

BI Norwegian School of Management
- Master thesis -

- Exploring the private dividend world -
- An investigation of Norwegian firms -

Supervisor: Paul Ehling

Exam code and name:

GRA 1903

Study Program:

Master of Science in Business and Economics, specialization in Finance

Written by:

Eirik M.M. Schau

Jessica Samuelsson

Handed in:

01.09.2009

This thesis is a part of the MSc program at BI Norwegian School of Management. The school takes no responsibility for the methods used, results found and conclusions drawn

Table of content

ABSTRACT	II
1 INTRODUCTION	2
2 LITERATURE REVIEW	4
3 DIFFERENCES BETWEEN PUBLIC AND PRIVATE FIRMS	6
4 HYPOTHESIS AND EXPECTATIONS	7
5 THE DATA	9
5.2 DESCRIPTIVE STATISTICS.....	10
5.3 FURTHER INVESTIGATIONS.....	12
5.3.1 <i>Test of means between payers and non payers</i>	12
5.3.2 <i>Test of means between low payers and high payers</i>	13
5.3.4 <i>Correlations</i>	14
6 EMPIRICAL FINDING	16
6.1 GLS REGRESSIONS.....	16
6.2 QUANTILE REGRESSION.....	18
7 EXPLANATION	24
8 CONCLUSION	24
REFERENCES	26
APPENDIX	28

Abstract

The goal of this paper is to shed light on the dividend policy in private firms by investigating if certain dividend theories applied for public listed firms can be attributed to the private non-listed business sector. This paper finds supporting evidence that dividend paying firms have lower risk, are larger in terms of assets, have fewer investment opportunities, higher profitability, lower cash and debt levels compared to non-dividend paying firms. We find no supporting evidence that shares owned by CEO is a firm characteristic associated to the dividend decision. Interestingly, we find that CEO salary is negatively related to dividend, which may be explained by the Norwegian tax law.

1 Introduction

Nearly all empirical literature work on dividends focuses on listed firms as they have been of principal interest to the average investor (Michaely and Roberts 2007). Yet, for the last two decades there has been an increase in private equity investments, mergers and acquisitions, hedge funds and Initial Public Offerings, all of which has an interest in non-listed firm value. In addition, the non-listed firms account for a large part of the economy and have a great influence on society on the whole. In fact, these firms account for a great fraction of the world's labour force, taxes, borrowings and output (Berzins, Bøhren and Rydland 2008).

Another contributing factor to the limited research within the private sector is the lack of information. However, the Centre for Corporate Governance Research (CCGR) in Norway provides high quality accounting and ownership data, which is unique internationally (CCGR, 2008). We will take advantage of this unique opportunity to use the CCGR database and investigate if dividend theories applied for the public (listed) firms sector are valid for the private (non-listed) firms sector as well.

Specifically, we investigate the relationship between level of dividend and risk in private firms by using the CCGR database. This is one of the few areas where research on public firms shows similar results, i.e. that risk and dividend appears to be negatively correlated. However, such an investigation creates a challenge with regard to an appropriate risk measure in that private firms do not have the commonly used beta measure as a proxy for risk. There is literature that uses volatility of operating income, which is a proxy for risk that we are able to replicate. Furthermore, we will primarily follow two articles within the risk related work on dividend: Grullon, Michaely and Swaminathan (2002) and Lie (2005). These two articles investigate how change in dividends associate with changes in risk. Our approach will be somewhat different, instead of focusing on dividends changes, we will investigate if higher dividends are associated with lower volatility in operating income.

In order to determine other factors influencing the payout decision of private firms we will rely on Fama and French (2001) article. They find that public dividend

paying firms tends to be larger, more profitable and have fewer investment opportunities compared to non payers.

As a supplement to the existing public dividend theories, we introduce CEO ownership structure as a variable for explaining payout policy to private firms. Within private firms it is common to observe a highly concentrated ownership with the CEO as the largest stockholder (Berzins, Bøhren and Rydland 2008). It is reasonable to expect that the owner will try to maximize his wealth by alternating between salary, dividend and retained earnings to meet potential future investment opportunities, depending on which yields the highest utility. Thus, we believe CEO ownership structure to be a factor influencing private firms' payout decisions.

In order to investigate characteristics associated to the dividend decision we will apply the following procedure; first we will examine the summary statistics and perform test of means between different dividend paying groups. We do this in order to explore if there are any significant differences in characteristics among these groups. Secondly, we will investigate the characteristics by using two different regression estimators, Generalized Least Square and Quantile regression, to secure robust results. In our study we chose to follow the above mentioned literature in assuming that all explanatory variables are exogenous determined.

Supporting public firm theories, we find evidence that higher payout ratios are associated with lower risk, larger assets (proxy for firm size), higher profitability, fewer investment opportunities, lower debt and cash levels. Furthermore, we do not find evidence supporting the relationships between shares owned by CEO and payout ratios. Interestingly, our investigation provides evidence of a negative association between CEO salary and dividend.

The remainder of the paper is organized as follows. Chapter 2 starts by presenting a literature review on articles of particular interests for our investigation. Chapter 3 takes under consideration important differences between public and private firms. In chapter 4 we present the selected empirical articles that we will base our investigation on, and develop hypotheses and elaborate on expected outcomes. Chapter 5 presents the data and examines the descriptive statistics. Chapter 6

reports the findings from our empirical analysis. In chapter 7 we will comment and address reasons of certain findings. Finally, we will conclude our findings in chapter 8.

2 Literature review

Since the 1950's a number of researchers have tried to explain why firms' pay dividends, and why investors have preference for these companies. Explaining this has become known as the dividend puzzle after Fischer Black (1976). Miller and Modigliani (1961), argue that firms' payout policies should not influence firm value, however several other researchers have found quite the opposite relationship (Graham and Dodd 1951, Lintner 1956, Michaely, Thaler and Womack 1995). Throughout the years resolving the puzzle has become one of the most thoroughly investigated topics in finance. Possible explanations to the puzzle have been approached from several angles and we will review two strands related to our research, namely signaling and risk theories.

Signaling theories are based on information asymmetry problems, and argue that dividends are used as a signal to yield information about profitability to the market (Bhattacharya 1979, Miller and Rock 1985, John and Williams 1985, Bernheim and Wantz 1995). To be more specific, dividend increases signal good news about a firm's earnings, while dividend decreases signal bad news about a firm's earnings. However, later research such as Benartzi, Michaely and Thaler (1997) finds evidence that contradicts the central supposition of signaling models. They conclude their finding by questioning what the signal is about if it is not about future earnings growth.

This brings us to the other strand of theories that are related to risk. The maturity hypothesis (Grullon, Michaely and Swaminathan 2002) claims if earnings increase is not a signal about earnings growth, it must be about changes in risk. They find a negative relationship between dividend and risk, which is supported by other risk models. Baskin (1989) shows robust inverse relationship between dividend yields and stock price volatility. Dyland and Hoffmeister (1986) apply duration as a measure for risk and finds that high dividend stocks have lower price volatility. Lie (2005) also supports the risk theories by his findings of an inverse relation between operating income volatility and payout.

In addition, literature on characteristics of dividend paying firms is of relevance for our research. Fama and French (2001) have investigated the characteristics of public dividend paying firms and found these firms are significantly larger, have higher profitability and less investment opportunities compared to non payers. On the other hand, some of these characteristics have been rejected by other researchers such as Rao and White (1994) and Grullon, Michaely and Swaminathan (2002).

Generally the research on dividends in public firms is inconclusive (Allen and Michaely 2002). Yet, within the risk related literature, researchers seem to agree that dividend paying firms tends to be less volatile than non dividend paying firms. This research field seems to be almost unexplored within private firms. Nevertheless, there is some literature on private firms that may be of interest for our research.

In particular, information provided by Berzins, Bøhren and Rydland (2008) study on characteristics of public and private firms with limited liability in Norway may be of importance as they use the same database as we do. They find, amongst other, that firms paying dividends are more often old, large, slow growing and profitable, which is consistent with Fama and French (2001).

Furthermore, Michaely and Roberts (2006) and (2007) investigates the signaling theory on British private firms and does not find compelling evidence of increased earnings subsequent to a dividend increase. Moreover, in contrast to Berzins, Bøhren and Rydland (2008), they find that most wholly owned private firms do not pay any dividends at all.

To sum up, the literature on dividends in the public sector is extensive and inconclusive, while the private sector is less explored. Our investigation will complement the dividend work within the less explored private sector and hence, the dividend literature overall.

3 Differences between Public and Private firms

Private firms differ from publicly traded firms in several ways. The outcome of our investigation is therefore uncertain as there is little research on private firms and dividend. The following differences are important to keep in mind as we conduct our analysis:

There are practical differences regarding method and measurement of our study. The information available on private firms is limited, since they do not have as strict disclosure requirements and as large coverage by market analysts as public firms. In addition, there can be wide differences on how items are accounted for in the financial statements between firms. Often there is limited amount of information both in terms of extent and availability each year. Hence, the standard techniques for estimating risk parameters such as beta and standard deviation for private firms is difficult, especially because of the missing market value observations (Damodaran 2002).

The ownership structures in Norwegian private firms are characterized as very concentrated regardless of firm size and industry membership. In addition, separation between ownership and control is rarely observed (Berzins, Bøhren and Rydland 2008). In these cases, Michaely and Roberts (2006) find that dividends are more volatile as the owner adjusts dividends according to the firm's investment opportunity level. This is also consistent with Michaely and Robert (2007) findings of less dividend smoothing by private firms compared to their public counterparts.

An implication with the absence of separation between ownership and control is the vague borderline that is created between management salary and dividend (Damodaran 2002). The owners' ability to alternate between dividend and salary in order to maximize his or her wealth is particularly of interest within private firms. This might be an explanation for Berzins, Bøhren and Rydland (2008) findings that Norwegian private firms distribute twice as much of their earnings compared to public firms.

Having evaluated these differences we will move on to the preparation of this paper's hypotheses and the elaboration of our expectations regarding the outcome of our study.

4 Hypothesis and expectations

This chapter presents in more detail the selected public firm literature on dividends that we base our study on, and explain this paper's hypotheses and relation expectations. The predicted signs of the coefficients in the regression are presented in the bracket behind the hypothesis formulation. All the expectations are summarized in appendix A1.

Concerning risk, we will partly follow the maturity hypothesis by Grullon, Michaely and Swaminathan (2002). It claims that if earnings increase is not a signal about earnings growth, then it must be about changes in risk. They argue that as a firm mature its investment opportunity set shrinks which gives a decline in firms' future profitability. More importantly is the change in a company's risk characteristics, the decline in risk occurs most likely because the firms assets in place has become less risky and / or the firm has less investments opportunities. Finally, the decline in investment opportunities generates an increase in free cash flows, leading to an increase in dividends. Therefore, the reduced earnings will tend to reduce firm value, while a decrease in risk will increase firm value.

Continuingly, we will also base our study on a research performed by Lie (2005). He investigates, amongst other, the relationship between dividend and total risk which is measured by volatility in operating income. He states that both systematic and total risk affects firm value, just in different ways. His research shows that firms that increase payouts have excess financial flexibility and exhibits positive concurrent income shocks and decreases in income volatility.

These two articles are both investigated on basis of change in risk. However, we will investigate the risk relation to dividends on a level basis. Furthermore, following Lie, we will use his proxy for risk of operating income volatility. Thus, we expect higher dividend to be associated with lower risk, and have developed the following hypothesis:

Hypothesis 1:

Payout ratios should be negatively associated with risk (negative influence).

According to Fama and French (2001) there are typically three firm characteristics that separate dividend paying firms (value stock) from non dividend paying firms (growth stocks). These characteristics are profitability, investment opportunities and size. They find that dividend payers have higher profitability than non payers measured by aggregate earnings before tax to aggregate assets. In fact, for non payers they find this ratio to be 5.37, while for payers it is 7.82. Turning to investment opportunities, they find that firms that have never payed dividends have much higher assets growth rates than both dividend payers and former payers. Concerning size, payers are about 10 times the size of non payers. Consequently, the next hypotheses for private firms will be:

Hypothesis 2:

Payout ratios should be positively associated with firm size (positive influence)

Hypothesis 3:

Payout ratios should be negatively associated with investment opportunities (negative influence).

Hypothesis 4:

Payout ratios should be positively associated with profitability (positive influence).

Despite the fact that the majority of dividend literature supports a positive relationship between dividend and profitability, it should be noted that Grullon, Michaely and Swaminathan (2002) find the opposite relationship.

Furthermore, we will also control for debt and cash levels, as these factors may have impact on dividend payout ratios.

We will follow Myers (1984) reasoning concerning the relation between debt and dividend. This article takes under consideration the pecking order theory of firms' financing choices. It does not search to explain the dividend puzzle through the

pecking order theory, but argue that it affects the dividend decision. According to the pecking order theory firms should use internal financing first, and then use the safest external financing starting with debt. Hence, dividends are less attractive to firms with more investment opportunities, high leverage ratios or firms that are financially constrained, i.e. debt will be negatively related to the payout decision.

Hypothesis 5:

Payout ratios should be negatively associated with debt (negative influence).

Following the reasoning from Acharya, Almeida and Campello (2007) and the pecking order theory (Myers 1984), we would expect there to be a negative relationship between cash and dividend. When future investment opportunities are uncertain and financing is not frictionless, one would expect firms to retain cash. Especially this may be the case for private firms as they do not have the similar costs and access to the external capital markets as their public counterpart. This constitutes the final hypothesis:

Hypothesis 6:

Payout ratios should be negatively associated with cash (negative influence).

Furthermore, we will also control for CEO ownership structure and CEO salary as these may be factors influencing the payout decision in private firms.

5 The Data

Our data sample is extracted from the CCGR database which contains annual accounting and governance data of all limited liability firms in Norway. We have obtained a random sample of 10,000 private firms, containing certain accounting variables for each firm in the period 1994 to 2006. In order to ensure reasonable variables in our investigation we have set the following criteria's:

- (a) Assets larger than zero
- (b) Operating income larger than zero
- (c) Earnings larger than zero
- (d) Cash larger than zero
- (e) Net income larger than zero.

The variable definitions in our investigation are explained in Appendix A2.

5.2 *Descriptive statistics*

Table 1 (on page 11) presents summary statistics. It contains characteristics relevant to the dividend payout decision, motivated by theory. The first part of the table presents all firms, followed by dividend and non dividend paying firms, respectively. As can be observed, the subdivision on dividend causes the number of observation to drop considerably, due to the poor reporting on this particular item. However this subdivision is essential for comparing the characteristics of the two types of firms.

For most of the items there is a large spread between the mean and the median, suggesting that we have some very large outliers. This could be reasonable as we have not induced any restrictions on firm size and age. In addition there seems to be large variation in the sample evidenced by the difference between the minimum and maximum observation for each variable.

By further investigation of the characteristics, there appears to be some very large differences between these types of firms. For instance, RISK is much larger among firms that do not pay dividend compared to the dividend paying firms. The payers have a mean (median) operating income volatility of 48.7 (0.49), while the non payers have a mean (median) of 1,080.6 (0.66). Firm SIZE does not appear to affect payout ratios as there is little distinction between the mean of payers and non payers. INVOPP depict a large difference between dividend groups. Payers have a mean of 1.08 compared to 57.81 for non payers. However, the median shows an opposite picture of 0.07 and 0.03, respectively. Like INVOPP, PROFITABILITY also differs across dividend groups. However, the spread between the two groups does not appear to be as large. CEOSHARE are larger for firms that do not pay dividend, both in terms of mean and median. CEOSAL depict lower mean values for the dividend paying firms. Furthermore, the descriptive statistics seems to support our expectations regarding DEBT, but not CASH.

Table 1: Descriptive Statistics : This table presents firm characteristics of all firms, including two subdivisions of dividend paying firms and non dividend paying firms. The sample consists of 130,000 observations for 10,000 firms in the period 1994 to 2006. DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents dividend by assets. OPIN stands for operating income. OPIN, Equity and Earnings are reported in NOK 1,000,000.

Variable	All firms					Firms with dividend payment					Firms without dividend payment							
	N	Mean	STD	Min.	Med.	Max.	N	Mean	STD	Min.	Med.	Max.	N	Mean	Std.	Min.	Med.	Max.
DIV	1,942	2.46	44.24	0.00	0.00	1,307.05	792	6.04	69.14	0.00	0.11	1,307.05	1,150	0.00	0.00	0.00	0.00	0.00
RISK	82,407	160.56	3,701.66	0.00	0.51	218,686.99	913	48.69	655.58	0.00	0.49	17,083.02	1,342	1,080.59	13,683.05	0.00	0.66	218,686.99
SIZE	58,447	14.29	2.03	6.91	14.27	24.72	939	16.70	1.76	11.55	16.69	23.98	1,411	16.72	2.37	9.21	16.71	24.72
INVOPP	48,602	3.18	249.99	-1.00	0.01	53,259.00	849	1.08	19.86	-0.82	0.07	573.98	1,177	57.81	1,569.78	-1.00	0.03	53,259.00
PROFITABILIT	38,193	0.48	13.19	0.00	0.08	1,653.00	363	0.14	0.14	0.00	0.10	0.92	878	0.82	17.58	0.00	0.05	507.17
CEOSHARE	16,074	0.65	30.14	0.00	0.60	1.00	157	0.49	33.58	0.03	0.46	1.00	129	0.51	33.53	0.04	0.48	1.00
CEOSAL	31,057	0.19	1.10	0.00	0.05	99.00	392	0.00	0.00	0.00	0.00	0.00	573	0.02	0.06	0.00	0.00	0.68
DEBT	58,062	26.08	1,453.51	-218,784.00	1.57	187,164.78	937	3.09	6.33	-13.88	1.77	116.52	1,352	264.83	5,665.17	-12,520.00	1.51	187,164.78
CASH	58,311	0.24	0.29	0.00	0.12	4.11	937	0.13	0.16	0.00	0.06	1.00	1,409	0.10	0.15	0.00	0.03	1.00
Other characteristics																		
Opin	59,313	13.90	88,550,196.24	0.00	1.38	5,617.08	939	53.89	157,686,736.19	0.00	6.22	2,403.53	1,411	79.70	236,685,653.09	0.00	6.07	2,563.96
Equity	59,365	8.22	101,057,850.28	-2,205.82	0.25	4,763.17	939	50.06	250,976,324.48	-0.91	5.84	2,821.31	1,412	95.26	364,076,600.36	-190.72	3.46	3,805.00
Earnings	38,670	2.20	25,062,578.44	0.00	0.17	2,510.60	827	11.15	62,576,692.29	0.00	1.80	1,467.60	878	19.05	66,193,388.14	0.00	0.95	696.20

To sum up, consistent with our hypothesis on risk, the summary statistics suggests that companies without dividend payments are riskier in terms of operating income volatility. However, there seems to be conflicting results regarding investment opportunities, profitability and cash levels. Firm size appears insignificant in the dividend payout decision, and number of shares owned by CEO seems to be negatively related to payout.

5.3 *Further investigations*

A cross section sample requires data for each firm and year on all accounting variables. This yields a very small sample due to the poor reporting on several variables, in particular, CEOSAL, CEOSHARE, and DIV contain many missing values. Therefore, we will replace the values in each firm's items with its mean over this period. This will be the basis for the analysis going forward. In some cases the average can be argued to be a better representation of certain matters, especially for dividend, as single year dividends are potentially more affected by fluctuations in net income (Rozeff 1982).

5.3.1 *Test of means between payers and non payers*

The next part of the analysis will be to explore and confirm the findings in the summary statistics with test of means. Table 2 presents the test of means on the hypothesized characteristics between dividend and non dividend paying firms.

Table 2: Test of means between firms without dividend payments and firms with dividend payments. This table presents the aggregated mean of the firms included in each subdivision. N is the number of firms included within each variable, based on the cross section sample. We used a two tailed t- test of means with unequal variances. DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents dividend by assets.

Variable	N	No Dividend	N	Dividend	P - value
RISK	209	1,444.4643	228	85.4763	0.0000
SIZE	229	16.4454	231	16.5188	0.1428
INVOPP	220	89.8231	229	1.5138	0.0001
PROFITABILITY	214	1.3136	230	0.1352	0.0003
CEOSHARE	80	57.5130	133	53.6736	0.0019
CEOSAL	214	0.3703	219	0.0452	0.0003
DEBT	228	207.4077	231	45.6977	0.0000
CASH	229	0.1276	230	0.1451	0.0000

Consistent with the summary statistics, firms without dividend payments exhibit significantly higher risk measured by operating income volatility, which constitutes a negative association between DIV and RISK. In the test of means we can also observe that INVOPP, PROFITABILITY, CEOSHARE, CEOSAL and DEBT associate negatively to DIV. This becomes evident as the mean of these variables is higher among firms that do not pay dividends. However, CASH appears to be positively associated to DIV, which is shown by a higher mean within the group of firms that pay dividend. All relationships are highly significant as can be viewed by the low p- values in Table 2. Only SIZE shows an insignificant relationship, which can be anticipated from the findings in the descriptive statistics. To sum up, based on the test of means, the hypothesised relations seem to apply for all variables except for PROFITABILITY, SIZE and CASH.

5.3.2 Test of means between low payers and high payers

In order to explore if the hypothesized relationships remains valid when comparing levels of dividend payouts, we subdivide the payers into groups of firms paying high dividend to those paying low dividend. The low dividend paying group constitutes the 50 percentile of the firms with lowest payout ratio, while the high dividend paying group contains the rest. Table 3 presents the test of means between these two groups.

Table 3: Test of means between firms low dividend payments and firms with high dividend payments. The low payers constitute the 50 percentile of the firms with the lowest payout ratio, high payers contains the rest. The table presents the aggregated mean of the firms included in each subdivision. N is the number of firms included within each variable, based on the cross section sample. We used a two tailed t- test of means with unequal variances. DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents dividend by assets.

	N	Low Dividend	N	High Dividend	P - value
RISK	115	150.9245	114	18.7082	0.0013
SIZE	116	16.6620	116	16.3937	0.0000
INVOPP	115	2.1290	115	0.8864	0.0238
PROFITABILITY	116	0.1116	115	0.1586	0.0000
CEOSHARE	74	48.2301	60	59.6387	0.0001
CEOSAL	114	0.0694	106	0.0187	0.0000
DEBT	116	206.4636	116	45.9346	0.0000
CASH	116	0.1575	115	0.1314	0.0000

This test shows that RISK, SIZE, INVOPP, CEOSAL, DEBT and CASH are negatively associated to DIV, as the mean within the low dividend paying group is significantly higher for all these variables. PROFITABILITY and CEOSHARE are positively related to DIV in a significant manner as the group of firms with high payout ratios depicts higher mean values. Consequently, these findings support all hypothesized relations except for SIZE.

5.3.4 *Correlations*

We have also estimated Pearson correlation coefficients in order to investigate how characteristics correlate with dividend. As shown in Table 4 (on page 15), all characteristics are in line with hypothesized directions.

To sum up this chapter, until now our analysis on characteristics focuses on the evidence from the descriptive statistics, test of means and Pearson correlations coefficients. All tests supports that the hypothesized relations on RISK, INVOPP, SIZE and DEBT. We will now investigate if the hypothesized relationships can be confirmed through regressions analysis.

Table 4: Correlation Coefficients: This table shows Pearson correlation coefficients between firm characteristics. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents divided by assets.

	DIV	RISK	SIZE	INVOPP	PROFITABILITY	CEOSHARE	CEOSAL	DEBT	CASH
DIV	1	-0.0171	0.0732	-0.0180	0.2278	0.0531	-0.0709	-0.0150	-0.0220
RISK		1	0.1404	0.6446	0.0681	-0.0464	-0.0342	-0.0089	0.0245
SIZE			1	0.0616	-0.1914	-0.3220	-0.3542	0.0981	-0.2200
INVOPP				1	0.0321	-0.0505	-0.0105	-0.0096	-0.0066
PROFITABILITY					1	0.1910	0.1112	0.0308	0.2436
CEOSHARE						1	0.1427	0.0804	0.0637
CEOSAL							1	-0.0171	0.2289
DEBT								1	0.0026
CASH									1

6 Empirical finding

In this section we will present a model with dividend as the dependent variable, and firm characteristics as explanatory variables. The model will be estimated by two different estimators in order to secure robust results. Our model can be described as follows: (hypothesized signs are shown in the equation):

$$\begin{aligned}
 DIV = & \beta_0 - \beta_1 RISK + \beta_2 SIZE - \beta_3 INVOPP + \beta_4 PROFITABILITY + /- \beta_5 CEOSHARE \\
 & + /- \beta_6 CEOSAL - \beta_7 DEBT - \beta_8 CASH
 \end{aligned}$$

We investigate the classical linear regression assumptions in our data and find that it contains heteroscedastic and positively autocorrelated error terms. Therefore we use an estimator that corrects for this. We will also run the regression on trimmed estimators in order to handle non normality. We will trim 0.1% and 0.5% of the outliers on both sides. However, due to the low number of observations on CEOSAL, CEOSHARE and DIV, we will not trim these measures in any analysis.

The potential for industry affects beyond the influences from characteristics is addressed by including industry dummy variables in the regressions. The effect of industry on companies payout decision was introduced by Lintner (1953). Dempsey, Laber and Rozeff (1993), and provide evidence that industry influences actually does matter. We use the same industry sectors as Berzins, Bøhren and Rydland (2008). They classify all firms into nine industry sectors according to their NAICS code (North American Industry Classification System). An overview of the industry dummy variables is found in Appendix A3.

6.1 GLS Regressions

In order to correct for heteroscedasticity and autocorrelation in the error terms we use Generalized Least Squares regression, with cross section weights and corrections for heteroscedasticity and autocorrelation. The GLS regression in Table 5 explains how firm characteristics impact dividend.

Table 5: Generalized Least Square Regression. The table presents a GLS regression with cross section weights and corrections for heteroscedasticity and autocorrelation. The regression with outliers includes 206 cross sections (firms), the regression without 0.1% outliers includes 204 cross sections, while the last trimmed sample contains 201 cross sections. DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents dividend by assets. ID stands for the industry dummy variables containing the following industries: ID1 Agriculture Forestry and Mining, ID2 Manufacturing and Chemical Products, ID3 Energy, ID4 Construction, ID5 Service, ID6 Financial, ID7 Trade, ID8 Transport. The omitted category is Multisector and are represented by the intercept. The industry classification are from Berzins, Bøhren and Rydland (2008).

	Sample with outliers		Sample without 0.1% outliers		Sample without 0.5% outliers	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Intercept	-1.7536	0.0000	-1.7561	0.0000	-1.8415	0.0000
RISK	-0.0001	0.0000	-0.0001	0.0000	-0.0001	0.0000
SIZE	0.0989	0.0000	0.0993	0.0000	0.1039	0.0000
INVOPP	-0.0056	0.0000	-0.0056	0.0000	-0.0050	0.0000
PROFITABILITY	4.6154	0.0000	4.6691	0.0000	4.5095	0.0000
CEOSHARE	0.0011	0.0000	0.0011	0.0000	0.0014	0.0000
CEOSAL	-0.5410	0.0000	-0.5557	0.0000	-0.5147	0.0000
DEBT	-0.0002	0.0000	-0.0002	0.0000	-0.0002	0.0000
CASH	-0.5873	0.0000	-0.6006	0.0000	-0.5982	0.0000
ID1	-0.3223	0.0000	-0.3292	0.0000	-0.3271	0.0000
ID2	0.0039	0.7850	0.0024	0.8636	0.0113	0.4214
ID3	0.2484	0.0000	0.2498	0.0000	0.2436	0.0000
ID4	-0.2329	0.0000	-0.2389	0.0000	-0.2350	0.0000
ID5	0.0925	0.0001	0.0874	0.0002	0.0901	0.0001
ID6	-0.8724	0.0487	-0.8989	0.0471	-0.8481	0.0504
ID7	-0.2139	0.0000	-0.2144	0.0000	-0.1928	0.0000
ID8	-0.0040	0.7312	0.0257	0.0337	0.0458	0.0014
Adjusted R ²		0.5219		0.5245		0.5139
Prob (F-stat)		0.0000		0.0000		0.0000

As can be observed, the regression shows that RISK, INVOPP, DEBT, CASH and CEOSAL are significant and negatively associated to DIV. Furthermore, SIZE, PROFITABILITY and CEOSHARE depict significant and positive coefficient estimates. In addition, there appears to be significant industry differences on the propensity to pay out dividend in all industry sectors, except within manufacturing, chemical products and transportation. The findings above are confirmed by the trimmed regressions found in the same table to the right, suggesting robust results.

The slopes of the coefficients estimates confirm the expectations made in the hypotheses. This indicates that dividend payout ratios are negatively affected by risk, investment opportunities, cash and debt levels, and positively affected by firm size and profitability, in a significant manner. CEOSHARE and CEOSAL show significant impact on dividend, in opposite directions. Hence, it appears that the selected theories on public firms seem to apply for private firms as well.

6.2 *Quantile regression*

In order to confirm that the relations found in the GLS regression actually hold we have estimated the same model with another estimator; Quantile Regression (Table 6). Together with the GLS regression this provides a more complete description of the conditional distribution compared to a regular GLS analysis and describes how the median of the response variable is affected by the regressors. This is of interest as the descriptive statistics in our investigation showed large variation between the mean and median of all variables. Furthermore, since this estimator does not require strong distributional assumptions, it offers a distributional robust method of modelling these relationships (EViews 2007).

Table 6: Quantile Regression. The regression includes 206 cross sections (firms). DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents dividend by assets. ID stands for the industry dummy variables containing the following industries: ID1 Agriculture Forestry and Mining, ID2 Manufacturing and Chemical Products, ID3 Energy, ID4 Construction, ID5 Service, ID6 Financial, ID7 Trade, ID8 Transport. The omitted category is Multisector and are represented by the intercept. The industry classification are from Berzins, Bøhren and Rydland (2008).

	DIV	
	Coefficient	P-value
Intercept	-0.116858	0.0000
RISK	-0.000015	0.0000
SIZE	0.006776	0.0000
INVOPP	-0.000508	0.0002
PROFITABILITY	0.390121	0.0000
CEOSHARE	-0.000092	0.0586
CEOSAL	-0.030430	0.0000
DEBT	-0.000003	0.2380
CASH	-0.022330	0.0568
ID1	-0.003564	0.6289
ID2	-0.009942	0.0072
ID3	0.002489	0.8377
ID4	-0.015173	0.0002
ID5	0.010901	0.0005
ID6	0.668193	0.0000
ID7	-0.001741	0.5319
ID8	0.018676	0.0573
Adjusted R ²		0.0074
Prob (F-stat)		0.0000

The quantile analysis shows similar relationships on a median level, as the GLS analysis, except for CEOSHARE. This variables change directions and become less significant with a p-value of 0.0586. In addition, DEBT is no longer significant. Hence, the quantile regression confirms all hypothesized relations, except for the relationships on DEBT.

Furthermore, the quantile analysis allows us to investigate the location, scale and shape of the distribution of explanatory variables. Table 7 presents the characteristics on three quantile levels, i.e from the quantile of firms paying least dividend, to the quantile of firms paying most dividends. This table presents how the regressors coefficients vary from the first to the third quantile.

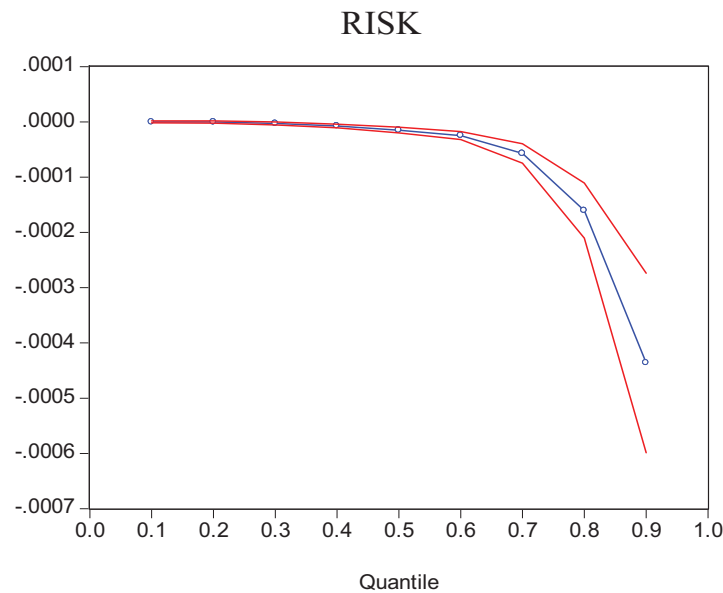
Table 7: Quantile Regression with process estimates. The first quantile constitutes the lowest dividend paying firms within each firm characteristic, the second quantile constitutes the medium dividend paying firms, and the last quantile constitutes the highest dividend paying firms. The regression includes 206 cross sections (firms). DIV is dividend scaled by net income. RISK is standard deviation of income volatility. SIZE stands for the logarithm of assets. INVOPP constitutes annual asset growth. PROFITABILITY is earnings divided by total assets. CEOSHARE stands for shares owned by the CEO divided by outstanding shares. CEOSAL is salary received by CEO scaled by assets. DEBT is total debt to total equity. CASH is cash and equivalents divided by assets. ID stands for the industry dummy variables containing the following industries: ID1 Agriculture Forestry and Mining, ID2 Manufacturing and Chemical Products, ID3 Energy, ID4 Construction, ID5 Service, ID6 Financial, ID7 Trade, ID8 Transport. The omitted category is Multisector and are represented by the intercept. The industry classification are from Berzins, Bøhren and Rydland (2008).

	DIV		
	Quantile	Coefficient	P-value
RISK	0.3330	-0.000005	0.0005
	0.5000	-0.000015	0.0000
	0.6670	-0.000052	0.0000
SIZE	0.3330	0.004212	0.0000
	0.5000	0.006776	0.0000
	0.6670	0.015191	0.0000
INVOPP	0.3330	-0.000012	0.9114
	0.5000	-0.000508	0.0002
	0.6670	-0.002856	0.0000
PROFITABILITY	0.3330	0.096088	0.0000
	0.5000	0.390121	0.0000
	0.6670	2.111168	0.0000
CEOSHARE	0.3330	0.000022	0.3829
	0.5000	-0.000092	0.0586
	0.6670	-0.000201	0.1469
CEOSAL	0.3330	-0.004165	0.2828
	0.5000	-0.030430	0.0000
	0.6670	-0.226519	0.0000
DEBT	0.3330	0.000009	0.0000
	0.5000	-0.000003	0.2380
	0.6670	-0.000054	0.0000
CASH	0.3330	0.014471	0.0058
	0.5000	-0.022330	0.0568
	0.6670	-0.200233	0.0000

From this we can observe that all relationships display coefficient slope that becomes steeper as payout level increases. A steeper slope indicates a stronger effect on dividend payout. For instance, as the payout level increases we observe a greater fall in risk. This is clearly depicted in figure 1.

Figure 1: Quantile Process Figure of Risk. This figure shows the quantile process of the coefficients when dividing the distribution of the firms into ten quantiles, from the lowest paying quantile to the highest paying quantile (the blue line). The red lines depicts the 95 percent confidence intervals.

Quantile Process Estimates (95% CI)



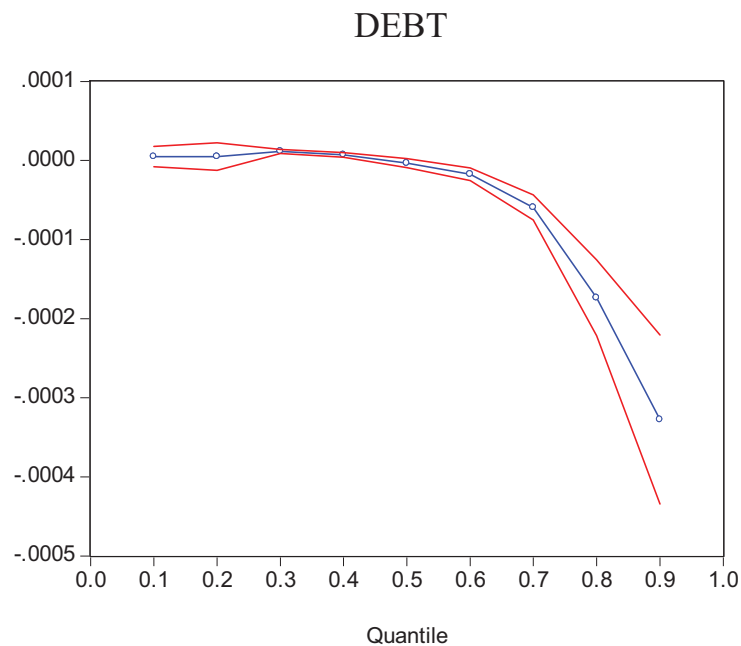
In some regressors (INVOPP, DEBT, CASH), within some quantiles, we observe a p-value higher than 5 percent. This indicates that the regressor's effect is not significant within this quantile. For example, the negative effect of INVOPP on dividend within the lowest dividend paying group cannot be confirmed. In addition, DEBT and CEOSHARE show different signs and less significance level between quantiles. This indicates that the regressors have different impact on dividend throughout the distribution. This can help explain the conflicting results between the GLS and Quantile analysis.

By further investigating of DEBT we can see from Figure 2 that this coefficient is only slightly positive for a very short period in the first quantiles. When the dividend payout ratio increases the coefficient slope turns significantly negative

and becomes quite steep. Hence, this reasons for a negative association to dividend in line with the findings in the GLS regression.

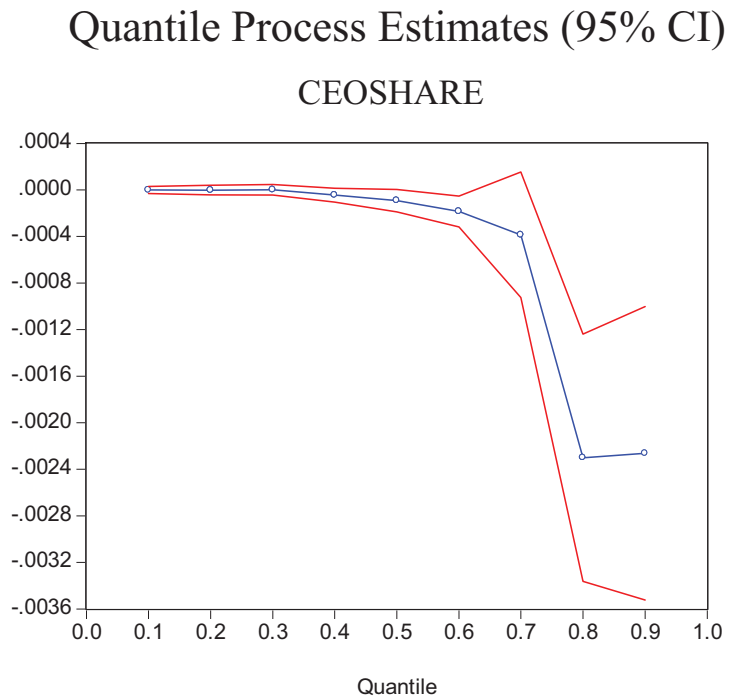
Figure 2: Quantile Process Figure of Debt. This figure shows the quantile process of the coefficient when dividing the distribution of the firms into ten quantiles, from the lowest paying quantile to the highest paying quantile (the blue line). The red line depicts the 95 percent confidence intervals.

Quantile Process Estimates (95% CI)



CEOSHARE shows a more contradicting picture as can be viewed in Figure 3. In contrast to debt the coefficient slope of CEOSHARE is not smooth, and it changes abruptly. Therefore, it is difficult to draw conclusions on the direction of this variable. In addition, the p-values are quite high (Table 7) which is represented by the larger span in the confidence band in Figure 3. Hence, a relation of CEOSHARE cannot be confirmed.

Figure 3: Quantile Process Figure of Shares Owned by CEO. This figure shows the quantile process of the coefficient when dividing the distribution of the firms into ten quantiles, from the lowest paying quantile to the highest paying quantile (the blue line). The red line depicts the 95 percent confidence intervals.



To sum up the findings of this chapter, both regression analyses confirms hypothesized relations on risk, firm size, investment opportunities, profitability and cash levels. This indicates that we have united evidence supporting a negative effect of risk, investment opportunities and cash levels, and positive effect of size and profitability on dividend. It should be noted that this contradicts Grullon, Michaely and Swaminathan (2002) findings of a negative association between dividend and profitability. The hypothesis on DEBT was accepted in the GLS regression, but rejected in the Quantile regression. However, by further investigation of the quantile process we think it is reasonable to confirm the hypothesized influence of DEBT. CEOSHARE, on the other hand, is the only relation that show quite mixed influences on dividend and hence, its association cannot be confirmed.

7 Explanation

The GLS and the Quantile estimators use different methods in estimating the coefficient estimates, which may lead to output differences. It is beyond this paper's scope to evaluate which estimator yields the most reliable results and will conclude that we cannot confirm an association between CEOSHARE and DIV.

Theories on CEO ownership structures relation on dividend are contradicting. Berzins, Bøhren and Rydland 2008 suggests that resolving potential conflicts between large and small shareholders are a relevant motive for increasing dividend when the CEO owns a large stake in the company. On the other hand, a higher stake in the firm will increase the CEO's risk exposure. The solution is to reduce risk by diversifying or reduce the risk of the firm. Often it is more costly to diversify for a large owner because of the private stock illiquidity. Hence, another way to reduce risk is to increase cash or debt, and not pay out dividend (Opler et al. 1999). These are opposite forces that might explain why we have not found any consistent relations between DIV and CEOSHARE.

Interestingly we found a negative significant relation of CEOSAL on DIV. A possible explanation may be that investors prefer dividend to salary, due to tax considerations. However, the tax law system is formulated in order to prevent different effective tax rates. Still, for active owners with large stake in the firm, this is not the case. The fact that there is social security taxes on salary and not on dividend leads to preferences of dividend (Folketrygdloven, 2009). Although the gain from this is reduced as the social security taxes are deductible, there is still an advantage.

8 Conclusion

This paper investigates certain firm characteristics associated with the decision to pay dividend within Norwegian private firms. We base our hypothesis and expectations mostly on findings from public firm literature.

Private firms are different from public firms in several aspects. Primarily this is seen in the large spreads in terms of size and governance. It is reasonable to expect that these differences could potentially affect the propensity to pay

dividends within private firms. However, our study provides supporting evidence for several similarities across firms in this decision. We find that risk, investment opportunities, cash and debt levels decreases, while size and profitability increases with dividend payouts. Furthermore, no clear evidence is found to support that shares owned by CEO are characteristics associated to the dividend decision. In addition, CEO salary is found to be negatively related to dividends. This is interesting as it can be seen as a substitute for dividend. However, this is probably due to country specific tax codes, and may therefore not be generalized to other countries. Moreover, the investigation yields evidence of significant industry differences on the propensity to pay dividend.

The evidence from this paper suggests that the dividend decision in Norwegian private firms is characterized and affected by several factors, supporting several strands of dividend theories. In contrast to many papers, the findings of our investigation does not reject any strands in the dividend puzzle, rather we find that several strands complement each other. As from this, we acknowledge that the dividend decision, and its affects, may be more complex than one strand indicates alone.

References

- Acharya, Viral V., Heitor Almeida, and Murillo Campello. 2007. Is Cash Negative Debt? A hedging Perspective on Corporate Financial Policies. *Journal of Financial Intermediation*, 16: 515-554.
- Allen, Franklin and Roni Michaely. 2002. Payout Policy. Centre for Financial Institutions Working Papers 01-21. Wharton School Centre for Financial Institutions, University of Pennsylvania.
- Baskin, Jonathan. 1989. Dividend policy and the volatility of common stock. *Journal of Portfolio Management*, 15 (3): 19-25.
- Benartzi, Shlomo, Roni Michaely, and Richard Thaler. 1997. Do Changes in Dividend Signal the Future or the Past. *Journal of Finance, American Finance Association*, 52 (3): 1007-34.
- Bernheim, B.Douglas and Adam Wantz. 1995. A tax-based test of the dividend signaling hypothesis. *American Economic Review*, 85: 532–551.
- Berzins, Janis, Øyvind Bøhren and Pål Rydland. 2008. Corporate Finance and Governance in Firms with Limited Liability: Basic Characteristics, CCGR Research Report 01/2008.
- Bhattacharya, Sudipto. 1979. Imperfect Information, Dividend Policy, and the Bird in the Hand Fallacy. *Bell Journal of Economics and Management Science*, 10: 259- 70.
- Black, Fischer. 1976. The dividend puzzle. *Journal of Portfolio Management*, 2(2): 5-8.
- CCGR. 2009. Centre for Corporate Governance Research. http://www.bi.no/Content/Article___56289.aspx (accessed 15. November 2008)
- Damodaran, Aswath. 2002. *Valuing Private Firms*. In Investment Valuation. New York: John Wiley & Sons Inc.
- Dempsey, Stephen J., Gene Laber and Michael S. Rozeff. 1993. Dividend Policies in Practice: Is There an Industry Effect? *Quarterly Journal of Business and Economics* 32(4): 3-13.
- Dyland, Edward A., and J. Ronald Hoffmeister. 1986. A Note on Dividend Policy and Beta. *Journal of Business Finance & Accounting*, 13 (1): 107-115.
- Fama, Eugene F. and Kenneth R. French. 2001. Disappearing dividends: changing firm characteristics or lower propensity to pay?. *Journal of Financial Economics*, 60: 3-43.
- Graham, Benjamin and David Dodd. 1951. *Security Analysis* (Third Edition). New York, NY: McGraw-Hill Book Company.

-
- Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan. 2002. Dividend Changes as a Sign of Firm Maturity. *The Journal of Business*, 75 (3): 387-424.
- John, Kose, Williams, Joseph, 1985. Dividends, dilution and taxes. *Journal of Finance*, 40 (4): 1053–1070.
- Lie, Erik. 2005. Financial Flexibility, Performance, and the Corporate Payout Choice. *Journal of Business*, 78 (6): 1-23.
- Lintner, John. 1956. *Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes*. *The American Economic Review*, 46 (2): 97-113.
- Lovdata. 2009. Folketrygdloven. <http://www.lovdata.no/all/nl-19970228-019.html> (accessed 26. August 2009)
- Michael S. Rozeff. 1982. Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios. *Journal of Financial Research*, 5: 249-59.
- Michaely, Roni, and Michael. Roberts, 2006, Dividend Smoothing, Agency Costs, and Information Asymmetry: Lessons from the Dividend Policies of Private Firms, Working Paper, Cornell University.
- Michaely, Roni, Michael Roberts 2007. Corporate Dividend Policies: Lessons from Private Firms, working paper.
- Michaely, Roni, Richard H. Thaler, and Kent L. Womack. 1995. Price reactions to dividend initiations and omissions: Overreaction or Drift?. *Journal of Finance*, 50: 573-608.
- Miller, Merton and Kevin Rock. 1985. Dividend policy under asymmetric information. *Journal of Finance*, 40 (4): 1031-1051.
- Miller, Merton H. and Franco Modigliani. 1961. Dividend policy, growth, and the valuation of share. *The Journal of Business*, 34 (4): 441-433.
- Myers, Stewart C. 1984. The Capital Structure Puzzle. *The Journal of Finance* 39 (3): 575-592.
- Opler, Tim C., Lee Pinkowitz , Rene M. Stulz ,and Rohan Williamson. 1999. The Determinants and implications of Corporate Cash Holdings. *Journal of Financial Economics*, 52: 3-46.
- Quantitative Micro Software, LLC. 2007. *EViews 6 User's Guide II*. Irvine CA.
- Rao, Ramesh K. S. and Susan A. White. 1994. The Dividend Payouts Of Private Firms: Evidence From Tax Court Decisions. *Journal of Financial Research*, 17(4):449-464.
- Skatteetaten. 2009. Aksjonærmodellen. <http://www.skatteetaten.no/Templates/Artikkel.aspx?id=10268&epslanguage=NO> (accessed 29. May 2009)

Appendix

A1. Sign predictions of explanatory variables in the dividend equation:

RISK:	Negative influence
SIZE:	Positive influence
INVOPP:	Negative influence
PROFITABILITY:	Positive influence
DEBT:	Negative influence
CASH:	Negative influence

A2. Following the definition of item in the CCGR database:

Operating income	= item_11 + item_24 + item_25 (Operating income + interests received + financial income)
Dividend	= item_151 (Dividends)
Total Assets	= item_63 + item_78 (Current Assets + Fixed Assets)
Earnings	= item_39 (Result of the year)
Debt	= item_91 + item_98 + item_109 (Provisions + long term liabilities + Current liabilities)
Shares owned by CEO	= item_136 (Share owned by CEO)
CEO salary	= item_114 (CEO salary)
Net Income	= item_11 (Sum Operating Income)

Independent variable constructions:

We employ the following common variable definitions in our investigation on dividend in private firms. The dividend payout ratio is defined as common dividend to net income:

$$DIV = \frac{DIV}{NETINCOME}$$

The annual change in operating income is defined as:

$$\Delta OP.IN = \frac{OP.IN_0 - OP.IN_{-1}}{Op.IN_{-1}}$$

Following Lie (2005), we have used volatility of operating income as a measure of risk:

$$RISK = STD OF \Delta OP.IN$$

Assets are used as a proxy for firm size:

$$SIZE = \log(ASSETS)$$

Asset growth is also used as a proxy for investment opportunities:

$$INVOPP = \frac{ASSETS_0 - ASSETS_{-1}}{ASSETS_{-1}}$$

We employ ROA as a measure of profitability:

$$ROA = \frac{OP.IN}{ASSETS}$$

The following ratios are used for shares owned by CEO, CEO salary, debt and cash:

$$CEOSHARE = \frac{SHARES.OWNED.BY.CEO}{OUTST.SHARES}$$

$$CEOSAL = \frac{CEOSALARY}{ASSETS}$$

$$DEBT = \frac{DEBT}{EQUITY}$$

$$CASH = \frac{CASH}{ASSETS}$$

A3. Dummy industry variables

ID1: Agriculture Forestry and Mining

ID2: Manufacturing and Chemical Products

ID3: Energy

ID4: Construction

ID5: Service

ID6: Financial

ID7: Trade

ID8: Transport

ID9: Multisector (the omitted variable/ intercept)