

**Important factors in determining the capital structure of a company.
Empirical evidence from Dutch companies**



Koert te Nijenhuis 1239937
University of Twente
Master Business Administration
Financial Management
First supervisor: H.C. van Beusichem Msc
Second supervisor: Dr. B. Roorda
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Preface

In the period between May and December, I conducted this study about important factors that determine the capital structure of Dutch companies. This master thesis is a part of the master Business Administration at the University of Twente. During a period of two years I completed the pre master and master Business Administration. I expect that the acquired knowledge during the master will help me during my job as accountant, when giving advice to clients.

First, I would like to thank my first supervisor Mr. van Beusichem for his help and useful tips to provide this master thesis. Also I want to thank my second supervisor dr. Roorda for giving me useful feedback to improve my thesis. Finally, I am very thankful for the support of my family and friends during my study and especially for the grammatical help of Judith, Maarten and Roland for this master thesis.

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Koert te Nijenhuis

Abstract

This study conducted a research to important factors that determine the capital structure of Dutch companies. Based on the the trade-off, pecking order and agency theory different hypotheses are established to test which factors are the most important in determining leverage. For the hypotheses, variables are developed and those are tested by using the ordinary least square (OLS) regression method. The data for this research is collected from Dutch non-financial publicly listed companies in the period between 2005 and 2009.

The results of this research indicate that firm size and liquidity are the most important factors in determining leverage of Dutch companies. Bigger firms use more debt and companies with more liquidity use less debt, which is in accordance with the pecking order theory. Also important are the factors non-debt tax shield, retained earnings, profitability and priority shares. The trade-off variable non-debt tax shield is only important when examining all the variables of this study. Together the pecking order theory variables are the most important, but the result of profitability is positive related to leverage which is not in accordance with the expectations. Free cash flow, preferred shares and priority are all three significant when testing the agency variables, but the results for free cash flow and priority shares are the opposite of what was expected. The corporate control mechanism priority share is also important when all the variables are tested. There is not a strong indication, but heteroscedasticity might have an impact on the results of this study. This must be kept in mind when interpreting the results.

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1. Introduction

The research about the capital structure became more popular after the article of Modigliani & Miller (1958), who stated that the capital structure of a company is irrelevant in a perfect market. Based on this article, researchers have tried to investigate how different capital market imperfections affect the capital structure of a company. Until now a lot of research has been conducted in different countries to find the determinants of the capital structure for a company. This study focuses on the factors that determine the capital structure for Dutch companies. The capital structure of a company consists of equity and debt. These resources are used in order to finance organization. The overall goal of the capital structure research is to find the optimal capital structure for a company that gives the highest value (Myers, 2001). There are a couple of questions that are interesting related to this subject. Like for instance, which factors are important if a company will borrow money? Do companies with more profitability have preference for debt or equity? And is more free cash flow related to more debt or equity? These questions are focused on specific factors that influence the capital structure of a firm. Research has also been conducted to find out how different factors of countries and industries affect the capital structure. For example, De Miguel & Pindado (2001) investigated the differences in determinants of the capital structure between Spain and the United States. Kayo & Kimura (2011) executed a research to find out in which hierarchy the capital structure is influenced by different factors such as the industry and time.

To investigate which factors determine the capital structure, different theories can be used. In this master thesis the following theories are discussed; the trade-off, the pecking order and the agency theory. These theories give a kind of guideline of the common relation between determinants and leverage. With the empirical results from the literature and the theories, a number of hypotheses are developed. To test the hypotheses, some variables are developed to investigate the relation between the determinants and the capital structure of Dutch companies. The trade-off theory describes how firms decide about the amount of leverage based on the balance between tax advantages and the distress cost of debt (Myers, 2001). From the pecking order theory it can be stated that companies prefer internal above external financing when searching for incremental financing. This is due to the asymmetric in information between the managers of a firm and the investors on the market (Baker & Martin, 2011). The agency theory is developed based on the conflicts between the managers and the shareholders of a company about how to deal with the free cash flow of a company (Jensen, 1986). The agency theory focuses also on the conflicts between debt providers and shareholders about how the companies are investing their financial resources. For debt holders the main goal is that companies are not taking too much risk when investing, but only the risk that is needed to earn money that is needed to pay the interest and repayments of debt. On the other hand, shareholders prefer that the company invest in risky project and therefore they will receive a higher share value and more dividends.

Dutch companies have some special characteristics that influence the capital structure. One of these characteristics, the corporate control mechanism, is tested in this study. The managers of Dutch companies can use the corporate control mechanisms to protect their companies against hostile takeovers. The corporate control mechanisms can also be used for other purposes, which are mentioned further on in this study. To test the relation between the corporate control mechanisms and leverage three measurements are used, namely preferred shares, priority shares and depository receipt. It is interesting to examine the influence of the corporate control mechanisms on the capital structure of Dutch companies.

Research of Dutch companies show that in accordance with the trade-off theory, tangibility is positively related to leverage (De Jong, 2002). It is obvious that companies with more tangible assets in the Netherlands have more debt. In line with the pecking order theory it has been found that firms with more profitability are less likely to use debt to finance the company (Chen, Lensink & Sterken, 1999). De Haan & Hinloopen (2003) found a negative relation between liquidity and leverage, which is in comparison with the pecking order theory. The research to the influence of the agency theory in Dutch companies indicates that the free cash flow is not really positively related to leverage. This is the opposite, what is stated by the agency theory (De Jong & van Dijk, 2007). Also in the article of Chen & Jiang (2001) a surprising result was found according to the agency theory, namely that growth opportunities are positive related to leverage.

The reason for conducting this study is that there are only a few researchers who used data from companies in the Netherlands. A reason for this can be that the corporate governance structures in Dutch companies are different in comparison with other countries. Another reason could be that companies in the Netherlands can protect themselves against loss of corporate control (De Jong & van Dijk, 2007). Therefore, it is difficult to compare the Dutch results with other countries, but it is interesting for this study to find out how the characteristics of Dutch companies influence the results. Another gap is the use of old datasets, while in this study more recent data was used. This research focuses on important factors in determining the capital structure. The degree of importance of the different theories is also included, from this can be concluded which theory has the most explaining power in determining the capital structure of Dutch companies.

Based on the trade-off, pecking order and agency theory, the existing literature and the previous research to the determinants of the capital structure in Dutch companies the following research question has been developed: "Which factors are important in determining the capital structure of a Dutch company?" The data for this study is collected from the ORBIS database based on the non-financial firms in the Effectengids. Data from all non-financial publicly listed companies in the Netherlands has been used. From the companies data is used from the period between 2005 and 2009. The data for the corporate control mechanisms has been collected from the "Effectengids: gids bij de officiële prijscourant van de Amsterdamse Effectenbeurs". The sample contains 336

observations of Dutch companies. To answer the research question the ordinary least square (OLS) regression method was applied. Firstly, the variables are tested in five different regression models. The first model consists of the control variables, the second, third and fourth model contain the variables of the different theories and in the last regression model all the variables are tested. This is conducted to conclude which of the theories and variables that were used in this study are the most important in determining the capital structure of Dutch companies. In addition, the results are compared with the hypotheses to decide whether they are in line with the theories. The hypotheses are based on the theories and the existing literature. Secondly, there has been investigated which of the factors are important in determining the capital structure. With the importance of the determinants for the capital structure is intended the influence of the factors on leverage based on the significance and correlation of the variables. The factors are the variables that are used to test the hypotheses.

The results of this study indicate that non-debt tax shields, retained earnings, profitability, liquidity, free cash flow, preferred shares, priority shares and firm size are important factors in determining the capital structure, while firm size and liquidity are the most important factors for Dutch companies. Most of the results are in line with what was expected, except for the variables tangibility, free cash flow and priority shares. Also a conclusion can be given about the importance of the theories. Based on the results the variables of the pecking order theory are the most important, followed by the agency and trade-off theory. This study adds value to the existing literature by giving evidence for some important factors in determining the capital structure. Another contribution is the time scale of the data that is used and the tests for influence of the retained earnings and corporate control mechanisms on the capital structure of Dutch companies. This study also contributes to the knowledge of businesses. All managers act on different ways with regard to the financing of companies. Under the same circumstances one manager may prefer internal while the other chooses for external financing. For companies it is interesting to see what the important factors are for choosing the capital structure. Managers and companies can use this information for their own choices when financing the assets and activities of the company.

The remainder of this study is structured as follow. In the second section an overview is given from the capital structure theory, where the most important theories and empirical results are discussed. The third chapter gives an overview from the Dutch literature about the capital structure. The fourth part describes the data, the selection criteria, the sources of the data that are used and the research method. In the fifth section the results are outlined and discussed. In the last chapter a conclusion is given of the main results and also some limitations of this research and suggestions for future research are mentioned.

2. Capital structure theory

In this chapter the literature concerning the capital structure is reviewed. Firstly, the theory of Modigliani & Miller and imperfections of the capital market are explained. Secondly, the trade-off theory, pecking order and agency theory are described. Based on the existing literature and the empirical evidence for the theories a number of hypotheses are developed to answer the research question. Lastly, there are mentioned a couple of not theoretical supported influences on the capital structure.

2.1 Modigliani & Miller

After the introduction of the theory of Modigliani & Miller, the study to the optimal capital structure became more popular. According to Baker & Martin (2011) a capital structure can be defined as the financing sources of a firm, used to finance assets, operations and future growth. The financing funds of the capital structure are debt and equity. Equity is the amount of money which is invested in the firm by the owners, also called the shareholders, the amount of retained earnings from the company. The debt of a company can be defined as the amount of money that is borrowed under certain conditions by a venture. Debt must be repaid before a certain date to the lenders. It is custom that lenders require an interest on the loan. There are many different types of debt, for instance short or long term debt, bonds and obligations.

Firms try to find a capital structure that gives the highest value for a firm. The highest value can be achieved when the capital structure maximizes the value of the shareholders. In a perfect market it does not matter which sources are used to finance a company. In proposition I, the theory of Modigliani & Miller states that in a perfect world without imperfections, differences between using debt and equity do not exist. To maximize the value of the company it makes no differences if a company's capital structure consists of debt or equity (Modigliani & Miller, 1958). In a world with only tax as an imperfection this proposition changes. A company needs to borrow as much debt as possible. With more debt the tax payments become lower, because the interest can be subtracted. Therefore, more cash flow remains whereby the value of the company increases. Proposition I with taxes explains that companies with more debt have a higher value due to interest that lowers the tax payments.

Proposition II of Modigliani and Miller (1958) explain that companies with more debt have a higher cost of equity. In times of slump less profit is available, because of the interest which must be paid. On the other hand, in more lucrative times the profit must be distributed among fewer shares because the capital structure not only consists of equity but also debt, since a part of the equity is replaced by debt. This leads to more earnings per shareholder. From this can be concluded that the risk is higher for shareholders, since the larger range between profits due to the debt and interest. Proposition II of Modigliani and Miller with tax clarifies that leverage add more risk to companies, but the tax "shield" reduces something of that risk. Therefore, the cost of equity is growing slower. Tax changes the slope of the Weighted Average Cost of Capital (WACC). At the point that the WACC is the lowest, the company has the highest value

due to the fact that a part of the interest can be subtracted from the tax payments (Hillier, Ross, Westerfield, Jaffe & Jordan, 2010).

Taxes are mentioned as an imperfection in the real world, but this is not the only imperfection that can occur. Other imperfections are for example; distress cost, information asymmetry and agency costs. Based on these imperfections theories are designed by researchers. It is interesting to see how those imperfections affect the capital structure of a company. The theories that are mentioned in this study are the trade-off, pecking order, and agency (free cash flow) theories. Those theories help to explain how the imperfections influence the capital structure of the company. First the different theories are explained with evidence from the literature. A number of hypotheses are developed to test how the imperfections influence the capital structure both indirectly and directly.

2.2 Trade-off theory

In short, the trade-off theory describes that firms try to find the optimal capital structure based on the pros and cons of borrowing debt. As can be cited from (Myers, 2002, P.88) “The firm will borrow up to the point where the marginal value of tax shields on additional debt is just offset by the increase in the present value of possible costs of financial distress”. Therefore, a company tries to find a balance between the tax shield and the distress cost which are created by using debt. This study has tried to investigate, how to measure the influence of tax advantage and the risk of leverage on the capital structure of a company. First the advantages of tax are explained and how it should be measured, after that the same is done for the distress cost.

Figure 1 of the article of Myers (1984) can help to explain the theory in more detail. The figure shows that the market value of a company with more debt increases to a certain point. More debt above this point decreases the value of the company due to the cost of financial distress. It can be concluded that companies need to search for a balance between the tax advantages and financial distress cost which gives the highest firm value.

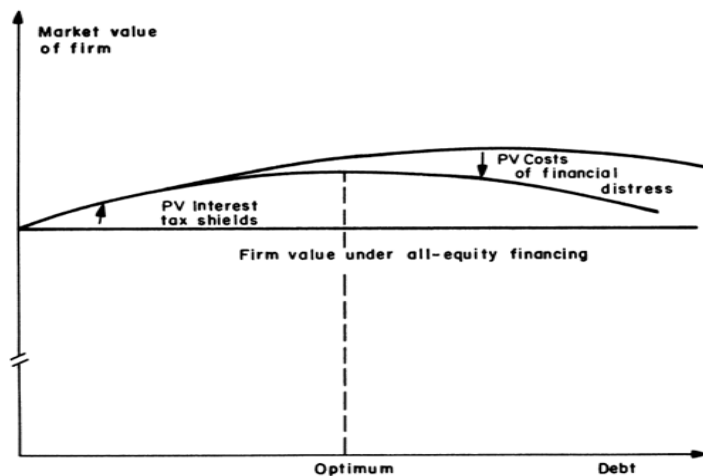


Figure 1. The static trade-off theory of capital structure (Myers, 1984)

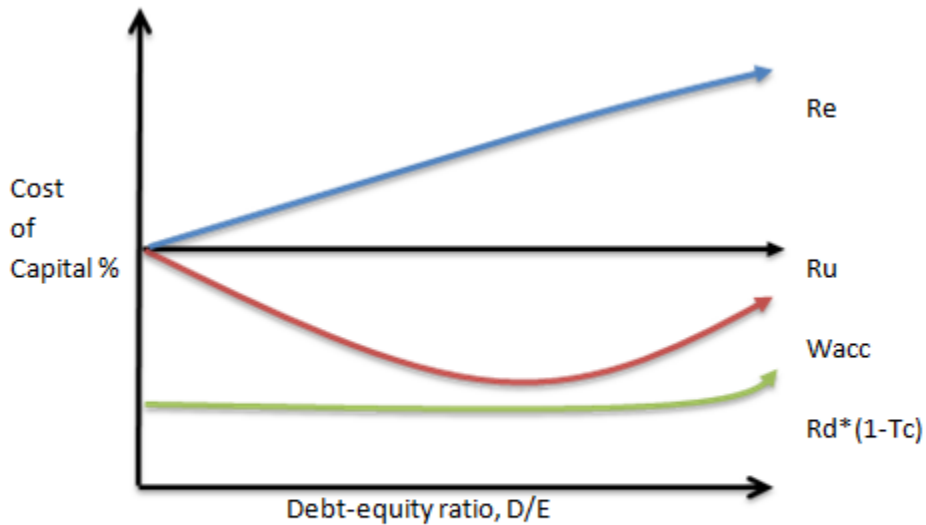


Figure 2: The optimal cost of capital
(Hillier, Clacher, Ross, Westerfield, Jaffe & Jordan 2011)

In Figure 2 another example is given for the trade-off theory. The WACC declines, because of the tax advantages up to a certain amount of debt. After that point the WACC begins to raise due to the distress cost of too much debt. Therefore, companies need to find an optimal amount of debt where the cost of capital is at its lowest point. At this point the company has the highest value and the lowest WACC.

Tax shield

The advantage of debt, gives a company some tax advantages, since the company does not need to pay any tax on the paid interest. It seems very beneficial for companies to borrow as much debt as possible, with debt the company needs to pay less tax, because of the interest which provides a kind of shield against tax (Myers, 1986). The main goal is to create the highest value for the company. To do this a company can use debt. The tax shield ensures that the company need to pay less tax due to interest that has to be paid. When less tax must be paid a higher amount of cash flow remains. Based on the cash flow the company can be valued. Hence, with a higher amount of debt the cash flow of the companies' increases the value due to the tax shield which is created by using debt instead of equity (Hillier et al., 2010).

Titman & Wessels (1988) state that depreciations and investment deductions can be seen as alternatives for the tax advantages of using debt. Therefore, with those non-debt options a company does not need debt to pay less tax. With the presence of the non-debt tax shield, debt is not necessary to obtain tax advantages (De Jong & van Dijk, 2007). The non-debt tax shield reduces the tax benefits of leverage. Another advantage is that companies do not need to make costs for borrowing and the risk of distress declines by not using more debt (Deesomak et al., 2004). The depreciation and amortization declines the amount of profit, which leads to lower tax payments. Therefore, non-debt tax shield is a good variable to measure the influence of tax

advantage on leverage. De Miguel & Pindado (2001) found that a firm with a higher non-debt tax shield has a lower amount of leverage. This is in line with what was found in the article of De Haan & Hinloopen (2003), where depreciation was negatively related to bank loans. The same applies for interest payments. If a company already has a lot of non-debt tax advantages it is not necessary to borrow more money to decline the amount of tax, which has to be paid.

Another way to test the trade-off theory is by using tangibility as a variable. According to Deesomak et al. (2004) tangibility is positively related to the leverage of a company. It is expected that companies with more tangible assets have a higher amount of debt, because tangible assets can be used as collateral for the loan. Intangible assets are harder to sell when a company has financial distress. The values of tangible assets are better to define. Therefore, those assets are easier to sell and to repay the debt and interest (Myers, 2001). If a company is no longer able to pay the interest and repayments of the face value, debt holders can sell the collateral of the debt (Degryse, De Goeij & Kappert, 2009).

Distress cost

Debt has not only benefits, but also a downside. Too much debt can lead to a higher risk for financial distress cost. These costs occur when a firm, who borrows debt, is not able to meet the obligations of the loan. Equity has the advantage it is owned by the company. Equity owners only expect some dividends for their invested money, debt is borrowed from debt providers and after a certain period it must be paid back to the lender with a certain amount of interest. Distress cost can be costs for administrative and legal fees. Also indirect costs can occur associated with bankruptcy. For example, when the company is not able to perform their normal businesses any longer and opportunities cannot be performed.

Hence, with a too high amount of debt a company may have the risk that it is going bankrupt. Not the possibility of going bankrupt lowers the value, but the distress cost that is associated with bankruptcy (Myers, 2001). As mentioned before the cash flow determines the value of the company. Because of the distress cost the amount of cash flow declines. Furthermore, the value of the company declines due to high amount of debt that is borrowed.

A variable that can measure the risk is volatility of the operating income. This variable helps to measure the business risk of a company. Financial distress cost would be higher when the volatility of the earnings increases. Expected is that when the volatility of the income increase, the amount of leverage decreases (Kayo & Kimura 2011). For companies with less volatility in their earnings, it is less likely to get bankruptcy costs (Degryse et al., 2009). With more volatility, it is more difficult for a company to pay the interest and repayments of the borrowed money. De Miguel & Pindado (2001) tested the influence of volatility on the amount of leverage. The results indicated there is a negative relation between volatility and leverage. This is in accordance with the trade-

off theory which states that with more business risk, it is expected that the amount of leverage would be lower.

To measure the risk part of the trade-off theory, the size of a firm is used as well. This can be measured in different ways, with the total market value of a company and the total sales. The expectation is that bigger companies are more likely to borrow than smaller ones. According to Titman & Wessels (1988) the probability to get distress cost is less likely for big companies and it is easier and cheaper for them to use debt. Larger companies are also more stable and thereby less likely to go bankrupt. De Jong, Kabir & Nguyen (2008) found a significant and positive relation between firm size and leverage for Dutch companies. This particular relation has also been found in the research of Deesomak et al. (2004). In this study firm size has been used as a control variable.

As mentioned before the focus of this study is on Dutch companies. The history of the research to the capital structure in this country is rare. De Jong & van Dijk (2007) found that the trade-off theory is important in determining the capital structure of Dutch companies. Firms make a trade-off between the tax shield and distress cost and based on that they choose their amount of leverage. The results of the article indicated that the marginal tax rate is positively related to leverage and the relation with firm risk is negative. To make this clearer; when two variables are positively related this means that if one variable increases the other will increase. When two variables are negatively related, it can be concluded that if one variable increase the other variable will decrease. Hence, the result tells us Dutch companies with a higher marginal tax rate probably have more leverage. The other way around applies for the risk of a firm. The higher the risk, the more likely it is that companies will use less leverage. The results are in line with the article of De Jong (2002) who indicated that the capital structure for the biggest part is determined by the trade-off theory. They found for instance that tangibility is significant and positively related with leverage. This indicates that companies with more tangible assets have probably more leverage.

2.3 Pecking order theory

The pecking order theory explains how companies make decisions on how to finance, and what kind of influence this has on the capital structure. This theory plays a role when a company is searching for incremental financing. By a shortage in financing a company need to think about what kind of financial resources it will use to fill up the gap. Larger companies have more alternatives for diversified financing. They have a better reputation on the market and it is easier for them to borrow money in comparison with smaller companies (Frank & Goyal, 2003). The theory is based on the fact that there is asymmetry in information between managers of a firm and the investors. From this theory can be mentioned that firms prefer internal financing above external financing. If companies use external financing, firms first favour debt above equity (Baker & Martin, 2011). Now we know that firms prefer internal above external financing due to the asymmetry in information.

Asymmetry in information occurs when managers know more about the firm's value than the investors on the market. This is not surprising, since the managers work at the company. Hillier et al. (2011) mentioned that managers are not better in determining the value of the company than the investors. This means with the same information, investors may perhaps estimate a more reliable value of the company. When managers are going to issue new equity and the firm is undervalued, it has a negative influence on the value of the existing shareholders. The article of Myers & Majluf (1984) showed that managers act in favor of the existing shareholders. Therefore, when managers assume the firm is undervalued, they do not choose to issue new equity. In this case it is better to use debt, because debt issuers are the first who are paid when the company goes bankrupt. Therefore, they are less interested in valuations of the company. Firms prefer to use the way of financing where they need to provide the least information, this is for companies the use of retained earnings. If that is not possible, they choose debt and the final alternative is to issue equity. This is due to the fact that by using debt, information only has to be provided to the suppliers of debt and by issuing stock information it should be given to all the investors on the market (Myers, 2001).

In the past, the pecking order theory is tested by different researchers. For instance, in the article of Gaud, Hoesli & Bender (2007) where they found internal financing is preferred beyond external financing which is in line with the pecking order theory. Previous studies have found that Dutch companies prefer internal above external financing. This is in accordance with the article of De Haan & Hinloopen (2003) who found that companies with high profits are less likely to use external financing.

To measure this theory three hypotheses are developed. The pecking order theory describes how information asymmetry leads to differences in preferences for financing. It is not possible to measure this theory directly, because it is difficult to measure the information asymmetry. Therefore, three variables that are most related to the pecking order theory are chosen.

Internal financing partly depends on the amount of retained earnings. Retained earnings are the amount of profit which is not distributed by the company. The net income of a certain year minus the dividends is the amount of retained earnings in a year (Gibson, 2012). According to Frank & Goyal (2003) firms prefer to finance their company by using retained earnings before using external financing. Hovakimian, Opler & Titman (2001) indicate that profitable firms with more retained earnings become less levered in comparison with unprofitable firms. Therefore, the expectation is that the variable retained earnings is negatively related to leverage.

Titman & Wessels (1988) describe that profitability gives an indication of the retained earnings which are available. As mentioned before, the pecking order theory stated that companies prefer internal above external financing. Therefore, more profitable companies have more internal funds and are less likely to borrow debt (Myers, 1983). This is in line with the results which are found by Deesomsak et al. (2004). They found that there is a significant and negative relation between leverage and profitability.

Companies with more profitability can also use more debt to give a signal to the market about their good performance and the confidence of the management (Chen et al., 1999). Concerning Dutch companies, it was found by Chen & Jiang (2001) that profitability is also negative related to leverage.

Liquidity of a firm can be described as the percentage of the liquid assets divided by the total assets. The liquid assets consist of cash and marketable securities. According to the pecking order theory, firms prefer internal financing, hence with more liquidity, companies need less leverage. The expected relation would be that there is a negative relation between liquidity and leverage (Deesomak et al. 2004). De Haan & Hinloopen (2003) have found a negative relation between liquidity and leverage for Dutch companies.

2.4 Agency theory

Another theory which has been discussed is the agency theory. In this study the theory is split up in two parts. One part focuses on the conflicts between the equity and debt holders and the other part on the conflicts between the managers of the company and the shareholders. This last part of the theory has to deal with the conflicts between the managers and shareholders due to their differences in interests and motivations on how the money must be spend. As can be cited from (Jensen, 1986, p.2) *“the problem is how to motivate managers to disgorge the cash rather than investing it at below the cost of capital or wasting it on organization inefficiencies”*. This will be the case when the firm has plenty of free cash flow. That is why this theory is also called the free cash flow theory. One of the ways to prevent against this problem is, according to Jensen (1986), to increase debt. With debt, the free cash flow of a firm declines, because of the interest that must be paid. Free cash flow can be described as the excess amount of cash from a company that remains after the investments in all positive net present value projects.

The conflict that arises between the managers and the shareholders is the following; shareholders assume that managers do not spend the cash in the right way, this is due to the different interests. The goal of the managers is to find investments that will lead to growth of the company. More growth means more power for them, because of the increasing resources. A developing company usually means a higher compensation for managers as well. Another reward for managers when they deliver good work can be promotion. Therefore, managers first investigate how they can increase their own wealth before thinking about the shareholders interests. The shareholders of the company want the manager to spend money in such a way that they will get the highest value or dividend for their investment in the shares of the company. To let the company grow, investments must be made. Hence, managers use some of the money that can be paid as dividends for their own interest to expand the companies value (Jensen, 1986).

One way to decline the free cash flow is by distributing it to the shareholders. The managers can pay a certain amount of the free cash flow as a dividend to the shareholders. This is according to Jensen (1986) a weak solution, because managers can lower the dividends in the future and therefore, more free cash flow remains. Another

way to decline the free cash flow, as mentioned before, is to use debt and pay interest (Ramu, 1999). The interest must be paid on the loan and declines the cash flow which is available for the managers. In this way the agency cost can be reduced. Borrowing too much debt has also a downside, namely, the company may have an insufficient amount of cash flow to pay the interest. This may lead to distress cost. The company needs to find the right amount of debt where the agency cost and distress cost are both low (as low as possible) (Jensen, 1986).

From previous researches the expectation is that free cash flow has a positive influence on leverage. Taking this into account, the intention is that companies with more free cash flow have more leverage to decrease the agency costs. According to the literature, free cash flow is not really positively related to leverage (De Jong & van Dijk, 2007). This result was also found in the article of De Miguel & Pindado (2001), they stated that the non positive relation between free cash flow and leverage is related to the information asymmetry which has been explained before in the pecking order theory. Nevertheless, the expectation is, based on the previous literature that there is a positive relationship between free cash flow and leverage.

According to Myers (2001) the free cash flow theory is developed due to sensitivity of companies to overinvest. This is the case when firms have a large amount of cash flow but there are not enough profitable investments. As mentioned before managers' act in their own interests. Therefore, if there were no profitable investments left, managers would like to invest in unprofitable projects to do everything in their power to let the company grow. By borrowing money companies can prevent against this threat, due to the lower amount of free cash flow that is available. Only this is not intended for companies with potential high profitable investments. It is not the intention that managers have no free cash flow to spend on profitable projects (Jensen, 1986).

To see if the managers are not investing in non profitable projects, agency costs must be made. To lower the agency costs, debt can be used. Agency costs can be described as the costs that are needed to monitor and control the managers of the company (Myers, 2001). The management act like an agent for the shareholders to invest their money in the right way. To control that the money is invested in the right way, costs must be made, because of the different perceptions and interest of the managers (Jensen, 1986). Another threat that leads to agency costs is underinvestment, this is the case when companies need to invest in low risk assets by means of the debt covenants. The problem is that even if the asset has a positive NPV, only the debt providers will get their money due to the low profit which has been provided with the asset. This leads to a conflict between the shareholders and debt providers. To control the managers for not investing into risky projects agency cost must be made (Myers, 1984).

Myers (2001) state that companies with higher growth opportunities will have a smaller amount of debt comparable to companies with low growth opportunities. Companies find it too costly to finance projects by using debt (Chen & Jiang, 2001). Higher growth

opportunities increase the likelihood of investing in risky projects or suboptimal. This makes it more difficult to obtain debt, since it is less likely for debt providers to get their money back. Therefore, debt suppliers are not willing to borrow money to companies that make overinvestment (Deesomak et al, 2004). When there is underinvestment, the opposite happens. From the overinvestment perspective it is expected that growth opportunities have a negative influence on leverage. This is in line with the findings in the article Gaud et al. (2007), who found out that growth opportunity, have a negative influence on the leverage of European companies. The results of Chen & Jiang (2001) indicate that for Dutch companies, growth opportunities are positively influences with leverage.

2.5 Other influences on the capital structure

In most of the literature described above firm-specific factors are used to measure the theories, this can be the size, tangibility of assets, profitability, risk and growth opportunities of a company (De Jong et al. 2008). Not only the firm-specific factors determine the capital structure, but also there are environmental factors which have influence on the capital structure. These factors can be the country and the industry where the company operates. The country of a company can change the relationship between, for instance, the tangibility of assets and leverage. Most of the time this relation is positive, but for example in Malaysia the majority of the shareholders of a company are the banks and therefore it will be easier to use debt with fewer tangible assets (Deesomak et al, 2004). The contribution of the article by Kayo & Kimura (2011) is using industry as a real factor of the capital structure. The majority of the studies are using the industry as a control variable. This is done, because researchers think the industry does only indirectly influence the capital structure of a company (Hall, Hutchinson & Michaelas, 2000). It is not the industry that determine the capital structure, but the activities of the firms in that particular industry. The activities from an industry can require more assets and this influence the capital structure. Some studies already did some research on this subject. Like Ovtchinnikov (2010) who found that deregulated industries affect the capital structure due to changes in the environment of the industry, but also the firm factors determine the structure through the growth opportunities, size and bankruptcy cost.

3. Overview literature related to studies on Dutch firms

Only the described theories in chapter two are used in this study. There are other theories developed based on this topic. The reason for not using these theories is due to the limited time for this research and the above theories are the most important ones in the literature. This chapter explains some specific properties for Dutch companies and gives an overview about previous studies on the capital structure in the Netherlands.

3.1 Corporate control mechanisms

An addition to test the agency theory for Dutch companies is done by using some corporate control mechanisms. Managers can use these mechanisms for instance, to protect their company against hostile takeovers. The Dutch companies are able to use different kind of alternatives. In this study three corporate control mechanisms are tested, namely preferred shares, priority shares and depository receipts. Most of the time companies' use preferred shares against hostile takeovers, but they also make use of priority shares or depository receipts. The corporate control mechanisms are not only used to protect against hostile takeovers.

By takeovers generally, the price for selling a share would be higher than normal, that's why it is interesting for shareholders. Hence, the corporate control mechanisms are an advantage for the managers and a disadvantage for the shareholders. This creates a conflict between the interest of the shareholders and the managers. The preferred shares can be placed at a friendly company, the shares may be paid with debt and only 25 percent of the share price should be paid by the owner. Despite that, the preferred shareholders have the same voting rights as the ordinary shareholders. With the preferred shares it is possible to give a friendly company voting rights in the company to protect against the loss of control. This kind of protection consists of three steps. Firstly, the common shareholders approve that the management of the company has the option to issue preferred shares. Secondly, the management provides this option to a friendly company or institutional investor. Lastly, the management issues the preferred shares. The last step will only be taken when a loss of control threatens. By using the preferred shares the voting power of the takeover party is declined. In this way the management can control the company, for instance against hostile takeovers (Kabir, Cantrijn & Jeunink, 2007).

Another way to protect against hostile takeovers is the using of priority shares. Priority shares can also be used to approve an amendment of the company, to approve the decisions for hiring or firing company managers, issuing new shares and also to protect against hostile takeovers. By using priority shares the voting power of the common shareholders can be declined. A priority share gives the owner special voting rights. Therefore, those shareholders can for example, vote against a company takeover even when they are outnumbered (Kabir et al., 2007).

The depository receipts are certificates which give the shareholders dividend rights but not the voting rights (De Jong, 2002). Hereby, the management keeps the control and it is possible to make for instance binding appointments. The depository receipts are

issued by a trust office. The trust office keeps the voting rights and the shareholders the shares and the dividends of the shares. Normally the trust office is a friendly company and on this way the company can protect against takeovers by issuing shares but keep the voting rights under control.

Based on the above assumptions, corporate control mechanisms have a negative influence on the leverage of the firm. By using depository receipts, priority shares and preferred shares, companies protect themselves against takeovers. According to De Jong (2002) managers make use of debt to prevent their company against the loss of control to another company or investors. By the use of corporate control mechanisms this is not necessary.

3.2 Characteristics for Dutch companies

In the Netherlands companies have to deal with some special characteristics which influence the capital structure. According to De Jong & Veld (2001) Dutch companies adopted some rules that protect them against loss of corporate control as mentioned in the previous section. The reason was to decline the power of the shareholders. Dutch managers have more freedom in taking financing decisions. From the previous part can be concluded that the decision freedom of managers influences the companies' capital structure, because shareholders have less power. Some other characteristics of Dutch companies are a two tier board system and the relationships with several financial companies.

The boards are taking care for the internal control of the companies and thereby they need less external control (De Jong, 2002). A two-tier board system refers to the fact that the supervisory board has to control the executive board (De Jong & van Dijk, 2007). The supervisory board consists of firm outsiders and people who represent groups with different interest. The executive board consists of the management that take care for the daily affairs of the company (Kabir et al., 2007). Also the relationships with financial companies are important. The credit market is not an important source for Dutch companies to finance due to the information asymmetry but, in comparison with other countries, debt from banks and other financial institutions is very important for Dutch companies (De Bie & Haan, 2007). Another characteristic for Dutch companies which can affect the capital structure is the law for bankruptcy. Creditors of Dutch companies are given more power. Thereby, firms that are not longer able to pay their creditors are more likely to go bankrupt (Chen & Jiang, 2001). The ownership concentration is also a characteristic of Dutch companies. The majority of the shares of companies in the Netherlands are owned by a small number of shareholders. These shareholders are also known as blockholders (Kabir et al., 2007). According to De Jong & van Dijk (2007) blockholders ensure as a takeover barrier, because of their strategic interest in the company, they do not want that the company is taking over by rival firms. It is also possible that some of the blockholders stimulate a hostile takeover for their own favour. Blockholders can be defined as shareholders with 5 percent or more equity shares. Most of the blockholders consists of shares for management and family

members, other companies, banks and insurance companies (Kabir et al., 2007). In this study the above characteristics for Dutch companies are not tested. Only the effect of corporate control mechanisms on the companies leverage has been investigated.

3.3 Review Dutch literature

The literature about the capital structure of companies includes a lot of different investigations. Most of the articles are based on, or linked to, data of the United States. The research about the capital structure is rare for using data of Dutch companies. Some researchers use data from Dutch companies, but also from other countries, therefore their conclusions are not specific for the Netherlands. The articles from Chen & Jiang (2001), De Jong (2002), De Jong & van Dijk (2007), De Haan & Hinloopen (2003), Chen, Lensink & Sterken (1999) and Degryse, De Goeij & Kappert (2009) have made use of data from Dutch companies. The articles are used to compare with the results of this study. These articles use different theories, methods and datasets. In table 1a and 1b, an overview of the articles is presented.

In comparison with this study the data of the other articles is not very recent, except the article of Degryse et al. (2009). It is interesting to find out whether there are changes in the results over time. In the articles described in table 1a and 1b the trade-off-, pecking order- and agency theory are used. That is in line with the theories which are used in this study. Some of the articles also discuss the specific characteristics of Dutch companies, such as the corporate control mechanisms and the development of the credit market and how these aspects influence the companies.

The articles in table 1a and 1b use the following variables to measure the trade-off theory: non-debt tax shield, tangibility, business risk and size. Size is in some research used as a normal variable instead of a control variable like in other articles. To measure the pecking order theory the articles make use of growth opportunities, profitability and volatility as a variable. For the agency theory the researchers use free cash flow, growth opportunities and corporate control mechanisms. In this study growth is used to measure the agency theory. In the article of Degryse et al. (2009) and Chen & Jiang (2001) the industry is being used as a control variable. To compare the results of this study with the articles, the most important variables that are mentioned by the articles of this review are tested. The common in the previous articles is that both the trade-off and pecking order theory are important predictors in determining the capital structure.

Chen & Jiang (2001) conclude that the variables size and tangibility are in line with the trade-off theory and their results are significant. In the article of De Jong (2002) the results indicate that the factors of the trade-off theory have the greatest impact in determining the amount of leverage from a company. The results also show that the control variable firm size is significant, but has only a little influence on leverage. Normally the variable size is used as a control variable, but De Haan & Hinloopen (2003) use it as an independent variable. Their result was interesting due to the fact that the variable size is negative related to leverage. The other trade-off variables, non-debt tax

shield and risk, are both negative and significant. The results of De Jong & van Dijk (2007) and Degryse et al. (2009) show that the variable non-debt tax shield is positively related to leverage. Before the research was conducted the researchers expected the opposite. The variables tangibility, marginal tax rate and risk are in line with the trade-off theory in the article of De Jong & van Dijk (2007).

A remarkable point in the article of Chen & Jiang (2001) in comparison with the other articles is that there is no hard evidence for the pecking order theory. The variable profitability is negative related to leverage which applies to the pecking order theory, but the results are not significant. It is remarkable that Chen et al. (1999) uses tangibility and size as variables to test the pecking order theory. Tangibility is an important determinant for leverage according to this research. De Haan & Hinloopen (2003) found that the variables liquidity and profit are negative related and the result for liquidity is also significant. Degryse et al. (2009) have used industry as a normal variable, while normally this variable is used as a control variable. They found that the industry has an obvious affect on the pecking order of SME companies. For SME companies the pecking order theory is more important than for listed companies in comparison with the other articles.

In the articles for this overview generally was found that the agency problems have only a relatively small influence on the leverage of Dutch companies. It was not expected by Chen et al. (1999), to find that the variable growth is positive related to leverage. The results of De Jong (2002) show that the corporate control mechanisms are negatively related to leverage and therefore are in line with the literature, but the results are not significant. The data of his article has been provided from the "effectengids" which is also used in this study, but De Jong (2002) used data from older versions in comparison with this research. Other results for the agency theory of the free cash flow and growth variable has only a small influence on leverage, while only the result of free cash flow is significant. De Jong & van Dijk (2007) conclude that there is not a direct relation between the agency cost and leverage. The free cash flow variable shows a positive and significant result. The results did not observe an agency problem between the shareholders and debt holders.

The used method to test the data of this study is in comparison with the studies of Chen et al. (1999), De Jong (2002) and Degryse et al. (2009). Another similarity is that the used data of Chen & Jiang (2001) is only from companies who have a complete record on the required variables. Some articles also differ from this study, like the article of De Haan & Hinloopen (2003) which has a different research goal. Their goal was to find the effect of the determinants on the type of financing. De Jong & van Dijk (2007) used a questionnaire to collect data for their research. It is interesting to examine if those results are in accordance with the results of this study, because data is collected on a different way and this can have an influence on the results. In the last article of Degryse et al. (2009) the data is quite recent and the sample is very large but the sample period is only for two years. The greatest difference with this article and the study is that the

data consist of Dutch SME companies while the other articles in this overview are mainly focused on listed companies. Despite the differences in the articles of De Haan & Hinloopen (2003), De Jong & van Dijk (2007) and Degryse et al. (2009). There are also a number of similarities and therefore it is a good comparison. This is because of the same determinants that are used and the connection with the research to the capital structure.

Table 1a: Summary literature capital structure for Dutch companies

Article	Chen, Lensink & Sterken (1999)	Chen & Jiang (2001)	De Jong (2002)
Theories	Pecking-order, Agency cost	Trade-off, Pecking-order	Trade-off, Pecking-order, Agency cost
Variables	Tangibility, Growth, Size, Volatility, Profitability Market to book ratio, Book leverage and Market leverage	Provision ratio, Tangibility, Size, Growth opportunity, Profitability Earnings volatility, Flexibility, Industry dummy Book/Market value long term and short term debt	Non-debt tax shield, Tangibility, Business risk, Firm size, Growth opportunities, Free cash flow, Corporate Governance and Long-term debt
Methodology	Ordinary least square	Structural Equation Model	Two stage least square regression and Ordinary least square
Data	Jaarboek Nederlandse ondernemingen "1984 -1995"	Jaarboek Nederlandse ondernemingen "1992 - 1997"	Jaarboek Nederlandse ondernemingen "1992/1993 - 1998/1999"
Sample	Listed non-financial Dutch firms	Non-financial Dutch firms and that have a complete record on the required variables	Listed non-financial Dutch firms

Table 1b: Summary literature capital structure for Dutch companies

Article	De Haan & Hinlopen (2003)	De Jong & van Dijk (2007)	Degryse, De Goeij & Kappert (2009)
Theories	Trade-off, Pecking-order	Trade-off, Agency cost	Trade-off, Pecking-order
Variables	Liquidity, Previous financing, Size Profitability, Depreciation, Interest Stock price run-up, Internal finance, Bank borrowing, Debt and Equity issue	Corporate tax rate, Non-debt tax shield Tangibility, Business risk, Free cash flow Growth Opportunities, Leverage, Short term debt, Covenants and Secured debt	Size, Tangibility, Profitability, Growth Liquidity, Tax rate, Non-debt tax shield Tax rate, Depreciation and Industry effect
Methodology	Multinomial logit model	Measurement and Testing model	Ordinary least square
Data	Jaarboek Nederlandse ondernemingen "1984 - 1997"	Questionnaires "1996-1998"	Database Rabobank SME clients "2003-2005"
Sample	Non-financial Dutch firms on the Amsterdam Stock Exchange	Non-financial Dutch firms on the Amsterdam Stock Exchange	SME clients from the Rabobank

4. Methodology

In this chapter, firstly the development of the research question for this study is explained. Secondly, which data has been used for testing the research question. Thirdly, an overview of the tested hypotheses is given. The hypotheses are developed based on the theories and the findings in the literature. Fourthly, the variables used to test the hypotheses are described and finally a research method is given how the data was tested to formulate an answer on the research question.

4.1 Research Question

The research on the capital structure of Dutch companies is scarce. This research gives an overview of the factors which determine the capital structure of a Dutch company by using more recent data compared to previous studies. The corporate control mechanisms are examined in this research, because it is a special characteristic of Dutch companies. Based on the theories and the findings of the literature in the previous two chapters, variables are developed to check for the important factors and to investigate which theory has the most explanatory power in explaining the leverage of Dutch firms. According to this the following research question has been developed for this study *“Which factors are important in determining the capital structure of a Dutch company?”* The factors refer to the variables of this study. From the proxies of the variables have been tried to investigate what the important factors for the capital structure of Dutch companies are. The factors may also be referred to as determinants.

4.2 Data

The data has been collected from the ORBIS database. A common time scale in this kind of research is about five years. The data for this study is collected from non-financial publicly listed companies in the Netherlands from the period 2005 till 2009. To find out which companies are listed, the Effectengids: gids bij de officiële prijscourant van de Amsterdamse Effectenbeurs was used to check for the names of publicly listed companies during the sample period. The Effectengids indicates that 165 companies are publicly listed on the stock market. In the ORBIS database data for 115 non-financial companies have been found. To measure the influence of the corporate control mechanisms, data is used from non-financial firms from the “Effectengids: gids bij de officiële prijscourant van de Amsterdamse Effectenbeurs” of the year 2004/2005 till 2008/2009.

To check if all units are complete a first analysis is carried out on the sample. Some units can go bankrupt, merge, acquire or exit the market during the sample period. These companies are also included in the sample to avoid survivor bias for this research, because the ultimate goal of the overall research into capital structures is to find the optimal capital structure. Survivor bias occurs if the sample only consists of the units that are successful and survive the sample period (Rothman, Greenland & Lash, 2008). Sometimes not all the variables can be tested for one company. If some of the data is

not available in a certain year the company has been removed from the sample for that year. Also some extremely outliers are removed to ensure that they will not influence the results of this study. Hereby, our sample consists of 336 observations from companies. This has been done to investigate what the influence is of the variables from the same companies on the different theories and different types of debt. The financial numbers of the data comprise of the book value and are in Euros. Book value has been used, because it was not possible to collect market values from the database. Another reason is that managers make financing decision based on the book values (De Jong & Veld, 2001).

4.3 Hypotheses

In this part an overview is given of the hypotheses, with a short explanation for the relation between the variables. The hypotheses are based on the theories and the findings for the literature review in chapter two and three.

Trade-off theory

H1: Non-debt tax shield_{t-1} is negatively related to leverage_t

The negative relation is caused by using non-debt tax shields instead of debt tax shields to lower the tax payments of companies. With more non-debt tax shield it is more likely that a company is not using debt to lower the tax of a company.

H2: Tangibility_{t-1} is positively related to leverage_t

Tangible assets of a company are used as collateral for the use of debt. For a company that has more tangible assets it is less risky to use debt, therefore a company with more tangible assets has more leverage.

H3: Volatility_{t-1} is negatively related to leverage_t

A company with a lot of volatility in the earnings is less inclined to use debt. For companies that has a higher volatility it is more difficult to the pay the interest and the repayments of the debt.

Pecking order theory

H4: Retained earnings_{t-1} are negatively related to leverage_t

For companies that have more retained earnings it is more likely that they can use internal funds to finance their activities. As stated by the pecking order theory, companies first prefer internal financing before using external funds, like debt or equity.

H5: Profitability_{t-1} is negatively related to leverage_t

More profitable firms do not need external funds to finance the company, which explains the negative relation between profitability and debt. A company with more profitability is less likely to use debt or equity to finance the company activities.

H6: Liquidity_{t-1} is negatively related to leverage_t

Companies that have a lot of liquidity can use their liquid assets to finance the company. The liquid assets can be used as internal financing. More liquidity means that a company need less external funds.

Agency theory

H7: Growth opportunities_{t-1} are negatively related to leverage_t

It is expected that companies with more growth opportunities have a lower amount of debt. With more growth opportunities companies tend to invest into risky projects or suboptimal. Therefore, debt providers are careful by lending money to companies with a lot of growth opportunities, because they are afraid of not getting their money back.

H8: Free cash flow_{t-1} is positively related to leverage_t

The problem with the different perceptions between shareholders and debt holders about how the free cash flow must be spent can be solved by using debt. With more free cash flow companies are more likely to use debt to lower the free cash flow problem.

H9: Corporate control mechanism_{t-1} is negatively related to leverage_t

Corporate control mechanisms can be used for different purposes. For instance, they are used to prevent a company against hostile takeovers. When companies can use corporate control mechanisms the use of debt is expected to be lower, because it is not necessary to use debt instead of equity to protect against the loss of control of a company due to the corporate control mechanisms.

4.4 Variables

In this part it is explained how the variables for the hypotheses are calculated. To test the hypotheses, variables are developed based on the literature. With the independent variables, non-debt tax shield, tangibility, volatility, profitability, liquidity, growth opportunities, free cash flow and corporate control mechanisms has been tested what the relation is with the dependent variable leverage. To clarify the relation between the independent and dependent variables, firm size and industry has been used as control variables.

Dependent variable

As mentioned before, the capital structure of a company consists of equity and debt to finance assets, operations and future growth of a firm. To finance, firms can choose for equity or debt. In this study the focus was to investigate how different determinants influence on the amount of leverage of a firm. Therefore, the dependent variable is *leverage*, which is measured as the percentage of the book value of long term debt divided by the book value of total assets. This is in line with the variable for leverage in the article of Antoniou, Guney & Paudyal (2002) and De Jong (2002). The choice for using long term debt is that most of the studies in chapter two focus on long term debt.

This is partly due to that the largest part of short term debt consists of trade credit. This type of credit has a special relation with the determinants of a company (De Jong, 2002). The results of Degryse et al. (2009) and Mateev, Poutziouris & Ivanov (2013), show that there are differences in the relationship between the determinants and the type of debt. As robustness check leverage has been measured in two different ways. First, short term debt is calculated by dividing the book value of short term debt with the book value of total assets (Chen & Jiang, 2001), this variable has been used to show that the choice between short and long term debt depends on different determinants. Second, total debt is measured as the percentage of the book value of total debt divided by the book value of total assets.

Independent variable

The independent variable *non-debt tax shield* of a company is used to test the first hypothesis. This has been measured as the depreciation and amortization divided by the total assets of the companies (Deesomak et al., 2004). To test the relation between the tax advantages and leverage this variable is a good proxy. The non-debt tax shield was also used by De Miguel & Pindado (2001) and De Haan & Hinloopen (2003). Expected is that the non-debt tax shield is negatively related to leverage.

For the second hypothesis the variable *tangibility* is measured as the tangible assets divided by the total assets of a company (De Jong, 2002). It is easier for companies to obtain debt when the loan is covered with tangible assets. The assets provide collateral for the given loan, therefore the lender is more secure that the money of the loan will be received back (Chen & Jiang, 2001). Hereby, the expectation is that companies with more tangible assets will have a higher amount of debt.

In the third hypothesis the expectation is that *volatility* of the earnings has a negative influence on leverage. This variable is used to measure the disadvantage of tax. More volatility leads to a higher risk for the fact that the company is not able to satisfy the debt covenant and that is why it is less likely that companies choose for debt. Higher volatility in operating income increases the probability of financial distress, because it is possible a company is not able to meet the loan terms (Antoniou et al., 2002). The data for the variable has been measured by using the absolute differences between annual percentage of change in earnings before interest and taxes and the average annual percentage of change in earnings before interest and taxes during the sample period (Deesomak et al., 2004).

The fourth hypothesis is tested by using the variable *retained earnings*. This variable is measured as the retained earnings on the balance sheet divided by the total assets. This variable measures how the amount of retained earnings influences on the leverage of a company (Alti, 2006). According to the pecking order theory firms prefer internal above external financing. Therefore, if the amount of retained earnings is adequate to finance the companies' activities the amount of leverage will decline (Frank & Goyal, 2003).

The fifth hypothesis indicates that there is a negative relationship between profitability and leverage. The variable for *profitability* of companies is measured through dividing the operating income by the sales of the firms (Titman & Wessels, 1988). More profitable firms will have more retained earnings and therefore less need for leverage according to the pecking order theory. This formula has also been used by De Jong & Veld (2001) to test how profitability influences the capital structure in Dutch companies.

Beside profitability also *liquidity* has been used as a variable to test the pecking order theory. As mentioned before companies prefer internal above external financing. Therefore, the expectation is that firms with more liquidity will have less leverage according to hypothesis 6. Liquidity has been measured as percentage of the cash plus marketable securities divided by the total assets (De Haan & Hinloopen, 2003).

For hypothesis seven the *growth opportunities* of a company are calculated as the percentage change in sales. It was not possible to measure growth as the logarithm change in the market to book ratio with the used database (Chen & Jiang, 2001). The percentage change of sales is a good alternative way to measure the growth opportunities of companies. Expected is that there is a negative relation between growth opportunities and leverage when a company has underinvestment problems (De Jong & van Dijk, 2007).

The independent variable for hypothesis eight, the *free cash flow*, has been measured as the operating income (EBITDA) minus taxes, interest expenditures and paid dividends divided by the total assets (De Jong, 2002). According to the article of Jensen (1986) free cash flow is positive related to leverage. To reduce the agency cost for overinvestment problems companies are borrowing more money to reduce the free cash flow. This result is not confirmed in the articles of De Jong (2002) and De Miguel & Pindado (2001), which probably has to do with the information asymmetry of Dutch and Spanish firms.

For hypothesis nine the variable *corporate control mechanism* is measured on the same way as in the article of De Jong (2002). It is checked for every company by using the "Effectengids: gids bij de officiële prijscourant van de Amsterdamse Effectenbeurs" if priority shares, preferred shares or depository receipts are present. The companies without any corporate control mechanisms will receive "zero points". Companies with *priority shares* or *depository receipts* get "one point". To determine if a company can use preferred shares as corporate control mechanisms the following formula is used: $preferred\ shares = amount\ of\ authorized\ preferred\ shares - amount\ of\ placed\ preferred\ shares > amount\ of\ placed\ ordinary\ shares + amount\ of\ placed\ preferred\ shares$. If the amount of unplaced preferred shares can dilute 30 percent of the placed shares the company get "one point". Kabir et al. (2007) found that the majority of the shares of companies in the Netherlands are owned by a small number of shareholders. The results of the article indicate that ownership concentration has a negative influence on the use

of corporate control mechanisms. Therefore, in this study a dilution of 30 percent has been used for preferred shares. This is due to the fact that large shareholders most of the time consist of management, family and other blockholders. The expectation is that with a dilution of 30 percent of the outstanding shares a loss of corporate control can be prevented.

Control variable

In this study firm size is used as a control variable. The variable for *firm size* is calculated as the logarithm of the sales in line with Titman & Wessels (1988). Logarithm has been used to rescale the data in order to indicate a better normal distribution for this variable. In this study it was chosen to use sales as an indicator for firm size instead of total assets, because some firms only have a few assets, but a lot of valuable staff, which are not included in the assets. According to Gaud et al. (2007) larger firms are more stable and have a higher amount of debt. For more stable firms it is less likely to go bankrupt and to get distress cost. Deesomak et al. (2004) mentioned that bigger firms have easier access to credit markets. Therefore, it is expected that firm size has a positive influence on leverage.

The control variable *industry* has been used to check for the influence of the industries on leverage. The industries has been divided in four different dummies based on the SIC codes. The different industries and the associated SIC codes are:

- 1) 0100-1499 Agriculture, Forestry and mining
- 2) 1500-1999 Construction
- 3) 2000-3999 Manufacturing
- 4) 4000-5999 Wholesale and Retail
- 5) 7200-8999 Business services

In this study the manufacturing industry is the reference and therefore there is no dummy for this industry. For every other industry a dummy variable is developed. The industries for the relevant dummies get a one and the other a zero. This has been done for every industry dummy. The sample of this study does not contain companies of the 6000-6799 Finance, 7000-7200 Hotel and Restaurants and 9100-9729 Education, Health and social work industries. Thereby, there are no dummy variables developed for these industries. In the remainder of this study the dummies are mentioned as follow: Agriculture, Forestry and mining companies are DumAgri, Construction companies are DumAgri, Wholesale and Retail companies are DumWhole and Business services are DumBusin.

By keeping the variable size and industry constant it is possible to give a better explanation about the relationship between the independent variables and the dependent variable. Table 2 gives an overview of the definition of the used variables.

Table 2: Variables

<u>Variable</u>	<u>Sign</u>	<u>Definition</u>
Leverage		Long term debt/Total assets Short term debt/Total assets (Short term debt + Long term debt)/Total assets
Non debt tax shield	-	(Depreciation + amortization)/Total assets
Tangibility	+	Tangible assets /Total assets
Volatility	-	Annual percentage change EBIT – Average annual percentage change EBIT*
Retained earnings	-	Retained earnings/Total assets
Profitability	-	Operating income/Sales
Liquidity	-	Cash + marketable securities/Total assets
Growth opportunity	-	Percentage change in sales
Free cash flow	+	(EBITDA-taxes-interest expenditures-paid dividends)/Total assets
Preferred shares	-	Present 1, not present 0 (dilute to 30%)
Priority shares	-	Present 1, not present 0
Depository receipts	-	Present 1, not present 0
Firm size		Log of sales
DumAgri		Agriculture, forestry and mining companies 1, other companies 0
DumConstr		Construction companies 1, other companies 0
DumWhole		Wholesale and Retail companies 1, other companies 0
DumBusin		Business services companies 1, other companies 0

In the table the different variables are displayed that are tested in this study. For the hypotheses, the expected signs and the definitions are given. *The annual percentage change of EBIT is calculated as follow: EBIT of the current year minus the EBIT of the previous years divided by the EBIT of the previous year. The average annual percentage change of EBIT is calculated as the average of the change over the sample period.

4.5 Research method

To find an answer on the research question of this study a cross-sectional study is used as the research method. Cross-sectional studies examine how different factors are related in an organization. By using data from different years of the same company it is possible to say something about the causality between factors of the company in terms of the capital structure. The companies are the units that are analyzed. From the units that are analyzed the data is collected and tested to investigate which factors are important in determining the capital structure (Babbie, 2010).

To measure the importance of the determinants, different variables have been used and tested with an ordinary least square (OLS). This method examines if there is a possible relation between the independent variables and the dependent variables, which is in this research leverage. An advantage of the regression analysis for this kind of study is that it helps to measure how big the influence is of the independent variables on the dependent variable (Alisson, 1998). This can be observed from the result of the regression analysis, where can be investigated what the the significance is of the variables. The coefficient explains the relation between the independent and dependent variable. From the significance level it can be concluded if the result for a variable is generalizable. The results of the correlation and regression models are used to investigate which variables are important in determining leverage. From this conclusions can be drawn concerning which factors are the most important for Dutch companies in determining the capital structure.

It is assumed that normally the independent variable causes the dependent variable. In this research it is necessary that the different factors influence the leverage of a company. A threat for this can be reverse causality; this means that the dependent variable also can cause the independent variable. To minimize this potential threat the data for the independent variables is lagged one year (Deesomak et al., 2004).

4.6 Overview descriptive statistics

In table 3 and 4 a summary overview is given from the statistics of all the publicly Dutch non-financial companies which have been used for this study. In the tables the mean, median, standard deviation, min and max of all variables are displayed. The first table consists of all the data which is collected. As mentioned before the companies with missing values in a specific year have been removed from the sample and some extremely outliers. Hereby, the total sample consists of 336 observations which have been tested. The descriptive statistics of these observations are given in table 4. In this paragraph the results of the descriptive statistics of table 3 and 4 are discussed and compared with previous research. To check for heteroscedasticity the residuals have been tested for a normal distribution. The variables have been tested by using a histogram, a scatter plot where residuals are plotted against the predicted values and a q-q plot, also called the normal probability plot. The residuals are a little bit skewed and have some outliers. The expectation is that this has not a major impact on the statistical

results, but it must be kept in mind (Huizingh, 2006). From this can be concluded that there is no indication that the residuals are not normal distributed and there is no heteroscedasticity. In order to provide data that gives a good impression of the average choice between whether or not using debt, outliers of the data in table 4 for the variables volatility, retained earnings, profitability, growth opportunity and free cash flow have been removed.

Table 3: Descriptive statistics of the used companies

	Mean	Median	SD	Min	Max
Long term debt	0.1551	0.1426	0.1398	0	0.9700
Short term debt	0.3426	0.3320	0.2306	0	3.9500
Total debt	0.4931	0.4964	0.1664	0	0.9600
Non debt tax shield	0.0538	0.0388	0.0723	0	0.9800
Tangibility	0.2077	0.1369	0.2069	0	0.9800
Volatility	-0.0136	-0.0362	7.7990	-125.7400	56.9300
Retained earnings	-0.1406	0.0900	1.7287	-19.7500	5.4300
Profitability	-0.4882	0.0612	6.5655	-122.6700	2.9800
Liquidity	0.1080	0.0589	0.1408	0	0.9900
Growth opportunity	0.1485	0.0649	0.9396	-13.4300	9.4600
Free cash flow	0.0276	0.0756	0.6015	-10.7500	0.9200
Preferred shares	0.5000	0.5000	0.5004	0	1
Priority shares	0.1818	0	0.3860	0	1
Depository receipts	0.1288	0	0.3352	0	1
Firm size	5.5902	5.6982	0.9647	2.1700	7.6500
DumAgri	0.0152	0	0.1223	0	1
DumConst	0.0530	0	0.2243	0	1
DumWhole	0.2121	0	0.4091	0	1
DumBusin	0.1970	0	0.3980	0	1

In the table the descriptive statistics of the sample are outlined. The table displays the data of all the observations in the database which corresponds with the requirements for the data. The total sample composed of 575 observations over the period between 2005 and 2009. The definitions of the variables are given in table 2. Dumagri is the dummy for the Agriculture Forestry and mining industry, DumConst is the dummy for the Construction industry, DumWhole is the dummy for Wholesale and Retail industry and DumBusin is the dummy for the Business services industry.

The mean and median in table 4 for long term debt are quite similar with the results of Chen & Jiang (2001), who found a mean of 0.189 and median of 0.180. The mean and median for short term debt of Chen & Jiang (2001) is a lot smaller in comparison with this study. This may be due to the fact of the difference in time of the used data. The mean of the variable explains the average total debt with respect to total assets of the companies in the sample of this study. From table 4

also can be stated that companies in this study use a maximum of 79% of total debt to finance the companies' assets. The results of the variable non-debt tax shield are a little bit higher as the mean of 0.026 and 0.028 of De Jong (2002), what indicates that companies in this sample use more depreciation and amortization with regard to total assets. Companies in this study make less use of tangible assets in comparison with the article of De Jong (2002), who found that the mean is 0.556 and median is 0.586. Deesomak et al. (2004) used the same method to measure volatility as this study, but they used data from companies from Asia. Therefore, it is difficult to compare the results. The mean of volatility explains that on average companies annual change in EBIT fluctuates negative in comparison with the average annual change in EBIT over the sample period. Hereby, companies EBIT fluctuates more on average as the the average annual change in EBIT over the sample period.

On average 10.59% of the total assets of the companies in this study composed of retained earnings. Companies also show the retained earnings on the balance sheet if they are negative. This may be due to that companies pay more dividends then there are retained earnings or companies have suffered a loss. The mean of 8.2% and median 8.0% of De Jong (2002) for the variable profitability is in line with the results of this study. In this study on average 10.37% of the assets consists of cash and marketable securities, which is about double of the findings in the article De Jong & Veld (2001). This may be due to the fact this study use more recent data and that companies now use more liquid assets.

The descriptive statistics for the variable growth opportunity indicate that the data is a little bit skewed to the right, because the median is bigger then the mean. To measure the variable the percentage change in sales has been used. The mean and median for free cash flow are a little bit higher in comparison with the mean of 0.049 in the article of De Jong & Veld (2001). The results of the variables to measure the corporate control mechanisms explains that on average 63.10% companies use preferred shares, 16.37% of the companies use priority shares and 17.56% companies are using depository receipts in this sample.

As mentioned before there is a big differences between the sales of the companies. By using the log of the sales the expectation is that the variable is more normal distributed. The results for firm size are not in comparison with the mean of around 13.2 and median of 13.3 in the articles of Chen & Jiang (2001) and Chen et al. (1999), what indicates that on average the sales are a lot smaller in comparison with the past. From the results of the dummy variables for the industries can be concluded that on average 1.4% of the companies' works in the agriculture, forestry and mining industry, 7.1% in the construction industry, 14% in the wholesale and retail industry and 20.8% in the business services industry. From this can also be concluded that the biggest part of the companies in this sample works in the manufacturing industry.

Table 4: Descriptive statistics of the relevant companies

	Mean	Median	SD	Min	Max
Long term debt	0.1493	0.1440	0.1264	0	0.6000
Short term debt	0.3483	0.3223	0.1391	0	0.7100
Total debt	0.4977	0.4973	0.1422	0.1100	0.7900
Non debt tax shield	0.0529	0.0440	0.0557	0	0.5800
Tangibility	0.2178	0.1687	0.1818	0	0.7900
Volatility	-0.0992	-0.0622	2.2266	-14.8400	10.2600
Retained earnings	0.1059	0.1207	0.3545	-2.1300	0.7600
Profitability	0.0641	0.0649	0.3766	-5.7700	0.9400
Liquidity	0.1037	0.0652	0.1167	0	0.6000
Growth opportunity	0.1908	0.0761	0.6013	-0.8600	5.2100
Free cash flow	0.0732	0.0819	0.0791	-0.5400	0.3000
Preferred shares	0.6310	1	0.4833	0	1
Priority shares	0.1637	0	0.3706	0	1
Depository receipts	0.1756	0	0.3810	0	1
Firm size	5.6849	5.8239	0.8416	2.6700	7.4800
DumAgri	0.0149	0	0.1213	0	1
DumConst	0.0714	0	0.2579	0	1
DumWhole	0.1399	0	0.3474	0	1
DumBusin	0.2083	0	0.4067	0	1

In this table the descriptive statistics of the tested data are outlined. The total sample composed of 336 observations over the period between 2005 and 2009. The definitions of the variables are given in table 2. The outliers for the variables, non-debt tax shield, volatility, profitability and free cash flow have been removed, to provide a better normal distribution. Dumagri is the dummy for the Agriculture Forestry and mining industry, DumConst is the dummy for the Construction industry, DumWhole is the dummy for Wholesale and Retail industry and DumBusin is the dummy for the Business services industry.

5. Results and discussion

In this chapter the results and discussion of the study are described. Firstly, the correlations between the variables are reported. Secondly, the results of the regression analysis are mentioned. Thirdly, the results of a robustness check are provided. Lastly, the results of the regression analyses are discussed and compared with other studies.

To test the correlation between the variables the Pearson correlation coefficient was used. With this test has been measured how variables move from each other. The correlations between the variables in table 5, gives a first indication about the sign and the influence of the variables in determining leverage. The variables, liquidity, firm size, DumConst and DumBusin are correlated at $P < .01$ with leverage. At a significance level of $P < .05$ also the correlation with leverage for the variables profitability, depository receipts and DumAgri are significant. The other variables do not have a significant impact on leverage when testing alone.

The correlation of -0.238 for liquidity and leverage indicates that there is a negative relation between the variables. The same applies for the dummy variables DumConst and DumBusin, with a correlation of -0.159 and -0.182 . Firm size and leverage are positive correlated, with a correlation of 0.356 . The less significant variable profitability and DumAgri with a correlation 0.122 and 0.129 , shows that profitability and DumAgri is positive related to leverage.

From table 5 can be concluded that most of the variables are negatively related to leverage except for tangibility, profitability, priority shares, firm size and DumWhole. When comparing the signs in the correlation matrix with the hypotheses of this study, it can be noted that the variables profitability, free cash flow and priority shares are not in line with these hypotheses. The expectation is that firm size and liquidity are the most important factors in determining leverage based on the correlation matrix, less but also important are the variables for profitability and depository receipts.

If the correlation between variables is higher than 0.40 there may be multicollinearity (Dietz & Kalof, 2009). From table 5 can be noticed that there is a strongly significant relation between the variables volatility and free cash flow, tangibility and volatility, tangibility and DumBusin and also between retained earnings and firm size. The relation between these variables has been checked for multicollinearity. To test for multicollinearity the variance inflation factor (VIF) and tolerance value has been calculated. The VIF measures if there is a strong linear relation between one variable and the other variables in the regression model. Tolerance has been measured through 1 dividing by the VIF. If the VIF is higher then 10 and the Tolerance below 0.1 there is a multicollinearity problem, but this has been checked for the strongly correlated variables and there is no indication that multicollinearity is a problem in this study (Field, 2000).

Table 5: Correlation between variables

	Leverage	Non debt tax shield	Tangibility	Volatility	Retained earnings	Profitability	Liquidity	Growth opportunity	Free cash flow	Preferred shares	Priority shares	Depository receipts	Firm size	Dumagri	DumConst	DumWhole	DumBusin
Leverage	1																
Non debt tax shield	-0.078	1															
Tangibility	0.085	0.212**	1														
Volatility	-0.036	-0.272**	-0.007	1													
Retained earnings	-0.078	-0.248**	0.064	0.084	1												
Profitability	0.122*	-0.131*	0.001	0.159**	0.224**	1											
Liquidity	-0.238**	-0.117*	-0.305**	0.022	0.087	0.041	1										
Growth opportunity	-0.059	-0.047	-0.144**	0.140*	-0.027	-0.012	0.050	1									
Free cash flow	-0.044	0.166**	0.227**	0.109*	0.154**	0.474**	0.121*	0.051	1								
Preferred shares	-0.078	0.088	0.036	-0.015	0.119*	0.041	0.233**	-0.113*	0.164**	1							
Priority shares	0.079	-0.056	-0.112*	-0.003	0.075	-0.093	-0.086	0.129*	-0.133*	0.038	1						
Depository receipts	-0.112*	-0.004	0.055	-0.012	0.198**	0.052	-0.142*	-0.099	-0.081	0.142**	0.113*	1					
Firm size	0.356**	-0.108*	-0.020	0.003	0.322**	0.196**	0.027	0.154**	0.119*	0.226**	-0.047	-0.100	1				
DumAgri	0.129*	0.045	0.263**	0.005	0.038	0.021	-0.016	-0.008	0.065	0.094	-0.054	-0.057	0.070	1			
DumConst	-0.159**	-0.119*	-0.048	-0.005	0.028	-0.011	0.045	-0.048	-0.078	0.140*	0.033	0.024	0.138*	-0.034	1		
DumWhole	0.078	0.039	0.224**	0.010	0.049	0.048	-0.148**	-0.070	0.136*	0.042	-0.062	-0.028	0.064	-0.050	-0.112*	1	
DumBusin	-0.182**	0.070	-0.389**	0.053	-0.303**	-0.031	0.110*	0.036	-0.016	-0.003	-0.128*	-0.044	-0.079	-0.063	-0.142**	-0.207**	1

This table shows the correlation between the variables. High correlated variables are checked for heteroscedasticity. N=336. The definitions of the variables are given in table 2. The symbol ** explains that the correlation is significant at $P < .01$, * Correlation is significant at $P < .05$. Dumagri is the dummy for the Agriculture Forestry and mining industry, DumConst is the dummy for the Construction industry, DumWhole is the dummy for Wholesale and Retail industry and DumBusin is the dummy for the Business services industry.

Table 6: Determinants of leverage

	Expected sign	Model 1	Model 2	Model 3	Model 4	Model 5
Non debt tax shield	-		-0.167 (-1.375)			-0.253** (-2.517)
Tangibility	+		0.004 (0.110)			-0.011 (-0.280)
Volatility	-		-0.003 (-0.954)			-0.002 (-0.835)
Retained earnings	-			-0.106*** (-5.802)		-0.109*** (-5.718)
Profitability	-			0.033** (2.112)		0.047*** (2.623)
Liquidity	-			-0.215*** (-4.291)		-0.205*** (-3.691)
Growth Opportunities	-				-0.006 (-0.595)	-0.003 (-0.257)
Free cash flow	+				-0.146* (-1.818)	-0.124 (-1.353)
Preferred shares	-				-0.034** (-2.515)	-0.014 (-1.079)
Priority shares	-				0.033* (1.919)	0.032** (1.981)
Depository receipts	-				-0.023 (-1.408)	-0.017 (-1.022)
Firm size		0.055*** (7.411)	0.054*** (7.226)	0.067*** (9.164)	0.060*** (7.827)	0.067*** (8.795)
DumAgri		0.087* (1.698)	0.090* (1.688)	0.081* (1.708)	0.108** (2.118)	0.106** (2.154)
DumConst		-0.114*** (-4.622)	-0.117*** (-4.708)	-0.118*** (-5.134)	-0.110*** (-4.456)	-0.122*** (-5.311)
DumWhole		-0.002 (-0.099)	0.000 (-0.022)	-0.016 (-0.946)	0.007 (0.371)	-0.006 (-0.352)
DumBusin		-0.057*** (-3.578)	-0.054*** (-3.097)	-0.078*** (-5.802)	-0.051*** (-3.232)	-0.073*** (-4.359)
Intercept		-0.146***	-0.134***	-0.176***	-0.143***	-0.149***
R2		0.212	0.217	0.333	0.253	0.371
Adjusted R2		0.200	0.198	0.317	0.230	0.339

In this table the unstandardized coefficients results of the regression analysis are given. N=336. In model 1 the control variables are tested. Model 2 only tests the trade-off variables. Model 3 shows the results of the pecking order variables. In the fourth model the results for the agency theory variables are displayed. In the last model all the variables are tested. The residuals have been checked for a normal distribution. The definitions of the variables are given in table 2. In parentheses the t-values are displayed. The symbol *** explains that the variable is significant at $P < .01$, ** Variable is significant at $P < .05$, * Variable is significant at $P < .10$. Dumagri is the dummy for the Agriculture Forestry and mining industry, DumConst is the dummy for the Construction industry, DumWhole is the dummy for Wholesale and Retail industry and DumBusin is the dummy for the Business services industry.

5.1 Results

To test the variables which are important in determining the capital structure different models are used. In the first model the control variables are investigated. In the second, third and fourth model the variables for the different theories are tested, subdivided by theory. In the fifth model all the variables for this study are tested together. These models are used to examine which variables and theories are important in determining the amount of leverage. Furthermore, it has been tried to explore in what order the theories determine the capital structure of companies based on the Adjusted R^2 .

In table 6 the results of the regression models are displayed. The fifth model shows that all the independent variables causes 0,339 of the variances in the dependent variable leverage. This means that the variables which are used in this study cause more than 1/3 of change in long term debt. By using $p < .01$ the results of the variables retained earnings, profitability, liquidity, firm size, DumConst and DumBusin are significant. With a $p < .05$ the variables non-debt tax shield, priority shares and DumAgri are also significant. The other variables are not significant in the fifth model.

When comparing the results of the regression models with the hypotheses, it can be noticed that the sign of the variable non-debt tax shield is in line with the hypothesis and is significant at $p < .05$, therefore hypothesis one is supported. It is remarkable that the variable tangibility is negatively related to leverage, which does not correspond to the second hypothesis. The variable volatility is moderately negative related to leverage and not significant. Therefore, hypothesis three is not supported in the second and fifth model hypothesis. The difference between model 2 and 5 for the trade-off theory variables is that tangibility is positive related when testing the trade-off variables and negative related, when all the variables are tested. Another difference is non-debt tax shield, which is only significant in the fifth model.

For the variables of the pecking order theory applies, the results for the variable retained earnings are significant at $p < .01$ in model 3 and 5, which supports the fourth hypothesis. The results for liquidity in the third and fifth model confirm with the sixth hypothesis. Remarkable is the positive relation between profitability and leverage in both models. This result rejects the fifth hypothesis. From the results of the regression analysis it can be concluded that both variables for liquidity and profitability are significant at $p < .01$, except for the result of profitability in model 3, when testing the pecking order variables.

In the fourth and fifth model the agency theory variables growth opportunity, preferred shares and depository receipts have the same sign as the established hypotheses. The other two variables free cash flow and priority shares have a different sign comparing to the pre-established expectations. The negative relation between growth opportunity and long term debt is not significant and therefore hypothesis seven is not supported. The variable free cash flow is significant in model 4, but not in model 5 and also the sign

is not in line with the expectation. From this can be noted that hypothesis eight is not supported. The ninth hypothesis is partly supported by the significant variable preferred shares in model 4. For priority shares both results are significant, but positively related to leverage and hereby not in comparison with hypothesis 9. The results for variable priority shares are significant in the fourth model at $p < .10$ and at $p < .05$ in the fifth model.

The first model with the control variables explains 0,200 of the variance in leverage. The variable firm size is positive related to leverage, what is in accordance with the expectation based on the literature. It is more likely that larger firms have a higher amount of debt, because larger firms are more stable and therefore the likelihood for distress cost is lower. The dummy variables for the Construction and Business services industries are significant at $P < .01$ and negatively related to leverage. At a significance level of $P < .10$, and in model four and five at $P < .05$, also the dummy variable for the Agriculture, forestry and mining industry is important. The dummy variables for industries indicate if the long term debt of the Manufacturing industry differs from the other industries. From the results can be concluded that companies in the Construction industry use less leverage in comparison with the Manufacturing industry. The same applies for the companies in the Business services industry. The Agriculture, forestry and mining industry companies use more leverage compared with manufacturing companies. The results for the Wholesale and Retail industry indicate that there is not a significant difference between the long term debts of the Manufacturing industry.

The trade-off variables in the second model cause 0.198 of the variance in leverage. Based on the third model it can be concluded that the pecking order variables explain 0,317 of the variance in leverage, which is more in comparison with the trade-off theory variables. The results of the fourth model for the agency theory variables are more or less the same as in the total model. This model only explains 0,230 from the variance in leverage. From this it can be concluded that the variables for the pecking order theory are the most important in determining leverage of a company followed by the agency theory.

5.2 Robustness check

For the robustness check two other variables for leverage are used, namely short term debt and total debt. These variables are tested to check whether the relation between the determinants and leverage differs by using different types of debt. From the articles of Degryse et al. (2009), Chen & Jiang (2001) and Mateev et al. (2013) it can be noticed that there is a difference in the results of the determinants, when using long term or short term debt. Table 7 presents the results of the robustness check. On the left side the results for short term debt are displayed and on the right for total debt.

A difference between short term and long term debt is that the firm size is no longer significant and positively related to leverage in all models. The results for firm size by

using total debt are almost the same when using long term debt. When comparing the results of model 2 of the short term debt with the hypotheses, it can be stated that the results are not in line with the expectation. The variable non-debt tax shield is significant and positively related to short term. In model 2 tangibility and volatility are still not important variables in the robustness check. Except for tangibility in the fifth model for both short term and total debt, this variable is significant, but not in accordance with the second hypothesis. The variables in model 3 for the pecking order theory are in line with the hypotheses and the regression analysis in table 6, except for the variable profitability that is no longer significant for testing total debt. In model 5 all the variables for the pecking theory are in line with the expectation. The results for the variable retained earnings by using short term debt and profitability by using total debt are different.

Model 4 in table 7 for both short term and total debt differs from the regression model in table 6 for the variables of free cash flow and priority shares. The results for the variable depository receipts and preferred shares are significant and negative related to leverage in the robustness check, when testing all the variables for total debt. The results of growth opportunity in table 7 are in line with the hypothesis, but not significant. The results for free cash flow are in accordance with hypothesis 8 and significant by testing all the variables for short term and total debt. The results for the variable priority shares are in accordance with hypothesis 9, when testing short term debt, but not significant.

From the robustness check it can be noticed that the determinants for leverage differ when investigating long term debt, short term debt or total debt. The results for the pecking order theory are quite similar, but the other theories are rather different by using different types of debt. Therefore, it can be concluded that the results are not robust for every variable, when using another definitions for leverage. Hereafter, a couple of explanations are given for the differences between the various proxies for leverage.

For companies it is cheaper to use long term debt instead of short term debt, because of the high interest rates. An advantage of short term debt is that it is easier to amortize in comparison with long term debt. Companies use their profits to reduce the short term debt (Degryse et al., 2009). The negative relation between short term debt and tangibility is caused, because firms prefer long term debt above short term debt if there are sufficient tangible assets to provide as collateral (Chen & Jiang, 2001), but this is not what the results for long term debt indicate. In the next paragraph this is further discussed. From the results of the robustness check can be concluded that there are some differences between using short term or long term debt. This is because of the differences between the two types of debt. The results for total debt indicate that both short term and long term debt have a different impact on the factors, who are determining the total amount of debt.

Table 7: Robustness check

	Short term debt					Total debt				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Non debt tax shield		0.255** (2.025)			0.076 (0.583)		0.088 (0.638)			-0.117 (-1.478)
Tangibility		-0.029 (-0.693)			-0.116** (-2.640)		-0.025 (-0.537)			-0.128*** (-3.089)
Volatility		0.000 (0.014)			0.000 (0.144)		-0.003 (-0.857)			-0.002 (-0.663)
Retained earnings			-0.040** (-2.024)		-0.032 (-1.544)			-0.146*** (-7.750)		-0.142*** (-7.240)
Profitability			-0.034** (-2.001)		-0.067*** (-3.408)			-0.001 (-0.073)		-0.020 (-1.067)
Liquidity			-0.172*** (-3.147)		-0.252*** (-4.151)			-0.387*** (-7.475)		-0.457*** (-8.038)
Growth Opportunities				-0.009 (-0.833)	-0.010 (-0.972)				-0.015 (-1.317)	-0.013 (-1.287)
Free cash flow				0.094 (1.103)	0.340*** (3.405)				-0.052 (-0.583)	0.216** (2.307)
Preferred shares				-0.016 (-1.138)	-0.006 (-0.404)				-0.050*** (-3.320)	-0.020 (-1.487)
Priority shares				-0.009 (-0.515)	-0.023 (-1.296)				0.023 (1.227)	0.009 (0.557)
Depository receipts				-0.027 (-1.562)	-0.022 (-1.230)				-0.050*** (-2.731)	-0.038** (-2.311)
Firm size	-0.004 (-0.454)	-0.002 (-0.295)	0.006 (0.710)	-0.005 (-0.631)	0.001 (0.127)	0.052*** (6.141)	0.052*** (6.120)	0.073*** (9.612)	0.055*** (6.395)	0.068*** (8.740)
DumAgri	0.048 (0.906)	0.053 (0.954)	0.045 (0.874)	0.044 (0.817)	0.067 (1.251)	0.136** (2.336)	0.143** (2.366)	0.126** (2.575)	0.152*** (2.662)	0.172*** (3.441)
DumConst	0.251*** (9.751)	0.254*** (9.862)	0.248*** (9.901)	0.257*** (9.895)	0.254*** (10.151)	0.136*** (4.874)	0.137*** (4.865)	0.130*** (5.499)	0.147*** (5.358)	0.132*** (5.627)
DumWhole	0.017 (0.868)	0.017 (0.874)	0.009 (0.460)	0.012 (0.635)	0.002 (0.113)	0.015 (0.711)	0.017 (0.781)	-0.008 (-0.429)	0.019 (0.931)	-0.004 (-0.224)
DumBusin	0.130*** (7.925)	0.123*** (6.896)	0.124*** (7.335)	0.128*** (7.707)	0.104*** (5.681)	0.074*** (4.119)	0.070*** (3.575)	0.046*** (2.879)	0.077*** (4.386)	0.031* (1.792)
Intercept	0.320*** (9.751)	0.307*** (9.862)	0.295*** (9.901)	0.341*** (9.895)	0.345*** (10.151)	0.174*** (4.874)	0.174*** (4.865)	0.119*** (5.499)	0.198*** (5.358)	0.196*** (5.627)
R2	0.298	0.308	0.343	0.312	0.383	0.206	0.210	0.437	0.261	0.481
Adjusted R2	0.288	0.291	0.327	0.291	0.353	0.194	0.191	0.423	0.238	0.455

In this table the unstandardized coefficients of the robustness check are given. N=336. See table 6 for an explanation of this table.

5.3 Discussion

In this section the results of the regression models are discussed and compared with other studies related to the subject of this study. Based on the results in table 6, the relationship between the variables and the influence on the capital structure of Dutch companies is explained.

The negative relation between non-debt tax shield and leverage is in accordance with the result of De Jong (2002). The similarity with this study is that the variable non-debt tax shield is also significant. The variable non-debt tax shield ensures that companies do not need debt for tax advantages, what clarifies the negative relation. The not significant and moderately positive and negative relation between tangibility and leverage in the regression model 2 and 5 is not in line with previous research on Dutch firms. A reason for this can be that tangible assets are not important to use more debt in comparison with the other factors that are tested. The negative relation between volatility and leverage in the total model was also found by Chen et al. (1999). An explanation for the negative relation can be that a higher volatility in earnings increases the risk that the companies are not able to meet the debt agreement, what increases the distress cost. The results of tangibility and volatility do not have a significant impact on leverage and are therefore not important in determining leverage in this case. In the fifth model the result of non-debt tax shield is significant at $p < .05$. From this can be concluded that non-debt tax shield is thus an important factor in determining the capital structure. This means that Dutch companies decide about the amount of debt, based on the non-debt tax shield that can be used.

The variable liquidity is significant and in line with the pecking-order theory, which was also found by De Haan & Hinloopen (2003). Companies with more liquidity prefer to use internal financing above external financing funds. From the results can be stated that firms in the Netherlands with higher liquidity are less likely to borrow money. This result is strengthened by the robustness check. The unexpected positive relation between profitability and leverage is not found by other researchers that are used in the literature review of Dutch companies. An explanation for this result is that a more profitable firm uses debt to show the market how well they perform and the confidence of the management for the future (Chen et al., 1999). A different explanation is that more profitable firms use leverage as a tax shield to reduce the amount of tax that must be paid in accordance with the trade-off theory (Frank & Goyal, 2003). When comparing the results of profitability by using long term debt and short term debt it can be stated that more profitable firms prefer long term debt instead of short term debt. From this can be concluded that companies use profit to finance the company on the short term. The variable retained earnings is significant and important in determining leverage. Companies use retained earnings to finance new investments with internal funds (Hovakimian et al. 2001). All three variables for testing the pecking order theory are

important factors for determining long term debt based on the regression results in table 6.

The negative relation between growth opportunities and leverage was also found by Gaud et al. (2007) for Dutch companies. This is in accordance with the results of Deesomak et al. (2004). Companies with more growth opportunities use less debt. This comes due to the fact that companies are preventing against underinvestment problems, when using more debt. Debt providers use covenants, to avoid that companies do not take to much risk by investing in growth opportunities. Therefore, profit of the investments is only enough for the debt providers to get their money. This leads to an agency conflict between the shareholders and debt providers of a company (De Jong & Veld, 2001). From the regression models can be concluded that the results for the variable free cash flow are the opposite of what was expected. This result is not in accordance with other studies for Dutch companies. A negative relation between free cash flow and leverage has to deal with the avoidance of debt by the managers of an organization to keep control of the company (De Jong, 2002). A different view according to De Miguel & Pindado (2001) is that companies do not want to use debt due to the existence of information asymmetry. When investigating the results of the robustness check it can be stated that companies use short term debt, instead of long term debt, to decline the free cash flow and to protect against overinvestment problems. The negative relation between the variables preferred shares and depository receipts are in line with the results of the article of De Jong (2002). With those corporate control mechanisms it is not applicable for these companies to lose control when issuing equity. Therefore, companies are more likely to use equity instead of debt to finance the assets and future growth of the company. A surprising result was the positive relation between priority shares and leverage, which is not confirmed by the Dutch literature. An explanation for the positive relation is that by issuing more equity, priority shares are not sufficient enough to protect against the loss of corporate control. Namely, the decisions of the priority shareholders can be overruled by two third of the votes from ordinary shareholders, which is only the case if at least 50 percent of the outstanding shares are represented during a shareholders meeting (Roosenboom & Van der Goot, 2003). Therefore, companies who are only able to use priority shares are more likely to use leverage instead of equity to finance. It is assumed in this study that for the companies who possesses over preferred shares, when 30 percent of the outstanding shares can be diluted, there are corporate control mechanisms. For the variables of the agency theory, the variables for the free cash flow, preferred shares and priority shares are the most important in determining the capital structure for Dutch companies based on the fourth model, when testing all the variables, the variable priority share is still important.

The control variable firm size is an important factor based on the significance of the variable on the dependent variable leverage in all the models, which can be related to the articles of Chen & Jiang (2001), De Jong (2002) and Degryse et al. (2009). From the

result can be concluded that bigger companies are more likely to borrow instead of smaller firms. This is due to the fact that bigger companies are more stable and have less earnings volatility. Therefore, the risk for distress cost is much smaller, when testing for the trade-off theory. An explanation for the positive relation under the pecking order theory is that outside investors are more aware of what is going on at bigger firms. Hence, there is less information asymmetry, which makes it easier to use debt (Chen et al., 1999). For the agency theory applies that bigger firms have less agency costs for debt and smaller monitoring costs (Deesomak et al., 2004). Therefore, it is cheaper for bigger firms to use debt instead of small firms. The Dummy variable for the Agriculture, Forestry and Mining industry use more leverage in comparison with the companies in the manufacturing and equipment industry. This is the opposite for the other dummies of companies in the Construction and Business services industry, who use less debt.

As mentioned before, the total model explains 0.339 of the variance in leverage, which is in accordance with the adjusted R² of 0.359 in the article of Chen et al. (1999) and 0.325 in the article of Degryse et al. (2009), in those articles less factors have been used. The Adjusted R² of the different models indicates that the variables for pecking order theory are the most important in determining the capital structure and the trade-off theory the least. The variables of the pecking order theory ensures for 0.317 of the variance in leverage.

The most important variables of this study in determining the capital structure of Dutch companies by investigating the significance levels are; profitability, liquidity, retained earnings and firm size. Somewhat less important are the variables for non-debt tax shield, free cash flow, preferred shares and priority shares. The influence of the other variables on the capital structure is not worth to be mentioned. When investigating the correlation and significance of the variables it can be concluded that the variables for liquidity and firm size are the most important in determining the capital structure for companies in the Netherlands.

6. Conclusion

This chapter outlines the conclusion of this study. Firstly, an answer is given on the research question. Secondly, the main results related to the hypotheses are mentioned. Finally, there is indicated what the contribution of the results is to the capital structure literature and in practice for the businesses in the Netherlands.

6.1 Summary main results

In this study the goal was to find an answer on the research question: “*Which financial factors are important in determining the capital structure of a Dutch company?*” Based on the trade-off, pecking order and agency theory, variables were developed to test which factors are important in determining leverage and therefore to investigate the most important theory for the capital structure of Dutch companies. Based on the results of the regression analysis important variables are *non-debt tax shield, retained earnings, profitability, liquidity, free cash flow, preferred shares, priority shares and firm size*.

From the results of the correlation analyses and the regression models can be concluded that liquidity and firm size are the most important factors in determining the capital structure for Dutch firms. To conclude, for Dutch companies applies that the above factors are important for the choice between the amount equity and debt. With more liquidity, firms are more likely to use internal funds instead of debt to finance the companies’ activities. For the size of a firm counts that how bigger the company the sooner a company tends to borrow debt.

According to the results of the regression analysis, the variable non-debt tax shield is the most important factor, which is measured for the trade-off theory. The other variables are not significant and do not influence the amount of leverage. Many researchers also use firm size to test the trade-off theory, because bigger firms are more stable and it is less risky to borrow debt. Therefore, the result for firm size confirmed the trade-off theory.

The variables retained earnings, liquidity and profitability, which are derived from the pecking order theory, indicates why a company does not prefer debt. The conclusion for these variables in this study is that Dutch companies with high retained earnings and liquidity are more likely to finance the company with internal financial resources. This is in agreement with the pecking order theory and the information asymmetry between firm insiders and the capital market, which reduces the need for external financing. When testing the pecking order variables, the factor profitability is not in accordance with the pecking order theory and is less important in comparison with the other two factors. More profitable firms use more debt, while the pecking theory explains the opposite.

For the agency theory the variable priority shares is the most important factor. Priority shares are positive related to debt, what can be explained by the fact that priority shares alone cannot protect the company against the loss of corporate control. When testing only agency theory variables, the free cash flow and depository receipts become also important. The negative relation between preferred shares, depository receipts and leverage comes due to the fact that companies do not want to use debt, because of the loss of control by using debt instead of equity.

Another target in this study was to find which theory is the most important in determining the capital structure. Based on the Adjusted R^2 can be concluded that the pecking order theory variables causes the biggest variance in leverage, followed by the agency theory. The trade-off theory is less important for Dutch companies, because most of the variables are not important. Hence, it can be concluded that the pecking order theory variables are the most important in determining the capital structure for Dutch companies in comparison with the other theories. Some of the tested variables are not in accordance with the expectation based on the theories. Therefore, there is no hard evidence that one of the theories is the most important in determining leverage.

Based on the hypotheses and results, it can be concluded that hypothesis 1, 4 and 6 are supported. The variable non-debt tax shield is negatively related to leverage and the result is significant, what supports the first hypothesis. The significant result for retained earnings and the negative relation with leverage is in accordance with hypothesis four. The sixth hypothesis is supported by the fact that there is a significant and negative relation between liquidity and leverage. Hypothesis nine for testing the corporate control mechanisms is partly accepted, due to the significant and negative relation between depository receipts and leverage, when testing the agency theory factors. The other results are not significant or are not in line with what was expected from the theories and literature.

This research contributes to the existing literature by adding evidence for some important factors in determining the capital structure. As mentioned before, the research to the capital structure by using data of Dutch companies is scarce. The results contribute due to the more recent data that has been used in comparison with other studies on Dutch firms. Another contribution is that not all the results of the variables are in line with the used theories for the capital structure, what gives new insights about the influence of the factors on debt. The findings that for Dutch publicly listed companies the factors non-debt tax shield, retained earnings, profitability, liquidity, priority shares and firm size are the most important, gives a good indication about the motives of Dutch companies in terms of financing.

For the businesses this study contributes with information about important factors that are useful for the choice between debt and equity. All companies are searching for an optimal capital structure for their organizations. The results of this study can be used as

an indication, which factors must be kept in mind by choosing the optimal capital structure for Dutch companies.

6.2 Limitations

Beside the contributions, this research also has some limitations. The first drawback is that the database does not provide data that can be used for a good proxy for all the variables. An example is the proxy for volatility, it was preferred to use the standard deviation of the change in operating income over three years, but the dataset does not contain the right data to measure this (De Jong, 2002). Another proxy for this variable could lead to a better measure of volatility and maybe show other results. In this study a dilution of 30 percent is used for the preferred shares, what indicates that if 30 percent of the outstanding shares can be diluted, preferred shares can be used to protect against loss of corporate control. With this percentage of dilution it is not certain if preferred shares are able to prevent against this loss of corporate control. Another limitation is that not all the residuals are totally normal distributed. Therefore, there may be heteroscedasticity due to the skewed distribution. This can influence the results of the research, but due to the fact that the deviation from normal was not very big the variables are not rescaled. Still it must be kept in mind that heteroscedasticity has maybe influenced the results of the regression analysis.

Within the research, concerning the capital structure, there are some other theories which are not mentioned in this study, but who also influence the choice for debt or equity. Through the time limit of this study only the trade-off, pecking order and agency theory have been examined. In this study an external database has been used. It is assumed that this database provide reliable data. This is of course not always obvious. The last limitation is about the generalizability of the results to specific companies. The articles of Antoniou et al. (2002) and Deesomak et al. (2004) indicate that differences between capital structures of companies is not only caused by firms specific factors, but also by the environment in which the company operate. Therefore, it is difficult for companies to interpret how the results of this study apply for them specific, if the company is not established in the Netherlands, because the choices of companies for the capital structure vary by country and region.

6.3 Suggestions for future research

Based on this research and the limitations, it is interesting for further research to examine the influence of the financial crisis. The data of this study goes up to the beginning of the crisis in 2008/2009 and by comparing the results of studies before and after the crisis something can be said about the change in the capital structure due to the crisis. Another suggestion is to use a different database that contains all the data that is needed for good proxies of the variables. For future research it might be meaningful to use market value instead of book value. Previous research in Dutch companies of Chen et al. (1999) show that there is a differences in the results between book and market value. It is also interesting to investigate in future research what the influence of a higher dilution percentage of preferred shares would be on leverage. By

using a higher percentage of dilution for preferred shares, companies are more able to protect themselves against loss of corporate control.

Further research can prevent against heteroscedasticity by checking for a normal distribution of the residuals. Therefore, there is no skewed data that have an influence on the results, since some of the data may differ a lot from what is normal and infect the research. For a following research it can be meaningful to include more countries. By adding specific variables for the countries something can be said about the factors that influence the capital structure in different counties. Thereby, the results are of more concern for specific companies. It might be interesting to investigate the differences between, for example Dutch and German companies.

7. References

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