# The influence of ownership concentration and the board structure on the capital structure
## Evidence from Dutch listed companies

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**ABSTRACT, This paper studies the impact of board size, board independence and ownership concentration on the capital structure of Dutch listed companies. Prior empirical studies show evidence for the presence of those relationships. This study tries to get a better view for this relationship in especially Dutch listed companies. From a multiple regression analysis a significant relationship is found between ownership concentration and the D/E ratio. This relationship corresponds to the fact of active monitoring from external block owners. The same relationship is found in prior empirical studies. However, the results of the relationship with board independence and board size are statistically insignificant, in contrast to prior studies.**

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# 1. INTRODUCTION

Corporate governance is the system by which companies are directed and controlled. It means setting the direction in which the company is going, setting its goals and objectives, as well as controlling the implementation of these goals. It regulates the relationships between the board, management and shareholders. Well-managed companies are important for the economy, they create employment and trading by investors. The points which are taken into account within the field of corporate governance are the transparency in reporting, clear accountability to directors and auditors and a relevant role for the shareholders. A prevalent view in the literature shows that the managers do not always make capital structure decisions that maximize shareholders wealth. The capital structure should be therefore not determined only by taxes and bankruptcy costs, but also by conflicts between managers and shareholders. Jensen and Meckling (1976) refer to this as the agency problem. The goal of this study is to gain insight into the influence of corporate governance mechanisms on the capital structure of a Dutch listed firm. In 2003 the corporate governance code in the Netherlands has improved. Accounting scandals, dissatisfaction about remuneration packages and the need to strengthen the role of the shareholders were reasons for this improvement. After the improvement of this code, the corporate governance and its influence has changed. In this paper, a few corporate governance mechanisms are selected. In particular is taken into account the ownership concentration and the board structure of the Dutch listed companies. Lin et al. (2012) found empirical evidence for a relation between the ownership structure and the choice of debt or equity. It can help to explain the choice between debt and equity because that choice depends on who is owning the firm, if those shareholders have more or less power on behalf of shares. There has been chosen for the board structure, because the boards of Dutch firms are quite unique with their two-tier board which makes it interesting for research (Postma et al., 2001). The board is controlling the managers, it controls the actions and strategy which are set by the managers. The board controls the managers to choose the most optimal capital structure, which delivers the highest return to shareholders. If the conflicts between the managers and the owners are high, there consist an agency problem which costs could influence the capital structure of a firm (Jensen and Meckling, 1976). The final research question reads as follows: *What is the impact of ownership concentration and board structure on the capital structure in Dutch listed companies?*

The effect of ownership concentration and board structure has been a subject of several studies, but it is never been done for Dutch listed firms. To fill in this research gap, this study focuses on Dutch listed firms. It is interesting for Dutch listed firms because they have a different view on the field of corporate governance than other countries. For example, the board structure. In the United States the independence of the board is lower, because there are more executive directors within the board. Also, CEO duality often occurs in the United States while this is quite rare in the Netherlands (Thomsen and Conyon, 2012). This study is practically relevant , because it gain insight in the decisions of the management from Dutch listed firms. Why make managers certain decisions on capital structure and what is the influence of the board and the owners? Do managers use the optimal capital structure whether they act in own interests? This study gain insight in this questions, and it tries to give some recommendations for companies to use corporate governance in that way the capital structure could be optimal.

This paper is organized as follows. First, literature about the topic is reviewed. This literature shows research that is done before, and it helps to explain some hypotheses. After the literature review, the methodology follows. This section helps to explain the quantitative research that has to be done to get answer on the research question. Then the data and results are illustrated and this paper ends with a conclusion and discussion.

# 2. LITERATURE REVIEW

The literature review is divided within three parts. The first part explains the capital structure in Dutch listed companies in general. The second part explains the relation between ownership concentration and capital structure on the basis of studies in the past. The last part of this literature review explains the relationship between the board structure, like board independence and board size, and the capital structure within Dutch listed companies.

## 2.1. Capital structure in Dutch listed firms

According to Modigliani and Miller's (1958) paper, capital structure has become a puzzle where the pieces do not fit. Selecting the right capital structure is a difficult decision for firms. The choice depends on attributes that determine the various costs and benefits associated with debt and equity financing. Titman and Wessels (1988) did research in the United States in eight attributes that may affect the firm's debt-equity choice. These attributes are asset structure, non-debt tax shields, growth, uniqueness, industry classification, size, earnings volatility and profitability. Their paper introduced a factor-analytic technique for estimating the impact of the attributes on the choice of debt ratios. They find that debt levels are negatively related to the uniqueness of a firm, which is expressed by the expenses on research and development and selling costs. Firms that impose high costs on their customers, workers and suppliers in the event of liquidation have lower debt ratios. Titman and Wessels (1988) not only find evidence for a relationship with the uniqueness of the firm, other determinants which have been proven are transaction costs and size of the firm. Short-term debt ratios were negatively related to firm size, because of the high transaction costs for small firms with long-term debt. Capital structures are chosen systematically. Non-debt tax shields, volatility and future growth do not have a significant effect on debt ratios (Titman and Wessels, 1988). Jensen and Meckling (1976) also find another attribute that could influence the choice between debt and equity within a firm, namely agency costs. How those costs arise and how it could influence the capital structure is explained in section 2.2.

Chen et al. (1998) have done research to the determinants of the capital structure in especially Dutch listed firms. The major theories covered are the agency theory and the theory of asymmetric information (pecking order theory). To explain the capital structure choice, empirical research is done with the focus on six attributes, namely asset tangibility, growth, size, earning volatility, profitability and market to book ratio. The data comes from the annual reports of Dutch listed firms. From that study it can be concluded that theories about asymmetric information are most relevant for explaining the financing choice in Dutch companies, especially the pecking order theory (Chen et al., 1998). The pecking order theory says that companies prefer internal financing, then providing debt and lastly raising equity. It starts with asymmetric information; managers know more about their company value and risk than outside investors. These outside investors are the owners of the company. It affects the choice between the issue of debt or equity, as the issue of debt signals the boards' confidence that an investment is profitable and the current stock price is

undervalued. The issue of equity would signal a lack of confidence of the board (Myers and Majluf, 1984). However, this situation is expected when ownership is dispersed and companies do not face strong corporate governance (Chen et al., 1998). After the introduction of the Corporate Governance Code in the Netherlands in 2003 the influence of corporate governance in Dutch organizations has changed. Companies face stronger corporate governance from their owners and ownership became more concentrated. In that case, agency theory become more relevant. Conflicts between owners and managers arise, because of different interests. How this could play a role in determining the capital structure, and its influence on board structure and ownership concentration is explained in section 2.2 and 2.3.

## 2.2 Ownership concentration and capital structure

Ownership is a set of rights and obligations concerning assets such as user rights, profit rights, disposal rights and control rights. In addition, ownership confers responsibility (Thomsen and Conyon, 2012). In publicly listed companies there are two key elements of ownership structure: Ownership concentration and ownership identity. In this section, the focus is on ownership concentration. This is the extent to which shareholders are concentrated or dispersed. In the Netherlands, in general, ownership is concentrated. Research from De Jong al. (1998) provide evidence that, in the Netherlands, the average ownership of the largest and three largest shareholders are 27% and 41% respectively. The interests from ownership from banks, insurance companies and other financial institutions are low (De Jong et al., 1998).

Between the managers and the shareholders exist an agency relationship. This relationship implies a principal-agent relation. It is about difficulties in motivating one party (managers) to act in the best interests of another (owner) rather than in his own interests. The problem arises where the two parties have different interests and asymmetric information such that the owner cannot directly ensure that the manager is always acting in the owner's best interests. Moral hazard and conflict of interest arise. Jensen and Meckling (1976) argue that managers do not always adopt capital structures with value maximizing level of debt, because managers are not always acting in the best interests of the owner. Jensen (1986) addresses this as the issue of agency theory and finds that managers of a firm make more efforts to expand the firm for their personal gains, which may result in a higher debt ratio because debt could be used as an effective substitute of dividend. By issuing debt in exchange for stock, managers are bonding their promise to pay out cash flows that cannot be accomplished by simple dividend increases. This lead to a greater power and status for managers, but will have a negative impact on firm efficiency. The deviation from the principals' best interests by the agent is called agency costs. Research provide empirical evidence when a company face high agency costs, debt can create value for the shareholders (Harvey et al., 2004). Margaritis and Psillaki (2008) shows that more debt in the organization, leads to more efficiency and thus higher profitability. Because the shareholders have more power when they are concentrated, they can push the management to raise more debt than equity, which could be explained by the pecking-order theory. Brailsford et al. (2002) shows a relationship between ownership structure and capital structure. They find a relation between managerial share ownership and debt ratio, namely when managerial ownership reaches a certain point, there is potential for an increase in managerial opportunistic behaviour which is associated with a decrease in the debt ratio. Besides that, they also find that external block ownership is positively related to the level of leverage. This leads to active monitoring the management to reduce the employment risk. In an environment where debt finance is dominant and equity finance plays a minor role, protection of minority shareholders from block holders is as important for an efficient system of corporate governance as for protection against entrenched management. Margaritis and Psillaki (2008) found a relationship between dispersed ownership and low debt-ratio, so for concentrated ownership the debt ratio is higher. The theory from Jensen and Meckling (1976), argued that agency costs within more concentrated firms are lower than in firms with a dispersed ownership. Also asymmetric information is reduced in case of concentrated ownership. It leads to block owners, which are owners with a great amount of shares in the company. Those owners can influence the company more than owners in a company with dispersed ownership. Concentrated owners have more interests to monitor the management, because they are willing to perform optimal for an optimal shareholder value because their interests are bigger. If block owners serve as active monitors over the actions of corporate managers, the management is not able to adjust the debt ratio to their own interests as freely if such block owners do not exist (Brailsford et al, 2002). As external block owners have strong incentives to reduce managerial opportunism, they use debt as a governance mechanisms to control management's consumption. Indeed, managers of a firm which is mainly equity-financed do not have a strong incentive to maximize profit, because without debt, bankruptcy does not occur (Grossman and Hart, 1982). External block holdings are likely to have higher debt ratios at least to the point where the risk of bankruptcy induce them to lower debt (Margaritis and Psillaki, 2008). This leads to the following hypothesis:

*H1: Ownership concentration has a positive impact on the debt ratio*

## 2.3 Board structure and capital structure

Board structure plays an important role in solving the agency problem. The board can control the management whether they act in the best interests of the shareholders. The board structure of a firm could impact the capital structure of a firm. There are several characteristics of boards. In this paper the emphasis is on the board independence and the board size.

The Dutch system of corporate governance is interesting because it combines elements of primarily market-orientation (US and UK) and more control mechanisms of corporate governance. In the Netherlands, a two-tier board system is prevalent consisting of a supervisory board and a management board. Characteristic of the supervisory boards in the Netherlands is co-option. Via co-option the incumbent members of the supervisory board, choose new members. Decision management is assigned to the management board, the management board has on average 3 members (Van Ees et al, 2003). The Corporate Governance Code in the Netherlands is rather strict in the independence of the supervisory board members, all members of the supervisory board must be independent. Also for supervisory board committees the Code provides that only one member may be dependent (Van Bekkum et al., 2009). In the Dutch companies the role from the CEO is always distinguished from the board of directors, this means the CEO from a company cannot be the chairman of the board of directors. This is in contrast to the USA where it is common that the CEO is also the chairman of the board. This may cause a bigger agency problem because the board is not able to monitor management in an objective way.

Combined with the results from the literature, it can be concluded that Dutch listed firms face strong corporate governance from the board with thanks to the Dutch Corporate Governance Code. Besides that, the percentage of outside directors within the board of Dutch listed firms is high. If the independence of the board is high, the board directors doesn't have any financial interests in the company. Top managers face more monitoring when the board of directors is controlled by more outside and independent directors. Outside directors control the managers more actively, which leads to that managers adopt lower leverage. Managers adopt lower leverage to avoid performance pressures associated with commitments to return cash, because the lower the debt in the company, the lower the chance of bankruptcy. (Jensen, 1986; Wen et al., 2002). Therefore, the hypothesis for the impact of board independence on the capital structure reads as follows:

*H2: Board independence has a negative impact on the level of debt*

Research from Berger et al. (1997) shows that larger board of directors generally have lower level of debt because a larger board put pressure on managers to follow lower gearing levels and enhance firm performance. Larger boards translates into stronger pressure to pursue lower leverage than within smaller boards. The board wants lower leverage to lower the chance of bankruptcy, in the interests of the owner. This is confirmed in a research of Abor (2007). The results indicate that Ghanaian listed have a negative relation between board size and leverage ratios in SMEs, which means that larger board have lower level of gearing. However, there is also empirical evidence for another relation between board size and capital structure. Pfeffer and Salancik (1978), Lipton and Lorsch (1992) and Ferreira (2012) found a positive relation between the size of the board of directors and the capital structure. This means that the debt is higher to the extent the size of the board is higher. Debt is more likely to be used as a governance mechanism to reduce the conflict of interest between the principal and the agent (Jensen, 1986). This could explain the positive relation between the level of debt and the size of the board of directors, because the conflict of interest are higher with the existence of large boards. Wen (2002) found also a positive relationship between board size and capital structure. He argues that large boards follow a policy of higher levels of gearing to enhance firm value. So, this literature propose the following hypothesis:

*H3: Board size has a positive impact on the level of debt*

# 3. METHODOLOGY

The causal relation between ownership concentration and board structure and the capital structure is trying to explained. This paper will rely on the deductive approach, which means that the hypotheses which are stated from the literature will be tested. First, data on the variables is being collected. Secondly, those data will be analysed and finally the hypotheses are going to be accepted or rejected. To start, the different variables have to be determined. This research consist of dependent and independent variables. The dependent variable is the capital structure of the firm. The independent variables are the board independence, the board size and the ownership concentration. How those variables are going to be measured, will be explained later. With this knowledge, a model could be drafted. This model looks as follows:

$$D/E\ ratio_i = \alpha_i + \beta 1 OWN_i + \beta 2 IND_i + \beta 3 BOARDSIZE_i + \beta 4 (log) SIZE_i + \varepsilon_i$$

The symbol β is the value to which extent the variable is correlated to the D/E ratio. If this value is negative, there is a negative relation between the variables. If the value is positive, there is a positive relation. OWN means ownership concentration, IND means board independence and BOARDSIZE means board size. SIZE stands for the size of the company which is expressed in total assets. This is the control variable. Following the literature, a linear relation between the dependent and independent variables is expected.

## 3.1 Dependent variable

The dependent variable of this study is the capital structure. The capital structure is measured by a ratio which compared the ratio between debt and equity, also called the D/E ratio. If the D/E ratio is more than 100, it means there is more debt in the firm than equity. So, the higher the ratio, the higher the level of debt. If there is a high level of debt, companies may have trouble with meeting their debt repayments. Industries with large and ongoing fixed assets requirements typically have higher levels of debt. In this case, the formula for measuring the D/E ratio is as follows:

$$\frac{\text{Total liabilities (book value)}}{\text{Total equity (book value)}}$$

This measurement is also taken in other, previous researches and is chosen because it gives you an inside in the ratio between debt and equity, all forms of debt are included. The equity of the companies are taken from the total shareholders' funds plus other shareholders' funds (Chen et al., 1998; Brailsford et al., 2002). The D/E ratio is a dependent and continuous variable.

## 3.2 Independent variables

The independent variables of interest are the ownership concentration, the board independence and the board size. What the characteristics of those variables are and how it is measured will be explained separately.

### *3.2.2 Ownership concentration*

The first independent variable is ownership concentration. From the literature, it is expected this variable has a positive effect on the level of debt. Ownership concentration is measured by the percentage of shares for the largest shareholder (Brailsford et al., 2002). This percentage is taken from the direct ownership of the largest shareholder. The higher the percentage, the more concentrated the ownership. Ownership concentration is a dependent, continuous variable. It is expressed as a percentage. The data for this variable is provided from the database ORBIS.

### *3.2.3 Board independence*

The second independent variable is the board independence. According previous research, the more independent the board the lower the level of debt, so it is expected independence has a negative impact on the level of debt. This is done by measuring how many board members own shares of that firm. If the percentage of board members which own shares is high, the independence of the board is low. If there are only a few board members which own shares, the independence of the board is higher because they do not personally care about the value of the shares. The formula is as follows:

$$1 - \frac{\text{Number of directors who own shares in the company}}{\text{Board size}}$$

Postma et al. (2001) measures the independence of the board among other by the percentage of equity ownership by members of the board. This gives an indication to which extent the board members have personally interests in the performance of the firm. Berger et al. (2007) use the percentage of outside directors as a measurement of board independence. However, following

the Corporate Governance Code in the Netherlands, all directors within the board should be independent. This measurement make thus no sense. In order to be able to measure the independence, a variation on the measurement of Postma et al. (2001) is taken, because data about equity ownership was not accessible and available for all companies. Therefore the percentage of the board members who own shares in the company is taken as a measurement. As earlier mentioned in this paper, CEO duality could also be an indicator of board independence. However, CEO duality is not taken into account in this case, because it hardly occurs in the Netherlands. Just as the occurrence of executive directors. It is generally known that the boards in the Netherlands are practical entirely independent, this means there are no executive board members within the board of directors.

### *3.2.4 Board size*

The third and last independent variable is the board size. The literature shows evidence for a positive impact of board size on the level of debt. The board size is the number of members within the board. This variable is measured by the number of board members in a certain year, this includes both the supervisory board and the executive board (also called management board). Both supervisory board and executive board are included, because this gives the best comparison because there are some companies who don't have a two-tier board structure. It is a continuous variable which could have infinite values, but it is expected the value is between 3 and 20.

## 3.3 Control variable

Firm size is a control variable. The firm size is measured by the total assets in thousands of euros. A control variable is included because they might affect the relationship between ownership concentration and capital structure or board size and capital structure. A firms capital structure is likely to be affected by many other factors. The control variable controls whether the capital structure is indeed influenced by the independent variables or also by the control variable. The choice for the size of the firm as control variable arise from the literature, because it is suggested that the size of the firm has a positive relation with the leverage of the firm (Moldasheva, 2012, Titman & Wessels, 1988). For the statistical analysis the log of the total assets is used, because for a good measurement the values have to be normalized. This is possible with adding a logarithm. Other researches confirm this thinking, because they make also use of it (Berger et al., 2007; Ferreira, 2012).

## 3.4 Sample selection

The sample of this study consists in first instance of 169 companies. Dutch listed and Dutch formerly listed companies from 2010 to 2012 are selected. The choice for Dutch listed companies has arisen from the research gap, this research is never been done for Dutch listed firms in the last five years. Financial companies are excluded, because those kind of companies have a total different structure of their board and ownership, and also their goals are different and not comparable with other companies, like industrial and service companies for example (Ferreira, 2012). Some companies may be removed from the dataset, because not all data needed was valid and accessible. Because also formerly listed companies were selected, companies with a market capitalization of zero were excluded, because this may indicate that the company was not listed in that certain year. Also companies with abnormal values, for example a very negative D/E ratio or extremely high D/E ratio, are excluded from this sample. This has caused that the sample was brought back to 72 companies with N = 152. 40 observations for 2010, 52 observations for 2011 and 60 observations for 2012. Data about the total assets, equity and liabilities is obtained from the database ORBIS. This is a database provided by Bureau van Dijk and it contains financial data from millions of companies worldwide. Other data needed, such as data for the board structure was not available at ORBIS for all years, so this data is taken from annual reports of the companies.

## 3.5 Descriptive statistics

Descriptive statistics are presented in table 1. As can be seen in the table, the mean number of board members is 9 members with a standard deviation of 5.6. This is consistent with prior research from Wen et al. (2002) and Ferreira (2012), where the mean board size was respectively 9.82 and 9.03. The ownership concentration is determined by the percentage of shares from the largest shareholder. In Dutch listed firms, the average is 32.07%. Board independence is measured by the amount of board members who own shares divided by the board size. This means that on average 90.2% of the board is independent. This is different with the research of Brailsford et al. (2002) and Ferreira (2012), where only 57% and 66% of the board is independent. However, this studies were done in companies from other countries which could be the cause for this difference. The dependent variable in this survey is the debt/equity ratio. The mean of this ratio in Dutch listed firms is 179.04 with a standard deviation of 173.49. This standard deviation is quite high and it could mean there are many outliers. However, the most extreme outliers have already been removed from the sample. Market capitalization and total assets are taken into account, because you have to know whether the company was listed in that certain year and if they had assets in that year. If that is not the case, those companies could be excluded from research.

| | Mean | STD | Min | Max |
|---|---|---|---|---|
| **DER (%)** | 179.04 | 173.49 | 14.70 | 899.80 |
| **IND (%)** | 90.22 | 17.08 | 11.11 | 100 |
| **BOARDSIZE** | 9.36 | 5.64 | 2 | 42 |
| **OWN (%)** | 32.07 | 22.91 | 0.70 | 100 |
| **SIZE (log)** | 13.69 | 2.16 | 8.47 | 18.62 |
| **MAC (mlj€)** | 3474.36 | 7640.35 | 2.98 | 53,413.31 |

**Table 1: Descriptive statistics. The table reports the sample statistics from Dutch listed companies in the period 2010-2012. The D/E ratio (DER) is a measurement for the capital structure. The % of independent board members (IND) measures the independence of the board. The board size (BOARDSIZE) is the number of board members including the supervisory and executive board. % of shares of the largest shareholder (OWN) is a measurement for the ownership concentration. The size of the company (SIZE) is used as the control variable.**

## 3.6 Statistical tests

Statistical tests give an understanding of the relationship between the variables. To test the relation, a correlation and regression analysis is done. First, a bivariate analysis outlining the correlation between the independent variables and the capital structure is being used. The Pearson correlation indicates the relation between two variables, without influence of a third

variable. The correlation analysis is 1-tailed. After this correlation, a multiple regression analysis will be performed. This analyse if the relation between the corporate governance mechanisms and the debt/equity ratio is with the influence of all variables. A multiple regression analysis is required for this kind of research, because there are several independent variables and one control variable which could predict the D/E ratio of a firm. In the next section, the results of the bivariate correlation and the multiple regression will be analysed and this can draw a conclusion to which extent the selected corporate governance mechanisms can influence the capital structure of Dutch listed firms.

# 4. RESULTS

The Pearson coefficients observes whether there exist a correlation between the independent variables, like ownership concentration, board independence and board size, and the dependent variable, the D/E ratio. Also the control variable, the size of the firm, is taken into account. The correlation coefficients are presented in table 2. As can be observed from the coefficients, it seems that there exist both low correlations for the independence of the board as well the ownership concentration with the D/E ratio. The correlation with the board independence is negative with a value of -0.061. The coefficient of ownership concentration is 0.100. The correlation coefficient from capital structure and board size is a little stronger with 0.136. Thereby, this correlation is significant with $\alpha = 0.05$ , to which you can conclude that the D/E ratio and the board size are positively correlated. All the correlations between the independent and dependent variables correspond to the hypotheses stated in section 2. However, the correlations with the board independence and ownership concentration are not significant. For ownership concentration, this is most surprising, because previous studies found a positive relationship between those variables which is significant (Brailsford et al., 2002; Margaritis and Psillaki, 2008). Besides that, the control variable is taken into account. From table 2 it can be concluded that the correlation between D/E ratio and size is significant with $\alpha = 0.01$. Its correlation is positive with a value of 0.428. This correlation shows that the bigger the company, the more debt it has. Literature from Titman and Wessels (1988) give empirical evidence for this relation. In their research there is evidence that size of the firm is a determinant for the capital structure of the firm. The correlation between size of the company and board size is also significant with a coefficient of 0.379. This correlation can be explained logically, by the fact that the larger the company is, the larger the board is. However, this could affect the model after adding the control variable to the model.

| | DER | IND | BOARD SIZE | OWN | log SIZE |
|---|---|---|---|---|---|
| **DER** | 1.000 | | | | |
| **IND** | -.061 | 1.000 | | | |
| **BOARDSIZE** | .136* | .145* | 1.000 | | |
| **OWN** | .100 | -.050 | -.140* | 1.000 | |
| **log SIZE** | .428** | .087 | .379** | -.980 | 1.000 |

**Table 2: Correlation coefficients of the dependent and independent variables. The correlation coefficients are presented by making use of the Pearson correlation. The definitions of the table are presented at table 1.**

*** Correlation is significant at the 0,05 level (1-tailed)**
**** Correlation is significant at the 0,01 level (1-tailed)**

For analysing the model of this relationship, a multiple regression analysis will be performed. In the first model, the control variable is excluded. In table 3, you can see the coefficient for board independence is -0.801. This indicates there exist a negative relation between the independent board members and the D/E ratio. For example, when the board independence increases with 1, the D/E ratio decreases with 0.801. However, this relation is not significant. The regression with the board size is significant with $p = 0.047$, and a coefficient of 5.054. This positive relation is expected from the literature and it confirmed the hypothesis (Pfeffer and Salancik, 1978). In model 2 the control variable is included. From table 3, model 2 it can be concluded that the relationship between firm size and D/E ratio is positively significant with a coefficient of firm size is 36.093 and a p-value < 0.001. This indicates a positive relation between the size of the firm and the D/E ratio with the presence of the independent variables. This can be explained by the fact that the larger the firms, the more easily they get contact with the credit market and thus the larger their debt should be (Chen, 2004). Berger et al. (1997) also provide evidence for the existence of this significant relationship. However, in the first model, board size has a significant relationship with the D/E ratio. With adding total assets in the second model, the significant relationship disappears and thereby, the relationship becomes negative. This could be interpreted by the strong correlation between board size and total assets as showed in the correlation matrix. The size of the firm affect the size of the board in that way, it becomes less important for determining the D/E ratio. As earlier mentioned, the reason for this can be explained logically, because larger firms need larger boards. What is also noteworthy, is the significant regression with the ownership concentration after adding the control variable. In the second model, the relationship between D/E ratio and ownership concentration becomes significant with B = 1,045 and p-value is < 0,1. This positive relation is confirmed by previous researches, these studies also uses the size of the firm as a control variable. However, those studies use a lot more other control variables which are not used in this study which could be the cause that the other variables are not significant related.

The correlation coefficient and the regression coefficients shows a strong positive and significant relationship between the total assets and the D/E ratio. The relationship between the independent variables and the D/E ratio are not that strong and significant. This may indicate that a big part of the model is determined by the size of the firm, a variable which is in this study a control variable. Table 3 shows the adjusted $R^2 = 0.020$ for model 1; it can be thus concluded that 2.0% of the model can be explained by the independent variables, respectively ownership concentration, board independence and board size. The adjusted $R^2$ for model 2 is 0.212. The change in $R^2$ is 0.173. This is a relatively high percentage, it means that 17.3% of the dependent variable is predicted by the addition of the control variable. From this it can be concluded that the control variable has such an impact on the capital structure that the impact from the corporate governance mechanisms do not have a big impact at all. It is a bit surprising that only the relationship with ownership concentration is significant. Previous studies found more corporate governance mechanisms with a significant relation with the D/E ratio, even if size is one of the predictors (Wen et al., 2002; Moldasheva, 2012; Husaiiney and Aljifry, 2006). However, this studies make use of more variables for measuring the corporate governance and more control variables are taken into account.

| | Variable | Expected relationship | B | T-value |
|---|---|---|---|---|
| **Model 1** | (Constant) | | 175.081 | 2.181** |
| | | | (80.266) | |
| | IND | - | -0.801 | -0.968 |
| | | | (0.828) | |
| | SIZE | + | 5.054 | 1.999** |
| | | | (2.528) | |
| | OWN | + | 0.901 | 1.462 |
| | | | (0.617) | |
| **Adjusted $R^2$** | 0.020 | | | |
| **$R^2$ change** | 0.039 | | | |
| **Model 2** | (Constant) | | -263.158 | -2.479** |
| | | | (106.75) | |
| | IND | - | -0.943 | -1.254 |
| | | | (0.752) | |
| | SIZE | + | -0.049 | -0.020 |
| | | | (2.467) | |
| | OWN | + | 1.054 | 1.879*** |
| | | | (0.561) | |
| | log SIZE | | 36.093 | 5.680* |
| | | | (6.355) | |
| **Adjusted $R^2$** | 0.191 | | | |
| **$R^2$ change** | 0.173 | | | |

**Table 3: Regression coefficients, t-value and significance are presented in this table. The dependent variable is the D/E ratio. In model 1 the independent variables are measured. In model 2 the control variable (SIZE) is included. Adjusted $R^2$ and $R^2$ change are given.**

*** Significant at the 0,01 level**
**** Significant at the 0,05 level**
***** Significant at the 0,1 level**

Model 1 in table 3 shows a significant relationship between D/E ratio and board size, but after adding the control variable in model 2, there emerged another relationship. The relation with board size became insignificant negative and the relation with ownership concentration became positive and significant. Thereby, a third model is developed. The dependent variable is D/E ratio. The independent variables in this third model are the ownership concentration, board independence and size of the firm. Board size is excluded to make clear what the exact relation is between the other independent variables and the D/E ratio. Table 4 shows the regression coefficients of model 3. As can be seen in the table, the coefficients are nearly the same as in model 2. The regression coefficient of the ownership concentration is 1.055 and is significant with a p-value < 0.1. The size of the firm is also still significant with a coefficient of 36.047 and a p-value < 0.01. However, the adjusted $R^2$ in model 3 is 0.196 while the adjusted $R^2$ in model 2 is 0.191. Therefore, it can be said that the board size does not have impact on the D/E ratio, but it impacts the other independent variables. This can be concluded because the $R^2$ is higher with the exclusion of the board size as independent variable. The hypothesis about the board size can therefore be rejected. Also the hypothesis about the board independence is not proved to be significant, whereby this hypothesis also could be rejected. The relation between D/E ratio and ownership concentration is significant and positive, by which this hypothesis can be accepted.

| | Variable | B | T-value |
|---|---|---|---|
| **Model 3** | (Constant) | -262.867 | -2.508** |
| | | (104.805) | |
| | IND | -0.945 | -1.270 |
| | | (0.745) | |
| | OWN | 1.055 | 1.898*** |
| | | (0.556) | |
| | log SIZE | 36.047 | 6.111* |
| | | (5.898) | |
| **Adjusted $R^2$** | 0.196 | | |

**Table 4: Regression analysis from an alternative model. In this model the independent variables are the board independence, the ownership concentration and the size of the firm.**
*** Significant at the 0.01 level**
**** Significant at the 0.05 level**
***** Significant at the 0.1 level**

# 5. CONCLUSION

This paper investigates the impact from a few corporate governance mechanisms on the capital structure of companies. The selected corporate governance mechanisms were the ownership concentration, the board size and the board independence. The sample consists of 72 companies with 152 observations between 2010 and 2012. From the literature some hypotheses have been developed. For the ownership concentration a positive impact on the D/E ratio is expected. This is caused by the fact that block owners serve as active monitors over the actions of the corporate managers, they will use debt as a governance mechanism which will lead to a higher debt ratio (Grossman and Hart, 1982). For the board independence, a negative impact is expected. Outside directors control the managers more actively and to avoid bankruptcy, the debt ratio will be lower (Jensen, 1986; Wen et al., 2001). The last hypothesis which is formulated is the board size hypothesis which one predicts a positive impact from board size on the capital structure. This stems from the fact that companies with large boards face more conflicts of interests. In this case, debt could also be used as a governance mechanism which will lead to a higher debt ratio (Jensen, 1986).

To understand the impact, a multiple regression analysis is performed. This analysis shows in first instance a significant positive relationship between the board size and the D/E ratio. However, after adding the control variable this relationship disappears. A alternative model is used to control this. In this model, a higher $R^2$ is found compared to model 1 and 2, whereby it can be concluded that the expected relation between D/E ratio and board size does not exist. Thereby, it can be concluded that relations between capital structure and the selected corporate governance mechanisms are only significant in case of ownership concentration. This confirmed the results of previous researches (Brailsford et al., 2002; Margaritis and Psillaki, 2008) and also the agency theory as mentioned by Jensen (1986). If the ownership is concentrated, the owners serve as active monitors over the actions of the management. This caused that the management does not act as freely as they would without concentrated ownership, and the block owners are using debt as control mechanism (Grossman and Hart, 1982). As an answer on the research question, it means that the

more ownership is concentrated, the higher the debt in the company should be. The impact of ownership concentration on the capital structure is therefore positive. The relations between D/E ratio and the board size and board independence are not proved significantly. For the board size, this was also the case in research from Wen et al. (2002), in that research also an insignificant relationship was found with the board size. However, the results show that a big part of the model is determined by the addition of the size of the firm, which means that the selected corporate governance mechanisms do not determine the capital structure as much as expected from the literature.

Limitations of this research compared to other researches is the limited amount of variables. Other researches, like Brailsford et al. (2002), Berger et al. (1997) and Margaritis and Psillaki (2008), uses a lot more variables for measuring the board composition or ownership structure. Thereby, this research contains one control variable while other researches make use of 5 or 6 control variables. However, when more time is available, this could be a goal for future research to get a better view about the relationship between corporate governance and the capital structure in Dutch listed companies.

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