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CAPITAL STRUCTURE DETERMINANTS IN FINLAND

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ABSTRACT

Since the publish of Mogliani and Miller's research about the cost of capital in 1958, several theories have been developed to solve the capital structure puzzle. The Pecking order theory and the Trade-off theory are among the most influential. Numerous studies in the field of finance have tested theories of firms' capital structure, but none of the theories has worked in all situations. Since none of the theories is perfect and researches conducted in different countries have found different results, it is essential to do researches using different countries and environments. The main objective of this study is to test which variables affect the Finnish listed companies capital structure, and in addition, try to explain the reasons.

In this thesis, data from Nasdaq Helsinki and Nasdaq First North has been examined to determine the relationship between financial leverage and six variables. Regression models used in the thesis are based on Frank and Goyals (2009) study´s core factor model. In total, 1256 observation from the years 2005 to 2019, has been tested by using regression analysis models.

The results show that neither the Pecking order theory or the Trade-off theory cannot fully explain the capital structure of Finnish companies. Size of the company, Industry and Stock exchange were positively related with total liabilities. Return on equity, GDP growth and Share of Tangible Assets were negatively. However, the Size of the company's and GDP growths relation with total liabilities were close to zero.

Some of the results of the thesis vary from research conducted in different countries. Different results are most likely due to institutional factors, such as differences in legislation and taxation. To research the topic more accurately, more theories and broader regression models should be used.

Keywords: Financial Leverage, Capital structure, Trade-off theory, Pecking order theory

INTRODUCTION

Over the years, companies' capital structure and how it could be used to maximize the company's value has been a major research topic. Put simply, the capital structure of a company refers to the way of how a company's assets have been financed. The reason why financial leverage is used differ between companies. According to the Pecking order theory, leverage is used because of the lack of cash flows for short-term debts and also for a need for more capital to finance investments (Myers, 1984). Other of the main theories of capital structure, the Trade-off theory, states that financial leverage is also used to increase the return measured as Net income (Brealy;Myers;& Allen, 2017).

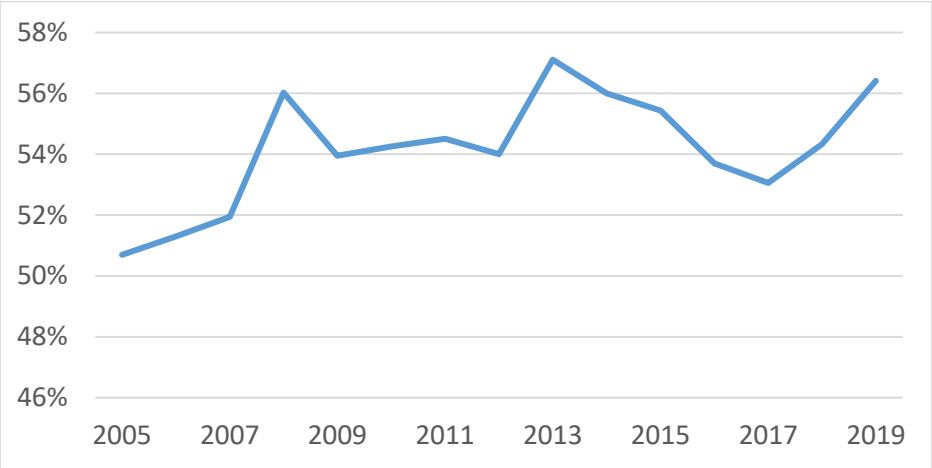

Figure 1. Share of assets financed by liabilities 2005-2019

As seen from the graph above, the amount of financial leverage companies use has grown during the last 15 years, and the trend seems to be continuing. After the millennium, significant events, like the 2008 financial crisis, have changed the field of finance and companies capital structures. At the moment economy is in an unusual situation since interest rates are at zero or even below. Negative interest rates push companies to raise their leverage ratios. Negative interest rates also reduce the amount of cash companies hold, which reduces their assets. Since the surroundings have been changed new research about capital structure are needed.

Since the publish of Mogliani's and Miller's (1958) theorem about capital structure, arguing that value of public companies is unaffected by choice of capital structure, many theories have been developed to understand the capital structure. Even though multiple theories have been developed to solve the capital structure puzzle, no theory that could work under all conditions has been found. The two most important capital structure theories, the Trade-off theory and the Pecking order theory, often provide different predictions on how different variables affect financial leverage. This has led to an ongoing debate which theory is the best at predicting the company's capital structure. Trade-off theory states that companies always strive to balance the benefits and costs of financial leverage and search for the optimal capital structure for value maximization. Public companies can use the advantage of tax shields to maximize their value, but on the other hand, a too high level of debt could bring different types of financial stress. Pecking order theory, however, suggests that companies prefer internal financing over external, and when external financing is needed, debt preferred over equity issues.

Former studies have studied the impact of different determinants on the capital structure in several countries, focusing on different industries and company sizes. Even though most of the studies have used the Mogliani and Miller theorem, the Trade-off theory and the Pecking order theory as their theoretical foundation, studies, however, have generated mixed results. All of the theories have been supported in several studies conducted in different countries. One of the reasons for the inconsistent result may be because different authors have used various methods and that different countries have different institutional factors that affect capital structure.

Even though several studies have been published, research focusing on Finland are uncommon. Especially studies that include the Nasdaq First North companies in the data are rare. Companies, investors and creditors can use the evidence in the thesis to understand how Finnish companies' capital structure is affected by different variables, and therefore evaluate their financial performance more accurately. Companies also need to understand the impact of financial leverage to make well-informed decisions. Since there is a varying result from different countries, it is important also to research Finnish markets. The purpose is to study the relation of financial leverage and variables in the Finnish context. In addition, try to find out if these relations differ for Nasdaq Helsinki and First North companies. This paper examined public listed companies in Finland over the period of 15 years 2005-2019. The thesis aims to answer the following research questions:

- How the capital structure differs in the Nasdaq Helsinki and the Nasdaq First North?

- How firm-specific factors affect the capital structure of public companies in Finland?
- How the state of the economy affects the capital structure of public companies in Finland?

The thesis is structured as follows. The first section will provide a theoretical framework for the "capital structure puzzle". The main points of the theories and former studies are introduced, and the hypothesis are presented. In the second section, the data and methodology of the thesis are explained. The section will contain an explanation about how the sample was obtained and information about the regression model that was used. The third part will include results and summary statistics, while the actual analysis and findings will be discussed in the fourth section. The last section concludes and highlights the findings of the thesis, notes the limitations and will also give suggestions for future researches.

The author would also like to thank a few people for the help and support that they provided throughout the studies and working process of the thesis. Firstly, Hilda Raittinen, for her support and help during the whole thesis writing progress. Secondly, Jouko Kulmala, for his support throughout the studies.

1. LITERATURE REVIEW

It is essential to understand the nature of capital structure research and the most important theories to understand the results of the theses. Currently, there are a vast amount of different models and ideas that, according to their creators, can explain the capital structure puzzle. In this section of the thesis, an overview of the essential terms, theories and former studies are given. This is followed by hypothesis development and hypothesis.

1.1. Mogliani and Miller theorem

Mogliani and Miller's paper (1958) is referred to as the pioneer of the capital structure research area, and it is often referred to in capital structure studies. Before them, there was no generally accepted theory of capital structure (Popescu & Visinescu, 2009). The central finding of the paper was that under specific conditions, the capital structure of a firm is irrelevant. Mogliani and Miller theorem assumed that market conditions are perfect with no asymmetries of information, no taxes and no financial distress. With these assumptions, however, the theory does not work in the real world, since most of the assumptions are not possible in practice.

Later Mogliani and Miller introduced a second paper which stated that as the leverage increases the expected return on equity, and the company needs to offer shareholders a risk-premium. Increased use of leverage still does not increase the share price; even though the required return increases. Shareholders increase the expected rate of return by the amount that can compensate for the risk that increased use of leverage brings. Studies, however, have proof that the capital structure of the company affects a company's value. The shortcomings of Mogliani and Millers theorem led to the development of new, more comprehensive theories (Popescu & Visinescu, 2009). The main theories are the Trade-off theory and the Pecking order theory. Developed theories can be divided into two categories, depending on whether or not they aim for an optimal capital structure.

1.2. Trade-off theory

According to the Trade-off theory, companies should try to find the optimal level of financial leverage. The optimal level of financial leverage means that gains and costs of financial leverage are balanced. The debt-equity decision is often thought of as a trade-off between interest tax-shield and cost of financial distress (Brealy;Myers;& Allen, 2010). So according to the Trade-off theory, companies' capital structure decisions point towards a target debt ratio, where debt tax shields are maximized and bankruptcy costs associated with the debt are minimized (Cekrezi, 2013). Target debt ratios vary from firm to firm. Companies with safe tangible assets and plenty of taxable income to shield ought to have high target ratios. Conversely, unprofitable companies with risky, intangible assets ought to rely primarily on equity financing (Brealy;Myers;& Allen, 2010). Since there are costs, and therefore delays, in adjusting capital structure, there are differences in debt ratios among firms having the same target debt ratio (Myers, 1984). The Trade-off theory also predicts that higher marginal tax rates lead to higher levels of leverage, because of the tax-deductibility of interest.

Financially distressed companies face distress costs, like higher interest rates. Distress costs can be divided into two categories; direct and indirect (Warner, 1977). Direct costs include legal and administrative costs. Indirect costs include loss of sales, lost profits, and the possibility of the inability of the firm to obtain credit or to issue securities except under especially onerous terms (Warner, 1977).

According to Brealy, Myers and Allen (2010), Trade-off theory successfully explains why there are differences in debt ratios between industries. However, there are a couple of things that the Trade-off theory can not explain. In real life, most profitable companies commonly borrow the least, even though trade-off theory predicts exactly the reserve. Also, it seems that public companies rarely make any significant shifts in the capital structure just because of taxes (Brealy;Myers;& Allen, 2017).

1.3. Pecking order Theory

Unlike in the Trade-off theory, in the Pecking order theory company does not have a target debt-ratio. Pecking order theory states that managers follow a hierarchy when financing the company's operations. Companies have three different types of financing sources that are valued differently by the company's perspective. According to Myers (1984), companies prefer internal to external financing and debt to equity:

1. Internal financing (Retained Earnings)
2. Debt issuance
3. Equity issuance

Internal financing is preferred over external because of the difference in costs. If capital comes from internal financing, there are no additional costs. External financing sources, such as investors and creditors, do not possess the same information as managers, so they require a higher return to compensate for the risk. According to Myers (1984), debt is preferred over equity for several reasons. Issuance of debt signals an undervalued stock and that company's managers believe that the company's investments will be profitable. On the other hand, issuing equity signals that the stock is overvalued and that the managers are generating financing by diluting shares in the company.

As stated by the Pecking order theory, new equity financing is the financing source companies prefer the least (Frank & Goyal, 2003). Equity financing should only be used when all the possible debt and retained earnings financing are already used. Managers use equity financing only when they believe that the market value of the company is too high because of asymmetric information between investors and the company (Brealy;Myers;& Allen, 2010).

According to the Pecking order theory, profitable companies use less financial leverage than low profitable companies. This means that financial performance affects the amount of financial leverage the company uses, instead of the opposite as the trade-off theory claim (Brealy;Myers;& Allen, 2010). This claim can be supported by the reasoning about the order of financing sources. Profitable companies are able to finance their operations by their own retained earnings and cash flows instead of debt and external capital (Myers, 1984). According to Fama and French (2002), more profitable companies use less leverage, so there should be a negative relation between Financial leverage and company financial performance.

The Pecking order theory also suggests that companies with only a few investment opportunities and high free cash flows will have low debt ratios. Conversely, high growing firms with low free cash flows should have high debt ratios.

1.4. Pecking order Theory versus Trade-off Theory

A study conducted by Rajan and Zingales (1995) studied capital structure choices of large firms in Canada, France, Germany, Italy, Japan, the U.K., and the USA. Results supported both Trade-off theory and the Pecking order theory. They found that debt ratios of companies depend on four main factors:

1. Size, Large firms tend to have higher debt ratios. One reasoning is that large firms tend to use more financial leverage because of the smaller risk of default and bankruptcy. This supports the Trade-off theory. Another reasoning is that large firms' managers have less information than external investors do not know, which makes investors more willing to invest. This supports the Pecking order Theory instead.

2. Tangible assets. Firms with high ratios of fixed assets to total assets have higher debt ratios. This supports the Trade-off Theory.

3. Profitability. More profitable firms choose to use less financial leverage. This supports the Pecking order theory.

4. Market-to-book. Firms with higher ratios of market-to-book value have a lower debt ratio. Market-to-book value is used to estimate the growth of the company and is associated with the financial performance of the company. This supports the Pecking order theory.

According to Brealy, Myers and Allen (2010), the Pecking order Theory seems to work better for large, mature firms that have access to public bond markets. These firms rarely issue equity. They prefer internal financing but turn to debt markets if external financing is needed. Brealy, Myers and Allen (2010) state that smaller, younger, growth firms are more likely to rely on equity issues when external financing is required.

1.5. Prior Research

Prior studies have supported both the Trade-off theory and the Pecking order theory. Mixed results may be caused by use of different measurements and regression models. Also, differences between countries lead to differences in companies capital structure.

Research conducted by Avelin (2005) supports the Pecking-order theory. Avelin researched Finnish stock companies between the years 1999-2004. Avelin used eleven variables in the research and found out that four of them, including profitability, supported the Pecking order theory. The author of this thesis will also research Finnish stock market companies, but with a broader time spectrum starting from 2005-2019. Even though the timeline is different, the same results should be expected. Avelin found significant and meaningful results for several variables, which are also used in this thesis. Most interesting findings were that size related negatively with leverage, and that intangible assets related positively.

Research published in 2010 by Akdal researched which variables affect the capital structure for companies in the United Kindom. One of the author's findings was that profitability is negatively related to leverage except for short-term debt ratio. According to the author, profitable companies do not prefer a higher ratio of debt; this supports the pecking-order theory. Research conducted by Häkkilä (2017) S&P 500 companies, the author, found that return on equity and financial leverage had a slight positive relationship. According to the author, it seems that more profitable companies have less debt, which also supports the pecking-order theory. The author's findings show that the Pecking order theory can explain the capital structure better than the Trade-off theory. However, the author's data only used S&P 500 companies, which are all large companies situated in the United States.

The trade-off theory is supported in several studies. One of the most recent is research made by Tsuruta (2015), who found that small Japanese companies with high leverage have better financial performance than companies with low financial leverage. This shows that financial performance has a positive impact on the company's financial leverage. A study conducted by Culata and Gunarish (2012) Studied the Indonesian stock exchange market. Their result supported the trade-off theory. Ozkan (2012) studied U.K companies and found out that companies have target leverage ratios, which supports trade-off theory.

The differences in the relation between variables and financial leverage in different countries have been investigated by Weill (2008). The author researches medium-size companies from seven European countries. The results presented differences between countries, and the author claimed that this is due to institutional factors. According to the author, a different legal system is a reason for differences. The author could not determine the amount of effect of differences in legal systems but claimed that the differences across the countries affect the relation between financial leverage and financial performance. This is why studies in different countries may get different results.

1.6. Hypothesis development

As stated before in the literature review, numerous variables affect the firm's capital structure. The relations have been tested in different countries with different results. This theses' hypotheses have been developed based on the Trade-off theory, the Pecking order theory, and on the findings of earlier studies.

Nasdaq OMX First North is a stock exchange meant for small and medium-sized companies located in nordic countries. The First North does not have as strict rules as the main market, and it gives companies room to focus on the business and growth, while still having advantages of a listed company. Companies are meant to start from First North and eventually end up to Nasdaq regulated market (Nasdaq 2020). Since First North companies are small-sized, they should, according to the Trade-off theory, have less financial leverage. Smaller and growing companies are more likely to rely on equity issues when external financing is needed (Brealy;Myers;& Allen, 2010). On the other hand, the Pecking order theory states that high growing firms with low free cash flow have higher leverage ratios.

Hypothesis 1. Companies listed on Nasdaq First North use less financial leverage than companies listed on Nasdaq Helsinki.

According to the Pecking order theory company with high financial performance does not use external financing, but chooses to use internal financing instead (Brealy;Myers;& Allen, 2017). This means that according to the Pecking order theory relation between financial performance and financial leverage should be negative. A former study conducted by Avelin (2005) supported the Pecking order theory, and a similar result is expected in this theses.

Hypothesis 2: There is a negative relation between financial leverage and companies' performance measured as return on equity.

Rajan and Zingales (1995) found that size affects the amount of financial leverage. According to the authors, size is strongly positively related to leverage. This supports the Trade-off theory. According to Rajan and Zingales, the more extensive business generates more stable cash flow streams and better borrowing terms, resulting in higher optimal leverage. This reasoning is supported in prior research by Van Empel (2012).

Hypothesis 3: There is a positive relation between financial leverage and the size of the company.

Structure of companies assets has been an influential factor used in earlier studies. Assets structure refers to the share of tangible assets. Tangible assets are assets which have physical properties. Previous researches have found a positive relationship between asset tangibility and leverage. (Rajan & Zingales, 1995) (Akdal, 2010) Thus, a similar relation is expected in this thesis, in the Finnish context. This kind of result would support the Trade-off theory

Hypothesis 4. There is a positive relation between Tangible assets and financial leverage.

According to Brealey, Myers and Allen (2017) companies tend to use more financial leverage when the whole economy seems to be strong and try to use less leverage when there is a recession in the economy. This is why a positive relationship between GDP growth and financial leverage.

Hypothesis 5: There is a positive relation between GDP Growth and financial leverage

2. DATA AND METHODOLOGY

2.1. Data

The population of the theses is selected from active public companies listed on the Nasdaq Helsinki exchange and Finnish companies listed on the Nasdaq First North. The Nasdaq Helsinki companies are listed Large-cap, Medium-cap and Small-cap. The total population where the sample was selected contained 129 companies from the Nasdaq Helsinki and 32 companies from the Nasdaq First North. For the final sample, financial companies were excluded, as also companies that had been listed after 2015. Furthermore, outliers were reviewed and deleted from the final sample.

After examining and processing the data, the final sample contained 1256 observations and represented 87 companies from the main market and 5 companies from the First North. The timeline of the research was 2005-2019.

The data set includes eight variables. Six were company-level variables which were obtained or calculated using data from companies' annual reports. These six variables were: Return on equity, Total assets, Total Liabilities/Total Assets, Current liabilities/Total Liabilities, Non-Current Liabilities/Total Liabilities and Tangible assets/Total Assets. The three remaining variables were yearly GDP growth, Stock Exchange, where the company is traded and average industry leverage. The stock exchange was obtained from Nasdaq.com. Data on annual GDP growth from 2005-2018 was obtained from worldbank.org, and the forecast for 2019 was obtained from Findicator.com. The average leverage of industries were calculated by using the data from companies annual reports. Companies were divided into ten different industry. The research period covered 15 years. This period can be considered long enough in order to receive definite and significant results. The period is also long enough to include both economic growth and recession phases, which allows testing how the state of the economy affects the variables.

2.2. Regression model

It is crucial to choose a suitable multivariate method for research. The relationship between variables and financial leverage can be analyzed with multiple regression. Multiple regression can be used when there is a single dependent variable, which is affected by two or more independent

variables. This fits the research questions of the thesis. The regression models used in this thesis are adapted from prior research, with a couple of adjustments to test the research question of the thesis better.

2.2.1. Quality of regression model.

Regression models are evaluated using by using a coefficient of determination, usually referred to as R^2. It represents the combined effect of all independent variables. It is the proportion of the variance in the dependent variable that is predictable from the independent variables. The value of R^2 is between 0 and 1, where 1 represents a perfect model that explains every single variation in the dependent variable. Adjusted R^2 is used when extra explanatory variables are added to the model. P-values evaluates the relevance of variables. If the p-value is less than the level of significance, the variable is considered significant.

2.2.2. Dependent variables.

It is possible to measure financial leverage in multiple different ways. In this thesis, financial leverage is measured from three different perspectives; Total liabilities, share of Non-current Liabilities and share of Current Liabilities. The purpose of using three perspectives is to gain insights about how variables affect the leverage structure of companies. Current liabilities are those liabilities which are to be settled within one financial year. Vice-versa, non-current liabilities are those liabilities which are not likely to be settled within one financial year. Total liabilities include both current and non-current liabilities and shows all liabilities that the company has (Brealy;Myers;& Allen, 2010).

The purpose of financial leverage is to increase the return on equity. With leverage, the company can buy more assets to widen its business. This potentially leads to increased financial performance. However, financial leverage may also cause losses if interest expenses are bigger than returns. Companies with significant financial leverage are financially distressed. Financially distressed stocks have delivered anomalously low returns (Campbell;Hilscher;& Szilagyi, 2008). Also, according to Kinsman and Newman (1998), firms with a lower percentage of debt have a higher value. Thus, managers should avoid debt if they can operate their business effectively without it.

Measurements for financial leverage are used as dependent variables. These are Total Liabilities divided by Total Assets, Non-current Liabilities divided by Total Liabilities and Current Liabilities divided by Total Liabilities.

Total Liabilities divided by Total Assets measures the company's capital structure. It measures how much the company's assets are financed by creditors and how much is financed by stakeholders. Total Liabilities also include Non-Current Liabilities and Current Liabilities. This variable is used to measure companies overall leverage ratio. Non-Current Liabilities divided by Total Liabilities measures the long-term liabilities proportion of Total Liabilities. Current Liabilities divided by Total Liabilities measures the short-term liabilities proportion of the Total Liabilities. The reason for using these two ratios is to examine the structure of companies leverage.

2.2.3. Independent variables.

Prior studies have used several different variables to research the capital structure. However, Frank and Goyals (2009) study found a set of six factors that can be called as "core factors" and the model that includes the factors is called as "core model of leverage". These core factors account for more than 27% of the variation in leverage, while the remaining factors only add a further 2% (Frank & Goyal, 2009). These core factors are industry, market-to-book value, tangible assets, profitability, size and inflation. Variables chosen for this thesis are based on these core factors.

Return on equity is used as an independent variable to measure a company's profitability. Return on equity is calculated by dividing Net income by Shareholders' equity. It measures how effectively a company uses its assets, and it can also be seen as how much profit a company created per shareholders' investments. Return on equity can be used to forecast the future performance of companies (Lewellen, 2002) and also to predict failure and bankruptcy (Beaver, 1966). When evaluating the company's Return on equity, it should be compared to what is the average among the stock's peers. Return on equity tends to differ between industries, and it is most useful when comparing companies in the same industry. Even though a high Return on equity is favoured, too high ratio might indicate that there is a risk. Factors like inconsistent profits, excess debt, or negative net income with negative shareholders equity might misleadingly high Return on equity (Brealy;Myers;& Allen, 2010). According to the Pecking order theory, retained earnings are higher in the hierarchy of financing than financial leverage. If the company is profitable, it does not need to use financial leverage for financing. This leads to more profitable companies having lower debt

ratios. However, the trade-off theory states that companies try to make use of the advantage of interest tax shield by using higher leverage, leading to more profitable companies having higher debt ratios.

Total Assets is used as a size variable. Size variable is used because the Trade-off theory states that larger companies use more leverage than small companies. Prior studies have found a positive relationship between leverage and size (Rajan & Zingales, 1995). Larger company get access to loans with more affordable terms. This enables them to take more debt at a lower interest rate. Larger companies are also less risky than smaller companies, so banks are willing to loan them more.

Tangible assets divided by Total Assets are included in the regression models since the Trade-off theory states that companies with safe, tangible assets ought to have higher financial leverage target ratios (Brealy, Myers and Allen, 2017). Companies with a higher amount of tangible assets are able to use them as collateral, which leads to a lower cost of debt. Tangible assets divided by Total Assets measures the structure of the company's assets. Tangible assets are assets that have physical properties and real transactional value. Prior literature has found a positive relationship between tangible assets and leverage (Rajan & Zingales, 1995).

Gross Domestic Product Growth (GDP Growth) is a measurement of how fast the economy is growing. It does it by comparing a one-period gross domestic product to the previous one. GDP growth is used as an indicator for the state of the economy. According to Brealey, Myers and Allen (2017), companies tend to use more leverage when the economy seems to be strong and less during the recession.

To examine differences in financial leverage between industries, variable for industry average is included. The amount of financial leverage varies between industries and also depends on the firms' position within its industry (Mackay & Phillips, 2005). Since the optimal level of debt changes depending on several factors, every company needs to determine its need for financial leverage individually. Variables for industry averages in this thesis are Average Total Liabilities divided by Total Assets, Current Liabilities divided by Total Liabilities, and Non-Current Liabilities divided by Total Liabilities. According to the trade-off theory companies operating in the same industry have common influencers on their leverage ratios. Companies managers also use the industry average to determine their optimal capital structure, which steers the capital

structure of the company closer to the industry average (Frank & Goyal, 2009). Thus, it can be assumed that company operating in an industry with high average leverage, have higher leverage.

To measure the differences in leverage ratios between companies traded at the Nasdaq Helsinki and Nasqad First North markets, a dummy variable is used. A dummy variable is used at regression analysis to represent categorical data. Dummy variable can only take two values, 1 or 0. In this thesis, if the company is traded in Nasdaq First North, it will have a value of 1, and if it is traded in Nasdaq Helsinki value will be 0.

Prior studies about Finnish companies have supported both the Pecking order theory and Trade-off theory. The relation between Return on equity and leverage has supported the Pecking order theory almost without exception. On the other hand, size and tangible assets effect on the amount of financial leverage have supported the Trade-off theory, in most studies. Variables and their abbreviations for are summarised in the table below.

Three different regression models are used to gain insight from the data. The models are based on the Frank and Goyals (2009) study´s core model of leverage, and an additional dummy variable for the difference in the stock market has been added.

$$T.L./TA=\beta_0+\beta_1 ROE+\beta_2 TA+\beta_3 Tang.Ass.+\beta_4 GDPG+\beta_5 Market+ \beta_6 Ind.Average+\varepsilon$$

$$CL/TL= \beta_0+\beta_1 ROE+\beta_2 TA+\beta_3 Tang.Ass.+\beta_4 GDPG+\beta_5 Market+ \beta_6 Ind.Average +\varepsilon$$

$$Non\text{-}CL/TL= \beta_0+\beta_1 ROE+\beta_2 TA+\beta_3 Tang.Ass.+\beta_4 GDPG+\beta_5 Market+ \beta_6 Ind.Average +\varepsilon$$

Table 1. Variables used in the regression analysis.

Abbreviation	**Variable**	**Definition**
TL	Total financial leverage	Total Liabilities/Total Assets
CL	Short-term financial leverage	Current Liabilities/Total Liabilities
Non-CL	Long-term financial leverage	Non-current Liabilities/Total Liabilities
ROE	Return on equity	Net Income/Shareholders equity
TA	Total Assets	Size variable
Tang.Ass	Tangible assets share of assets	Tangible Assets/Total Assets
GDPG	Gross Domestic Product Growth	(GDPt – GDPt-1) / GDP t-1
Market	Stock Exchange	Used as a dummy variable
Ind.Average	Average industry leverage	Different leverage for different models depending on which leverage is used as the dependent variable.

3. RESULTS

All of the regression models are statistically significant. This means that the explanatory power found in the regressions is most likely not due by chance. The variance inflation factor for all variables was below 5, which means that there is only a moderate relationship between variables. None of the variables suffered from multicollinearity.

Table 2. Descriptive statistics

Variables	Amount of observations	Minimum	Maximum	Average	Standard deviation
TL/TA	1256	6,8%	130,6%	54,2%	0,1512
CL/TL	1256	0%	100%	62,6%	0,2176
non-CL/TA	1256	0%	100%	37,4%	0,2176
ROE	1256	-916,5%	293,2%	7,8%	0,3620
Total Assets	1256	1,966 Mil.	44901 Mil	1900,3 Mil	4848,2 Mil
Tangible assets/Total assets	1256	0%	99,9%	78,3%	0,1910
GDPG	15	-8,075	5,299	1,151197	2,9500
TL/TA industry average	1256	46,1%	60,8%	53,1%	0,0350
Non-cl/TL industry average	1256	41,6%	69,1%	61,7%	0,0759
CL/Tl industry average	1256	30,9%	58,4%	38,3%	0,0756

Author's calculations

3.1. The relation between Total Liabilities and variables

The regression model describing the relation between Total Liabilities and independent variables has R^2 value of 0,130 and an adjusted R^2 value of 0,126. All the values in the table have been rounded to three decimals.

Table 3. The total Leverage regression models results

Variable	Coefficient	T stat	P-value	VIF
Intercept	-0,065	-1,053	0,292349	
Return on Equity	-0,064	-5,620	0,000	1,069
Total Assets	0,000	3,787	0,000	1,025
Tangible Assets/Total Assets	-0,113	-5,315	0,000	1,038
GDP Growth	-0,002	-1,416	0,157	1,006
Industry average	1,310	11,368	0,000	1,024
Stock exchange	0,062	2,199	0,028	1,540

Author's calculations

Five out of six variables have lower than 0,05 P-value. The only variable with over than 0,05 P-value was GDP growth. Average Industry Leverage, Stock Exchange and Total Assets had a positive coefficient. The rest of the variables had negative. Total Assets' and GDP Growth's coefficients were close to zero.

3.2. The relation between Non-current Liabilities and variables

The regression model describing the relation between Non-current Liabilities and independent variables has R^2 value of 0,193 and an adjusted R^2 value of 0,189.

Table 4. The non-current Leverage regression models results

Variable	Coefficient	T stat	P-value	VIF
Intercept	0,142	4,182	0,000	
Return on Equity	-0,087	-5,514	0,000	1,069
Total Assets	0,000	4,138	0,000	1,025
Tangible Assets/Total Assets	-0,215	-7,159	0,000	1,038
GDP Growth	-0,003	-1,613	0,107	1,006
Industry average	1,053	13,263	0,000	1,024
Stock exchange	-0,112	-2,842	0,005	1,540

Author's calculations

Again only variable with over than 0,05 P-value was the GDP Growth. Industry average and Total Assets had a positive coefficient with Non-current Liabilities, and rest had a negative relation. As before, Total Assets and GDP growth coefficients were close to zero.

3.3. The relation between Current Liabilities and variables

The regression model describing the relation between Current Liabilities and independent variables has R^2 value of 0,193 and an adjusted R^2 value of 0,189.

Table 5. The current Leverage regression model results

Variable	Coefficient	T stat	P-value	VIF
Intercept	-0,194	-3,248	0,001	
Return on Equity	0,087	5,514	0,000	1,069
Total Assets	-0,000	-4,138	0,000	1,025
Tangible Assets/Total Assets	0,215	7,159	0,000	1,038
GDP Growth	0,003	1,613	0,107	1,006
Industry average	1,053	13,263	0,000	1,024
Stock exchange	0,112	2,842	0,005	1,540

Author's calculations

GDP Growth is again the only value with over than 0,05 P-value. Only Total Assets have a negative relation with Current Liabilities. As before, Total Assets' and GDP growth's coefficients are close to zero.

4. DISCUSSION

4.1. Quality of research.

Research has a relatively low adjusted R square for all of the regression models. However, since the predictors are statistically significant, conclusions about different variables effects on financial leverage can still be made. Theses' regression models R squares imply that around 12-18% of the company's financial leverage is explained by the variables used in the models. This was expected since the company's financial leverage is affected by numerous different variables and the author's models only consisted of six. GDP growths P-values were over 5% in all three regression models, which means we can not reject the null hypothesis. A relatively high P-value could be due to the fact that Finland's GDP has not been volatile enough, but has been staying steady.

4.2. The relation between Leverage and variables.

Stock Exchange was used as a dummy variable to find the difference between Nasdaq Helsinki's and Nasdaq First North's leverage levels. Regression models show that companies listed in First North have more liabilities, and especially more current liabilities than companies listed on Nasdaq Helsinki. On the other hand, companies in the First North exchange have less non-current liabilities than Nasdaq Helsinki companies. The fact that First North companies use more leverage could be explained by the fact that First North companies are small companies trying to use leverage to grow their business and compete with others, and eventually gain access to the Nasdaq Helsinki. According to Brealy, Myers and Allen (2010), firms may grow rapidly in the short term by relying on debt financing. Since First North companies' primary goal is to access the main market, they sacrifice the long term gains by trying to grow rapidly. This could be the reason why First North companies have less non-current liabilities. The results support the Pecking order theory. According to the theory, high growing firms with low free cash flow have higher leverage ratios. The First North companies higher leverage ratios can also be a result of the industries companies operate at. Nasdaq Helsinki contains companies from all industries, but the First North mostly contains companies from industries that have higher than average leverage ratios. As mentioned before in the thesis, companies in industries in which the median firm has higher leverage tend to have higher leverage.

When using Total Liabilities divided by Total Assets and Non-Current Liabilities divided by Total Liabilities as dependant variable, Return on equity has a negative coefficient. This supports the Pecking order theory, which states that more profitable companies tend to use less financial leverage. The relation between Current Liabilities divided by Total Liabilities and Return on equity, on the other hand, is positive. It could be explained by the fact that short-term debt impacts profitability through better monitoring and control, or by allowing greater flexibility to exploit investment opportunities (Baum;Schäfer;& Talavera, 2007).

Total assets were used as a size variable. Size and total leverage had a positive relationship. Total assets were used as a size variable. Size´s relationship with leverage was positive. However, the coefficient founded was smaller than in most of the previous studies conducted in other countries. According to the Pecking order Theory, larger companies should have higher leverage ratios than smaller. This theses' result together with Avelin´s (2005) study, indicate that in Finland size does not seem to affect the capital structure as much as in other countries. Size of the company also did not have a big impact on the structure of liabilities.

Tangible Assets share of Total Assets had a negative coefficient when Total Liabilities divided by Total Assets and Non-current Liabilities divided by Total Liabilities were used as the dependant variable. According to Rajan and Zingales (1995), Firms with high ratios of fixed assets to total assets have higher debt ratios, which would support the Trade-off Theory. This theses regressions are showing opposite results. Only when Current Liabilities divided by Total Liabilities was used as a dependant positive coefficient was found as in Rajan's and Zingales' (1995) research. The negative relationship between leverage and tangible assets was not expected. The tangible asset effect on the capital structure could be a potential topic for further research. Research conducted by Avelin (2005) and Aalto (2017) on Finnish companies got the same result on tangible assets and leverages relationship. The result could be due to the fact that a relatively significant share of Finnish stock companies is operating in the technology sector. Technology sector companies operations do not need as much tangible assets as other industries. Still, without tangible assets, Technology companies can issue debt, since they do not need tangible assets for collateral. Companies with more tangible assets have a more significant share of current liabilities of total liabilities.

In all regression model industry average had the most robust coefficient. It supports earlier studies where similar results have been found. Also, the Trade-off theory states that optimal leverage ratio

changes from industry to industry. According to the data Construction and Materials industry have the highest leverage ratios, and Food and Beverages have the lowest. However, when researching the structure of the debt Technology sector has the largest Current Liabilities divided by Total Liabilities ratio, and Basic resources have the lowest.

GDP Growth was the only variable that had a P-value over 0.05, meaning that the is only little or no evidence that state of the economy measured as a GDP Growth is affecting the amount of financial leverage for companies. Also, the GDP growth's coefficient was close to zero for every model. According to Brealey, Myers, and Allen (2017), companies tend to use more leverage when the economy seems to be strong and less during the recession. Nevertheless, as stated before, the volatility of Finland's GDP Growth was probably not enough to affect the leverage levels.

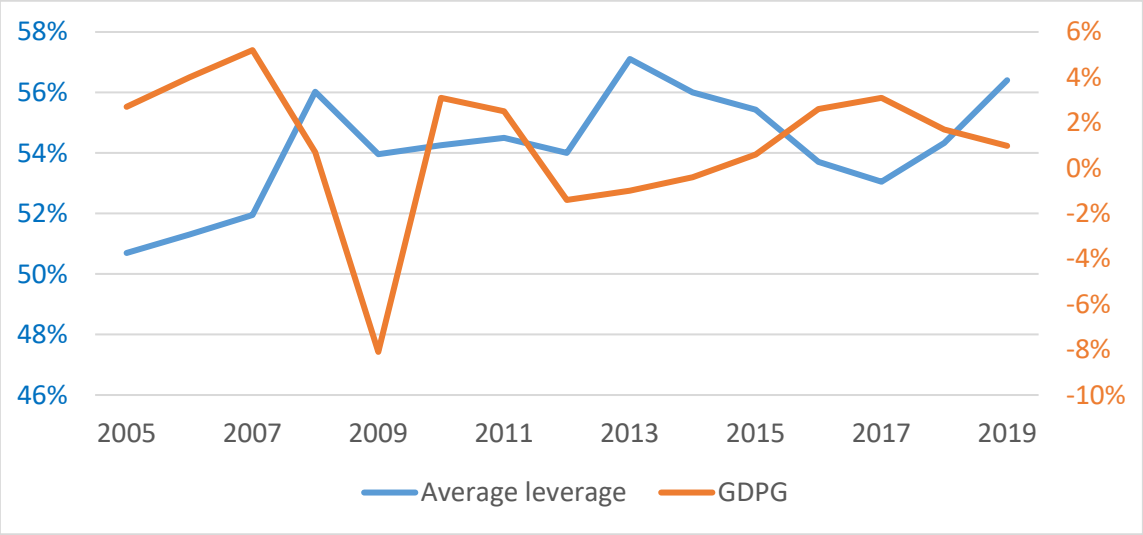

Figure 2. Average leverage and GDP Growth 2005-2019.

It can also be seen from the graph that leverage does not seem to be directly affected by GDP Growth. Some other variable to represent the state of the economy could produce significant results. For example, interest rate or expected inflation should be used.

4.3. Result of hypotheses.

The first hypothesis stated that companies listed on First North use less financial leverage than Companies listed on Nasdaq Helsinki. To test this hypothesis dummy variable was used, by giving companies traded at the Nasdaq First North value of 1 and value 0 to the companies traded at Nasdaq Helsinki. To accept the hypotheses, a positive relationship between the dummy variable and financial leverage should be found. Model using Total Liabilities divided by Total Assets as a dependant supports the hypotheses. Variables have a positive relationship at a significance of 5 percent. By examining the results of the other two regression analyses, it can be noticed that the structure of liabilities is also different between the markets. First North companies rely on current liabilities more.

The second hypothesis, stating that there is a negative relation between financial leverage and companies' financial performance measures as Return on Equity, is supported. Total Liabilities divided by Total Assets and Return on equity has a negative relation at a significance level of 1 percent. This supports the Pecking order theory, which states that profitable companies do not need to rely on external financing. When examining the structure of leverage more, we notice that Return on equity has a positive relation with Current Liabilities divided by Total Liabilities, and negative with Non-Current Liabilities divided by Total Liabilities. Further research would find is profitability increasing the amount of current liabilities or decreasing the amount of non-current liabilities, or both.

The third hypothesis, stating that there is a positive relation between the financial leverage and the size of the company, is supported. Financial Leverage and Total Assets has a positive coefficient at a significance level of 5 percent. This supports the Trade-off theory.

The fourth hypothesis, stating that there is a positive relation between GDP growth and financial leverage, is supported. However, the coefficient is not statistically significant, since the P-value of the GDP Growth variable is around 0,13.

The fifth hypothesis stated that there is a positive relation between Tangible assets and financial leverage. The hypothesis is rejected by a significance of 5 percent. Share of tangible assets had a coefficient of -0,113 in the regression. Similar results have been founded from earlier studies focusing on Finnish companies. When examining the structure of liabilities, it can be noticed that

companies with more tangible assets have more current liabilities. Results for all hypothesis are summarized in the table below.

Table 6 Hypotheses and results summary

Hypothesis	**Result**
Hypothesis 1: Companies listed on Nasdaq First North use less financial leverage than companies listed on Nasdaq Helsinki.	Rejected by 5 percent-level
Hypothesis 2: There is a negative relation between financial leverage and companies' performance measured as return on equity.	Supported by 1 percent-level
Hypothesis 3: There is a positive relation between financial leverage and the size of the company.	Supported by 5 percent-level.
Hypothesis 4: There is a positive relation between Tangible assets and financial leverage.	Rejected by 5 percent-level
Hypothesis 5: There is a positive relation between GDP Growth and financial leverage.	Supported by 16 percent level

5. CONCLUSION

The primary motivation for choosing this topic was that prior studies on leverage determinants had yielded mixed results in different countries. Previous studies about Finnish companies also have not paid much attention to the First North companies, which is the market place meant for smaller fast-growing companies. Because of the mixed results from different countries, it is important to study the capital structure determinants also in the Finnish context. The purpose of the thesis was to investigate the variables that affect financial leverage ratios. This was done in the Finnish context using companies from Nasdaq Helsinki and Nasdaq First North. To do this, a sample including as many companies as possible, excluding the financial sector, was analyzed with multivariate regression models.

Three different financial leverage ratios were used as dependent variables. Leverage was measured as Total Liabilities divided by Total Assets, and to analyze the structure of liabilities Current Liabilities divided by Total Liabilities and Non-Current Liabilities divided by Total Liabilities were used. Six variables were used as independent variables to represent Profitability, Size, Structure of assets, Economy, Industry, and Stock Exchange.

Three regression models results were analyzed, and some conclusion was made. The first hypothesis stated that companies listed on Nasdaq First North use less financial leverage than companies listed on Nasdaq Helsinki was rejected. Results show that First North companies, which are smaller than average Nasdaq Helsinki companies, use more leverage. This does not fit to the Trade-off theory, stating that larger companies use more leverage. As mentioned before, in the results section, the result could be due to the meaning of the First North market. The First North is meant to be a springboard to the main market for rapidly growing companies. The results support the Pecking order theory, which mentions that high growing firms with low free cash flow have higher leverage ratios.

As pecking order theory suggests, profitability and leverage ratios were negatively related, so the second hypothesis was accepted. More profitable companies use less leverage, as they prefer internal financing. More profitable companies also rely more on short term financing. Similar results have been found from Germany, in research conducted by Baum, Schäfer and Talavera (2007). According to the authors, this can be explained by the signalling theory, which states that the issuance of short-term debt is a positive signal of the firm’s low credit risk.

The third hypothesis, stating that there is positive relation financial leverage and size of the company, is accepted. However, sizes coefficient was close to zero in all regression models. This means that size' economic effect on leverage is very small. Size also did not have a great effect on the structure of liabilities. This finding differs from the result found from other researches conducted in other countries. The reason for this could be a possible topic for further research. This kind of result is most likely due to the differences between Finland and other countries. Smaller companies also do not have similar access to leverage as bigger companies. This could increase the cost of leverage and thus increase liabilities of the company, even though the company uses less leverage than a larger company with better credit terms.

Fourth hypothesis, stating that there is a positive relation between Tangible assets and financial leverage, was also rejected. Structure of assets in Finnish companies also seems to have an opposite effect to leverage, than in other countries. A positive relationship was expected, like in a study conducted by Rajan and Zingales (1995). However, this theses' results with studies by Aalto (2017) and Avelin (2005) all show that tangible assets are negatively related to leverage. This result does not fit in any theories. Reason for this kind of relationship could be the fact that a significant share of Finnish companies on the stock market are technology companies, with a low level of tangible assets.

The relation between GDP growth and Liabilities was statistically insignificant. This means that the fifth hypothesis, stating that there is a positive relationship between GDP Growth and financial leverage, was no accepted. Thus, we cannot make any conclusion on it. The reason behind this kind of result is that the Finnish economy has not variated enough. After the crisis in 2008, the Finnish GDP did not grow as fast as in other countries. To investigate the effect of the economy on leverage, a more extended time period should be used

Both the Trade-off theory and the Pecking order theory failed to explain the capital structure of Finnish companies. Pecking order theory can explain the results for profitability and stock exchange, but all other variables did not fit the theories. This is why the capital structure determinants should be researched in every country separately. Results vary from country to country due to institutional factors.

These thesis results can be used to understand the Finnish company's capital structure better, and therefore evaluate the decisions company makes. Results show that theories can not always explain the real world. It is hard to compare which theory is the best in which case, since multiple theories can be correct at the same time, and capital structure decisions can be interpreted by using different theories. Companies could use these results to understand the impact their capital structure has on profitability, and what variables affect their capital structure. According to this, theses' results managers should focus most on the industry they are operating in and finding an optimal assets structure, since those are the variables with the most significant effect on capital structure. From an investor's perspective, it looks like the use of financial leverage is a negative thing, since there is a negative relationship between return on equity and leverage. However, this is not always the case; investors should remember that high growing companies with low free cash flow have higher leverage ratios.

5.1 Limitations and suggestions for further research

One of the limitations of the study is that financial companies were excluded. In further studies, a separate analysis should be conducted for financial companies to understand the whole capital structure puzzle. Also, the fact that no significant results for Gross Domestic Product Growth and Liabilities relation were not gotten was a limitation. As mentioned before in the thesis, the fact that researches on capital structure deliberately use different approaches and regression models; it makes the results harder to compare.

Although this study provides some insights into the Finnish companies' capital structure, there is still a lot to do before the capital structure puzzle is understood. Since neither, the Pecking order theory or Trade-off theory was not able to explain the capital structure of Finnish companies, additional theories and variables should be used. For further research, the author suggests that researchers should focus on specific company size or companies operating in a specific industry. Also, trying to why the share of tangible assets of total assets had opposite relation than previous studies. The Stock Exchange variable also had an opposite relation than what was expected, and this could also be an exciting research topic. Further research could focus only on the Nasdaq First North companies since they are often left out when researching Finnish stock companies

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