ratio increases. In addition, the effect is stronger in firms dominated by investors whose tax brackets are influenced by the change in the tax regulation. Both findings are strongly supportive evidence for the existence of dividend tax clientele.

JEL classifications: G3, L2

Keywords: Dividend policy; Tax clientele

## 1. Introduction

A strand of literature on corporate dividend policy investigates the tax clientele hypothesis: whether the dividend payout level and the marginal investor's relative tax rate on dividends were negatively associated with each other. So far empirical findings are mixed: On one hand it has been documented that investors in high tax brackets buy stocks that pay substantial amount of dividends against the prediction of the tax clientele theory (e.g. Allen and Michaely (2002) among others), on the other hand there are traces of the existence of dividend clienteles (e.g. Poterba (2004), Graham and Kumar (2005), Dahlquist, Robertsson and Rydqvist (2006)).

This paper attempts to contribute to the empirical literature on dividend clientele by examining a special dataset from Norway. A few characteristics of the Norwegian stock market make it an extremely good research lab to test the theoretical suggestions. First, the unique dataset of ownership structure of firms listed on the Oslo Stock Exchange offers an unexploited opportunity to verify the existence of dividend clienteles. The dataset includes investor information such as the type of the investor (e.g. financial institutional, corporate, individual, Norwegian state or foreign). The results will provide essential evidence for/against dividend clientele theory. Second, the Tax Reform of 1992 provides a natural experiment on the tax effect of dividend policy. The Norwegian tax system prior to 1992 was best described as a double-taxation system: corporate income was taxed at both the corporate level and the personal level. The tax reform stipulated that all dividends became tax-exempt for the Norwegian domestic. Meanwhile, foreign shareholders are tax exempt for capital gains tax but subject to a withholding tax for dividends. The cross-time variation in the tax environment and the tax asymmetry between domestic and foreign investors provide a very interesting yet very simple background for studying the tax effects.

The major findings of this study are: First, in the tax regime where dividends are taxed at a lower relative rate, dividend payout ratio increases. Second, the effect is stronger in firms dominated by domestic taxable investors whose tax brackets are influenced by the tax reform. Both findings are strongly supportive evidence for the existence of dividend tax clientele.

This study is closely related to a strand of literature on dividend tax clientele. For example, Graham and Kumar (2005) examine a dataset of U.S. 60,000 households' stock holdings and find that low-income retail investors disproportionately purchase stocks before the ex-dividend day; that the ex-day premium for small stocks decreases with income; and that low-income investors purchase stocks that initiate dividends. These findings show strong preference for dividends by the low-income group, which is consistent with the prediction of the dividend clientele hypothesis. In a dataset of 40,000 stock portfolios by Swedish households and corporations, Dahlquist et al. (2006) also report that portfolios are systematically related to tax preferences for dividends over capital gains.

The approach of this study is similar to that of Poterba (2004), who investigates the relationship between variations in dividend payouts and changes in tax codes. The Norwegian study has an advantage over the U.S. case due to the simplicity of its tax system. Tax codes in the U.S. are so complicated that researchers often find it a major task to estimate the ambiguous marginal tax rate, which is what Poterba did in his 2004 study. To the contrary, the Norwegian case, with mostly flat rates and substantial changes in tax codes, provides a much more straightforward setting for this type of tax study.

The rest of the paper is structured as follows. The next section discusses related literature. Section 3 describes the institutional settings for the Norwegian firms. Section 4 presents the data and conducts descriptive analysis. Section 5 details the empirical results. Section 6 concludes the study.

## **2. Literature review**

Allen and Michaely (2002) sort the extent tax-related theoretical literature into two strands: static tax clientele models (e.g. Elton and Gruber 1970) and dynamic trading models (e.g. Kalay 1982, Michaely and Vila 1995).

In the dynamic trading models, investors of different tax brackets trade around the ex-dividend days to transfer the tax liability of the distribution to investors in low tax

brackets. When there are no transactions costs and all risks can be fully hedged, tax can be entirely avoided. The investor's portfolio choice thus becomes independent of the dividend policy. Empirical studies have shown that large abnormal trading volume around ex-dividend days exists in many stock markets around the world, and that the trading activity is positively related to the magnitude of the dividend and negatively related to the magnitude of transaction costs and risk (e.g. Lakonishok and Vermaelen, 1986 and Michaely and Vila, 1996 for the U.S., Michaely and Murgia, 1995 for Italy, Kato and Lowenstein, 1995 for Japan, Green and Rydqvist 1999 for Sweden, Dai and Rydqvist 2006 for Norway). The evidence is consistent with the notion that the abnormal trading activity is related to differential taxes. However, the price drop over the ex-dividend days is on average less than the dividend, which implies that tax is not entirely avoided by dynamic trading (e.g. Frank and Jagannathan 1998). As suggested by Allen and Michaely (2002), this is caused by either transaction costs or unhedged risks or both.

To the contrary, static tax clientele models assume that investors carry out buy-and-hold investment strategy. According to their tax statuses the investors choose the stocks that minimize their tax liabilities. Some testable hypotheses of the static models are: (1) high tax payers for dividends buy stocks with low payout levels, and vice versa; (2) when there are changes in tax provisions, either the firms adjust their dividend policies to fit the tax preference of the clienteles, or there will be a shift in the stock ownership; (3) changes in the corporate dividend policy lead to changes in ownership structure.

Some researchers set out to test the first hypothesis, looking for the predicted negative relationship between the investors' tax bracket and the dividend yield of the stocks they hold, and find mixed results. On one hand researchers report that investors in high tax brackets buy stocks that pay substantial amount of dividends against the prediction of the tax clientele theory (e.g. Allen and Michaely 2002), on the other hand there are traces of the existence of dividend clienteles. For example, in a Swedish dataset of individual and corporation portfolios, Dahlquist, Robertsson and Rydqvist (2006) find that portfolios are systematically related to tax preferences for dividends over capital gains.

To test the second hypothesis mentioned above, Poterba (2004) investigates the influence of tax reforms on the variation in dividend payouts over time. He finds in a U.S. time series data from 1929 to 2002 that dividend payouts are affected by the

weighted average marginal dividend tax rate relative to capital gains tax rate, implying that the corporate payout policy does respond to changes in tax regulations, consistent with the prediction of the static tax clientele theory.

Some studies focus on the third hypothesis which is on the impact of changes in dividend policies on the firms' ownership structure. Mixed empirical results have been reported: On one hand Richardson, Sefcik, and Thompson (1986) and Michaely, Thaler and Womack (1995) conclude that dividend initiations and omissions do not lead to ownership shifts; on the other hand Brav and Heaton (1998) and Biney (2001) document changes in institutional holdings as a response to dividend initiations and omissions.

This paper is closely related to the strand of literature investigating the negative relationship between tax brackets and dividend payouts predicted by the static clientele theory, such as Dahlquist, Robertsson and Rydqvist (2006). It is also similar to Poterba (2004) in the sense that both of the two studies are focusing on the linkage between changes in tax codes and variations in dividend payouts. Tax codes in the U.S. are so complicated that researchers often find it a major task to estimate the ambiguous marginal tax rate, which is what Poterba did in his 2004 study. However, the Norwegian case, with mostly flat rates and substantial changes in tax codes, provides a much simpler setting for the tax study.

### **3. Institutional settings and dividend payouts**

#### *3.1 Taxation*

Prior to 1992, corporate income of a Norwegian corporate was taxed at both the corporate level and the personal level. For individual investors, gains from short-term investments were taxed at a flat rate of 40%. Shares that had been held for more than three years were regarded as long-term investments, and the associated capital gains were exempt from taxation. Dividends were taxed at a 40% rate. For corporate investors, the statutory tax rate of gains and dividends were around 56%. For the time period prior to 1992, capital gains were deemed as more favorable than dividends: First the taxation

on the capital gains were more lenient (i.e. long-term capital gains were tax-exempt); Second the taxation of the capital gains could be postponed into the future by delaying the realization of the gains, while the taxation of the dividends was due once the dividends were paid.

The Tax Reform in 1992 stipulates that corporate income is only taxed at the firm level: If the income stays within the corporate as retained earnings, the firm pays corporate income tax and the shareholders' associated capital gains are exempt from taxation by a yearly step-up of the cost basis equal to the amount of the retained earnings<sup>1</sup>. If instead the income is distributed as dividends, it is tax-exempt to all domestic investors. Tax symmetry is therefore achieved between capital gains and dividends for Norwegian domestic shareholders.

Meanwhile, foreign investors in the Norwegian capital market, who hold around 20% of the entire market, are subject to a withholding tax for their dividend income in Norway at a rate between 15% and 25%. Their capital gains are not taxed by the Norwegian tax authority. According to the tax treaty between the associated countries, some taxes can be deductible in the home country. Tax treaties between countries may change over time, but these changes are not correlated with the variations in the Norwegian domestic corporate and personal taxes.

There is another special type of investor in the Norwegian stock market: the Norwegian state. The state as an investor has always been exempted from taxation for its investment income. Therefore it is not affected by the tax reform in 1992.

### *3.2 Dividends*

For a Norwegian firm, the dividend payout is determined in the following way: After the year turns, the board of the firm will raise a proposal for the dividends to be paid for the previous fiscal year. Soon afterwards, shareholders of the firm hold a meeting where they decide whether to accept the dividend proposal or not. If the proposal is rejected, the shareholders can only agree on a new payout level which can only be lower than the

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<sup>1</sup> This step-up is named as *RISK*, acronym for *Regulering av Inngangsverdien med Skattlagt Kapital*, meaning adjustment of the stock's cost basis with the amount of the retained earnings after tax. Dai and Rydqvist (2004) gives detailed information on the Norwegian imputation tax system and this special tax treatment.

previously suggested amount. In the same shareholder meeting, a new board is to be elected by the investors. Unlike in many other countries, most Norwegian firms pay dividends only once in a year, the majority of which are concentrated in the period between March 1<sup>st</sup> and May 31<sup>st</sup>.

In order to protect the rights of debt holders, the Norwegian corporate law prevents the erosion of the equity base by setting up an explicit upper bound on the total dividends that a firm can pay. Only equity that is in excess of the minimum equity requirements—namely “unrestricted equity”—which is essentially accumulated retained earnings in the company, can be distributed among the shareholders. The computation of the unrestricted equity changed once during our sample period. Before 1992, Norwegian firms could allocate up to 23% of their corporate income before tax to a tax-exempt reserve fund. The tax reform of 1992 on one hand abolished this generous tax allowance to the firms, on the other hand stipulated that all the previously accumulated tax-exempt funds count as part of the unrestricted equity and therefore can be distributed among shareholders.

Stock repurchases were prohibited by law in Norway until year 1999. Since then more and more firms started to buy back their own stocks as a means to distribute corporate income to the investors. Skjeltorp (2004) observes that on the OSE the amount of stock repurchases as a percentage of cash dividends rose from 25% in 1999 to 44% in 2001. However it is also noticed that the soar in 2001 was at least partially related to liquidity supply and price support by the listed firms after the stock market crisis since September 11, 2001. At this stage of this study, my sample period ends right before 1999 so as to exclude the effect of stock repurchases.

## **4. Data**

### *4.1 Sources of data*

The dataset includes all non-financial companies listed on the Oslo Stock Exchange (OSE) during 1989 and 1998. The sample period starts in 1989 when the annual ownership data of the Norwegian firms, collected by Verdipapirsentralen (Norwegian



Central Securities Depository), became available. The ownership dataset includes investor information such as the type of the investor (e.g. state, institutional, corporate, individual, or foreigner), which makes it possible to obtain precise information on the ownership structure breakdown by investor type for each firm listed on the OSE at the end of each calendar year. As mentioned earlier, the sample period ends in 1998 in order to eliminate the effect of stock repurchases on the payout policy of firms.

Accounting data and stock data are provided by the OSE, including information on balance sheets and profit and loss account items for all listed firms, stock trading history such as daily trading volume and closing bid/ask/trade price. For the ten year period 1989-1998 I gather data on dividends, net income, operating profit, income taxes, minority interests of net income, book value of assets, book value of debt, and market value of equity.

#### *4.2 Data summary*

Some descriptive statistics of the data set for the entire sample are summarized in Table 1. There are altogether 10 calendar years, 319 companies, 1447 firm/year observations included in the sample.

Table 1 shows that, during the period between 1989 and 1998, the average (median) market capitalization of a listed company on the OSE is NOK 1921 million<sup>2</sup> (NOK 435 million), while the mean (median) book value of its total asset is NOK 3316 million (NOK 754 million). Return on Asset (ROA) is defined as profit before extraordinary items minus income taxes and minority interests' share of net income divided by book value of total assets. Row 3 of Table 1 shows that the average ROA among the listed Norwegian firms over the period 1989-1998 is 6.9%, while the median ROA is 8.46%. The extensive banking sector crisis in Norway that took place during the end of the 1980s and the early 1990s partially explains for the low profitability during the sample period. The mean ROA is influenced by a few extreme outliers, the maximum being 104.26% and the minimum -91.87%. The fourth row of Table 1 shows that the average listed firm on the OSE pays out 21.85% of its income to shareholders in the form of

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<sup>2</sup> About US\$ 300 million.

dividends<sup>3</sup>, while the median firm does not pay dividends. Some extremely large payouts (in the maximum case, the firm paid out more than 10 times of its net income in dividends) influence the average payout ratio. The payout ratio can be larger than one since firms are allowed to distribute as dividends among investors not only current year's corporate income but also accumulated retained earnings known as "unrestricted equity". The last three rows of Table 1 look at the ownership structure of the firms. In an average firm listed on the OSE, foreign investors and the Norwegian state own 23.5% and 4.7% of the outstanding shares respectively. Domestic taxable investors, including individual, corporate and institutional investors, own 71.8% of the firm.

The cross-time variation in dividend payouts is presented in Table 2. The fourth column reports the percentage of firms that paid dividends for each year. Over the 1989-1998 period, the average propensity for a firm to pay dividends was around 41%. In year 1991, as few as 23% of the listed firms paid dividends. Since then, more firms started to distribute corporate income through dividend payouts, and years 1994 and 1995 saw a peak of dividend paying activities: More than half of the sample firms paid dividends during the two years. As a result, the median payout ratio for those years became positive for the first time. The soar in dividend payouts might be caused by the tax reform of 1992, which removed the tax disadvantage for dividends for Norwegian taxable shareholders. It could also be related to the reallocation of the previous tax-exempt funds to the unrestricted equity stipulated by the tax reform, which raised the firms' dividend paying capacity. The proportion of dividend paying firms started to decrease in 1996, and went all the way down to 34.6% in year 1998. The drop can be an effect of the inclusion of newly listed firms, which tend to be less likely to pay dividends than mature cash-rich firms with less growth potentials.

The fifth and sixth columns of Table 2 show the mean and median payout ratio among the listed firms. While the mean payout ratio is relatively stable around 22%, the median payout ratio was zero for all years except for in 1994 and 1995 when it was as high as 17% and 15.5% respectively.

In order to eliminate from the analysis the influence of outliers, in the following part of this paper, a firm will remain in the data sample only if its ROA is within the [1%, 99%]

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<sup>3</sup> This is fairly close to the average payout ratio of 25% of U.S. listed firms, reported by Grullon and Michaely (2002).

range of entire sample and if its dividend payout ratio is no more than 1. Also excluded from the sample are observations lacking information on the dividend payout ratio from the previous year. The refined data sample thus includes 242 firms and 1001 firm/year observations.

#### *4.3 Descriptive analysis*

As discussed in Section 3.2, the tax reform in 1992, which aimed at achieving tax asymmetry between capital gains and dividends, removed the tax disadvantage of dividends for the Norwegian taxable investors. The static tax clientele model would predict that:

First, the tax reform will raise the Norwegian domestic taxable investors' preference for dividends;

Second, since the Norwegian state as an investor has always been exempted from taxation for its investment income, it should strictly prefer high dividend stocks both before and after the tax reform in 1992. Before 1992, as the only tax-exempt investor on the market, the state should on average receive much more dividends than any other investors. After the tax reform, since both the state and the domestic taxable investors are tax-exempted for investment income, their dividend preference should not be different from each other;

Third, after the reform, as the only type of investor with tax liability for receiving dividends foreigners, foreigners have the lowest value for dividends. The static tax clientele theory predicts foreign investors to receive fewer dividends than the rest of the market.

Table 3 reports weighted average dividend payout ratio for each owner type in each sample year. The second to the fourth columns present payout ratio weighted by ownership of foreign, state, and domestic taxable investors respectively. For each owner type  $x$ , the weight for stock  $i$  in year  $t$  equals market capitalization of stock  $i$  by the end of year  $t$  times the percentage owned by owner type  $x$ , taking into account not only the size of the firm but also the importance of the specific owner type in the firm. For purpose of comparison, the last column of the table reports yearly average dividend payout ratio weighted by market capitalization.

As expected by the tax clientele theory, compared to the market, foreign investors' preference for dividends can be divided into two periods: Before 1993, foreigners' dividend income level was moving around the Norwegian market average. It was above the market average in years 1989, 1991 and 1992, and lower than the latter in year 1990. During the period between 1993 and 1998, foreigners' yearly weighted average dividend payout ratio was strictly lower than the market level for six consecutive years: While the market weighted average payout ratio was about 17.5% of corporate income, foreigners receive 1.7% less, which is about 9.5% less than the market level.

Also consistent with the prediction of the clientele model, the Norwegian state appears to have high preference for dividends throughout the sample period except for in year 1991. The state's portfolio on average generates a dividend inflow of around 22.4% of corporate income, way above the market average of 15.7% of the same period.

The domestic taxable investors, on one hand, behaved fairly close to the foreign investors prior to the tax reform, agreeing with the tax clientele hypothesis. On the other hand, post tax reform, the domestic taxable investors' weighted average dividend level is way below that of the state, with a difference of around 7.5% in payout ratio. This could be related to difference in investment patterns. For example, the state might have a higher tendency than the other domestic investors to invest in large mature cash-rich firms who are more likely to distribute income in large dividends. Such factors will have to be controlled for in the following regression analysis.

Figure 2 illustrates these observations.

## **5. Regression analysis**

### *5.1 Regression model and estimation methodology*

Lintner (1956) documented that firm managers regard it a negative sign of the firm's quality if the dividend is reduced or skipped, and that firms set long-run goals of dividend payouts. Based on these observations, Lintner's partial adjustment model suggests that the payout level is set so that it takes into account both of the previous

payout level and the current earnings of the firm. The empirical methodology of this study is developed from the partial adjustment model:

$$D_{it}=a+b_1*Y_{it}+b_2*D_{it-1}+e_{it} \quad (1)$$

$D_{it}$  ( $D_{it-1}$ ) is the dividend payout ratio of firm  $i$  for income year  $t$  ( $t-1$ ). It is calculated as the total dividend payouts over the net income of the firm.  $Y_{it}$  is the *ROA* of firm  $i$  of year  $t$ , measured as PBIT over total asset, a proxy for the firm income. The partial adjust model expects that both of the two slope coefficients are positive: that the corporate payout level is positively related to both the payout level of last year and the current corporate income.

A few other explanatory variables are employed in the regression analysis. First, to test the predictions of the tax clientele theory, I add an independent variable *Tax\_Domestic* which is an interaction between the tax regime and the (percentage) ownership by the domestic taxable investors. As discussed earlier, the tax reform in 1992 removed the tax disadvantage of dividends for Norwegian taxable investors. Static tax clientele models would predict that, after the tax reform, either the Norwegian domestic taxable investors adjust their portfolios and hold more dividend paying stocks, or firms raise their dividend payout level as the tax burden on dividends goes down. Since neither the Norwegian state, which have always been exempted from taxation for its investment income, nor foreign investors, who are subject to a withholding tax for their dividend income from stocks listed on the OSE, are affected by the 1992 reform in their tax status, if the static models are true, the influence of the tax reform on the firms' dividend policy depends on the firms' ownership structure: The effect is stronger in firms that are dominated by domestic taxable owners. To empirically test that tax regulation and ownership structure influence payout policy in a joint force, an interaction variable *Tax\_Domestic* is employed, which for the observations from the years between 1992 and 1998 equals the proportion of ownership (in percentage) that is owned by domestic taxable investors (i.e. shares that are not owned by foreigners or the Norwegian state), and takes the value of zero when the observation is prior to 1992. The static tax clientele models predict the variable to be positively correlated to the likelihood to pay and the dividend payout level.

Second, as has been discussed in Section 3.2, the dividend payouts in Norway are upper-bounded by the size of the "unrestricted equity", the part of equity that is in excess of the minimum equity requirement. The more unrestricted equity a firm has, the

larger its dividend paying capacity becomes. We control for this effect in our analysis by *Distributable Equity*, which is the unrestricted equity as a percentage of the total asset at the end of the previous fiscal year.

As mentioned earlier, the tax reform of 1992 reallocated all previously accumulated tax-exempt reserve funds to the unrestricted equity; the maximum amount of dividend payouts was therefore largely increased. Since the enlargement of the restricted equity base and the removal of the tax disadvantage of dividends took place simultaneously, it might be difficult to distinguish the two effects from each other. Figure 1 shows that the fluctuations in the mean and median unrestricted equity level coincide with the tax reform. From the data, I find that *Tax\_Domestic* and *Distributable Equity* are highly correlated, with a correlation coefficient of 0.3362. It is therefore necessary to orthogonalize the two variables in order to eliminate the collinearity problem from the regression analysis. The orthogonalization process is defined by the expression

$$Distributable\ Equity_{it}=c+d*Tax\_Dummy_t+u_{it}$$

where *Tax\_Dummy* is a dummy variable that takes the value of null for the years before 1992 and 1 otherwise. Residuals from an OLS estimation are kept for the final regression, renamed as *Distributable\_R*. *Distributable\_R<sub>it</sub>* measures the magnitude of unrestricted equity of firm *i* in year *t*, free of the impact of the tax reform. It is expected to have a positive influence on the dividend payout ratio: The more retained earnings a firm has accumulated previously, the larger its capacity to pay dividends.

The maturity of the firm is another factor to be controlled for. As suggested by DeAngelo and DeAngelo (2004), it is optimal for a mature firm to distribute its income as dividends when its marginal productivity goes down. I consider firm size as a sufficient proxy for the maturity of the firm, and employ the natural log of the market value of the equity in million NOK (*lnMarCap*) as a control variable. The data shows that there is high correlation between *lnMarCap* and *ROA* (the correlation coefficient is 0.3342). Again I orthogonalize the two independents, regressing *lnMarCap* on *ROA*. A vector of residuals from an OLS regression is kept and named as *lnMarCap\_R*, capturing the size factor uncorrelated with the firm's profitability. I expect the variable to be positively associated with dividend payouts.

The final regression model therefore becomes

$$D_{it}=a+b_1*Y_{it}+b_2*D_{it-1}+Tax\_Domestic_{it}+Distributable\_R_{it}+lnMarCap\_R_{it}+e_{it} \quad (2)$$

Table 4 reports correlation coefficients among the independent variables.

In this empirical study, the same group of firms are being observed over 10 years' time. Because the observations are not independent, simple OLS regressions will be misspecified with correlated error terms. In order to control for such panel data property, model (2) is estimated with random-effect regressions. Another problem arises since a substantial number of firms choose not to pay dividends—as found in the data, as many as 59% of the observations had a payout ratio of zero—the dependent variable does not have a normal distribution which makes a linear regression like OLS inadequate. A tobit methodology, on the other hand, is most appropriate for this situation. Therefore the following empirical analysis adopts random effect tobit estimation left-censored at 0.

## 5.2 Regression results

Estimation results are reported in Table 5. In addition to the firm income and the previous payout level as suggested by the partial adjustment model, the dividend payout ratio is systematically influenced by the interaction between the tax regime and the tax clientele of the firm, the magnitude of unrestricted equity, and firm maturity measured by firm size.

Regression A tests the basic partial adjustment model defined by model (1). As expected, the dividend payout ratio is positively related to both of the previous payout level and the current earnings of the firm. The slope coefficient for the previous dividend payout is as high as 0.8091, showing that there is high correlation between previous and current payouts, providing evidence for the dividend smoothing behavior by firms. The large slope coefficient of 1.74 for *ROA* indicates that profitable firms pay more dividends, also consistent with the partial adjustment theory.

In regression models B, C and D, the following three independent variables are added one by one: *Tax\_Domestic*, *Distributable\_R* and *lnMarCar\_R*. Since multi-colinearity among the independents had been controlled for by two orthogonalization regressions, the correlation coefficients are negligible as shown in Table 4, enabling the set of regressions to generate rather stable estimation results.

Firm's dividend payout ratio is positively associated with *Tax\_Domestic*, the interaction between the tax reform and ownership by domestic taxable investors, with a slope coefficient of around 0.1. The implication of the coefficient is that in the tax regime

after the reform when the tax disadvantage is removed for domestic taxable investors, the domestic taxable ownership is positively associated with the dividend payout ratio, other things controlled for. This is consistent with the tax clientele theory which predicts that, when the relative tax rate on dividends changes, taxable investors' demand for dividends will change accordingly. Notice that the prediction includes two elements: the change in the tax rate, and the ownership of *taxable* investors.

As expected, the magnitude of unrestricted equity, which sets the upper bound for a firm's payout capacity, as proxied by *Distributable\_R*, positively affects dividend payouts. The coefficient of 0.3 for the unrestricted equity (as a percentage of the total asset) is much smaller than that of *ROA* which is around 1.7. Since unrestricted equity is basically accumulated retained earnings, it appears that retained earnings work as a "buffer" to provide sources of cash for dividend payouts, subordinate to the current corporate income which works as a first order determinant for the payout level.

Also unsurprisingly, *lnMarCap\_R*, which proxies for firm maturity, has positive influence on the payout ratio, consistent with the argument that large mature firms facing declining marginal productivity distribute more cash to their investors.

All regression coefficients are highly statistically significant at 1% level.

Regression E includes not only all the independent variables but also year dummies. Estimation results remain unaltered.

## **6. Conclusions**

In this study I show that firms payout more dividends when the relative tax rate on dividends goes down, which is consistent with the tax clientele theory. I also find that the tax effect is associated with the firm's ownership structure: the firm's dividend policy will only reflect changes in tax codes when the tax brackets of its major owners have been affected, which is another supportive evidence for the clientele theory.

Therefore I conclude that there are tax clienteles in the market.

One avenue for future research is to extend the sample period to post 1998 so that the corporate payout policy includes not only dividends but also stock repurchases. The tax neutral environment in the Norwegian stock market provides a simple background for studying the intriguing choice between dividends and stock repurchase.



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Table 1. Statistic summary

	Mean	Median	SD	N
<i>Market Capitalization</i> (Million Kroner)	1921	435	5853	1285
<i>Book Value of Total Assets</i> (Million Kroner)	3316	754	9339	1295
<i>ROA</i> * (%)	6.90	8.46	14.5	1231
<i>Payout Ratio</i> ** (%)	21.86	0	60.79	1447
<i>Foreign investor</i> (%)	23.46	15.14	23.83	1388
<i>State investor</i> (%)	4.72	0.0075	13.42	1388
<i>Domestic taxable investor</i> (%)	71.82	80.46	25.80	1388

\* ROA = (Profit before extraordinary items - Income taxes - Minority interests' share of net income) / Book value of total assets

\*\* Payout Ratio = Total dividend / (Profit before extraordinary items - Income taxes - Minority interests' share of net income). For firms with negative Earnings, Payout ratio = 0.

Table 2. Dividend payout ratio over time

Year	No. of listed firms	No. of div paying firms	% of div paying firms	Mean dividend payout ratio (%)	Median dividend payout ratio (%)
1989	119	48	40.33	31.39	0
1990	117	35	29.91	28.43	0
1991	111	26	23.42	13.98	0
1992	114	41	35.96	26.87	0
1993	126	57	45.23	23.71	0
1994	135	74	54.81	25.34	17
1995	148	83	56.08	21.23	15.5
1996	160	75	46.88	19.39	0
1997	203	82	40.39	17.13	0
1998	214	74	34.58	17.84	0
Total	1447	595	41.12	21.85	0

Table 3. Weighted average dividend payout ratio by owner type

For each owner type  $x$ , weight for stock  $i$  in year  $t$  equals market capitalization of stock  $i$  by the end of year  $t$  times the percentage owned by owner type  $x$ .

year	foreign	state	Domestic taxable	Market capitalization
1989	19.15	30.59	18.26	18.56
1990	11.72	17.22	13.71	12.74
1991	7.96	3.64	6.32	6.4
1992	14.92	19.06	13.61	14
1993	15.78	16.41	16.41	15.89
1994	20.8	31.12	21.73	21.75
1995	17.13	20.68	20.02	18.97
1996	16.59	21.41	17.40	17.18
1997	15.08	35.93	17.85	18.04
1998	9.86	28.07	13.38	13.35

Table 4. Pairwise correlation coefficient between explanatory variables

	2	3	4
1 <i>ROA</i>	0.0135	0.0566	-0.0011
2 <i>Tax_Domestic</i>		0.0165	-0.1190
3 <i>Distributable_R</i>			0.1139
4 <i>InMarCap_R</i>			

Table 5. Random effect tobit estimation, left-censored at zero

The dependent variable *Dividendi<sub>t</sub>* is the dividend payout ratio of firm *i* for income year *t* measured by total dividend over net income.

	A	B	C	D	E
<i>Dividendi<sub>t-1</sub></i>	0.8091 a (0.0536)	0.8036 a (0.0534)	0.7644 a (0.0534)	0.7175 a (0.5339)	0.7187 a (0.0527)
<i>ROA</i>	1.7864 a (0.1700)	1.7536 a (0.1692)	1.7148 a (0.1691)	1.7625 a (0.1710)	1.6807 a (0.1683)
<i>Tax_Domestic</i>		0.1001 a (0.0323)	0.0852 a (0.0325)	0.1149 a (0.0333)	0.1873 a (0.0597)
<i>Distributable_R</i>			0.3020 a (0.0792)	0.2148 a (0.0808)	0.3535 a (0.0850)
<i>InMarCap_R</i>				3.7729 a (0.7939)	4.3691 a (0.8278)
Constant	-29.0494 a (2.6022)	-33.8088 a (1.1484)	-31.3166 a (3.2614)	-32.8515 a (3.3553)	
<i>Year Dummy</i>					Yes
No. obs.	1001	982	949	945	945
No. firms	242	239	235	233	233
Log likelihood	-2531.25	-2510.56	-2477.12	-2464.76	-2441.96
Wald chi2	362.31	359.50	356.19	362.59	395.05
Prob>chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Standard errors are reported below the regression coefficients. a denotes significance level at 1%.

Figure 1. Percentage of dividend paying firms and mean and median dividend payout ratio over 1989-1998.

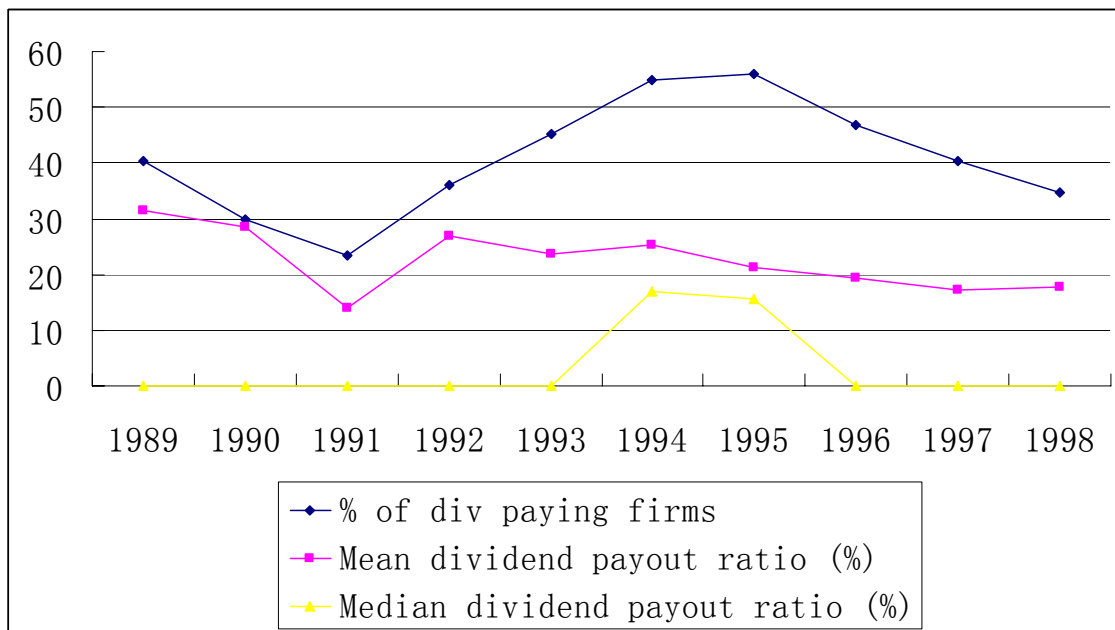


Figure 2. Weighted average dividend payout ratio by owner type.

For each owner type  $x$ , weight for stock  $i$  in year  $t$  equals market capitalization of stock  $i$  by the end of year  $t$  times the percentage owned by owner type  $x$ .

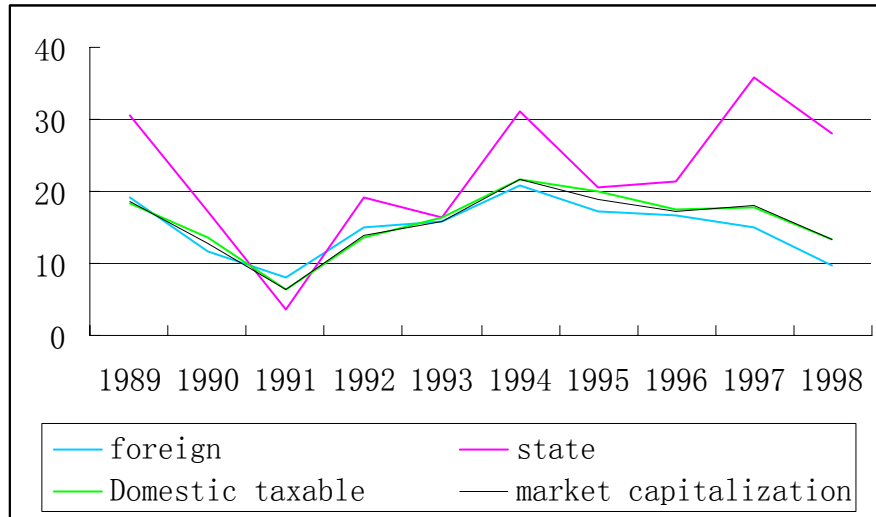




Figure 3. Unrestricted equity divided by total asset (t-1)

