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Capital Structure and Agency Costs for Norwegian Private Firms

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Abstract

This paper is motivated by the developments of capital structure theory, and the fact that private firms have been modestly researched in this field. The paper examines whether agency costs influence the capital structure of Norwegian private firms, and to what extent. The predictions of agency costs are tested for firms with dispersed and concentrated ownership structure. This paper finds support for the agency theory proposing that firms with dispersed ownership has a higher level of leverage than firms with concentrated ownership. However, the support of agency theory is not consistent. Instead, the findings support an alternative capital structure theory, the pecking order theory.

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1. Introduction

Capital structure decisions play an important role for corporate finance and corporate governance. The potential conflict of interest between different groups related to a firm influence capital structure, corporate governance activities and investment policies. The costs related to these conflicts might result in inefficient managerial decisions and investments that can be categorized as underinvestment and overinvestment. These effects will ultimately lead to decrease in firm value.

Over- and underinvestment occurs when not all negative NPV projects are rejected and where not all positive NPV projects will be exploited. Overinvestment might solely be a product of agency issues, while conflict between shareholders and management may only be one of the reasons for underinvestment. The managers may be motivated to undertake such decisions as it results in greater personal benefits and not necessarily being in the best interest of the shareholders. It is assumed throughout the paper that owners are aware of over- and underinvestment issues, and use the level of leverage as a means for disciplining management.

Motivated by the developments of capital structure theory, this paper examine whether, and to what extent, ownership structure and corporate governance are linked with the capital structure of Norwegian private firms. In general, these rely heavily on debt as a financing resource (Frank and Goyal, 2007). This paper investigates whether owners use the level of leverage as a means for disciplining management, and whether leverage decreases when ownership concentration increases. This negative relationship between leverage and concentration is expected because the minority shareholders will have limited control over all actions made by management and will therefore use the capital structure to influence managers' behaviour. Entrenchment and other use of free cash flow will be limited in line with increasing leverage. Therefore, the more concentrated ownership a firm has, the less leverage should be necessary for this particular reason.

To investigate agency issues in Norwegian firms, nine hypotheses have been tested. The first hypothesis predicts there to be *higher leverage for firms without a*

majority shareholder than the ones with a majority. A greater ownership share increases the power of the largest shareholder and enhances the monitoring incentives. The need for debt as a disciplining device is therefore less prevalent for firms with a majority shareholder. For the remaining hypotheses, the sample is split into firms with concentrated ownership and firms with dispersed ownership. Four hypotheses are tested on each of the two samples. The second hypothesis predicts that in *firms with dispersed ownership, leverage is decreasing in the share of the largest shareholder.* When the largest owner is also the CEO, she will have greater power to keep leverage low in order to benefit from higher levels of free cash flow. In addition to the low transparency of private firms, this may incentivise the CEO to use his power to entrench himself. The third hypothesis is therefore to test the prediction that *in firms with dispersed ownership, leverage is decreasing in the ownership share of the CEO*. The fourth hypothesis tested is *whether there would be an even lower level of leverage when the CEO is the largest shareholder* as the CEO has full control over the capital structure decisions. Leverage may also be lower when there are growth opportunities available for the firm. Owners will recognize possibilities to expand and thus allow lower leverage in order to exploit some valuable growth opportunities. The fifth hypothesis therefore predicts that *in firms with dispersed ownership, leverage is decreasing in growth opportunities.*

In the sample with firms having a majority shareholder, the hypotheses are the same as the previous four. However, the story behind these is different. There is a controlling shareholder, which means that the problem of not having control over management is no longer present. Leverage is expected to decrease with the share of the majority shareholder because the majority can increasingly expropriate funds from minority shareholders. A form of expropriation is tunnelling and it is defined as "*the transfer of assets and profits out of firms for the benefit of their controlling shareholders*" (Johnson et al. 2000, 1). In addition, when increasing debt, the controlling shareholder has less to "steal" from the firm because more of the cash flow is bounded for repaying debt holders. Leverage may also decrease as a function of growth opportunities. Exploiting these may contribute to value maximisation for shareholders. It is therefore included as the ninth and last hypothesis. All the hypotheses are built on the premise that private Norwegian

firms are exposed to agency issues. This can severely destroy firm value and is therefore an interesting field of research.
Alternative explanations for the capital structure will also be examined based on theories such as agency costs between shareholders and debt holder, the tradeoff theory, and the pecking order theory.

This paper finds some support to the agency theory for Norwegian private firms. Firms with dispersed ownership have higher leverage than firms with concentrated ownership. It also finds the leverage is decreasing with growth opportunities when firms have dispersed ownership structure. Furthermore, leverage is decreasing with ownership share in the concentrated ownership sample. However, the paper finds stronger and more persistent support for the pecking order theory on capital structure.

Private firms are much less researched than public firms, hence this thesis will give a comparative advantage by exploring this field. Public firms are widely used for a large number of articles, but very few have analysed private firms from a corporate finance and corporate governance perspective. This is despite the fact that 90 percent of firms are private (Bøhren, 2012). Due to regulations, these firms are not obligated to provide all of the same information as public firms. It is therefore scarce data on private firms. Relative to other countries, Scandinavia keep quite good records of private firms making it possible to do research on these. In particular, for this thesis, data is provided by the CCGR database constructed by the Centre for Corporate Governance Research. The database contains corporate governance data and accounting data for both public and private Norwegian firms.

The rest of this paper is structured as follows; in section two a literature review provides the main findings in context of optimal capital structure. The focus here is on the agency theory, and ownership structure, alternative theories are supplemented in section three. The paper introduces the hypotheses followed by the description of the data selection and the variables in section four. Section five elaborates on the methodology of this paper leading up to section six which presents the results. Finally, the paper concludes in section seven.

2. Literature Review

2.1 Capital Structure

Ever since Modigliani and Miller (1958) argued that the market value of any firm is independent of its capital structure, capital structure has been a popular field of research. In essence, Modigliani and Miller proposed that capital structure was irrelevant for the value of the firm. This has become known as M&M proposition I. It builds on rather rigid assumptions that are not compatible with the real world, such as: no taxes, no transaction costs, no bankruptcy cost, symmetry of market information, and same borrowing rate for individuals and firms. Due to the unrealistic nature of these assumptions, they later created the stepping-stone for future advances in this field. M&M´s view on "optimal" capital structure changed when they relaxed the assumption of no taxes. They relaxed this assumption in their 1963 paper and found that firm value was maximized when entirely financed with debt. This was due to the tax advantage of debt, known as tax shield. However, they did not include important factors such as; bankruptcy costs, personal taxes (although Miller published a paper including personal taxes in "Debt and Taxes" in 1977) or agency costs. Agency costs can be defined by "*representing the difference between the value of an actual firm and the value of a hypothetical firm which would exist in a more perfect world where the incentives of the managers and the shareholders are perfectly aligned*"(Grinblatt and Titman 2002, 645).

2.2 Agency Theory between Managers and Owners

In 1776 Adam Smith expressed how one takes better care of one's own money than anyone else's money. This statement might be considered the first approach towards agency theory. Nonetheless, Jensen and Meckling formalized the actual principal-agent theory in 1976, which became the foundation for modern agency theory within the organization (Goergen, 2012).

Separation of ownership and control within firms creates the foundation for potential agency costs. Berle and Means outlined this in 1932 in their book "The Modern Corporation and Private Property", arguing that managerial discretion

increases with the dispersion of ownership. When the manager (agent) of a firm is not the owner (principal) of the same firm, she does not "bear a substantial share of the wealth effects of their decisions" (Fama and Jensen, 1983). This implies that the manager may have incentives other than the owners concerning financing and investments, as these decisions affects the managers differently than the owners. Hence, maximizing shareholders' wealth is not always top priority of the manager. Agency costs consist of three components; monitoring costs, bonding costs, and residual loss. Monitoring is observing agents behaviour, but also taking action to limit or avoid unwanted behaviour. Bonding costs is borne by the agent; it acts as a signal to the principal that the agent will in fact act in their best interest. Finally, the principal incurs the residual loss because the agent may not invest in a way that maximizes the principal's wealth (Goergen, 2012). The agency costs may be more severe in firms with less transparency. Due to the nature of private firms, they are less transparent than listed firms. When there is little transparency managers have the ability to entrench himself with less probability of being detected.

The free cash flow problem introduced by Michael Jensen in 1986 was fundamental to the understanding of how managers were enabled to deviate from maximizing shareholders wealth. The free cash flow theory argues that the incentives and interests of managers and shareholders conflicts over the payment of free cash flow to shareholders. In order to prevent managers from taking advantage of free cash flow for personal benefits, the resources under managers' control should be limited. Jensen states that free cash flow is the number one financing source of agency problems. Although this paper will not focus directly on the free cash flow theory, it
will do so indirectly in order to explain some of the conflict of interest that evolves between managers and owners.

2.3 Ownership Concentration

The benefits of high ownership concentration for private firms are closer monitoring and less free riding. According to Jensen and Meckling (1976) and Demsetz and Lehn (1985) monitoring increases when the ownership concentration increases. They are incentivised by higher gains from higher firm value when

owning more. Additionally, their impact of voting on the annual general meeting (AGM) is increasing with ownership fraction, giving higher power to shareholders with more shares. According to Shleifer and Vishny (1986) there will be less free riding when ownership concentration is high, as active governance will give less benefit to passive owners. There is a fixed cost of being active, such as time consumption. However, the benefits of being active increases with ownership share.

The costs of high concentration constitute i.e. majority-minority shareholder conflicts and problems with incompetent owners (common for second-generation family firms), which is why many firms have dispersed ownership. Majority-minority conflicts between owners arise when powerful owners over-consume, overinvest, and create private benefits through tunnelling mechanism. Tunnelling is defined as "*the transfer of assets and profits out of firms for the benefit of their controlling shareholders*" (Johnson et al., 2000, 1). High concentration gives high power to the largest owners who may not be suited or competent in optimal decision-making on behalf of the firm (Burkart et al., 1997).

2.4 Underinvestment and overinvestment problem

Financing and investment decisions are not independent in imperfect capital markets. Actually, imperfections in the capital market, such as asymmetric information, where one party has more information than the other party, and agency costs**,** might induce over- and underinvestment. This indicates that not all positive net present value (NPV) projects will be exploited (*underinvestment)* nor will all negative NPV projects be rejected (*overinvestment*). Asymmetric information between managers and shareholders may contribute to conflicts of interest and encourage overinvestments or underinvestments (Morgado and Pindado, 2003).

Exploiting positive NPV projects should be advocated whereas investing in negative NPV projects should be discouraged. In 1990, René M. Stulz wrote "Managerial discretion and optimal financing policies" in which he further discusses the overinvestment and underinvestment issues. He suggests that there is an optimal financing policy where there is a trade-off between the costs and benefits of debt. The optimum therefore lies between underinvestment and

overinvestment. According to Stulz, underinvestment may occur as debt payments force management to pay out cash flow instead of investing in positive NPV projects. He assumes that managers value investment because their perquisites increase with investment, even when the firm invests in negative NPV projects. Supported by Jensen (1986), free cash flow creates incentive for managers to overinvest, whereas debt makes managers pay out cash and therefore limits overinvestment. Consequently investment in all states of the world is reduced – reducing overinvestment while increasing the probability of underinvestment. Hence, debt impacts shareholders positively by reducing overinvestment and negatively by amplifying the underinvestment problem. Due to these problems, shareholders may use debt as a governance mechanism, as a way to discipline managers.

2.5 Debt as a Governance Mechanism

Imposing debt requirements on the firm means that managers are less able to take cash out of the firm for personal usage as the firm is financially constrained to repay creditors in the future. The managers therefore have to focus on generating future cash flow in order to prevent illiquidity and threat of bankruptcy. A possible liquidation process would imply a shift of the controlling hands to the creditors. Creditors' incentives of the firm's future differs from that by shareholders as they only worry about receiving as much as possible back, rather than keeping the firm as an going concern. Therefore, the debt should be set at a level that encourages managers to enter positive NPV projects and continue to finance existing ones, as this is the firms' livelihood (Tirole, 2006).

2.6 Alternative Theories of Capital Structure

2.6.1 Agency Theory Between Shareholders and Debt holders

Shareholders may have an incentive to maximize the value of their shares instead of the total value of the firm's debt and equity. This becomes evident when firms have debt in their capital structure. In other words, firms make different decisions for maximizing wealth when financed not only with equity. If the firm is equity

financed it will resort to less risky projects (Grinblatt and Titman, 2002). In AS and ASA private firms, shareholders' limited liability form the basis for the firm's preference for risky investments as higher risk should provide higher expected return. Gains will benefit managers and shareholders, while potential losses will be borne by debt holders. Substituting safer assets for risky assets, after debt is granted, is an agency problem known as the *asset substitution problem* (Jensen and Meckling, 1976). It is also known as overinvestment.

There is no debt contract that can control for all possible future events, thus no perfect contract can be written to prevent agency issues. However, if debtors are rational they will suspect there to be an assets substitution problem and so increase the interest rates on the loans. The debt contracts may therefore limit the firms in making investments, causing underinvestment problems. Another aspect of the underinvestment problem is presented by Stewart Myers (1977), as the *debt overhang problem*. In this case, debt made in previous periods limit the free cash flow that would be necessary in order to exploit positive NPV projects available.

2.6.2 Tradeoff Theory

The static tradeoff theory is based on the Modigliani-Miller theorem (1963), which has been developed to determine an optimal capital structure. It takes into account market imperfections such as bankruptcy cost of debt, agency costs and taxes. Kraus and Litzenberg (1973) propose it to be a balance between the deadweight loss of bankruptcy and the tax shield benefit of debt, disadvantage and benefit from leveraging. When debt to equity ratio increases, marginal benefit of tax and marginal cost of bankruptcy should get to an optimal point. The tradeoff theory proposed by Kraus and Litzenberg is the classical version, while it has later been extended further by among others Jensen and Meckling in 1976. Tax benefits are not so prevalent, whereas agency cost has been included as cost to debt. The effect of agency costs may increase or decrease the level of debt. In the case of too much equity the result may be the free cash flow problem mentioned above, and conflict of interest between managers and shareholders. Too high debt level may result in asset substitution, overinvestment, and conflict of interest between shareholders and bondholders (Baker and Wurgler, 2002). However, a static target debt level is rather impossible to hold for any circumstances. Firms are to various

degree financially constrained which affect the debt level. Therefore the theory argues that there are variables that need to be included when determining the target debt level of a firm, i.e. profitability, tangibility, size, growth opportunity. For example, a firm with high profitability and a solid level of tangible assets will usually have a higher target debt ratio. As the firm has collateral to offer as a security on the debt, the cost of debt is less than a firm with little collateral. Therefore, trade off theory suggests a positive relationship between profitability and leverage (Fama and French, 2002).

2.6.3 Pecking Order Theory

Another theory of capital structure is the pecking order theory. It is developed by Myers (1984), arguing that a firm follows a pecking order if it prefers internal to external financing and debt to equity if it is to use external financing. The reason is that managers have more information about the firm and its prospects than outside investors. Being aware of this, the outside investors require compensation, a discount in share prices, for the asymmetric information. Hence raising external funds is costly which is why managers avoid this form for fund raising if possible. The name of the theory comes from the order of desired financing methods of a firm: internal funds from retained earnings, riskless debt, risky debt and finally equity issue. Moreover, this theory considers managers' vision of financial flexibility and its effect on firms' leverage. In tough periods, having internal funds or excess reserves gives the managers flexibility in the sense of financial decision making. Furthermore, it makes firms less dependent on paying back claims or making new expensive loans. Hence, firms remain flexible in the sense of minimizing interest obligations in order to avoid shrinking their business in economic downturn (Graham and Harvey, 2001).

The pecking order theory will therefore be supported if there is a negative relationship between performance and leverage. This is because firms would not take on debt if internal funds were generated.

3. Hypotheses

In this section nine hypotheses are presented and explained. They are all built on the premise that private Norwegian firms are exposed to agency problems.

According to the agency theory, debt has the advantage of reducing the principal-agent problem between owners and managers. Leverage can be used to limit managerial overinvestment. On the contrary, if leverage is too high it can lead to debt overhang, and thus underinvestment. Owners would ideally set capital structure such that there is an optimum level of investment, the level that avoids both under and overinvestment. Owners with a low ownership share have less power over management and will have higher incentive to use debt as a disciplining device. As a result it is expected that leverage is higher in firms with dispersed ownership. Since private firms rely heavily on debt financing, this paper commences the research by testing whether leverage changes with the ownership concentration. The first hypothesis is as follows:

H1: Firms with dispersed ownership have higher leverage than firms with a majority shareholder.

A greater ownership share increases the power of the largest shareholder and enhances monitoring incentives. With increased power, shareholders can better monitor the investment decisions by management. Debt is therefore less important as a governance mechanism. For that reason, leverage is expected to decrease. To test this, the sample is split into firms with dispersed and concentrated ownership structure.

H2a: In firms with dispersed ownership, leverage is decreasing in the share of the largest shareholder.

When the largest owner is also the CEO, she will have greater power to keep leverage low in order to benefit from higher levels of free cash flow. In addition to the low transparency of private firms, this may incentivise the CEO to use his power to enjoy perquisites, also called the entrenchment effect.

H2b: In firms with dispersed ownership, leverage is decreasing in the ownership share of the CEO.

H2c: In firms with dispersed ownership, even lower leverage is expected when the largest shareholder is also the CEO.

Hypothesis one propose that with dispersed ownership leverage is higher. However, when firms with dispersed ownership have growth opportunities these may be taken advantage of and leverage will decrease. This is due to the fact that the firm uses the free cash flow on new investments. Shareholders are willing to exploit growth opportunities that they believe will increase their wealth. Debt is therefore less needed a as a disciplinary device on managers. On the other hand, when debt is substantially high, investment opportunities may not be taken advantage of due to debt overhang. Lower leverage may therefore be beneficial when growth opportunities are present.

H3: In firms with dispersed ownership, leverage is decreasing in growth opportunities.

So far the sample with dispersed ownership is examined, and the same hypotheses in the sample with concentrated ownership will be examined. The assumptions above apply for concentrated ownership as well: a greater ownership share increases the power of the largest shareholder and enhances monitoring incentives. Also, the managers' incentives will more or less be aligned with that of shareholders. However, the story behind these hypotheses is different. There is a controlling shareholder, which means that the problem of not having control over management is no longer present. Leverage is expected to decrease with the share of the majority shareholder because she can increasingly expropriate funds from minority shareholders. In addition, when increasing debt, the controlling shareholder has less to "steal" from the firm because more of the cash flow goes to paying the debt holders.

H4a: In firms with concentrated ownership, leverage is decreasing in the share of the largest shareholder.

When the CEO has an ownership share in the firm, leverage is expected to decrease. This is because the CEO will have greater power to limit leverage. When the CEO is also the majority shareholder she will have full control over capital structure and therefore leverage is expected to be even lower.

H4b: In firms with concentrated ownership, leverage is decreasing in the ownership share of the CEO.

H4c: In firms with concentrated ownership, leverage is even lower when the largest owner is also the CEO.

Leverage may also decrease as a function of growth opportunities. Exploiting growth opportunities may contribute to value maximisation for shareholders which may relax the use of leverage as a controlling device. This leads to the final hypothesis.

H5: In firms with concentrated ownership, leverage is decreasing in growth opportunities.

4. Description of Data and Variables

4.1 Description of Data

The Centre for Corporate Governance Research provides data from the CCGR database. This is a unique database containing corporate governance related data and accounting data for private Norwegian firms.

The CCGR database contains standardized yearly accounting data of all Norwegian private firms. The period that will be analysed in this thesis is 2006-2011. Because of the 2006 tax reform, that changed the dataset substantially, this paper starts with the accounting year of 2006. The dataset used in this study includes only non-utility and non-financial private firms, filtered to include only AS and ASA registered firms. Non-operating firms is filter out from the sample as these might be set up primarily for tax advantages only, and is expected to be an increase of these firms particularly after the new tax reform in Norway in 2006. In order to exclude the non-operating firms, firms with total assets less than

10 000 000 NOK are filter out which additionally excludes firms that are generally small in size. Some descriptive statistics of the sample are given in **Table 3.** Additionally, all negative observations on liabilities to financial institutions are excluded as these are considered unrealistic observations. This also goes for negative revenues, zero revenues for all years, and ownership percentage above 100percent. In order to separate majority ownership from minority dummy variables are used, 1 for ownership concentration above 50 percent and 0 for less than and equal to 50 percent.

The final sample consists of 170364 observations (firm-years), where 90724 are considered concentrated and 73281 dispersed. **Table 1** in appendix presents the number of firms and descriptive statistics over the six consecutive years. The industry sectors codes defined in the data sets can be found in **Table 2** in the appendix.

4.2 Variables

The variables obtained from the CCGR database are presented in appendix. In the proceeding section follows an elaboration of the variables (leverage, growth opportunities, and ownership concentration) and control variables (tangibility, performance, firm size, liquidity, and industry dummies).

Capital structure is the dependent variable in this study and represented by "Leverage". It is measured as the ratio of Debt to Total Assets, where debt is the sum of long- and short-term liabilities to financial institutions. Since the database consists of accounting data, all values are book values. Revenues over total assets as a proxy for growth opportunity is therefore use instead of the usual Tobin's Q. Trade credit is kept separated from leverage, meaning holding accounts payable and accounts receivable distinct from debt and assets.

$$\text{Leverage} = \frac{Short\ term\ liabilities\ to\ financial\ institutions + liabilities\ to\ financial\ institutions}{\text{Total Assets}}$$

According to Myers' (1977) firm value is made up of assets in place and growth opportunities. This paper uses Revenue over Total Assets as a proxy for *growth opportunities.* The value of growth opportunities depends on investments made by the managers. Brito and John (2002) concluded that growth opportunities which have not yet been taken advantage of has a considerably effect on agency costs of

debt. Firms in mature sectors with low future growth opportunities and with high leverage are often subject to overinvestment in risky projects. On the contrary, firms with good economic prospects are motivated to underinvestment and to avoid overly risky investments. Industries in which the opportunities for asset substitution are more limited will have higher debt levels. For example firms in mature industries with few growth opportunities will be more highly levered. Firms where slow or negative growth is optimal, and with large cash inflows from operations should have more debt (Raviv and Harris, 1991). This is because large cash inflows without future investment options facilitates actions such as consuming perquisites or build empires by managers. Jensen (1989) identified industries with these characteristics as steel, chemicals, tobacco, television and radio broadcasting, and wood and paper products.

$$\text{Growth opportunity} = \frac{Revenue}{Total\ Assets}$$

According to Jensen and Meckling (1976) there is a negative relation between *ownership concentration* and debt since firms with concentrated ownership structure will hesitate to take on excess debt if it introduces greater monitoring because there will be additional debt holders that will have interest in the firms operations. The variable used to measure the ownership concentration is the sum percent of equity held by the owner with rank 1, and divided by 100 to get a comparable ratio. The ownership concentration is measured by using variables based on ultimate ownership and not direct ownership. An ultimate owner may not own a firm directly but has an ownership through another firm.

$$\text{Share of largest owner} = \frac{\%\ Equity\ held\ by\ owners\ with\ rank1}{100}$$

Tangibility represents collateral and is measured as total fixed assets over total assets. According to Harris and Raviv (1991) and Myers and Majluf (1984), leverage is positively related to tangibility (fixed assets). The greater the tangibility the lower is the debt rate offered the firm as it can issue debt secured by the firm's property which has known values.

$$Tangibility = \frac{Total\ Fixed\ Income}{\text{Total Assets}}$$

The return on assets (ROA), Operating Income over Total Assets, is used as a proxy for *performance*. Titman and Wessels (1988) found that firms prefer to use internal funds if available. Firms with high earnings rate would maintain relatively low debt levels because of its ability to finance itself from internally generated funds. They prefer to remain flexible in the sense of minimizing interest obligations in order to avoid shrinking their business in economic downturn (Graham and Harvey, 2001). This indicates a *negative relationship* between performance and debt ratio. Tradeoff theory predicts *a positive relationship* to debt levels. Performance would have a positive relationship with leverage based on the same argumentation as for collateral, reducing debt rates promoting the use of debt. However, this does not seem to hold in practice.

$$Performance = \frac{Operating\ Income}{\text{Total Assets}}$$

Additionally, *firm size* is often argued to have a positive relationship with leverage. Size is measured by the logarithm of the book value of revenue. It is argued that large firms have better access to capital markets (Ozkan, 2002), fewer growth opportunities (Kim, Mauer and Stohs, 1995), are more diversified, and have lower probability of being financial distressed, i.e. lower expected bankruptcy costs (Rajan and Zingale, 1995) , more possibilities to publish information about themselves (Scherr and Hulburt, 2001), as well as more collateral (Ozkan, 2002).

$$Firm\ Size = \text{LnRevenue}$$

DeAngelo, DeAngelo, and Wruck (2002), concluded that *liquidity* is an important determinant of capital structure, as it affects the expected costs of financial distress and expected agency costs. It is expected to be a relationship between liquidity and leverage, hence a liquidity variable is therefore constructed as a control variable to account for this effect. Research including asset liquidity faces difficulties of measuring the liquidity of assets (Sibilkov, 2007). Both the current assets over current liabilities (current ratio) and current assets over total assets are used as proxy for liquidity (named proportion of liquid assets). Current ratio is frequently used and is appropriate for private firms. However, this proxy for liquidity reduces the number of observation substantially. The second proxy replaces the former as it increases the number of observation. Morellec (2001)

predicts a positive relation between asset liquidity and leverage when assets serve as collateral for debt contracts and when managers have no discretion over those assets. A negative relation between asset liquidity and leverage is predicted when the assets are not for collateral. However, the rational for a positive effect of liquidity on leverage is based on the idea that illiquid assets are more costly and timely to sell, and therefore the cost of liquidation, bankruptcy and debt will increase. Thus, firms that are less liquid reduce their probability of default by reducing leverage. Models that predict a negative effect argue that illiquidity makes it more expensive to expropriate from debt holders, which reduces the cost of debt, and firms then take up more debt.

$$\text{Current Ratio} = \frac{Current\ Assets}{Current\ Liabilities}$$

$$\text{Proportion of Liquid Assets} = \frac{Current\ Assets}{\text{Total Assets}}$$

Two dummy variables are also included in the regressions; a dummy for the CEO being the majority shareholder and a dummy for a firm having only one owner.

According to Harris and Raviv (1991) firms within the same industry are more similar than firms across industries, as firms within an industry share common factors. As firms in high leverage industry have higher leverage, accounting for industry effects is necessary (Frank and Goyal, 2009). Industry effect will therefore be measured by sector dummies according to the Standard Industry Classification (SIC) codes (Table 3 in Appendix) 9 industry dummies are used for classifying the firms into 9 different industry sectors in addition to keeping 0 as a reference group for firms missing an industry sector. In order to avoid correlation among the residuals, the dummies are added to the regression, and where the intercept is excluded in order to avoid perfect correlation with the dummies. **Table 1** below displays the industry codes for the sample.

The control variables like tangibility, performance size and liquidity is used for supporting tradeoff and pecking order theory if present in the regression results.

Table 1: Industry Dummies

This table includes all industry dummies used in all the regressions. It shows what sector each dummy represents, how many firms there is for each, how many percent of the total firms, and the standard industry classification code (SIC) it entails.

Industry Dummies	Sector Name	SIC Number	No. of firms	% firms
Id_1	Basic agriculture, forestry, fishing, mining and oil	1+2+3+4	5306	3,39
Id_2	Light industry	5	5357	3,43
Id_3	Heavy industry	6	8932	5,71
Id_4	Retail and wholesale	9	27583	17,63
Id_5	Building	8	14119	9,03
Id_6	Transport	10	9516	6,08
Id_7	Tourism	11	2686	1,72
Id_8	Publishing &Media,IT, Real Estate, Services, Gambling	12+14+15+17	82919	53,01
	Total		156418	100

4.3 Descriptive Statistics, Analysis of Variance and Variance Inflation Factor

This section presents the most relevant descriptive statistics, analysis of variance and variance inflation factors (VIF). **Table 2** outlines the descriptive statistics for the main variables for the full sample. Year by year descriptive statistics are included in the appendix (Table 1). **Figure 1** shows the distribution of the ownership variable. **Table 3** display correlations between all the main variables and some variables that are used to construct a main variable. The table contains two correlation matrices, one with the old measure for liquidity (current ratio) and the other with the proportion of liquid assets. **Table 4** display the number of observations for each variable in the entire sample and two subsamples. **Table 2** in the appendix provides a test of the three assumptions for Anova. **Table 5** outlines the mean and the median for all the main variables and the Anova F-test. **Table 6** displays the VIF's for the main variables used in the regressions and VIF's including the current ratio.

4.3.1 Descriptive Statistics

Table 2: Summary Statistics

This table shows the main statistical measures for the main variables used in the regression analysis. It is for the full sample. N is the number of observations.

	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,60	0,90	0,13	0,73	0,64	0,07	48638157	16,75	0,23
Median	0,51	0,08	0,00	0,93	0,57	0,04	2111000	17,19	0,08
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,00	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
Std, Dev,	0,34	1,32	0,24	0,34	0,31	0,15	1,4E+08	2,14	0,29
N	31830	163418	163418	163418	163418	163418	163418	96458	96458

In **Table 2** is the statistical measures; mean, median, maximum, minimum, number of observations and standard deviation. Mean and median should not deviate substantially from each other when there is normal distribution of the data. Most variables exhibit this, however the growth opportunity (GO) and tangibility is deviating somewhat. The variables have been winsorized to deal with this. Max and min defines the range of each variable. This is particularly important for leverage and ownership variables as these shouldn't deviate from the range 0-1. Standard deviation shows the variation away from the mean. All the variables have low standard deviation.

Except from CEO ownership, all variables have a large number of observations. Therefore, when using the CEO series in the regressions, this is important to keep in mind as it can make the results insignificant if there is too few observations.

Figure 1: Distribution of ownership

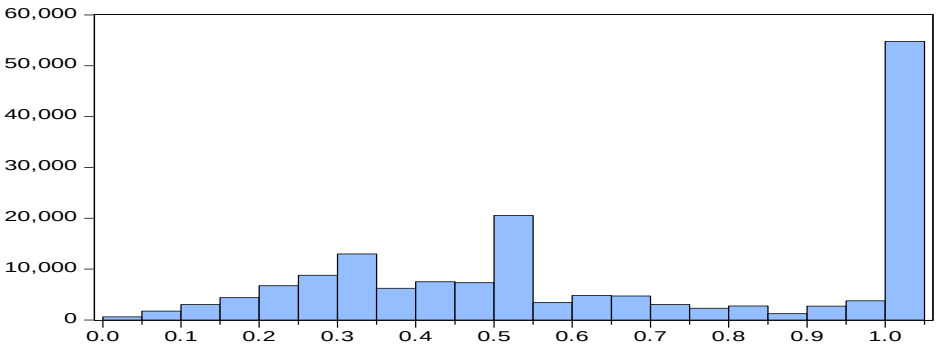

Figure 1 is included to give a visual understanding of the skewed distribution of ownership. The number of single owners is significantly bigger than for any number of owners. Around 55 000 firms have only one owner. This has been taken into account as regressions are including a dummy for these single owners. Including such a dummy would prevent the results to be driven by this factor.

Table 3: **Correlation Matrices**
The top matrix includes the portion of liquid assets as a measure for liquidity, while the bottom uses the current ratio. All main variables are included as well as operating income and revenue as these form the basis for some of the main variables.

	CEO Ownership	Leverage	Liquidity	Op. income	Ownership	Performance (ROA)	Revenue	Size	GO	Tangibility
CEO Ownership	1,00									
Leverage	0,07	1,00								
Liquidity	-0,07	-0,56	1,00							
Operating income	-0,05	-0,10	0,07	1,00						
Ownership share	0,59	0,02	-0,01	-0,04	1,00					
Performance (ROA)	-0,04	-0,22	0,15	0,40	-0,07	1,00				
Revenue	-0,18	-0,14	0,19	0,31	-0,08	0,10	1,00			
Size	-0,18	-0,17	0,28	0,19	-0,11	0,27	0,57	1,00		
GO	-0,12	-0,23	0,33	0,05	-0,06	0,24	0,51	0,70	1,00	
Tangibility	0,07	0,55	**-1,00**	-0,07	0,00	-0,15	-0,19	-0,28	-0,33	1,00

	CEO Ownership	Leverage	Liquidity	Operating income	Ownership share	Performance (ROA)	Revenue	Size	Tangibility	GO
CEO Ownership	1,00									
Leverage	0,09	1,00								
Liquidity	0,00	-0,11	1,00							
Operating income	-0,05	-0,06	0,00	1,00						
Ownership share	0,84	0,05	0,00	-0,05	1,00					
Performance (ROA)	-0,06	-0,17	0,03	0,27	-0,06	1,00				
Revenue	-0,20	-0,12	-0,01	0,15	-0,17	0,10	1,00			
Size	-0,23	-0,13	-0,03	0,09	-0,20	0,22	0,55	1,00		
Tangibility	0,08	0,42	-0,04	-0,03	0,05	-0,05	-0,16	-0,17	1,00	
GO	-0,15	-0,21	-0,01	0,01	-0,13	0,19	0,48	0,69	-0,28	1,00

Table 3 displays the correlation matrix for the variables included in the regression as well as a matrix with the current ratio as a liquidity proxy. The current ratio doesn't have high correlation with any of the other variables, it does however have very few observations relative to the other variables used. The new measure

for liquidity has perfect negative correlation with tangibility. Tangibility is therefore excluded from the regressions.

The highest correlation is between, ownership share and CEO ownership share. However, these two variables are not used in the same regression. The second largest correlation is between GO and size. Its 0,70 and is the larges accepted value for positive correlation between variables used in the same regression. To make sure these two can be included together in a regression the Variance Inflation Factor was calculated, and was below the threshold for multicollinearity (**Table 7**)

Table 4: Number of observations for each variable in three samples

Variable	Dispersed	Concentrated	All
Revenue	73013	90405	163418
Growth Opportunity	73013	90405	163418
Tangibility	43298	53160	96458
Performance	73013	90405	163418
Ownership	73013	90405	163418
Liquidity (Current Ratio)	10288	11662	21950
Proportion of Liquid Assets	73013	90405	163418
CEO Ownership	12952	18878	31830
Leverage	73013	90405	163418

Table 4 outlines the number of firms in the dispersed, the concentrated ownership structure sample, and full sample for all years. This is important to check as a large full sample may look sufficient while for the regressions using only a subsample may be compromised if the difference is large. The samples are not significantly larger for any of the variables. In the appendix, there is a year by year count of each variable confirming that there is no significant difference in the subsamples across years.

4.3.2 Analysis of Variance

This section analyses the variance of the mean and median between the two groups concentrated and dispersed ownership structure. ANOVA is used for testing the variance of means between the two group whereas Kruskal-Wallis is used for testing the median.

Table 5: Analysis of variance test (ANOVA)

This table shows all the main variables' mean and median and the p-values for both Anova F-test and the Kruskal-Wallis Test.

	Total		Concentrated		Dispersed		Difference		ANOVA's F-test	Kruskal-Wallis Test
Variables	Mean	Median	Mean	Median	Mean	Median	Mean	Median	p-value	p-value
Leverage	0,13	0,00	0,12	0,00	0,15	0,00	-0,04	0,00	0,000	0,000
Revneue	48638k	2111k	54402k	1840k	41501088	2485k	12901k	-645k	0,000	0,003
GO	0,90	0,08	0,91	0,07	0,90	0,09	0,01	-0,02	0,061	0,090
Tangibility	0,23	0,08	0,22	0,08	0,23	0,08	-0,01	-0,01	0,000	0,000
Performance	0,07	0,04	0,06	0,03	0,07	0,04	-0,01	-0,01	0,000	0,000
Ownership	0,64	0,57	0,88	1,00	0,34	0,34	0,54	0,66	0,000	0,000
Liquidity	356,41	7,25	367,40	7,39	343,95	7,12	23,45	0,26	0,575	0,002
CEO Ownership	0,60	0,51	0,80	1,00	0,31	0,33	0,49	0,67	0,000	0,000

When analyzing the difference in mean the one-way ANOVA's F test is utilized. The null hypothesis for the test is that there is no difference between the two samples. **Table 5** displays the variable statistics, for which the null hypothesis cannot be rejected for Growth Opportunities and Liquidity. For the remaining variables it can be concluded that there is a statistical significant difference between the two groups. However, there are three assumptions underlying the ANOVA test that must be met to ensure the validity of the analysis and the power of the test. The following three assumptions have been check in this study and for which the results are presented in **Table 2** in the Appendix: 1) Homogeneity of variance; 2) Normally distributed errors; 3) Independent error terms. Only assumption three is satisfied. As two out of three assumptions are not met, the chances are high for incorrectly rejecting the null hypotheses. Probably the most important explanation for why the first two assumptions failed is the inequality in sample sizes between the two groups, and also because the panel data is unbalanced.

Since the median is less sensitive to outliers than the mean, the equality test of the median is run, the *Kruskal-Wallis* test. It is a non-parametric ANOVA test, making no assumptions about normality. This assumption is made in the ANOVA test, which can provide inaccurate p-values when the data is far from being normally distributed. The null hypothesis for Kruskal-Wallis test is that there is

no difference between the median of the two groups, concentrated and dispersed ownership. From the results displayed in **Table 5**, all variables are *rejected* except from *Growth Opportunity* which cannot be reject. This means that the median of Growth Opportunity is not statistically significantly different between the two groups.

4.3.3 Variance Inflation Factor

Table 6 : Variance Inflation Ratio

When the VIF coefficient is below 5, there is no evidence of multicollinearity. The first result table includes Current Ratio as proxy for Liquidity. The second result table includes the second proxy for Liquidity, Proportion of Liquid Assets. However, the VIF result for Proportion of Liquid Assets excludes Tangibility which is why it has an acceptable value below the VIF threshold.

Explanatory Variables (w/current ratio)	**VIF**
Size	2,00
Growth Opportunity	2,01
Tangibility	1,09
Performance	1,06
Ownership	3,44
Current Ratio	1,00
CEO Ownership	3,51

Explanatory Variables (w/proportion of liquid assets)	**VIF**
Size	2,53
Growth Opportunity	2,21
Tangibility	**39915943**
Performance	1,19
Ownership	1,00
Portion of liquid assets	1,08
CEO Ownership	1,02

The presence of multicollinearity within a set of explanatory variables can make interpreting the significance of the individual variables in a regression model difficult. In order to measure the degree of multicollinearity in the regressions the Variance Inflation Factor (VIF) is used. The VIF is measuring to what extent a variable is affecting the standard error in the regression. If significant multicollinearity is present the VIF will be large for the inflated variable (O'Brien, 2007). Because of this significance, it is possible to have a relatively large R_i^2 although the independent variable is not statistically significant. Hence, it is

important to adjust the model if there is evidence for multicollinearity. *Equation 5* below has been used to calculate all pairs of explanatory variables, where R_i^2 is the goodness of fit for the i^{th} explanatory variable.

$$VIF = \frac{1}{1-Ri^2} \quad (5)$$

The threshold of multicollinearity has been set to the level of VIF at 5. **Table 6** shows the results from the explanatory variables. There is no evidence of strong multicollinearity among the variables except from *Tangibility* in the second VIF measurement. The correlation matrix shows that the multicollinarity is likely to be a result from the perfectly negative relationship between tangibility and the proportion of liquid assets as a proxy for liquidity. The reason why proportion of liquid assets has a low value presented in the VIF results is that liquidity is excluded in this measurement. This is also the case when testing the hypotheses using regression with proportion of liquid assets as proxy for liquidity.

5. Methodology

This section will thoroughly explain the steps performed for this thesis. From receiving the raw data from the CCGR database to running the regressions. The reason for being particularly detailed is that it will be useful for further research using this database. It might shorten the data handling time for any future analysis.

5.1 Data handling and regression equations

In excel the data is filtered for negative liabilities, utility and financial firms are excluded, and the non-readable missing values are replaced by #NA. Then the data series are imported into Eviews for further filtering and estimation purposes. The sample is filtered for firms with zero revenue in all six years. Descriptive statistics are estimated in order to observe any outliers that would potentially drive the results. In addition, the number of observations for each variable is displayed from the descriptive statistics which also facilitates the comparison between the whole sample and the two subsamples. The covariance matrix is produced in Eviews making it possible to detect any multicollinearity problems.

To handle extreme outliers winsorization is applied. Winsorization is a transformation method in which outliers are replaced with a threshold quintile value. The reason for choosing this method is to avoid micromanaging at a case-by-case basis, and rather treat the outliers with an arms-length approach. The quintile values chosen are 0.01 percent, 0.05 percent and 0.1 percent. For example, the maximum and minimum 0.1 percent observations are deleted from series included in the regressions. Depending on the amount of outliers, different values were used on the different variables. 0.01 percent was used on firm Size, 0.05 percent on Growth Opportunity and 0.1 percent was used for the other variables.

The data is structured as an unbalanced panel, it is therefore necessary to identify both a group ID reference and a cell ID reference for Eviews to register it as a panel. The group ID is the firm ID series, and the cell ID is the year series.

To test the first hypothesis, the whole sample of firms is used (concentrated and dispersed ownership). The dependent variable is leverage and the main independent variable is a dummy for ownership concentration. To control for various effects, firm size, growth opportunities, industry effects, tangibility, firm performance and liquidity, are included. This is elaborated in section 4.
For all hypothesis tests three different regressions are run - changing the usage of liquidity. It is done in order to maintain an acceptable number of observations making the results more trustworthy. One regression is with the current ratio, the second is without liquidity whereas the third is with the second proxy for liquidity and excluding tangibility. The reason for the latter is because of the high level of VIF for tangibility, which exceeds the VIF threshold. In addition, it has a perfectly negative correlation with proportion of liquid assets (second proxy for liquidity). Hence, the coefficient values of the two variables and the constant are high and might cause incorrectly interpretation of the significance of liquidity.
Equation (1) below is tested to investigate the first hypothesis. As explained in section 4.3.3 the initial VIF value for proportion of liquid assets was also exceeding the threshold as it included tangibility. However **Table 2** presents the new value after excluding tangibility and this is below the threshold.

As mentioned the data set is unbalanced; this means that for some firms there are some missing years of data. Being able to test the hypothesis on this data, it is necessary to adjust for the unbalanced panel. This is done by importing the data as undated and unstructured panel in Eviews, as explained above.

$$Leverage = \alpha_0 + \beta_1 Ownership + \beta_2 Size + \beta_3 GO + \beta_4 ID_1 + \beta_5 ID_2 + \beta_6 ID_3 + \beta_7 ID_4 + \beta_8 ID_5 + \beta_9 ID_6 + \beta_{10} ID_7 + \beta_{11} ID_8 + \beta_{12} Tangibility + \beta_{13} Performance + \beta_{14} Liquidity + \beta_{15} SingleOwner + \varepsilon \quad (1)$$

It is only in hypothesis 1 that the whole sample is used. For the remaining hypotheses the sample is divided in two. The split is between dispersed and concentrated ownership. The division is made on the criterion that ownership by the largest ultimate owner equal to or less than 50 percent, is the dispersed sample. For hypotheses 2-3 this sample is used. Hypotheses 4-5 is based on the concentrated sample.

The second hypothesis, 2A, is tested with a similar regression as in hypothesis one, however the ownership variable is not a dummy in this hypothesis, it's the actual percentage held (2). As hypothesis two is tested on the dispersed sample, a single owner dummy is superfluous. Hypothesis 2b is tested with a factor that gives the percentage ownership fraction that the CEO may have in the firm (3). This variable replaces the ultimate ownership variable, as these are correlated. Hypothesis 2c adds another variable; a dummy variable that is one if the CEO holds the largest ownership share and zero otherwise (4).

$$Leverage = \alpha_0 + \beta_1 Ownership + \beta_2 Size + \beta_3 GO + \beta_4 ID_1 + \beta_5 ID_2 + \beta_6 ID_3 + \beta_7 ID_4 + \beta_8 ID_5 + \beta_9 ID_6 + \beta_{10} ID_7 + \beta_{11} ID_8 + \beta_{12} Tangibility + \beta_{13} Performance + \beta_{14} Liquidity + \varepsilon \quad (2)$$

$$Leverage = \alpha_0 + \beta_1 CEOownershipshare + \beta_2 Size + \beta_3 GO + \beta_4 ID_1 + \beta_5 ID_2 + \beta_6 ID_3 + \beta_7 ID_4 + \beta_8 ID_5 + \beta_9 ID_6 + \beta_{10} ID_7 + \beta_{11} ID_8 + \beta_{12} Tangibility + \beta_{13} Performance + \beta_{14} Liquidity + \varepsilon \quad (3)$$

$$Leverage = \alpha_0 + \beta_1 CEOdummy + \beta_2 Size + \beta_3 GO + \beta_4 ID_1 + \beta_5 ID_2 + \beta_6 ID_3 + \beta_7 ID_4 + \beta_8 ID_5 + \beta_9 ID_6 + \beta_{10} ID_7 + \beta_{11} ID_8 + \beta_{12} Tangibility + \beta_{13} Performance + \beta_{14} Liquidity + \varepsilon \quad (4)$$

$$Leverage = \alpha_0 + \beta_1 Ownership + \beta_2 Size + \beta_3 GO + \beta_4 ID_1 + \beta_5 ID_2 + \beta_6 ID_3 + \beta_7 ID_4 + \beta_8 ID_5 + \beta_9 ID_6 + \beta_{10} ID_7 + \beta_{11} ID_8 + \beta_{12} Tangibility + \beta_{13} Performance + \beta_{14} Liquidity + \beta_{15} CEOdummy + \varepsilon \quad (5)$$

In the fourth hypothesis, the relationship between leverage and growth opportunities is explored (5). Growth opportunities might be driven by industry specific determinants, but these effects are captured by the industry dummies.
Usually Tobin's Q would be used in this regression, but since this thesis examines private firms only, there are no market values available to calculate Tobin's Q. In this regression the proxy for growth opportunities is revenue over total assets. The intuition for this is that a firm with high revenues to total assets will have a higher capacity to invest and also a need to expand.

After examining the effects of ownership share, CEO ownership share and growth opportunities on the dispersed ownership sample, the remaining four hypotheses will examine the exact same relationships in the sample with concentrated ownership. The only exception is that in the concentrated sample a single owner dummy is included. For the concentrated sample it's very important to capture any effects driven by the distributional imbalance caused by the single owners.

In the concentrated sample, ownership share will go from just above 50 percent to 100 percent. The split is made by creating a dummy in Eviews, and filtering the sample by defining the sample as a function of the dummy.
The first step in running the regressions is to run pooled regressions where all observations are regressed together. Then run fixed effects regressions where dummies for every firm is included. Thus, it imposes time independent effects for each firm that possibly is correlated with the regressors. This approach will account for unobservable characteristics of the firms, which are assumed to be fixed over time. This assumption is relatively strong, and is a weakness to this method.

Random effects regression might work better when working with persistent variables, which is usually the case for both leverage and ownership concentration. Thus, the random effects regressions will be run as well. These two methods might show different results, and therefore a test of which one to use will be run. This test is called a Hausman-test. Under the null hypothesis, the Random effects model is preferred due to higher efficiency, while under the alternative hypothesis fixed effects is at least consistent and thus preferred.

If random effects model is used when there is a fixed effect across firms, the random effects model will induce omitted variable bias. The error term will no longer be identically, independently distributed (i.i.d) nor random nor with a mean of zero. Thus, some assumptions for running OLS are violated.

5.2 Fixed effects model estimation

In addition to running regular pooled OLS regressions, the fixed effect estimation and random effect estimation was used. In order to test which of these models to use, the likelihood ratio test and the Hausman test was run. The first test was performed on the fixed effect result and resulted in not being able to just use the pooled results. The Hausman test resulted in having to implement the fixed effects model. Both the fixed effects results and the random effects regression results are included in the appendix (Table 5).

Choosing the fixed effects model for panel data estimation in Eviews is equivalent to generating dummy variables for each of the firms and including them in a standard linear regression to control for these fixed "case effects". These effects are the unobservable firm characteristics for each individual firm. This method of estimation works best when there are fewer firms because each dummy variable remove one degree of freedom from the model. Choosing the fixed effects model in Eviews gives three options: cross-section fixed effect, period fixed effect or both.

Statistically, fixed effects are always a reasonable thing to do with panel data (they always give consistent results) but they may not be the most efficient model

to run. Random effects will give better P-values as they are a more efficient estimator.

After careful estimation and analysis, the regression models were run by using fixed effects across periods (years). All models include industry dummies, which gives a similar effect as having fixed effects for both period and cross-section without losing as many degrees of freedom.

5.3 Endogeneity

In the regression models, a problem with endogeneity would indicate correlation between leverage and the main variables and the error term. It can result from measurement error, autocorrelated errors, omitted variables and simultaneity. It would be a loop of causality between leverage and ownership, instead of the explanatory variable strictly explaining the variance of the dependent variable. (Kennedy 2008, 139). This is a severe error and of great concern for this thesis. However, this problem is not present as ownership is very stable across all samples and the VIF is lower than the threshold (**Table 6**).

5.4 Expectations

The first hypothesis predicts there to be ***higher*** *leverage for firms without a majority shareholder than the ones with a majority*. A greater ownership share increases the power of the largest shareholder and enhances monitoring incentives. The second hypothesis predicts that in *firms with dispersed ownership, leverage is* ***decreasing*** *in the share of the largest shareholder.* When the largest owner is also the CEO, she will have greater power to keep leverage low in order to benefit from higher levels of free cash flow. In addition to the low transparency of private firms, this may incentivise the CEO to use his power to entrench himself. The third hypothesis is therefore to test the prediction that *in firms with dispersed ownership, leverage is* ***decreasing*** *in the ownership share of the CEO*. *When the CEO is the largest shareholder there would be an even* ***lower*** *level of leverage* as the manager has full control over the capital structure decisions. This is tested in the fourth hypothesis. Leverage is expected to be lower when there are growth opportunities available for the firm. Owners recognize possibilities to

expand and thus allow lower leverage in order to exploit some valuable growth opportunities. The fifth hypothesis therefore predicts that *in firms with dispersed ownership, leverage is* ***decreasing*** *in growth opportunities.*

In the sample with firms that has a majority shareholder, the hypotheses are the same. The same expectations about the signs are also equal.

Apart from the industry dummies, the main variables and the control variables are expected to be significant as these are commonly used in empirical models explaining leverage.

6. Empirical Results

6.1. Hypothesis Test Results

In this section results from the hypotheses tests are presented. The results are presented in **Tables 7-15**. Explanations with regards to agency theory or the alternative theories are provided for each table.

The current ratio is commonly used as a liquidity measure. In this dataset however, the number of observations are much lower for this measurement compared to the other main variables. Therefore the proportion of liquid assets as a proxy for liquidity is used instead. The results are presented for three different regression models: with the current ratio, without liquidity, and proportion of liquid assets. In the regressions with proportion of liquid assets the R^2 values vary between 21 and 36 percent. The R^2 values for the current ratio is between 15,5 and 27 percent. The R^2 increases when including the CEO dummy. The firms reporting this variable might be larger and provide more reliable and consistent reporting.

The number of cross-section observations and total panel observations for each regression is included at the bottom of each table. These clearly underpin the reason for changing the proxy from current ratio to proportion of liquid assets. The number of cross-section observations is about three times higher for proportion of liquid assets and about five times higher for the panel observations.

Table 7: Testing hypothesis 1 – The effect of Ownership Structure on Leverage

Table 7 displays the coefficients obtained from equation 1 using an OLS panel regression model. The ownership variable is a dummy of 1 when the ownership structure is concentrated and 0 when ownership structure is dispersed. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The entire sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid assets
Concentration Dummy	**-0,017*** **	**-0,023*** **	**-0,0062*** **
	(-5,899)	(-18,73)	(-3,89)
Size	**-0,012*** **	**-0,012*** **	**-0,011*** **
	(-11,159)	(-29,95)	(-28,79)
GO	**-0,013*** **	**-0,002**	**-0,0013** **
	(-9,122)	(-1,457)	(-2,23)
Industry Dummies	Yes	Yes	Yes
Tangibility	**0,233*** **	**0,302*** **	
	(-36,614)	(130,012)	
Performance	**-0,162*** **	**-0,095*** **	**-0,096*** **
	(-16,637)	(-26,494)	(-27,013)
Liquidity	**-6.33E-06*** **		**-0,30*** **
	(-12,059)		(-130)
Single Owner Dummy			**-0,029*** **
			(-16,89)
C	**0,467*** **	**0,278*** **	**0,57*** **
	(21,476)	(39,599)	(83,6)
R^2	17 %	22,30 %	22,57 %
Obs. Cross-sections included	9032	32206	32206
Obs. Total panel (unbalanced)	17970	96458	96458

The first hypothesis is *not rejected*. The firms with concentrated ownership have slightly less leverage compared to the firms with dispersed ownership. The ownership concentration dummy is significant at the 1 percent level. This supports the agency theory, but the coefficient is small and the difference between the two ownership structures is therefore not economically significant.

Shareholders in a concentrated ownership structure have greater incentive for monitoring the managers and use less debt as a disciplinary device. Shareholders in a dispersed ownership structure have less power of the firm and hence require a higher level of debt in order to prevent entrenchment effect.

The small difference between the two ownership structures might be due to the way the sample is spilt. Even though everything above 50 percent gives the firm a majority shareholder, there might be someone that has an additional share that is not accounted for in the concentrated sample. A greater split between concentrated and dispersed ownership structure has been used for testing several regressions. None of them gave any significant impact on the results, therefore these are not provided in this paper.

From **Figure 1** it is clearly a large amount of single owner firms in the distribution of ownership concentration. This might drive the results, and is controlled for in the regression by including a single owner dummy. The dummy is negative and significant at the 1 percent level. Single owner firms have less debt compared to the rest of the sample, but the effect is not as large as expected from the impression made in figure 1.

Another factor that might have affected the results is trade credit. Many small private firms have either trade credit instead of or in addition to institutional leverage. The relationship would perhaps be larger if trade credit was included in leverage. This paper will not investigate this further due to lack of data.

Dispersed Ownership Structure

Table 8: Testing hypothesis 2A –The effect of Ownership Structure on Leverage for Firms with Dispersed Ownership

Table 8 displays the coefficients obtained from equation 1 using an OLS panel regression model. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The dispersed sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid assets
Ownership share	**0,076*** **	**0,102*** **	**0,10*** **
	(4,202)	(12,923)	(12,94)
Size	**-0,008*** **	**-0,007*** **	**-0,006*** **
	(-4,752)	(-10,477)	(-10,38)
GO	**-0,018*** **	**-0,007*** **	**-0,007*** **
	(-8,400)	(-6,562)	(-6,63)
Tangibility	**0,244*** **	**0,318*** **	
	(26,245)	(89,258)	
Performance	**-0,174*** **	**-0,109*** **	**-0,11*** **
	(-12,836)	(-20,25)	(-20,26)
Industry Dummies	Yes	Yes	Yes
Liquidity	**-6.50E-6*** **		**-0,32*** **
	(-8,262)		(-89)
C	**0,371*** **	**0,18*** **	**0,50*** **
	(10,711)	(14,782)	(41,5)
R^2	19 %	23,78 %	24 %
Obs. Cross-sections included	4634	16479	16479
Obs. Total panel (unbalanced)	8520	43298	43298

Hypothesis 2A focuses on the relationship between leverage and dispersed ownership structure. The results are statistically significant for all variables at the 1 percent level (**Table 8**). Ownership share has a positive relationship with leverage. The hypothesis is therefore *rejected*. The results do not support the agency theory suggesting that debt is decreasing in the share of the largest shareholder. Nonetheless the results do support the pecking order theory. The control variable performance is negative (-0,11) and statistically significant at the 1 percent level. It satisfies the pecking order theory which proposes that a decline

in internal funds causes the debt level to increase. Since firms regard issuance of equity to be expensive due to the asymmetric information problem, they will rather use internal funds before increasing debt. If they realise a decline in performance, they will have insufficient internal funds to finance new projects and would therefore increase debt.

Table 9: Testing hypothesis 2B –Dispersed Ownership Structure with the CEO being a shareholder

Table 9 displays the coefficients obtained from equation 2 using an OLS panel regression model. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The dispersed sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
CEO Ownership share	**0,098*** **	**0,071*** **	**0,071*** **
Size	**0,003**	**0,004*** **	**0,004*** **
	(0,678)	(2,683)	(2,7)
GO	**-0,023*** **	**-0.009*** **	**-0.009*** **
	(-4,375)	(-3,869)	(-3,87)
Tangibility	**0,308*** **	**0,431*** **	
	(15,004)	(53,469)	
Performance	**-0,305*** **	**-0,200*** **	**-0,20*** **
	(-8,259)	(-15,523)	(-15,53)
Industry Dummies	Yes	Yes	Yes
Liquidity	**-1.13E-5*** **		**-0,43**
	(-3,473)		(-53,46)
C	**0,272*** **	**0,048***	**0,48**
	(3,086)	(1,778)	(17,53)
R^2	27 %	35,7 %	35,8 %
Obs. Cross-sections included	987	3631	3631
Obs. Total panel (unbalanced)	1660	8583	8583

Hypothesis 2B is *rejected.* The results from this hypothesis are presented in **Table 9**. CEO ownership share and leverage has a positive relationship of 0,071 and is significant at the 1 percent level. The level of debt increases in the share of the CEO.

Because the hypothesis is *rejected* the capital structure cannot be explained by the agency theory. Nevertheless, the results support the pecking order theory. The performance variable is negative (-0,2) and significant at the 1 percent level and is economically significant. This means that as firm performance declines the level of debt increases. Information asymmetry problems make fundraising from issuing equity expensive. Firms therefore prefer to increase debt instead, or use internal funds for financing new projects. As internal funding is the cheapest alternative, they will increase debt only if the internal funds are not sufficient.

Table 10: Testing hypothesis 2C – Dispersed Ownership Structure with a dummy for CEO being the Majority Shareholder

Table 10 displays the coefficients obtained from equation 3 using an OLS panel regression model. The CEO variable is a dummy of 1 when CEO is the largest shareholder and 0 otherwise. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The dispersed sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
CEO Dummy	**0,012**	**0,020*** **	**0,02*** **
	(1,23)	(4,76)	(-4,8)
Size	**0,0036**	**0,004** **	**0,004** **
	(0,83)	(2,707)	(-2,41)
GO	**-0,026*** **	**-0,01*** **	**-0,01*** **
	(-4,66)	(-3,97)	(-3,9)
Tangibility	**0,310*** **	**0,435*** **	
	(15,23)	-15,19	
Performance	**-0,29*** **	**-0,201*** **	**-0,20*** **
	(-7,9)	(-15,19)	(-15,5)
Industry Dummies	Yes	Yes	Yes
Liquidity	**-1.2E-05*** **		**-0,43*** **
	(-3,67)		(-53,7)
C	**0,28*** **	**0,053** **	**0,49**
	(3,23)	(2,009)	(18,8)
R^2	25,45 %	35,70 %	35,7 %
Obs. Cross-sections included	987	3631	3631
Obs. Total panel (unbalanced)	1660	8583	8583

The results in **Table 10** imply that hypothesis 2C is *rejected*. There is no support of the agency theory. When the majority shareholder is also the CEO it actually has a positive impact on leverage, though, economically this relationship is small (0,02). The number of observations for the CEO series is limited and may induce insignificant results. However, these results give support to the pecking order theory. The coefficient for performance is negative and statistically significant at the 1 percent level. This indicates that firms with dispersed ownership structure regard internal funds and borrowing as more attractive than raising funds by issuing equity.

Table 11: Testing hypothesis 3 – Exploring the effect of Growth Opportunities on Leverage in a Dispersed Ownership Structure

Table 11 displays the coefficients obtained from equation 4 using a OLS panel regression model. The CEO variable is a dummy of 1 when CEO is the largest shareholder and 0 otherwise. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The dispersed sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
CEO Dummy	**0,007**	**0,018*** **	**0,018*** **
	(-0,672)	(-4,249)	(4,24)
Ownership share	**0,101** **	**0,043** **	**0,043** **
	(-2,208)	(-2,339)	(2,33)
Size	**0,002**	**0,004*** **	**0,004*** **
	(-0,567)	(-2,652)	(2,65)
GO	**-0,024*** **	**-0,01*** **	**-0,0095*** **
	(-4,359)	(-3,904)	(-3,91)
Tangibility	**0,309*** **	**0,431*** **	
	(-15,052)	(-53,62)	
Performance	**-0,302*** **	**-0,201*** **	**-0,2*** **
	(-8,153)	(-15,555)	(-15,55)
Industry Dummies	Yes	Yes	Yes
Liquidity	**-1.16E-5*** **		**-0,43*** **
	(-3,572)		(-53,6)
C	**0,269*** **	**0,044**	**0,47**
	(-2,979)	(-1,549)	(16,8)
R^2	27 %	35,80 %	35,8 %
Obs. Cross-sections included	987	3631	3631
Obs. Total panel (unbalanced)	1660	8583	8583

Hypothesis 3 focuses on the growth opportunity variable whereas the rest of the variables function as support variables. The results in **Table 11** supports hypothesis 3, and so it *cannot be rejected*. There is a negative relationship between leverage and growth opportunities. Thus, leverage decreases as growth opportunities increase.

A negative relationship between leverage and growth opportunities supports the agency theory behind the hypothesis. Particularly, it is expected that leverage will be determined as a function of growth opportunities in firms with dispersed ownership structure. Less leverage will be needed if there are possible investment opportunities that may increase shareholders' wealth. The free cash flow, or internal funds of the firm, is spent on the new investments. The shareholders do not see the necessity of increasing debt since the growth opportunities are believed to be beneficial and not give rise to overinvestment issues.

Concentrated Ownership Structure

Table 12: Testing hypothesis 4A- The effect of Ownership Structure on Leverage in a Concentrated Ownership Structure

Table 12 displays the coefficients obtained from equation 1 using an OLS panel regression model. The single owner variable is a dummy of 1 when there is only one shareholder in the firm and 0 if there are more than one owner. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The concentrated sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
Ownership share	**-0,053*** **	**-0,072*** **	**-0,022** **
	(-4,728)	(-15,721)	(-2,51)
Size	**-0,014*** **	**-0,013*** **	**-0,013*** **
	(-10,018)	(-27,959)	(-27,3)
GO	**-0,011*** **	**0,002** **	**0,002** **
	(-5,236)	(-2,54)	(2,28)
Tangibility	**0,225*** **	**0,286*** **	
	(-25,763)	(-93,771)	
Performance	**-0,155*** **	**-0,088*** **	**-0,089*** **
	(-11,12)	(-18,460)	(-18,55)
Industry Dummies	Yes	Yes	Yes
Liquidity	**-6.04E-6*** **		**-0,28*** **
	(-8,591)		(-93,9)
Single Owner Dummy			**-0,02*** **
			(-6,68)
C	**0,536*** **	**0,337*** **	**0,587*** **
	(-17,902)	(-35,697)	(55,7)
R^2	15,50 %	21,40 %	21,4 %
Obs. Cross-sections included	5071	19556	19556
Obs. Total panel (unbalanced)	9450	53160	53160

The results from hypotheses 4A test are presented in **Table 12**. Hypothesis 4A *cannot be rejected* as there is a negative and statistically significant relationship between ownership share and leverage at the 1 percent level. This supports the agency theory stating that as ownership concentration increases shareholders' incentives to monitor the managers. Therefore, leverage decreases as it becomes

decreasingly necessary to use debt as a means of control over managers. However, the economically significance is marginal (0,022).

These results may be explained by the issue between the majority and the minority shareholders. Leverage decreases with the share of the majority shareholder. The increasing power of the majority shareholder may increase the incentive to expropriate funds from minority shareholders.

The results also support the pecking order theory, as the variable performance is negative and significant at 1 percent level. The same explanation as for 2A applies here: Firms are willing to use internal funds when investing in new projects. If it becomes necessary to finance the project with external funds, the firm will choose debt before issuing equity as it is less costly. A decline in internal funds causes the debt level to increase.

The single owner dummy has a negative relation with firm leverage. When there is only one owner of the firm, the level of debt is lower. Although the result is statistically significant at 1 percent level, it is not economically significant. The negative relationship can be explained by the fact that it is more expensive for single owner firms to borrow externally. Their firm is in general less liquid and due to the fact that they are privately held they are also less transparent. If a single owner firm realises economical difficulties it is less likely to repay debt claims. Debt holders are aware of this problem and will require compensation in the form of increased interest rates. The high borrowing cost limits the ability to increase leverage compared to multiple owners firms.

Table 13: Testing hypothesis 4B – Effect of Ownership Structure when the CEO has shares and the firms have Concentrated Ownership.

Table 13 displays the coefficients obtained from equation 2 using a OLS panel regression model. The single owner variable is a dummy of 1 when there is only one shareholder in the firm and 0 if there are more than one owner. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The concentrated sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
CEO Ownership share	**0,025***	**-0,002**	**0,002**
	(-1,724)	(-0,291)	(0,258)
Size	**-0,001**	**0,007*****	**0,007*****
	(-0,052)	(-5,481)	(5,46)
GO	**-0,014*****	**-0,009*****	**-0,009*****
	(-2,833)	(-4,914)	(-4,89)
Tangibility	**0,338*****	**0,439*****	
	(-18,578)	(-61,619)	
Performance	**-0,185*****	**-0,217*****	**-0,217*****
	(-4,452)	(-16,05)	(-16,05)
Industry Dummies	**Yes**	**Yes**	**Yes**
Liquidity	**-1.33E-5*****		**-0,44*****
	(-4,528)		(-61,6)
Single owner dummy			**-0,0034**
			(-0,58)
C	**0,301*****	**-0,031**	**0,40*****
	(-4,194)	(-1,331)	(16,7)
R^2	21,30 %	31,4 %	31,4 %
Obs. Cross-sections included	1156	4505	4505
Obs. Total panel (unbalanced)	2018	10650	10650

In hypothesis 4B the relationship between the CEO as an owner and leverage is investigated. The results are presented in **Table 13**, showing no statistical significant relationship between the CEO as an owner and leverage. The weak result may be due to a small data size for CEO ownership share. This hypothesis test does not support the agency theory as it projects no effect from the CEO being an owner to the leverage. The hypothesis is therefore *rejected*.

There is support for the pecking order theory from the variable performance. The variable is negative (-0,217) and statistically significant at the 1 percent level. This means that when performance decreases, the level of leverage increases. This indicates that the firm regards equity issuance as too costly and hence turn to internal funds or debt for raising funds for new investments. Hence, when performance declines, and a decline in internal funds, the firm raises funds from increasing the debt level. The single owner dummy has no effect in this hypothesis test. This can be a result of the small number of observations using the CEO ownership sample.

Table 14: Testing hypothesis 4C – The effect of the CEO being the Majority Shareholder in Firms with Concentrated Ownership on Leverage.

Table 14 displays the coefficients obtained from equation 3 using an OLS panel regression model. The CEO variable is a dummy of 1 when CEO is the largest shareholder and 0 otherwise. Single owner variable is a dummy of 1 when there is only one shareholder in the firm and 0 if there are more than one owner. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The concentrated sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1%.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
CEO Dummy	**0,017**	**-0,002**	**-0,001**
	(-1,558)	(-0,430)	(-0,150)
Size	**5.63E-5**	**0,007*** **	**0,007*** **
	(-0,015)	(-5,345)	(5,251)
GO	**-0,015*** **	**-0,009*** **	**-0,009*** **
	(-2,973)	(-4,756)	(-4,738)
Tangibility	**0,338*** **	**0,439*** **	
	(-18,592)	(-61,684)	
Performance	**-0,185*** **	**-0,215*** **	**-0,215*** **
	(-4,457)	(-15,979)	(-15,976)
Industry Dummies	**Yes**	**Yes**	**Yes**
Liquidity	**-1.33E-5*** **		**-0,44*** **
	(-4,522)		(-61,7)
Single owner dummy			**-0,002**
			(-0,53)
C	**0,302*** **	**-0,022**	**0,417*** **
	-4,344	(-1,022)	(18)
R^2	21,30 %	31,40 %	31,40 %
Obs. Cross-sections included	1156	4505	4505
Obs. Total panel (unbalanced)	2018	10650	10650

Hypothesis 4C is *rejected*. In the sample with dispersed ownership, the CEO dummy was significant, however, from **Table 14** it is evident that there is no effect in this sample. It indicates that having the CEO as a majority shareholder in a firm does not significantly affect leverage. The performance coefficient is negative (-0,215) and statistically significant at the 1 percent level. This supports the pecking order theory. The level of leverage increases when firm performance decreases. When a firm has good performance it has internal funds to finance its

operations and investments. If external funding is necessary, it will choose debt over equity issuance as the former is less costly. Therefore the debt level increases if firm performance is negative.

Table 15: Testing hypothesis 5- Exploring the effect of Growth Opportunities on Leverage in a Concentrated Ownership Structure

Table 15 displays the coefficients obtained from equation 1 using OLS panel regression model. The single owner variable is a dummy of 1 when there is only one shareholder in the firm and 0 if there are more than one owner. The first column shows the explanatory variables. The industry dummies are replaced with an indication that they have been included in the regression. The concentrated sample is used. T-values are presented in parentheses. *, **, ***: significant at 10%, 5% and 1% respectively.

Explanatory Variables	Current Ratio	Without liquidity	Proportion of Liquid Assets
Ownership Share	**-0,038***	**-0,072*****	**-0,021****
	(-1,93)	(-15,721)	(-2,26)
Size	**-0,005****	**-0,013*****	**-0,008*****
	(-2,35)	(-27,96)	(-10,10)
GO	**-0,022*****	**0,002****	**-0,002**
	(-7,82)	(-2,54)	(-1,43)
Industry Dummies	**Yes**	**Yes**	**Yes**
Tangibility	**0,22*****	**0,286*****	
	(17,28)	(-93,771)	
Performance	**-0,173*****	**-0,088*****	**-0,121*****
	(-8,755)	(-18,46)	(-15,67)
Liquidity	**-4.44E-6*****		**-0,3****
	(-5,14)		(-59,8)
Single ownership dummy			**-0,035*****
			(-3,44)
C	**0,435*****	**0,337*****	**0,53*****
	(9,3)	(-35,697)	(32)
R^2	15,50 %	21,35 %	20,90 %
Obs. Cross-sections included	2597	9265	9265
Obs. Total panel (unbalanced)	4617	21765	21765

The results in **Table 15** *reject* hypothesis 5. The growth opportunity variable is negatively related to leverage, however it is neither statistically nor economically significant. The results do not support the agency theory.

On the contrary, the pecking order theory holds as the performance variable is negative and statistically significant at the 1 percent level. The coefficient is also economically significant. This means that the firm will increase the leverage when the internal funds have been reduced due to poor performance. New projects are finance with debt if external fundraising is necessary.

6.2.1 Control Variables

The variables that are not central to the hypotheses are not given much emphasis to, however there are some that are interesting to examine further. The variables that are not consistent across OLS panel regressions, significant statistically or economically significant has been excluded from this discussion. Nevertheless, there are two variables with consistently large and significant regression coefficients, namely tangibility and performance.

Tangibility

This variable measures the size of collateral. It is an important element in the context of obtaining institutional debt. Firms with low collateral may have to finance with trade credit as they do not pass the requirements for obtaining institutional loans. They will therefore have zero leverage in this paper's sample as it does not have data on trade credit. In the regressions, tangibility has positive coefficient and lie around 25-40 percent, and is significant at the 1 percent level.

Performance

This variable would indicate how successful the firm is. If a firm has high performance there is less need for leverage to finance operations and investments. Performance is consistently negative and significant in all OLS panel regressions. It lies around 15-25 percent and is therefore economically significant. It is also statistically significant at the 1 percent level throughout the regressions. This is persistent with pecking order theory proposing that if firms follow a pecking order it prefers internal to external financing and debt to equity if it is to use external financing.

7. Conclusion

The purpose of this thesis is to find out whether or not there is agency costs present in Norwegian private firms. Additionally, it seeks to find out whether owners use debt as a disciplinary device on management in order to reduce over- and underinvestment problems.

All the hypotheses are built on the premise that there are agency costs within Norwegian private firms. This paper finds that firms with dispersed ownership have higher leverage than firms with concentrated ownership. Shareholders in a concentrated ownership structure have greater incentive for monitoring the managers and use less debt as a disciplinary device contrary to shareholders in a dispersed ownership structure.

Furthermore, the leverage is decreasing with growth opportunities when firms have dispersed ownership structure. Less leverage will be needed as a disciplinary device, if growth opportunities are believed to increase shareholders' wealth. Also, leverage is decreasing with ownership share in the concentrated ownership sample. Ownership concentration increases shareholders' incentives to monitor the managers, hence using debt as a governance mechanism decline. These results confirm the agency theory. This paper does not find support for the agency theory when the CEO has ownership shares in the firm. It can be explained by the limited number of observations in the CEO-series.

Instead of there being an indication that debt is determined only on the basis of the agency theory, there seems that pecking order theory is a stronger and more persistent explanation of capital structure.

The results in this paper imply that Norwegian private firms have some problems related to agency costs, and that their capital structure is also explained by the pecking order theory.

8. References

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9. Appendix

1.Descriptive statistics per year

2006	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,56	0,96	0,15	0,74	0,64	0,08	51297649	16,89	0,22
Median	0,50	0,13	0,00	0,93	0,60	0,05	3813500	17,28	0,08
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,00	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
St. Dev.	0,35	1,33	0,25	0,33	0,31	0,16	1,43E+08	2,06	0,28
Skewness	0,08	1,62	1,66	-1,06	-0,13	0,58	5,30069	-1,07	1,38
Kurtosis	1,53	5,82	4,63	2,58	1,63	12,61	34,27371	4,54	3,72
Observations	3465	24018	24018	24018	24018	24018	24018	14490	14490

2007	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,60	0,94	0,15	0,73	0,64	0,08	50145092	16,82	0,22
Median	0,50	0,09	0,00	0,93	0,58	0,04	2509500	17,26	0,08
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,04	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
St. Dev.	0,34	1,33	0,25	0,34	0,31	0,16	1,42E+08	2,13	0,28
Skewness	-0,01	1,63	1,70	-1,05	-0,05	0,45	5,326493	-1,03	1,38
Kurtosis	1,49	5,72	4,75	2,52	1,50	11,92	34,62759	4,26	3,67
Observations	5526	27370	27370	27370	27370	27370	27370	16247	16247

2008	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,60	0,92	0,15	0,72	0,64	0,06	50565229	16,81	0,23
Median	0,51	0,08	0,00	0,92	0,55	0,03	2141000	17,25	0,09
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,00	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
St. Dev.	0,34	1,33	0,25	0,34	0,31	0,17	1,45E+08	2,14	0,29
Skewness	-0,03	1,70	1,70	-0,95	-0,02	-0,50	5,287003	-0,98	1,28
Kurtosis	1,47	6,01	4,70	2,32	1,50	14,39	33,85862	4,16	3,36
Observations	5733	28435	28435	28435	28435	28435	28435	16714	16714

2009	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,61	0,87	0,14	0,71	0,64	0,06	48492872	16,71	0,24
Median	0,51	0,07	0,00	0,92	0,55	0,03	1865000	17,15	0,09
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,05	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
Std, Dev,	0,34	1,29	0,25	0,35	0,31	0,15	1,42E+08	2,18	0,30
Skewness	-0,06	1,79	1,71	-0,90	-0,02	-0,29	5,387717	-0,96	1,23
Kurtosis	1,47	6,46	4,74	2,19	1,49	15,37	35,10819	4,07	3,18
Observations	5796	28607	28607	28607	28607	28607	28607	16795	16795

2010	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,62	0,86	0,11	0,73	0,64	0,06	45466495	16,63	0,23
Median	0,52	0,06	0,00	0,93	0,57	0,03	1509000	17,10	0,08
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,05	0,00	0,00	0,00	0,01	-1,23	0	9,74	0,00
Std, Dev,	0,34	1,30	0,23	0,35	0,31	0,15	1,38E+08	2,19	0,30
Skewness	-0,11	1,86	2,17	-0,98	-0,07	-0,19	5,612571	-0,94	1,32
Kurtosis	1,47	6,78	6,66	2,33	1,49	15,50	37,82165	3,98	3,40
Observations	5454	26815	26815	26815	26815	26815	26815	15602	15602

2011	CEO ownership	GO	Leverage	Liquidity	Ownership	Performance	Revenue	Size	Tangibility
Mean	0,62	0,88	0,11	0,73	0,64	0,06	46128221	16,65	0,22
Median	0,55	0,07	0,00	0,94	0,58	0,03	1820000	17,11	0,07
Maximum	1,00	6,96	1,00	1,00	1,00	0,97	1,06E+09	20,79	1,00
Minimum	0,05	0,00	0,00	0,00	0,00	-1,23	0	9,74	0,00
Std, Dev,	0,34	1,32	0,22	0,35	0,31	0,15	1,38E+08	2,17	0,30
Skewness	-0,13	1,82	2,21	-1,01	-0,06	-0,03	5,558018	-0,92	1,36
Kurtosis	1,48	6,64	6,84	2,39	1,49	14,91	37,23635	3,98	3,52
Observations	5856	28173	28173	28173	28173	28173	28173	16610	16610

2. ANOVA

Table 2: Three assumptions for using ANOVA

This table presents the results for the homogeneity Levene's test, Normally Distributed errors, Jarque-Bera p-value and independent error terms. These form the basis for running an ANOVA test. The Levene's test is used for equality of variance when testing for homogeneity of variance between the two groups. The null hypothesis is that the variances of the samples are equal. From the table it is evidence that it is only for Growth Opportunity that cannot reject the null hypothesis and conclude that this variable has homogeneity of variance. The remaining variables have a p-value below 5percent, thus the null hypothesis is reject, and there is heterogeneity. First assumption is violated for all variables except growth opportunity. For the second assumption the Jarque-Bera test is used as well as the distribution of the graph of each variable. The second assumption was violated for all variables. Problems concerning independent error terms are rarely a case in cross-sectional data, however, the paper did check for the third assumption by looking into the scatter plot of the actual observations for each variable as Eviews does not report the errors.

Variables	Homogeneity Levene's Test	Normally Distributed errors (Jarque-Bera p-value)	Independent error terms
Leverage	0,000	Non-normal (0,000)	Independent
Revneue	0,000	Non-normal (0,000)	Independent
Growth Opportunity	0,321	Non-normal (0,000)	Independent
Tangibility	0,000	Non-normal (0,000)	Independent
Performance	0,000	Non-normal (0,000)	Independent
Ownership	0,000	Non-normal (0,000)	Independent
Liquidity	0,000	Non-normal (0,000)	Independent
CEO Ownership	0,000	Non-normal (0,000)	Independent

3. Industry Sector Codes

NAICS Code	NAICS Label	Industry Sector Code	Industry Sector Label
1	Agriculture and hunting	1	Agriculture, forestry, fishing, mining
2	Forestry and logging	1	Agriculture, forestry, fishing, mining
5	Fishing, fish farming, incl. Services	1	Agriculture, forestry, fishing, mining
10	Coal mining and peat extraction	1	Agriculture, forestry, fishing, mining
12	Mining of uranium and thorium ores	1	Agriculture, forestry, fishing, mining
13	Mining of metal ores	1	Agriculture, forestry, fishing, mining
14	Other mining and quarrying	1	Agriculture, forestry, fishing, mining
27	Basic metals	2	Manufacturing, chemical products
28	Fabricated metal products	2	Manufacturing, chemical products
29	Machinery and equipment n.e.c	2	Manufacturing, chemical products
30	Office machinery and computers	2	Manufacturing, chemical products
31	Electrical machinery and apparatus	2	Manufacturing, chemical products
32	Radio, TV sets, communication equip	2	Manufacturing, chemical products
26	Other non-metallic mineral products	2	Manufacturing, chemical products
34	Motor vehicles, trailers, semi-tr.	2	Manufacturing, chemical products
21	Pulp, paper and paper products	2	Manufacturing, chemical products
33	Instruments, watches and clocks	2	Manufacturing, chemical products
25	Rubber and plastic products	2	Manufacturing, chemical products
24	Chemicals and chemical products	2	Manufacturing, chemical products
35	Other transport equipment	2	Manufacturing, chemical products
22	Publishing, printing, reproduction	2	Manufacturing, chemical products
36	Furniture, manufacturing n.e.c	2	Manufacturing, chemical products
20	Wood and wood products	2	Manufacturing, chemical products
19	Footwear and leather products	2	Manufacturing, chemical products
18	Wearing apparel., fur	2	Manufacturing, chemical products
17	Textile products	2	Manufacturing, chemical products
16	Tobacco products p	2	Manufacturing, chemical products
15	Food products and beverages	2	Manufacturing, chemical products
23	Refined petroleum products	2	Manufacturing, chemical products
40	Electricity, gas and steam supply	3	Energy
11	Oil and gas extraction, incl. Serv.	3	Energy
45	Construction	4	Construction
91	Membership organizations n.e.c.	5	Service
74	Other business activities	5	Service
73	Research and development	5	Service
72	Computers and related activities	5	Service
71	Renting of machinery and equipment	5	Service
37	Recycling	5	Service
80	Education	5	Service
99	Extra-territorial org. And bodies	5	Service
85	Health and social work	5	Service
75	Public administration and defense	5	Service
90	Sewage, refuse disposal activities	5	Service
70	Real estate activities	5	Service
92	Cultural and sporting activities	5	Service

55	Hotels and restaurants	5	Service
93	Other service activities	5	Service
95	Domestic services	5	Service
50	Motor vehicle services	5	Service
41	Water supply	5	Service
64	Post and telecommunications	5	Service
66	Insurance and pension funding	6	Financial
65	Financial intermediation, less ins.	6	Financial
67	Auxiliary financial intermediation	6	Financial
52	Retail trade, repair personal goods	7	Trade
51	Wholesale trade, commission trade	7	Trade
63	Supporting transport activities	8	Transport
62	Air transport	8	Transport
61	Water transport	8	Transport
60	Land transport, pipeline transport	8	Transport
		9	Multisector
		0	Missing

4. Variables obtained from the CCGR database

Item	Description
4	CEO birth year
6	Enterprise type
9	Revenue
15+16	Depreciation of fixed assets and intangible assets and write-down of fixed assets and intangible assets
19	Operating Income
30	Other interest expense
31	Other financial expenses
51	Total fixed assets (tangible)
63+78	Total fixed assets and Total current assets
65+102	Accounts receivable and Accounts payable
94	Liabilities to financial institutions
101	Liabilities to financial institutions – short-term
113	Number of employees
13601	Share owned by CEO
14011	%Equity held by ultimate owner with rank 1
14023	Aggregate fraction held by international owner
14025	Herfindahl Index
14507	Is independent
15302	Largest family sum ultimate ownership
15304	Largest family has CEO
11102	Industry codes
17002	Listing status on Oslo Børs (Filter dummy variable)

5. Panel Regression Results for Fixed and Random Effects

Hypothesis 1

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Concentration Dummy	-0,006232	0,0001	-0,001997	0,1644
Size	-0,011158	0	-0,000871	0,0382
GO	-0,001374	0,0252	-0,013454	0
Industry Dummies	Yes		Yes	
Tangibility		0		0
Performance	-0,0963	0	-0,070666	0
Liquidity	-0,301528	0	-0,271779	0
Single Owner Dummy	-0,028661	0	-0,017652	0
C	0,574071		0,404387	
Obs. Cross-sections included	32206		32206	
Obs. Total panel (unbalanced)	96458		96458	
			Weighted statistics	Unweighted statistics
R2	0,2257		0,116	0,195425
S.E. of regression	0,190795		0,09054	
Sum squared resid	3510,622		790,5863	3647,84
Log likelihood	22929,88			
F-statistic	1479,425		909,6108	
Prob(F-statistic)	0		0	
Mean dependent var	0,123377		0,036759	0,123377
S.D. dependent var	0,216804		0,098905	
Akaike info criterion	-0,475023			
Schwarz criterion	-0,473058			
Hannan-Quinn criter.	-0,474426			
Durbin-Watson stat	0,313623		1,147255	0,290686

Hypothesis 2A

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Ownership share	0,102227	0	0,070636	0
Size	-0,006763	0	0,002131	0,0013
GO	-0,00671	0	-0,018149	0
Performance	-0,108589	0	-0,082052	0
Industry Dummies				
Liquidity	-0,317799	0	-0,295181	0
C	0,499085	0	0,361952	0
Obs. Cross-sections included	16479		16479	
Obs. Total panel (unbalanced)	43298		43298	
			Weighted statistics	Unweighted statistics
R^2	0,237794		0,137677	0,215666
S.E. of regression	0,19746		0,09054	0,091818
Sum squared resid	1687,463		790,5863	364,9078
Log likelihood	8811,208			
F-statistic	750,1225		909,6108	531,5874
Prob(F-statistic)	0		0	0
Mean dependent var	0,137898		0,036759	0,123377
S.D. dependent var	0,226127		0,098905	0,101662

Akaike info criterion	-0,406125		
Schwarz criterion	-0,402318		
Hannan-Quinn criter.	-0,404925		
Durbin-Watson stat	0,324151	1,147255	1,187574

Hypothesis 2B

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
CEO Ownership	0,070725	0	0,090978	0
Size	0,004243	0,0073	0,009754	0
GO	-0,009373	0,0001	-0,024789	0
Performance	-0,200409	0	-0,128938	0
Industry Dummies			**Yes**	
Liquidity	-0,430483	0	-42,40762	0
C	0,478866	0	13,12344	0
Obs. Cross-sections included	3631		3631	
Obs. Total panel (unbalanced)	8583		8583	
			Weighted Statistics	Unweighted Statistics
R^2	0,357767		0,235244	0,334555
S.E. of regression	0,180879		0,082551	
Sum squared resid	280,1913		58,39552	290,318
Log likelihood	2507,048			
F-statistic	265,04		202,7606	
Prob(F-statistic)	0		0	
Mean dependent var	0,149975		0,046449	0,149975
S.D. dependent var	0,225469		0,097291	
Akaike info criterion	-0,579762			
Schwarz criterion	-0,564139			
Hannan-Quinn criter.	-0,574433			
Durbin-Watson stat	0,325497		1,19862	0,301889

Hypothesis 2C

Explanatory Variables	Fixed		Random	
CEO Dummy	0,019929	0	0.019498	0.0000
Size	0,003794	0,0159	0.009324	0.0000
GO	-0,009553	0,0001	-0.024873	0.0000
Performance	-0,200255	0	-0.128087	0.0000
Industry Dummies				
Liquidity	-0,431848	0	-0.393635	0.0000
C	0,497138	0	0.396381	0.0000
Obs. Cross-sections included	3631		3631	
Obs. Total panel (unbalanced)	8583		8583	
			Weighted Statistics	Unweighted Statistics
R2	0,35749		0.234596	0.334313
S.E. of regression	0,180918		0.082575	
Sum squared resid	280,3122		58.42852	290.4236
Log likelihood	2505,196			
F-statistic	264,7205		202.0307	
Prob(F-statistic)	0		0.000000	

Mean dependent var	0,149975	0.046437	0.149975	
S.D. dependent var	0,225469	0.097276		
Akaike info criterion	-0,57933			
Schwarz criterion	-0,563707			
Hannan-Quinn criter.	-0,574002			
Durbin-Watson stat	0,325372	1.198055	0.302047	

Hypothesis 3

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
CEO Dummy	0,017827	0	0,018922	0
Ownership	0,043387	0,0193	0,046976	0,0254
Size	0,004193	0,008	0,00954	0
GO	-0,009456	0,0001	-0,024788	0
Performance	-0,200838	0	-0,128519	0
Industry Dummies				
Liquidity	-0,430968	0	-0,392594	0
C	0,474492	0	0,374057	0
Obs. Cross-sections included	3631		3631	
Obs. Total panel (unbalanced)	8583		8583	
			Weighted Statistics	Unweighted Statistics
R^2	0,3579		0,235032	0,334916
S.E. of regression	0,180871		0,082564	
Sum squared resid	280,1331		58,40646	290,1607
Log likelihood	2507,939			
F-statistic	251,207		188,0338	
Prob(F-statistic)	0		0	
Mean dependent var	0,149975		0,046445	0,149975
S.D. dependent var	0,225469		0,097286	
Akaike info criterion	-0,579736			
Schwarz criterion	-0,563291			
Hannan-Quinn criter.	-0,574127			
Durbin-Watson stat	0,325427		1,198952	0,302107

Hypothesis 4A

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Ownership	-0,021922	0,0122	-0,015505	0,0602
Size	-0,013109	0	-0,004259	0
GO	0,001748	0,0222	-0,009562	0
Performance	-0,088584	0	-0,06042	0
Industry Dummies				
Liquidity	-0,286091	0	-0,247954	0
Single Owner Dummy	-0,021096	0	-0,011879	0,0001
C	0,587578	0	0,436033	0
Obs. Cross-sections included	19556		19556	
Obs. Total panel (unbalanced)	53160		53160	
			Weighted Statistics	Unweighted Statistics
R^2	0,214348		0,107625	0,183938
S.E. of regression	0,184539		0,083871	
Sum squared resid	1809,66		373,8405	1879,707
Log likelihood	14414,07			

F-statistic	763,058	457,8272	
Prob(F-statistic)	0	0	
Mean dependent var	0,11155	0,032827	0,11155
S.D. dependent var	0,208159	0,090975	
Akaike info criterion	-0,541538		
Schwarz criterion	-0,538196		
Hannan-Quinn criter.	-0,540494		
Durbin-Watson stat	0,300251	1,136504	0,277283

Hypothesis 4B

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
CEO Ownership	0,002441	0,7963	0,014426	0,1911
Size	0,007323	0	0,007313	0
GO	-0,009006	0	-0,01871	0
Performance	-0,216517	0	-0,118538	0
Industry Dummies				
Liquidity	-0,438417	0		0
Single Owner Dummy	-0,003408	0,5602		0,0478
C	0,406522	0		0
Obs. Cross-sections included	4505		4505	
Obs. Total panel (unbalanced)	10650		10650	
			Weighted Statistics	Unweighted Statistics
R^2	0,314197		0,192582	0,282227
S.E. of regression	0,186766		0,080121	
Sum squared resid	370,7899		68,27068	388,0747
Log likelihood	2767,949			
F-statistic	256,32		181,1864	
Prob(F-statistic)	0		0	
Mean dependent var	0,146859		0,042694	0,146859
S.D. dependent var	0,225325		0,091804	
Akaike info criterion	-0,516047			
Schwarz criterion	-0,502388			
Hannan-Quinn criter.	-0,511438			
Durbin-Watson stat	0,310983		1,247703	0,278822

Hypothesis 4C

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
CEO dummy	-0,000796	0,8805	0,006128	0,318
Size	0,006692	0	0,006246	0
GO	-0,008619	0	-0,017972	0
Performance	-0,215202	0	-0,117269	0
Industry Dummies				
Liquidity	-0,438721	0	-0,358329	0
Single Owner Dummy	-0,002244	0,5922	-0,009055	0,0657
C	0,41798	0	0,399177	0
Obs. Cross-sections included	4505		4505	
Obs. Total panel (unbalanced)	10650		10650	
			Weighted Statistics	Unweighted Statistics
R^2	0,314064		0,192194	0,282175
S.E. of regression	0,186784		0,080153	
Sum squared resid	370,8616		68,32481	388,1033
Log likelihood	2766,919			
F-statistic	256,1622		180,7351	

Prob(F-statistic)	0	0	
Mean dependent var	0,146859	0,042706	0,146859
S.D. dependent var	0,225325	0,091819	
Akaike info criterion	-0,515853		
Schwarz criterion	-0,502195		
Hannan-Quinn criter.	-0,511244		
Durbin-Watson stat	0,311189	1,248312	0,279191

Hypothesis 5

Explanatory Variables	**Fixed**		**Random**	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Ownership	-0,020457	0,0235	-0,021176	0,0296
Size	-0,00866	0	-0,000832	0,3594
GO	-0,001858	0,1525	-0,01647	0
Performance	-0,120912	0	-0,073064	0
Industry Dummies				
Liquidity	-0,298172	0	-0,268899	0
Single Owner Dummy	-0,034928	0,0006	-0,018318	0,046
C	0,53293	0	0,413875	0
Obs. Cross-sections included	9265		9265	
Obs. Total panel (unbalanced)	21765		21765	
			Weighted Statistics	Unweighted Statistics
R^2	0,208728		0,123349	0,181144
S.E. of regression	0,190047		0,085279	
Sum squared resid	785,3799		158,1762	812,7579
Log likelihood	5267,281			
F-statistic	301,8981		218,5941	
Prob(F-statistic)	0		0	
Mean dependent var	0,129916		0,039215	0,129916
S.D. dependent var	0,213554		0,093191	
Akaike info criterion	-0,482176			
Schwarz criterion	-0,474836			
Hannan-Quinn criter.	-0,479784			
Durbin-Watson stat	0,327821		1,202124	0,303078

Preliminary Thesis Report

- Capital Structure and Agency Theory -

Supervisor:

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Hand-in date: 15.01.2013

BI Norwegian Business School, Oslo

Master of Science in Financial Economics

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1. Introduction

Capital structure theories play an important role for corporate finance and corporate governance. Capital structure and its determinants has for decades been a popular field for researchers, where conflict of interest between different groups related to the firm, as well as the ownership structure have been proven to be significant determinants. The classical tradeoff theory has been advanced to include these. Motivated by the developments of capital structure theory, we will examine whether ownership structure and corporate governance is linked with capital structure of Norwegian private firms.

Despite the extensively researched field of capital structure, we have a unique angel as we are permitted to access the CCGR database provided by the Centre for Corporate Governance Research. The database contains corporate governance data and accounting data for both private and public Norwegian firms. Since private firms are much less researched than public firms, we have the comparative advantage of exploring this field with the unique database.

The rest of this preliminary is structured as follows; first a literature review which gives the main findings in context of optimal capital structure, agency theory, and ownership structure. It comprises of only the most relevant studies for the purpose of this thesis. Thereafter, the paper gives an explanation of the data in terms of sources and uniqueness. The scarcity of private firm analysis is also elaborated. Finally, the paper outlines the methodology and hypotheses.

2. Literature Review

2.1 Capital Structure

Ever since Modigliani and Miller (1958) argued that "The market value of any firm is independent of its capital structure and is given by capitalizing its expected return at the rate appropriate to its (risk) class", there has been particular interests for researching the importance of capital structure. In essence, Modigliani and

Miller proposed that capital structure was irrelevant for the value of the firm. This has become known as M&M proposition I. It builds on rather rigid assumptions that are not compatible with the real world. Due to the unrealistic nature of these assumptions, they created the stepping-stone for future advances in this field. M&M´s view on "optimal" capital structure changed when they relaxed the assumption of no taxes. They relaxed this assumption in their 1963 paper and found that firm value was maximized when entirely financed with debt. This was due to the tax advantage of debt, known as tax shield. However, they did not include important factors such as; agency costs, bankruptcy costs or personal taxes.

Miller (1977) included personal taxes into the analysis of capital structure. His main result was that optimal debt ratio might vary from 0-100% depending on personal and corporate tax rates (Swanson, 2003). Taxes are not significant enough to account for the capital structure to have 100% debt.

The tradeoff theory of capital structure takes into account bankruptcy cost of debt. Kraus and Litzenberg (1973) propose it to be a balance between the deadweight loss of bankruptcy and the tax shield benefit of debt. When debt to equity ratio increase, marginal benefit of tax and marginal cost of bankruptcy should get to an optimal point.

The tradeoff theory proposed by Kraus and Litzenberg is the classical version, while it has later been extended. Tax benefits are not so prevalent, while agency costs and asymmetric information has been included as costs and benefits to debt.

2.2 Agency Theory

Agency theory dates back as far as the 18th century where Adam Smith in 1776 expressed how one takes better care of one's own money than anyone else's money. Jensen and Meckling formalized the actual principal-agent theory in 1976, and their theory became the foundation for modern agency theory within the organization (Goergen, 2012).

Separation of ownership and control within firms is the seed of agency costs. Berle and Means outlined this in 1932 in their book "The Modern Corporation and Private Property". Agency costs consist of three components; monitoring

costs, bonding costs, and residual loss. Monitoring is observing agents behavior, but also taking action to limit or avoid unwanted behavior. Bonding costs is borne by the agent; it acts as a signal to the principal that the agent will in fact act in their best interest. The principal incurs the residual loss because the agent may not invest in a way that maximizes the principal's wealth (Goergen, 2012).

The free cash flow problem introduced by Jensen in 1986 was very fundamental to the understanding of how managers were enabled to deviate from maximizing shareholders wealth. Jensen states that free cash flow is the number one financing source of agency problems. He also argues that in larger mature firms the free cash flow problem will heighten the difficulties created by moral hazard. The larger the firm, the more complex and perhaps less transparent it is. Private firms are less transparent and may therefore have the same degree of agency issues as large public firms.

Jensen and Meckling argue that there should be an optimal combination of debt and equity to minimize agency problems and thus also maximize firm value.

2.3 Ownership Concentration

There are at least four methods of measuring concentration of ownership; per owner: the fraction held by a given owner with rank n (e.g. third largest owns 10%), or by subgroup of owners: fraction held by the largest plus n (e.g. the two largest hold 70%), Herfindahl Index (take all ownership fractions and square them, then add them together, it ranges from 0-1), or simply the number of owners (the firm has 200 owners) (Bøhren, 2012).

The benefits of high ownership concentration for private firms are closer monitoring and less free riding. According to Jensen-Meckling (1976) and Demsetz-Lehn (1985) monitoring increases when the owners are more concentrated. They are incentivised by higher gains from higher firm value when owning more. Additionally, their impact of voting on the annual general meeting (AGM) is increasing with ownership fraction, giving higher power to shareholders with more shares. According to Shleifer-Vishny (1986) there will be less free riding when ownership concentration is high - active governance will give less benefits to passive owners. There is a fixed cost of being active and the benefits of being active increases with ownership share, therefore when ownership

concentration is dispersed it will lead to the collective action problem in corporate governance.

The costs of high concentration are diversification loss, majority-minority conflicts, and problems with incompetent owners (common for second-generation family firms). Diversification loss is a consequence arising from a situation when investing most of the wealth in one firm, becoming more dependent of the firm to do well. Private firms do not provide much liquidity and diversification loss and inflexibility is therefore more severe for private firms (Demsetz-Lehn, 1985).

Majority-minority conflicts between owners arise when powerful owners over consume, overinvest, and create private benefits through tunnelling mechanism (Johnson et al., 2000). High concentration gives high power to the largest owners and they may not be suited or competent to make decisions that are best for the firm (Burkart et al., 1997).

3. Data

Public firms are widely used for an astonishing amount of articles, but very few have analyzed private firms from a corporate finance and corporate governance perspective. However, private firms constitute the largest part of the economy (Bøhren, 2012). One can say that it is a strong bias that private firms have been ignored in empirical research in finance and governance. According to Becht et al. (2003) and Eckbo (2008), practically every empirical paper in finance studies the public firm. Some exceptions exist: Giannette (2003), Claessens-tzioumis (2006), Klapper et al. (2006), Bennedsen et al. (2007) and Giannetti-Ongena (2008). Also, family firms have been studied for years, but not in a public versus private perspective (Bøhren, 2012).

Considering the fact that a majority of firms are private, one would expect them to be at least as analyzed as public firms. Due to regulations, private firms are not obligated to provide all of the same information as public firms, and it is therefore much more difficult to obtain data for private firms. However, Scandinavia keep quite good records of private firms making it possible to do research on these. One implication however, when analyzing private firms we will use book values only as there are no market prices available.

The Centre for Corporate Governance Research will provide us with access to data from the CCGR database. This is a unique database containing corporate governance related data and accounting data for private Norwegian firms. We might also use the Zebra database provided by Norges Bank. It contains, among other data, the loan level of Norwegian firms.

Most private firms are small in size, 90% have less than 20 employees. Large public firms are much larger than large private firms, however a large firm is more often private. According to Bøhren (2012) private firms have in general more debt than public firms, 75% compared to 47%. In his research, Bøhren also used the CCGR database.

The period that will be analyzed is 2006-2011. Because of the 2006 tax reform, that changed our dataset substantially, we start with the accounting year of 2006. After 2006 there was double taxation of dividends and it induced higher debt and lower dividends which would cause a structural break in the dataset. The data is cross-sectional and our results will not be affected by the limited number of years.

We can use either the raw leverage numbers or industry-adjusted ones.

Proxy for growth opportunities (GO) and proxy for leverage:

Growth opportunity proxy;

- Sales to assets

Leverage proxy;

- Short and long-term debt as a share of total assets

Ownership proxies;

- Share of largest owner
- Share of the CEO
- Number of shareholders
- Share of largest family

Firm performance proxies;

- Return on assets (ROA)
- Return on equity (ROE)

4. Methodology and Hypotheses

4.1 Methodology

Eviews will be used when analyzing the data, for running regressions, making charts etc. The econometric method has not yet been established, however, we might use 2SLS to account for possible endogeneity. This method has some disadvantages to the standard OLS. We will therefore research the possible methods further.

4.2 Possible Hypotheses

Private firms rely heavily on debt financing. According to agency theory there is an advantage of debt to reduce the principal-agent problem between owners and managers. Leverage could be used to reduce managerial overinvestment, but if leverage is too high it can lead to debt overhang. As a result we expect leverage to be increasing in capital structure, which can vary across industries.

To test this, we would split our sample into firms with majority shareholders and firms without a majority shareholder, firms with dispersed ownership, expecting the latter group to use leverage to control management.

H1: firms with dispersed ownership have higher leverage than firms with a majority shareholder.

A larger share may increase the power of the largest shareholder and enhance monitoring incentives. This may also align managers' incentives with that of shareholders. We therefore propose two hypotheses that account for each of these predictions.

H2a: in firms with dispersed ownership, leverage is decreasing in the share of the largest shareholder.

H2b: in firms with dispersed ownership, leverage is decreasing in the ownership share of the CEO.

In hypothesis one we propose that with dispersed ownership leverage is higher, however, when firms with dispersed ownership have growth opportunities these will be taken advantage of and leverage will decrease. When measuring growth opportunities we cannot use Tobin's q as we are analyzing private firms. Due to the lack of market values we use book values only. Growth opportunities can be measured as sales to assets or by using industry indicators.
H3: in firms with dispersed ownership, leverage is decreasing in growth opportunities.

When the largest owner is also the CEO, she will have greater power to keep leverage low in order to benefit from higher levels of free cash flow. In addition to the low transparency of private firms, this may incentivize the CEO to use his power to enjoy perquisites.

H4: leverage is lower if the majority shareholder is also the CEO

Jensen (1986) argued that free cash flow is the main financing source of agency problems. Higher free cash flow implies that management has more cash available for perquisites and overinvestment causing conflicts of interest between managers and owners.

H5: Higher free cash flow decreases leverage when ownership concentration is high.

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