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Market Timing and Capital Structure

Evidence from the Nordic market

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PREFACE

This Master thesis is written at the end of the Master program in Corporate and Financial Management. The subject at hand concerns decision making that must be based on some specialized skills and knowledge's; however the subject also embraces absolutely all aspects of a firm and its environment. The demand to narrow down the investigation to some significant specifics has been crucial.

The subject can easily broaden towards behavioral or even philosophical matters and these aspects are left to the business leaders to manage.

However the knowledge to support this decision-making is as important as ever and even more so when the internationalization of competition for production and innovation develops as rapidly as the global financial markets.

Recent history shows that the fundamentals persists and we are pleased to identify that no strong signs of market timing can be found at the larger firms at the Nordic market.

We like to express our gratitude towards our supervisor Prof. Lars Oxelheim whom also has been kind enough to give us a glance of the world of international research and science. We also like to express our gratitude to Marcus Thorsheim for advice throughout this period.

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ABSTRACT

- Title:** Market Timing and Capital Structure: Evidence from the Nordic Market
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- Advisor:** Lars Oxelheim
- Key words:** Equity Market timing, Capital Structures, D/E, Debt, Equity, Baker and Wurgler, Nordic Market
- Purpose:** Testing the generality of the Market Timing Theory on in many aspects specific the Nordic market.
- Methodology:** Panel regression with leverage as the dependent variable. The timing measure used to measure market timing is External Finance Weighted Average Market-to-Book ratio, control variables are also added to control for the effect of size, profitability and tangibility on capital structure.
- Theoretical perspectives:** Market Timing Theory, Pecking Order, Tradeoff Theory, Management Entrenchment, Agency Cost
- Empirical Foundation:** Inconclusive results from the established panel data regression utilized. Market-to- book is not significantly correlated with net equity issues hence not supporting equity market timing.
- Conclusions:** Concerning large companies within the Nordic region significant and conclusive support for the Market Timing Theory has not been found. Other forces are likely to out power market timing in importance, such as ownership structures and investor relations.

TABLE OF CONTENT

PREFACE.....	I
ABSTRACT	II
TABLE OF CONTENT	III
1. INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 PROBLEM DISCUSSION	2
1.3 PURPOSE	5
1.4 RESEARCH QUESTION	5
1.5 DELIMITATIONS.....	5
1.6 THESIS OUTLINE	6
2. THEORY	7
2.1 THEORETICAL FRAMEWORK	7
2.1.1 <i>Market Timing Theory</i>	8
2.1.2 <i>Miller and Modigliani</i>	9
2.1.3 <i>The tradeoff theory</i>	9
2.1.4 <i>Related Theories</i>	9
2.1.5 <i>Pecking order theory</i>	11
2.1.6 <i>The Managerial Entrenchment Theory</i>	12
2.2 EARLIER STUDIES OF MARKET TIMING	12
3. METHOD.....	14
3.1 RESEARCH APPROACH.....	14
3.2 DATA SAMPLE	14
3.3 REGRESSION MODEL.....	16
3.3.1 <i>Fixed effects model</i>	17
3.4 VARIABLES	18
3.4.1 <i>Dependent Variables</i>	18
3.4.2 <i>Independent variables</i>	19
3.4.3 <i>Control Variables</i>	20
3.5 COMMENTS ON THE REGRESSION MODELS.....	21
3.6 METHODOLOGICAL PROBLEMS.....	21
3.6.1 <i>Reliability</i>	22
3.6.2 <i>Validity</i>	22
3.7 METHODOLOGIES USED IN PREVIOUS RESEARCH.....	23
4. EMPIRICAL FINDINGS	25
4.1 DESCRIPTIVE STATISTICS.....	25
4.2 CORRELATION	26
4.3 MARKET-TO-BOOK'S EFFECT ON CAPITAL STRUCTURE.....	27

4.3.1	<i>Excluding EFWAMB</i>	27
4.3.2	<i>Including EFWAMB</i>	30
5.	ANALYSIS AND DISCUSSION	34
5.1	MARKET TIMING	34
5.2	NORDIC MARKET.....	35
5.3	MATURITY, TIME DYNAMICS AND SIZE.....	37
5.3.1	<i>Maturity</i>	37
5.3.2	<i>Time dynamics</i>	37
5.3.3	<i>Size</i>	39
6.	CONCLUSIONS	41
6.1.1	<i>Implications investors, owners and top management. Fel! Bokmärket är inte definierat.</i>	
6.2	FURTHER RESEARCH	42
7.	REFERENCES	44
8.	APPENDIX	47
8.1	APPENDIX I	47
8.2	APPENDIX II	48

1. INTRODUCTION

In this introductory chapter the background of the subject is presented in order to discuss the problem at hand leading up to the purpose of this thesis.

1.1 Background

Capital structures are a vital area under discussion for companies since the cost of financing is fundamental for the company's ability to be competitive. The cost of debt and cost of equity does not follow the same patterns and the implication thereof affects the firms cost of capital, maneuverability and risk profile, including both distress risk and take-over risks. Linked to the subject are also ownership structures and value creation for shareholders given the diversification between the residual claimants and debt-holders.

“How do firms choose their capital structures?” Again, the answer is, “we don't know.” // “we know very little about capital structure.

We do not know how firms choose the debt, equity or hybrid securities they issue.”

Stewart C. Myers (1984) p. 575

Back in 1984 this was stated by S. Myers who where then the president of the American Finance Association. The same year he published a paper together with N. Majluf that is considered the major development of the Pecking order theory (Myers and Majluf 1984). The Pecking order together with the Tradeoff theory are well established regarding capital structure choices, however there is a more modern addition that has recently found its way to the text books. This theory attempts to answer the question by stating that; *“capital structure is a cumulative outcome of past attempts to time the equity market.”* Baker and Wurgler (2002, p 1) The founders of this theory called the Market Timing Theory are Malcolm

Baker and Jeffrey Wurgler through the article “*Market Timing and Capital Structure*” that were published in 2002. Focus of the theory is the markets valuation of the company relative to management’s view of the firm’s intrinsic value hence the company is inclined to issue equity when it is highly valued. This is why the market-to-book ratio will be a key indicator in the intriguing statistical findings that will follow in this thesis. The general market condition when a firm search for financing can affect the capital structure outcome hence leading to different capital structure outcome regarded as optimal for similar firms. The market conditions at hand are popularly referred to as “hot” or “cold” equity respectively debt markets. Generally market timing is the possibility to arbitrage from mispricing at the market by sale or purchase of any financial asset at the right point in time. Focus of this thesis as in the original work by Baker and Wurgler is narrowed down to market timing of *equity*.

The founders, Baker and Wurgler (2002), presented their theory with evidence from US firms. The theory has been tested with evidence from the G-7 countries (Mahajan and Tartaroglu 2007), Dutch firms (Bie and Haan 2007), Shenzhen, China firms (Tian, Shao and Luo 2008) and further evidence from US firms (Elliott, Koeter-Kant and Warr 2007). Notably these investigations have been recently published indicating that this defines the scientific border of today. Consensus states that on short term market timing effects can be proven, however the long term persistency differs considerably.

1.2 Problem discussion

The subject of capital structures has been highly debated for decades and hence the vast amount of papers supporting different details of the established theories that can be found. However the Market Timing Theory is fairly modern and less investigated. In this thesis we do not attempt to find a universal answer to S. Myers question on how firms choose their capital structure, nor did Baker and

Wurgler. They recognize all established forces that simultaneously affect a company's capital structure as valid, but they found proof of that the Market Timing *out powered* them in impact and importance regards their sample of US firms.

Miller and Modigliani initiated the debate in 1958 by presenting a static and partial equilibrium analysis with the assumption of, more or less, perfect markets. They made these drastic simplifications to “*come to grips with the problem at all*” Miller and Modigliani (1958 p. 29). They encouraged other researchers to follow them in investigating the field in the direction of greater realism and relevance. The past 52 years many researchers have taken up on the challenge and areas of specific interest to bring in to the matter are plenty. To begin with, the different political agendas and regional circumstances effect the regulations and control applied to the market. The Nordic region, which is at the focus of this thesis, has its history and a number of characteristics, i.e. industries, ownership structures, bank spheres, proportion of large firms and its maturity profile as well as governmental monetary policies (Oxelheim and Forssbaeck 2003). Compared to previous research conducted on especially the US market these characteristics differ quite dramatically. The ownership structures in US are generally highly dispersed in opposition to the often concentrated ownership that exists in the Nordic region. The strong connection between ownership structures and capital structures emphasize the vast potential contribution of an investigation of this geographic area. Another central difference to earlier studies of market timing in the US is the presence of bank spheres in the Nordic market. This fact adds influence to the debt holders and hence affecting the capital structure in ways that not will occur in countries with weaker banks. (Clarke 2007)

These variations in-between regions previously investigated regarding market timing makes the Nordic region interesting in the sense that the generality of market timing can be further tested and the knowledge of what contributes to the

capital structure outcome within the regions increased. The tribute aimed for is to investigate to what extent Market Timing does *out power* other forces, as regards a sample of Nordic firms, – or not.

A brief political and financial overview of the region shows that Sweden and Denmark are members of EU but not of the EMU, Norway and Iceland, are not members in either one. Finland is a member of both EU and EMU. The possibility to access international cost of capital regarding both debt and equity during the time span of this investigation is however provided by the financial markets and is affected but not decided or controlled by politics. Even so the relevancy of investigating markets separately are enhanced by some of the conclusions found in Oxelheim and Whilborg (2008) where it is stated that there is not yet one single European money market, and path dependency and historical lock in effects still prevail. Furthermore the EMU countries are found to show as much diversity in these monetary aspects in-between themselves as relative to non EMU countries and that the repo and short term securities markets remains fragmented. These realities, together with the ownership structures, bank spheres, size and maturity of firms in the sample highlight the importance of taking the specifics of the region investigated into account when analyzing the results from the research executed. Since the subject of capital structure is very broad by nature the value added by our investigation is increased by focusing on larger firms. The dynamics, processes and organization are harmonized within the sample by the legislative demands in accounting and investor relations put on listed firms.

To our knowledge this investigation has not before been sufficiently done at the Nordic market. The identification of where the scientific border rests today is fairly straight forward since the utilization of the Market Timing Theory is consistent and the methodology adequately similar.

1.3 Purpose

The Nordic region has its particular identity, just as previously investigated markets, such as the G7, US and Shenzhen. Investigating the existence of equity market timing in this area tests the ability to generalize the concept of the Market Timing Theory to different contexts.

This insight will contribute to the understanding of what affects the capital structure of Nordic companies which can be beneficiary to numerous stakeholders besides investors, owners and top management.

1.4 Research question

With the intention of fulfilling the purpose of this thesis the first question that needs an answer is whether evidence could be found supporting the Market Timing Theory at large Nordic firms. If such evidence exists, is it persistent over time or is the effect only short term? What conclusions can be drawn in relation to underlying explanations for the results?

1.5 Delimitations

This thesis is limited to three Nordic countries; Denmark, Finland and Sweden. Because of the collapse of Iceland's banking system during the recent financial crisis (The Economist 2008) no Icelandic firms are part of the sample, since that could potentially cause adverse effects in the results. Notably is that before this crisis Island were excluded from most research due to their then young financial market. There are no Norwegian companies listed at the OMX, furthermore the Norwegian oil fund is somewhat extreme and so are the economics of Norway, and thereby they are excluded.

Additional limitations are the exclusion of small and medium sized companies. As previously mentioned this investigation is interested in market timing of large

firms. This focus also makes it possible to verify the data used in the investigation from several sources, since the availability and consistency in reporting is more developed for larger firms. Smaller firms are also to a larger extent inclined to have entrepreneurial management to potentially disturbing our analyze in agency related issues, further more the priorities regarding the owner can affect the aspects of the tax shield. (Berk and DeMarzo 2007)

1.6 Thesis outline

The disposition of the thesis is as follows; in the second chapter the relevant theoretical framework is presented with focus on the prevailing theories of capital structure. The third chapter will describe the methodology and potential problems of the investigation. The sample will be presented together with explanations of the statistical models and the variables used. The forth chapter includes the empirical findings of the investigation conducted together with some descriptive statistics and a correlation matrix. Chapter five contains the analysis of the empirical findings with the theories presented in the second chapter used as a framework. The last chapter will conclude the thesis and in addition to that give some suggestions on future research.

2. THEORY

This chapter presents the theoretical framework and the motive is to understand the factors affecting the capital structure of the firm as well as the different effects it has on the standing of the firm.

2.1 Theoretical Framework

The supporting theories chosen were utilized in the original Market Timing Theory work of Baker and Wurgler (2002). Furthermore their followers have established these supporting theories as they are used in all the other published studies of market timing. Consensus is reached regarding the theories from Miller and Modigliani as well as the pecking order and the tradeoff theory as a necessary framework to visualize the effects of market timing. The research in the field of corporate financials regarding capital structures utilize these theories to sort out and position almost every offspring or aspect thereof that they look into. One major challenge is that since every researcher build and support their own contribution with a selection of other reports and fragments thereof the importance of being critical to this selection and to our own has been immense. The managerial entrenchment theory is highlighted in Baker and Wurgler's investigation and therefore a natural part in this paper in order to achieve a coherent framework. Furthermore; many aspects, results and economic observable facts can be interpreted and positioned both under the pecking order as well as in the tradeoff theory. The theoretical research time span embraced goes from 1958 up till this day and hence presenting a selection of more than 50 years of research.

2.1.1 Market Timing Theory

The Market Timing Hypothesis was presented by Baker and Wurgler (2002). This corporate finance theory has behavioral finance influences and is based on the assumption that the company selects the financing that is regarded most cost efficient at the point in time capital is needed. When the market-to-book value is high the management is inclined to issue new stocks. When the market-to-book value is low repurchasing of stocks are regarded more favorable. The capital structure is thus an accumulated result of earlier attempts to utilize arbitrage possibilities at the market. Baker and Wurgler's research results are that market timing has a large and persistent effect on US companies. Capital structures in the year 2000 is found to be depending on variations of market to book ratios in 1990 and earlier and the impact found has a half life exceeding 10 years. If the assumption is made that the company issues equity in perfect correlation with good news presented, then there would be no asymmetry but Baker and Wurgler believes in an irrational behavior giving arbitrary potential for management. The results are significantly interesting but are only the first part, the second just as thorough part is how Baker and Wurgler presents and interprets their result. They use the tradeoff, pecking order and managerial entrenchment theories to do this. And mostly so to identify whether there is an optimal capital structure for the firm to aim at over time. They find that; yes the tradeoff theory assumes a optimal level but the cost of deviation is small and the cost of adjustment high. Regarding the pecking order; no, there is no optimal capital structure hence the cost of deviation is found negligible. Managerial entrenchment is identified but the effects non decisive so; no optimum is found.

Baker and Wurgler conclude that the market timing hypothesis is the dominating force overpowering all other theories in impact and importance.

2.1.2 Miller and Modigliani

Miller and Modigliani stirred things up in the late fifties and an intense capital structure debate was initiated that is still very much alive. They demonstrated that in a perfect capital market the capital structure per se does not affect the value of the company (Miller and Modigliani 1958). Later they enhanced these thoughts when they published a paper taking the taxes and the tax shield into account and the benefits of debt financing is strengthened. This implies that the equilibrium point is adjusted but the authors also recognize that “real world problems of financial strategy” must be taken into consideration. (Miller and Modigliani 1963) In 1977 Miller publishes a paper still maintaining that “the value of the firm, in equilibrium, will be independent of its capital structure.” Bankruptcy cost and agency cost, that actually was already mentioned in the paper of 1958, are still considered small relative to the tax savings they are balancing. (Miller 1977)

2.1.3 The tradeoff theory

The tradeoff theory indicates that there is an optimal capital structure to be found by weighting the pros and cons of increased debt; foremost by weighting the value of an increased tax shield to the risk of distress costs. The risk of distress increases very little when the leverage increases at low levels hence presenting an attractive option. With higher leverage the risk accelerates until an optimum tradeoff level is reached, as mentioned by Miller (1977). The tradeoff theory embraces numerous theories regarding all aspects of different debt levels. Under this umbrella we find several other theories that potentially can explain costs and exposures that affect the optimum debt level of the firm.

2.1.4 Related Theories

Jensen and Meckling (1976, p 72) states that “*agency costs are as real as any other costs.*” But they remain on the positive side concluding that the normative problems and incentives needed to find a prosperous equilibrium will be solved in

a tradeoff manner between the manager (i.e. agent) and the outside debt and equity holders (i.e. principals). The importance agency conflict has on capital structure is now widely accepted and in the area of corporate governance this subject is a highly contemporary. (Clarke 2007)

In the article “*Separation of Ownership and Control*” Fama and Jensen (1983) are mapping the decision process and monitoring challenge when the residual claimant and residual risk bearer are separated from management so that the decision management is separated from the decision control. The interplay between managers, owners and board members is expressed in who has the right to “fire and hire”. The amount of residual risk bearer in a dispersed firm put high demand on the control systems. The stock market is though presented as a unique monitoring device that puts pressure on the corporate decision process towards the interest of the residual claimant. The stock market is regarded in itself a unique external monitoring device that foremost work in the interest of the residual claimants by the immediate price signaling enabled due to the low cost and high speed of pricing and transferring. In the absence of an entrepreneurial decision maker an alternative decision system is needed but the benefits of getting access to expert knowledge of the right kind at every specific moment in time is regarded greater than the agency costs generated.

To get a broader picture of the global factors affecting capital structures Rajan and Zingales (1995) contributes by comparing debt levels, ownership structures and market-to-book ratios between countries. They confirm that the takeover risk which is a strong determinant for choice of capital structure in the US is not an issue in Europe. And that the strong shareholder representation of the boards in Europe should mitigate agency costs. They find that the proportion of debt is increasing with size in all countries within G7 except for Germany. “*In The Theory of Capital Structure*” by Harris and Raviv (1991p 342-349) a broad and comprehensive presentation of all empirical evidence up to that date is given.

2.1.5 Pecking order theory

This theory claims that the firms preferred order of financing is first internal then loan and last issuing of new stocks, i.e. organic through retained earnings, leverage and lastly issuing equity. The theory was initiated by Donaldson (1961) and the formation of the theory is accredited Myers (1984). Myers starting point refers back to the theories of Miller and Modigliani (1958, 1963, 1977) and Black (1976) “*The Dividend Puzzle*” The target dividend ratios are specified to match the investment opportunities of the firm even though dividends have a strong signaling effect and a “sticky” character. According to this theory the debt to equity proportions does not have a target level since equity is both at the beginning and the end in the pecking order; since the first equity is internal and the last choice is also equity but externally received. In the middle is first debt and then convertible bonds or other types of hybrid securities. Myers (1984) remains critical since he has found many firms that issues equity when they easily could have received debt at investment grade interest rate. However, the clear majority of firms rely on internal finance to cover capital expenditure and debt to cover the majority of external finance. The importance of asymmetric information and the real option value of participation in potential positive NPV engagements is further developed by Myers in cooperation with Majluf in the same year (Myers and Majluf 1984). They include the issue of ownership concentration and the market for corporate control. They have the approach that every project with positive NPV should be engaged regardless of funding. The information asymmetry between managers and investors is assumed and management is acting in the interest of old shareholders. Investors are well aware of the situation with asymmetric information (Akerlöv 1970) due to the inside information possessed by the company, hence calculating with the assumption that the firm is issuing equity only as a last resource or at a point in time where the valuation of the firm is high. Besides other management restraining and ownership protecting benefits

of debt the monitoring effect is also important since the bank is an external actor who scrutinizes the security the company constitutes and is considered to have a strong signaling effect. (Ross 1977)

2.1.6 The Managerial Entrenchment Theory

Baker and Wurgler interprets this theory as managements possibility to entrench themselves by refusing debt and timing equity issuing while highly valued. Hence not restoring the capital structures to optimum, it this way also focusing on earnings management. In the original article by Zweibel (1996) they start off by the basic reasoning of pros with management having access to funds for good investments and cons that they can also commit to bad ones. The disciplinary role of debt that forces management to be efficient is mentioned as a way to mitigate the interesting proof found that managerial rather than shareholder optimum exists. Managements faces an alleged tradeoff between empire building and fear of default/take over. The managerial entrenchment and constraints of debt affected by the management's possibility to undo restraints initially imposed on them gives a further dynamic angle. Zweibel (1996)

The relation between the debt maturity profile and dividend payout can be used by the management to adjust the debt profile to fit their needs. The debt profile is commonly affected in M&A and LBO situations and the consolidated firm presents an often radical change in D/E profile pre to post the merger or acquisition (Gaughan 2007). This is as mentioned earlier of particular interest at the US market.

2.2 Earlier Studies of Market Timing

As described earlier Baker and Wurgler (2002) were the first to formulate the market timing theory of capital structure. They found that in the U.S the effect of

equity market timing on capital structure is significant not only in the short-term but also persistent over time.

There are other studies that do not find a long-lasting effect of market timing on capital structure. Kayhan and Titman (2007) confirms that leverage changes are consistent with the market timing theory, but unlike Baker and Wurgler they do not find a persistent effect on capital structure. In an examination of Dutch firms by Bie and Haan (2007) evidence of market timing is found but there is no long-lasting persistency of the effect. The same result is found in the Shenzhen market in the study by Tian, Shao and Luo (2008). Mahajan and Tartaroglu (2007) found that in all G-7 countries leverage of firms is negatively correlated to the historical market-to-book value, which is in line with the market timing theory. Like many others they are not convinced about the long-lasting effect of market timing.

Of special interest is the results found in the research paper by Högfeldt and Oborenko (2004) where Baker and Wurgler's approach is used concerning measure and time period on the Swedish market. The focus is although somewhat different since they are concentrating on the ownership distribution as an explanatory determinant for capital structure. The results are that market timing is not important to all Swedish firms and that a more likely explanation of capital structure is the enhanced pecking order where *“new equity (...) is issued only when internal equity and debt is insufficient while public offers are not used since compensating transfers from incumbents to external shareholders needed”* (Högfeldt and Oborenko 2004, 2).

3. METHOD

This chapter describes the methodology used when performing the research regarding collection of data as well as the processing of the chosen input data. At the end of this chapter an overview of the methodologies chosen in previously published studies from different geographical regions.

3.1 Research approach

Generally there exist two different research approaches one can choose, the quantitative and the qualitative approach (Bryman and Bell 2005). This thesis will use a quantitative approach when investigating the market timing effect on the Nordic market. The choice of a quantitative instead of a qualitative approach is made for several reasons, one of them are that previous researchers of market timing have used this approach, such as Baker and Wurgler (2002) and Mahajan and Tartaroglu (2007) etc. Using the same approach makes it possible to compare the results of this thesis with the results of previous work in the area. A quantitative approach is characterized by usage of large amounts of data and is often applied when testing theories (Bryman and Bell 2005), which is the purpose of this thesis. A qualitative approach is therefore not an appropriate method of conducting this type of study.

3.2 Data Sample

The sample used is derived from some specific criterions. The criterions are based on earlier research to make results more comparable but furthermore some criterions exist to stabilize and decrease possible adverse effects on the result due to outliers. Since the purpose of this thesis is to investigate the existence and persistence of market timing in large Nordic firms, the firms chosen must be listed

on The Nordic Exchange OMX Large Cap. The Nordic countries included are as stated in section 1.5 Sweden, Denmark and Finland.

Companies included in the sample must have been listed from 1998 until the end of 2009, in order to give a sample of ten years. This is because when calculating one of the variables the change in equity and change in debt for previous years is needed and therefore twelve years of observations is needed to create a sample of ten years. In other words, to investigate leverage over the years 2000-2009 explanatory variables derived from data beginning in 1998 are utilized. The concept of survivor bias is taken into consideration here, and worth mentioning is that there are no companies that are excluded due to unlisting.

The time period chosen will include data from the recent economic crisis. This type of data has a tendency to be noisy. To stabilize the regressions outliers has been excluded according to conditions specified regarding the variables in section 3.4. The character of the crisis is also considered to be of such form that the effect on the fairly homogeneous (considering size and origin) sample of firms is reasonably the same.

All banks and financial institutions are excluded from the sample, due to their capital structure largely being affected by regulations, for example Basel II (Finansinspektionen 2002:8). The countries remaining are fairly similar in many ways in its development and regard differences that are of particular interest to our investigation, especially regarding equity markets, is the development and presents of large multinational companies in Sweden. The other countries, Finland and Denmark have developed with a higher proportion of small and medium sized companies. When analyzing the results this bias is kept in mind.

After excluding the above mentioned firms 57 are still part of the sample. For more details about the sample see Appendix I.

The data needed to investigate the effect of market timing on large Nordic companies will be collected from the database DataStream.

3.3 Regression Model

In order to fulfill the purpose of this thesis regression has been used to test the significance between the variables presented below. The choice of using regression stems from earlier studies in this area (Baker and Wurgler 2002, Mahajan and Tartaroglu 2007). The regressions are done in two sections. In the first section the three determinants of annual changes in leverage are regressed against the explanatory variables to determine whether any potential effect of M/B on leverage indeed comes through net equity issues as the market timing theory implies. This will test if there exists a short term effect of market timing on leverage. For definitions of the different variables see section 3.4. The regression models tested in this first section are:

$$\text{Change in debt (d)} = \text{Net equity issues (e)} = \text{Change in retained earnings } (\Delta RE) = \alpha + \beta_1 M/B_i + \beta_2 \text{LogSales}_i + \beta_3 \text{PPE/TA}_i + \beta_4 \text{EBITDA/TA}_i + \varepsilon_i$$

In the second part of the regressions leverage is regressed against the previously mentioned explanatory variables and also a variable that summarize the relevant historical variation in market variations, EFWAMB (for definition see section 3.4.2). This is done in order to determine if a potential short term effect of market timing is rebalanced away quickly by managers or if the effect is more persistent. The regression is defined as follows:

$$\text{Leverage (Firm } i) = \alpha + \beta_1 M/B_i + \beta_2 \text{EFWAMB}_i + \beta_3 \text{LogSales}_i + \beta_4 \text{PPE/TA}_i + \beta_5 \text{EBITDA/TA}_i + \varepsilon_i$$

To compute the regressions in the thesis the statistical software E-views is used. There exist some drawbacks with E-views when working with unbalanced panel data, which will be presented when appropriate.

3.3.1 Fixed effects model

The structure of the data used in the regressions is unbalanced panel data. Some of the benefits of using panel data are that they contain more information and more degrees of freedom. When using panel data one must apply either a fixed effects model or a random effects model (Brooks 2002). When working with unbalanced panel data a random effects model is not possible to use in E-views (E-views User's guide II).

The choice of model in this thesis is two-way error component fixed effects, which is characterized by parts of the disturbances are assumed to be fixed parameters that are to be estimated and the rest of the error term is stochastic. The parts chosen to be kept fixed in the regressions is the period, which will account for any time specific effect that is not included in the regression and the cross-section (Baltagi 1995). During the sample period some time specific events occurred, such as the implementation of the IFRS framework which, among other aspects, involved separating intangible assets and goodwill when accounting for it. The area of goodwill accounting has been controversial hence this harmonization of regulation can be expected to alter the books of several companies. Due to the use of fixed period effects no other dummies will be used to test for the significance of the IFRS implementation, the effect of the extreme values on the stock market in 1999 or any other time specific event since they are already taken into account.

3.4 Variables

The selection of variables used is taken from earlier research in order to ensure comparable results. Control variables are also added that have been found to be correlated with leverage in several developed countries (Rajan and Zingales 1995). Earlier research uses two measures of leverage; book leverage and market leverage. Both explained in more detail below. The use of total assets as denominator in the variables is to make the observations more comparable between firms and years. For complete definitions of the variables see Appendix II.

3.4.1 Dependent Variables

First two measures of leverage is presented and after that the three components of change in leverage are presented which are used to test wherein a potential effect of over- and undervaluation lies by putting it into relation to the different determinants of change in leverage.

Book leverage: Book leverage is defined as book value of debt to total assets, where book value of debt is total assets less book value of equity. Firm-years observations where the book leverage is above one is excluded. (Baker and Wurgler 2002)

Market leverage: To calculate the market leverage the denominator is changed compared to book leverage in order to reflect the market value of assets. Market leverage is defined as book value of debt to total assets less book value of equity plus market value of equity. Market value of equity is defined as common shares outstanding times price. (Baker and Wurgler 2002)

Net equity issues (e): Calculated by subtracting change in retained earnings divided by total assets from change in book value of equity divided by total assets.

Book value of equity equals total assets less total liabilities and preferred stock plus deferred taxes and convertible debt. (Baker and Wurgler 2002)

Changes in retained earnings (ΔRE): Defined as the change in retained earnings divided by total assets (Baker and Wurgler 2002).

Net debt issues (d): Simply calculated as change in book value of debt divided by total assets (Baker and Wurgler 2002).

3.4.2 Independent variables

M/B: This ratio is often seen as a proxy of investment opportunities but may also be related to market mis-pricing of equity (Rajan and Zingales 1995). According to the market timing theory M/B should be negatively correlated with leverage and changes in equity. In accordance with Baker and Wurgler (2002) firm-years with an M/B ratio exceeding 10 will be dropped. This variable will also be used as a control variable for growth opportunities in the regression when the historic M/B measure is used to account for the effect of equity mis-pricing. (Baker and Wurgler 2002)

EFWAMB: To test the market timing hypothesis following Baker and Wurgler (2002) and Mahajan and Tartaroglu (2007) the *External Finance Weighted Average Market-to-Book* ratio is used. Defined by Baker & Wurgler as follows:

$$EFWAMB_{t-1} = \sum_{s=1}^{t-1} \frac{e_s + d_s}{\sum_{r=1}^{t-1} e_r + d_r} * \frac{M_s}{B_s}$$

where s and r equals the first year of that sample period and d is the difference in book debt. In line with Baker and Wurgler's procedure negative weights are set to zero for computational reasons and the maximum EFWAMB is set to ten with the aim of limiting a potential effect of outliers. Not allowing any negative weights will ensure that really a weighted average is created. This variable should take high values for firms that have raised external finance when the M/B ratio was

high and vice versa. If the hypothesis that firms consistently chose to issue equity when their M/B value is high is correct, EFWAMB should be negatively correlated to leverage. (Baker and Wurgler 2002)

3.4.3 Control Variables

In order to round out a benchmark a set of three control variables are added, which have been found to be correlated with leverage in several developed countries (Rajan and Zingales 1995). The variables also used to explain leverage are as following:

LogSales: The size of the company is potentially something that could influence their capital structure, for example are big companies more diversified and could hence be considered safer debt holders. The logarithm of sales is used as a proxy for size, in accordance with previous research. (Baker and Wurgler 2002, Mahajan and Tartaroglu 2007)

PPE/TA: This is a measure of tangibility which might be correlated to leverage since the more tangible assets a company owns the larger debt it should be able to hold. This is due to the fact that assets could serve as collateral and therefore decrease the agency cost of debt (Baker and Wurgler 2002, Rajan and Zingales 2007). As stated above the use of total assets as denominator is to enhance the comparability between different firms and years.

EBITDA/TA: Another factor that might be correlated with leverage is profitability, since it is associated with the availability of internal funds (Baker and Wurgler 2002). This would according to the pecking order theory be associated with less leverage (Myers 1984, Myers and Majluf 1984). EBITDA is also scaled with total assets to increase the comparability.

3.5 Comments on the regression models

To use OLS estimates in a linear model involves fulfillment of a specific set of assumptions. One of these assumptions is that the error term should be normally distributed. The Jarque-Bera test has been executed to test for normality (Brooks 2002), with the result of strong significance of the null hypothesis that normality in the disturbances exists in all regressions that is done in this investigation.

Another assumption made when using OLS estimation method is that the explanatory variables should not be correlated with each other. If they are multicollinearity will exist. This is tested and presented in a correlation matrix in section 4.2.

The statistical software used in this investigation has its limitations. The classical tests of heteroscedasticity is not possible to conduct when working with unbalanced panel data in E-views, instead White's (diagonal) heteroscedasticity-consistent standard error estimates has been used to correct for potential problems with heteroscedasticity (Brooks 2002).

3.6 Methodological Problems

The selection and handling of input data is one link in the chain. The processes within the "black box" of the software are another, which has to be just as thoroughly scrutinized. The result from the regressions can be cross checked to be statistically, mathematically and econometrically correct. However a line must be drawn regarding where and when the interpretation of the results is beginning to be effected by different scientific standpoints and where we shall draw the line between empirical findings and our analyze thereof.

3.6.1 Reliability

Reliability refers to the repeatability of the study that is conducted (Bryman and Bell 2005). Repeating the study made in this thesis is based on finding the same data and also using the same regression models. The data is collected from Datastream which is generally established as reliable. To double-check the accuracy of the numbers exported from this database, some cross-references are done comparing the data to annual reports and historical stock prices and finding the data to be correct. The study is made on large firms listed on OMX, which suggests a high accuracy in the numbers published. The regression models are explained in detail above and the handling of the data input and the settings in the software are executed according to several published articles within the field. The excluding of certain firm years with extreme values to avoid outliers has been done in accordance with the principles of the very same studies. The econometric methods employed are generally accepted.

3.6.2 Validity

The validity is a concept of accuracy in the measure. For a study to have high validity it should measure what it claims to measure correctly (Bryman and Bell 2005).

The fact that the methods employed are previously utilized in internationally published studies enables this study to attain a high validity. As stated in section 2.2 the timing measure utilized differs in the previous research. Baker and Wurgler (2002) use EFWAMB while others, such as Kayhan and Titman (2007), use a different measure. The choice to use EFWAMB is based on the goal of optimizing the comparability with Baker and Wurgler (2007). The correctness of the concept validity in this measure is further strengthened by the fact that it is also used by Mahajan and Tartaroglu (2007) as well as Bie and Haan (2007).

However the dual character of the measure M/B is something that is important to be aware of. One should always consider the possibility that a potential correlation between this measure and leverage might not be due to mis-pricing but rather due to growth opportunities. This also implies that the measure of historical market timing EFWAMB in extension do not measure market timing but rather historical opportunities to invest.

Using generally accepted significance levels increases the internal validity though establishment of causality between the dependent and independent variables (Bryman and Bell 2005). The external validity concerns the question whether the results are generalizable beyond the specific research context (Bryman and Bell 2005). In this study the restrictions of investigating only large Nordic firms might decrease the external validity to only being applicable to firms of similar size and in similar markets.

3.7 Methodologies used in previous research

As presented in section 2.2 there is not a consensus about the long-term persistency of the market timing effect on capital structure among the earlier research. To make matters even more complicated there exist two different types of measures of market timing as well. Baker and Wurgler (2002) together with Mahajan and Tartaroglu (2007), and Bie and Haan (2007) use EFWAMB as the timing measure. Kayhan and Titman (2007) instead develop other timing measures by dividing EFWAMB into two components; yearly timing and long-term timing. This thesis will use EFWAMB as timing measure since it is the most commonly used metric. For more information regarding EFWAMB as a timing measure see section 3.4.2.

Another difference between the studies of market timing is the time period. Baker and Wurgler use the IPO date as a starting point in the sample. Mahajan and Tartaroglu (2007) on the other hand use a fixed time period of ten years which

could be motivated by the fact that companies often tend to have a similar capital structure the first years following an IPO. This thesis will combine these two approaches and use Baker and Wurgler's (2002) measure of market timing, EFWAMB, together with Mahajan and Tartaroglu (2007) time perspective of a fixed period of ten years.

Leary and Roberts has published the article "*Do firms rebalance their capital structures?*" that further motivates the choice of a time series above one decade. Since shocks on leverage can have a persistent effect when firms are faced with adjustment costs and firms tend to make changes in capital structure relatively infrequently and in clusters. Equity issuance and equity price shocks are followed by a rebalance in leverage within two to four years. This adjustment cost optimization effect can be accounted for and mitigated within the time series.

Baker and Wurgler's (2002) method of using IPO dates as starting point has not been found suitable in our investigation since many of the large firms part of the sample has been around for a long time that their capital structure are affected by their maturity. Following Mahajan and Tartaroglu's (2007) time period choice of ten years makes it possible to minimize this effect. This also has the positive effect that all firms have been exposed to the same financial climate.

4. EMPIRICAL FINDINGS

In this chapter the empirical findings from the conducted study will be presented, including descriptive statistics, correlation matrix and the results from the regression analysis.

4.1 Descriptive Statistics

In order to give a foundation for understanding the regression analysis the variables included are presented below together with the basic data. The number of observations of the different variables varies due to the unbalanced panel structure.

Table 1 – Descriptive statistics

	Book leverage	Market leverage	e	d	ΔRE	M/B	EFWAMB	LogSales	PPE/TA	EBITDA/TA
Mean	0,58	0,53	-0,05	0,07	0,05	1,25	2,54	16,69	0,66	0,16
Median	0,58	0,53	-0,01	0,03	0,03	0,97	1,58	16,88	0,61	0,14
Std. Dev.	0,18	0,25	0,43	0,36	0,10	5,76	2,56	1,22	0,40	0,09
Observations	617	652	591	440	444	455	299	512	503	497

Comparing with previous studies one can conclude that the M/B mean value of 1,25 is lower than the values found by Mahajan and Tartaroglu (2007) that was in Germany 1,46 and UK 1,69. This difference might be explained by the fact that the sample only consist of large firms which allocate great resources to communicating with investors. This communication can lead to a more true valuation of the company by the market hence decreasing the mean value of the M/B ratio.

Another variable that differs from other research is the LogSales, which in this sample has a mean of 16,7. Comparing with Mahajan and Tartaroglu (2007)

values of around 12 to 13 it is obvious that there is a difference. This divergence is expected and explained by that LogSales is used as a proxy for size and in this thesis only large firms are included in the sample due to the research question.

Comparing the control variable PPE/TA, the tangibility proxy, to Mahajan and Tartaroglu (2007) results a large difference is discovered. Mahajan and Tartaroglu (2007) presents mean values for tangibility for firms from the G-7 countries that span from 20,2% to 45,2%. This could also be one effect of the sample only consisting of large firms, since their composition of property, plant and equipment and total assets may be different from other researchers' samples.

The profitability measure EBITDA/TA also differs from Mahajan and Tartaroglu (2007). In their international sample the mean values of profitability varies from 7,2 to 12,4 indicating that the large Nordic firms have higher profitability than firms from the G-7 countries. Notably here is that their time period is 1994-2005 and this thesis is focused on 1998-2009.

4.2 Correlation

Another important way of examining the variables is to test for potential multicollinearity which is done by producing a correlation matrix (Brooks 2002). As shown in Table 2 the correlation between the variables are highly acceptable and not indicating any collinearity.

Table 2 – Correlation matrix

	M/B	EFWAMB	LogSales	PPE/TA	EBITDA/TA
M/B	1				
EFWAMB	0,16	1			
LogSales	0,08	0,08	1		
PPE/TA	0,03	-0,01	-0,09	1	
EBITDA/TA	-0,09	0,16	-0,25	0,22	1

4.3 Market-to-book's effect on Capital Structure

4.3.1 Excluding EFWAMB

To examine the hypothesis that current M/B has an effect on firm leverage, with the ratio used as a measure for market mis-pricing and also growth opportunities, firstly regressions will be made not including the other market timing measure of historic M/B ratios. This could be seen as a test of the short-term effect of market timing on the capital structure. Thereafter the regression on the three determinants of change is presented.

	B	t	Prob.	Significance
c	1,563	4,115	0,000	***
M/B	0,032	7,507	0,000	***
LogSales	-0,069	-3,091	0,002	**
PPE/TA	0,189	3,961	0,000	***
EBITDA/TA	-0,213	-1,955	0,051	-
No. Obs.	466			
R-squared	0,71			
Adj. R-squared	0,67			

Table 3 - Book leverage

(where no significance is indicated by -, * sig. at 5% level, ** sig. at 1% level and *** sig. at 0,1% level)

In Table 3 the fixed effects regression with book leverage as the dependent variable and EFWAMB excluded is presented. Here one can see that the relationship between M/B and book leverage is highly significant, but according to the market timing theory this correlation should be negative. This inconclusive and important results will be further elaborated in section 4.3.2.

Just like in previous research the control variables are found significant. Except for EBITDA/TA, which in other studies have been found significant. See section 4.3.2 for a more detailed explanation on this matter.

	B	t	Prob.	Significance
c	2,218	4,800	0,000	***
M/B	0,000	-2,305	0,022	*
LogSales	-0,096	-3,552	0,000	***
PPE/TA	0,039	1,543	0,124	-
EBITDA/TA	-0,572	-4,191	0,000	***
No. Obs.	499			
R-squared	0,76			
Adj. R-squared	0,72			

Table 4 - Market leverage

In Table 4 the fixed effects regression with market leverage as the dependent variable and EFWAMB not included is presented. When running the regression with market leverage as the dependent variable M/B is again significant, but not negatively correlated which it should be according to the market timing theory.

In this regression the only control variable that is not significant is PPE/TA, and EBITDA/TA is highly significant which is different from the regression presented in Table 3. LogSales, used as a proxy for size, is negatively related to both types of leverage, the interpretation hence is that larger companies have lower leverage in this sample.

Regressing M/B on net equity issues will clarify whether the relationships between leverage and M/B are due to issuance of equity (which is proposed by the market timing theory) or if the explanation lies in changes in debt or retained earnings.

	B	t	Prob.	Significance
c	-0,928	-0,836	0,404	-
M/B	0,000	-0,920	0,358	-
LogSales	0,114	1,772	0,077	-
PPE/TA	-1,574	-7,381	0,000	***
EBITDA/TA	0,168	0,721	0,471	-
No. Obs.	489			
R-squared	0,65			
Adj. R-squared	0,60			

Table 5 - Net equity issues (e)

As presented in Table 5 no relationship is found between current M/B and net equity issues, indicating that in the Nordic area the prevailing M/B ratio has no bearing on firms' equity issuance decisions. In other words, since M/B is found correlated with book leverage, the effect of M/B on leverage is more likely to depend on changes in debt or retained earnings rather than issuance of equity. In turn this would indicate that in the Nordic context equity market timing does not exist.

Testing current M/B against change in retained earnings will demonstrate a positive correlation, see Table 6. This indicates that M/B affects leverage because it forecasts earnings, not due any mis-pricing by the market.

	B	t	Prob.	Significance
c	-0,052	-0,177	0,859	-
M/B	0,000	-2,009	0,045	*
LogSales	0,003	0,194	0,846	-
PPE/TA	0,040	1,839	0,067	-
EBITDA/TA	0,056	0,729	0,467	-
No. Obs.	521			
R-squared	0,31			
Adj. R-squared	0,21			

Table 6 - Change in retained earnings (ΔRE)

The fact that firms with high M/B on average have higher retained earnings might contaminate the historical M/B with the effects of earnings. This argument further reiterates that any relationship found between market leverage and EFWAMB is not attributable to attempts of market timing.

	B	t	Prob.	Significance
c	0,206	0,334	0,739	-
M/B	0,000	1,849	0,065	-
LogSales	-0,029	-0,805	0,421	-
PPE/TA	0,434	4,870	0,000	***
EBITDA/TA	0,302	2,447	0,015	*
No. Obs.	532			
R-squared	0,30			
Adj. R-squared	0,20			

Table 7 - Net debt issues (d)

For completeness the regression with net debt issues as dependent variable is also presented. The results imply that there is no significant relationship present between debt issues and M/B, but in accordance with the assumptions surrounding the control variables tangibility and profitability a positive relationship exist to debt issuance.

4.3.2 Including EFWAMB

Even though the initial results imply that short term market timing does not exist the effect of historic M/B ratios effect on leverage is investigated as to see if any long term connection can be found. Now the market timing measure EFWAMB is added to the regression. Current M/B is still included in the model only to control for growth opportunities, instead of bearing the dual role of measuring both market mis-pricing and growth opportunities (Baker and Wurgler 2002) (Mahajan and Tartaroglu 2007).

	B	t	Prob.	Significance
c	0,701	1,451	0,148	-
M/B	0,036	6,028	0,000	***
EFWAMB	-0,004	-1,171	0,243	-
LogSales	-0,019	-0,670	0,503	-
PPE/TA	0,243	4,536	0,000	***
EBITDA/TA	-0,296	-1,777	0,077	-
No. Obs.	342			
R-squared	0,73			
Adj. R-squared	0,67			

Table 8 - Book leverage including EFWAMB

M/B is just like in the regression without EFWAMB found highly significant but not negatively correlated as the market timing theory predicts. The important measure EFWAMB is not found to be correlated with book leverage. According to the market timing theory this measure should be negatively correlated with leverage.

	B	t	Prob.	Significance
c	1,321	2,666	0,008	**
M/B	0,001	1,779	0,076	-
EFWAMB	-0,011	-2,343	0,020	*
LogSales	-0,042	-1,458	0,146	-
PPE/TA	0,070	2,614	0,009	**
EBITDA/TA	-0,393	-2,190	0,029	*
No. Obs.	369			
R-squared	0,77			
Adj. R-squared	0,71			

Table 9 - Market leverage including EFWAMB

In Table 9 the regression with market leverage as the dependent variable and EFWAMB included is presented. EFWAMB should be seen as a measure of the persistency of any potential market timing effect.

A difference between the regressions with book leverage and market leverage is that in the latter the control variable EBITDA/TA is significant. Since book leverage is showed to not be significantly correlated with profitability and the only difference between book leverage and market leverage is the change from book equity to market equity as part of total assets in the denominator the answer has to be found in market equity. Profitability and market leverage is negatively correlated which would indicate that if profitability rises market leverage will decline due to the fact that market equity increases.

Common between the two regressions including EFWAMB is that LogSales is not significant. In the regression with market leverage as dependent variable and EFWAMB included as an explanatory variable only the two control variables PPE/TA and EBITDA/TA is significant.

In this regression (table 9) EFWAMB is significant at a 95% confidence interval, and the correlation is negative just as the market timing theory predicts. This means that EFWAMB is found to have a significant effect on market leverage but not book leverage. As stated earlier the only factor differentiating book leverage from market leverage is the fact that market equity is included in the denominator of the latter. When market value of equity is included then a dynamic arises that could support Baker and Wurgler's hypothesis of market timing.

	Excluding EFWAMB	Including EFWAMB
Book Leverage	M/B***	M/B*** and EFWAMB -
Market Leverage	M/B*	M/B - and EFWAMB *

Table 10 - Significance of M/B matrix

As seen in Table 10 the only time when M/B is not significant is when EFWAMB is included in the regression with book leverage as dependent variable. The role of

M/B in this regression is to measure growth opportunities and not market timing. This indicated that the static constitution of book leverage is not useful when analyzing market timing. The results are not in line with the theory of equity market timing, since there is no consistency as well as the change in leverage is previously shown to rest in change in retained earnings, not net equity issues.

5. ANALYSIS AND DISCUSSION

The results presented in the previous chapter will be analyzed and discussed in relation to the research question and the theories presented in second chapter.

5.1 Market timing

The fact that current M/B does not possess any explanatory power over large Nordic firms' issuance of equity (see Table 5) casts serious doubt on the interpretation power of EFWAMB as a measure of cumulative equity market timing attempts in the Nordic area. The underlying reasons for this will be further developed thorough out this chapter. Similar results have been found in Japan where Mahajan and Tartaroglu (2007) explains this by a slowdown in tapping the equity market which leads to a conclusion that the relationship between leverage and EFWAMB in Japan cannot be attributed to market timing.

When including current M/B in the regression, to control for growth opportunities, a positive correlation to book leverage is generated when EFWAMB is included. Baker and Wurgler (2002) refer to Rajan and Zingales (1995) for interpretation of the links and dependency of current M/B when accounting for growth opportunities. There is no clear theoretical explanation to the directions of correlation, and they admit that it is "puzzling".

Considering the inconclusive results EFWAMB cannot be considered an appropriate measure of equity market timing regarding large Nordic companies. The fact that the Nordic companies do not change their external equity related to M/B and that the market timing hypothesis is not valid is further interpreted by a observation of the specifics of this region and the character of the companies investigated.

5.2 *Nordic Market*

Baker and Wurgler's original work is executed at the US market that is well recognized as having a scattered ownership structures and immense number of banks. The explanation for our divergent results could be connected to our specific region. Bie and Haan (2007) uses regional (Dutch) differences to explain their deviation from the US market and they, together with Högfeltdt and Oborenko (2004) "*challenges the generality of the Baker and Wurglers market timing theory*" (Högfeltdt and Oborenko 2004, 25) Their findings strengthen our opinion that there are other aspects influencing capital structure decisions more heavily than market timing attempts when dealing with large Nordic firms.

If we view the local financial markets in a broader perspective we can start of by concluding that equity prices at given interest rates can be thought of as uncertainty about the market risk premium. Real and monetary chocks in the global markets will affect the interest rates, exchange rates, inflation and demand in the national economies of the Nordic market. This could be of certain interest due to the capital intense character of the industries in the sample. All countries in our investigation are regarded as policy takers in a global view. Even so they keep sovereign and somewhat independent economic policies, with central banks protecting their credibility. Regarding tariffs, trade and liberalization of regulations at equity markets the Nordic region must be regarded as fairly well globally integrated during our investigation period. As earlier stated the Nordic region has access to international cost of capital (Oxelheim and Forssbaeck 2003). These macroeconomic issues should therefore not be able to distort our analyze to any large extent.

Our focus is turned towards the structures of ownership, foremost in Swedish firms towards whom we have a bias in the sample. The specific and historical symbiosis between owners, industrialists and banks within the region is clear in

the case of the Wallenberg family; that besides being a dominant owner helped by strong voting power through their possession of dual class shares, also controls one of the largest banks, SEB. When observing the list of firms in Appendix I, several Stenbeck controlled firms can also be found and in the past history they have been supported by its close relationship with Handelsbanken, at times of unprofitable growth and other financial challenges (Andersson 2002).

The dual class shares could be expected to drive a wedge between new and old shareholder and this could be observed in the discount that investment firms are traded with and market for corporate control is noticeable through the premium paid to block holders (Clarke 2007). The pecking order would be enhanced by the increased ability to control internal equity with less ownership since dual class shares further separates ownership and control. This conclusion is also to some extent in accordance with the findings of Högfeldt and Oborenko (2004). The agency costs connected to separation of residual risk bearing and decision management is discussed by Fama and Jensen (1983) and a question often debated in the Nordic region, hence the presence and awareness of the issue. The dual class shares and concentration of ownership should milder costs of decision system since active ownership can be expected. This could reduce the value of a bank as an external monitoring entity and the signaling effect thereof. Zweibel (1996) expresses the benefit of debt since it is set *ex ante* to constrain the manager's investment decision however the dynamics of capital structures is that management still can alter it through recalling of debt and/or reduction of dividends prevails. This occurring within the firms at hand, without the board members i.e. owners knowing about it seems farfetched. Nevertheless we continue to search for explanations affected by the conditions at the Nordic market as well as general issues firstly the maturity of the firm and secondly the effects of time and finally the aspects of size.

5.3 Maturity, time dynamics and size

5.3.1 Maturity

The companies at hand are mature and that has a recognized effect on M/B values. In Baker and Wurgler (2002) this is reported with historical levels from IPO date and forward. Just to give an idea about the radical changes that occurs after an IPO the coefficient for M/B with book leverage as dependent variable stretches from -4.10 in IPO+1Y to 2.54 for 1980-1999 all firms. This phenomenon can be one explanation to the contrarian results regarding market timing in our investigation. The arbitrary market timing potential is not in focus, as it might be in startups or smaller firms. This observation is supported by legislative demands put on listed firms to publish proper and accurate market communication and offer transparency. The aspect that the issuance of stocks should take place when the information asymmetry between managers and market are at a minimum, not to disturb the markets pricing of the stocks and the position of new versus old stockholders, seem to be valid here (Myers and Majluf 1984). The road shows and other activities perused when issuing equity or the pricing of stocks and bonds are thus not attempts from the issuers to receive a premium due to asymmetric information; but an effort to get the right pricing, as it seems.

5.3.2 Time dynamics

We have stated that the large firms in the sample can be assumed to possess capabilities to decide upon what overall goal they have regarding their capital structure – a target level regarding the quota of debt to equity. The short time demand is then to combine the financial activities so that the consolidation of all short time engagements end up in the level stated. (Koller et al 2005)

The other can be changes in the situation the company is in and the challenges it is expected to meet, that could change the management's opinion of what is an optimum capital structure. A translation of a recent quota from top management in on of our sample companies supports this idea.

“Obviously we would prefer a lower debt level, but then we would not have been able to do the acquisitions we did. With the knowledge we have now the extra dividend we did in 2007 was not wise. But it was another situation then. The question of debt levels is a living question and leverage must always be adapted to the current business situation”.

President and CEO of Sandvik

It seems as if these companies in any of these two perspectives analyzes where they want to be after the refinance action is executed and succeed in getting there.

The time period coincident with booming economy and is highly heavy on the upside of a business cycle. The firms in the investigation have high proportion of tangible assets and shows a high profitability, compared to other studies, these are attractive circumstances to be in and further enables the firms to be proactive and in control of their capital structure. When capital structures are investigated image of a certain point in time are usually utilized and several moments constitute time series of data. When applying the theoretical framework it is beneficiary to in visualize the firm being in motion. A firm may have a target level of debt that they have decided upon through utilization of the trade off theory. However they might just as well be believers of the pecking order, the consequence thereof has a clear time aspect though. If they, for example, would like to decrease their leverage, they can limit themselves to reach that goal using only retained earnings, it will just take more time.

5.3.3 Size

Larger companies are considered to be bankruptcy remote to larger extent than smaller ones, and a multinational company also have the possibility to redirect and mitigate financial exposure through a central department that can consolidate all different exposures and identify the net exposure; and hence the need for financial insurance, hedging or other use of structured products (Culp 2006). Furthermore are the maturity, cyclicity, and type of assets possessed determinant for reasonable debt level. The determinant factor is whether the company is proportionally high leveraged compared to its peers and in line with the demands of the industry. This is strongly connected to the rating the firm will receive and since the cost of debt is directly connected to that rating this issue is fundamental (Gaugin 2005). This also connects to size and when not including EFWAMB in the regression, LogSales (i.e. size) is positively correlated to both types of leverage meaning that larger firms have higher leverage which is in accordance with the tradeoff theory. On the other hand when including EFWAMB in the regression LogSales is not significantly correlated to neither book- nor market leverage, indicating unclear effect of size on capital structure at the Nordic market. This result was not unexpected since all firms are within the same category regarding size. Size did not have an effect on leverage but if we look into the profitability's effect on leverage it is starting to get interesting.

According to pecking order EBITDA/TA should be negatively correlated with leverage since the possibility to utilize retained earnings for financing is preferred. The tradeoff theory could however suggest that higher profits will allow higher leverage, as earlier discussed, this relationship should be valid regarding both book leverage and market leverage, but as shown in section 4.3.2 profitability is only significantly correlated with market leverage. The correlation between profitability and market leverage is negative, hence supporting pecking order theory as a determinant for the capital structure of a large Nordic firm as

supported by Myers and Majluf (1984) and contradictory to the tradeoff theory. The finding that more profitable firms tend to be less levered also corresponds with the result found by Fama and French (2002).

6. CONCLUSIONS

In this chapter the conclusions that can be drawn from the empirical findings and the analysis will be presented together with suggestions for further research.

Concerning large companies within the Nordic region no significant and conclusive support is found for the Market Timing Theory. Leverage is affected by M/B but not in the way that equity market timing predicts. M/B is not found to be correlated with net equity issues, hence not explaining any market timing of equity issuance in this region. There are many explanations to the fact that market timing is out powered. The mature standing and industrial belonging of most of the firms in the sample may explain why other factors than short arbitrary profits are the priority. The urge for large public firms within the region to be transparent and accurate in their communications and investor relations could be another explanation.

To an investor the signaling effect of equity issuance is diverse; the implication of our findings can reduce the impact of this information asymmetry between the firm and the investors. Presuming three basic incentives the firm has to issue equity. Firstly if the firm is heading towards distress, secondly if the firm sees growth opportunities with expected positive NPV and lastly if the firm is overvalued. If a firm is in distress it is not unlikely well known and the asymmetric information is therefore less dominant. The second alternative presents an attractive investment opportunity. The findings that the Market Timing Theory is not dominant on Nordic firms imply that the third incentive can be neglected by the investor. This suggests that participating in equity issuance at the Nordic region should present an attractive investment opportunity in all cases where it is not obvious that it is not. Indicating that if not obvious that the firm is

in distress, the probability of equity issuance due to growth opportunities is increased simplifying the decision making for the investors. The first scenario clearly presents a high risk and the expected reward should be accordingly high. This we leave to the investors analyze and risk appetite to decide upon.

The implication to owners of our findings is not immediate, since we cannot take for granted that the results of this thesis immediately will be known to everyone on the market. The fact that the tradeoff and pecking order prevails in importance can serve as a guiding consolidated benchmark that it is considered being of higher importance than the potential arbitrary profits of market timing.

Top management related issues instantaneously awaken the thought of the habitat in which they are operating. The ownership structures in the Nordic region are as discussed very different from the US. The connection between owner and top management in our setting can be expected as high. This implies that the priorities of owners and top management will coincide to large extent.

The result that market timing does not prevail proposes that top management succeeds in correct and adequate investor relations within the Nordic region.

6.1 Further research

It would be highly interesting to do further robustness test using alternative weighing schemes, for example the differentiation of EFWAMB into two components, such as yearly timing and long-term timing (Kayhan and Titman 2007). This could be done to conclude if the results found in this thesis still are valid.

Another mean of testing market timing could be an earnings based valuation model that allows the researcher to separate equity mis-pricing from growth options and time varying adverse selection, hence avoiding the multiple interpretations of market to book ratio, which has been an important issue in this

thesis. Such a technique is used by Elliott, Koeter-Kant and Warr (2007) on the US market. Executed at the Nordic market this could potentially contribute with more details and dept in the understanding.

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Databases

DataStream

8. APPENDIX

8.1 *Appendix I*

Assa Abloy	Outokumpo
Atlas Copco	Pöyry
Axfood	Rautaruukki
Carlsberg	Rockwool
Coloplast	SAAB
D/S Norden	Sandvik
Danisco	Sanoma
DSV	SCA
Electrolux	Scania
Electa	Seco Tools
Ericsson	Securitas
Fiskars	Skanska
FLSmidth & Co	SKF
Getinge	SSAB
Hennes &Maruitz	Stockmann
Hexagon	Stora Enso
Holmen	Swedish Match
Kemira	TDC
Kesko	Tele2
Konecranes	Tieto
Københavns Lufthavne	Torm
H. Lundbeck	Trelleborg
Meda	UPM-Kymmene
Metso	Uponor
Modern Times Group	William Demant Holdings
NCC	Volvo
NKT Holdings	Wärtsilä
Nokian Renkaat	YIT
Novo Nordisk	

8.2 Appendix II

Variable name (Alphabetical order)	Definition
Book Debt	= Total Assets – Book Equity
Book Equity	= Total Assets – Total Liabilities – Preferred Stock + Deferred Taxes + Convertible Debt
Book Leverage	= $\frac{\text{Book Debt}}{\text{Total Assets}}$
Net Debt Issues (d)	= $\frac{\Delta \text{Book Debt}}{\text{Total Assets}}$
Change in Retained Earnings (ΔRE)	= $\frac{\Delta \text{Retained Earnings}}{\text{Total Assets}}$
Market Equity	= Price \times Number of Shares
Market Leverage	= $\frac{\text{Book Debt}}{\text{Total Assets} - \text{Book Equity} - \text{Market Equity}}$
Market-to-Book	= $\frac{\text{Market Equity}}{\text{Book Equity}}$
Net Equity Issues (e)	= $\frac{\Delta \text{Book Equity} - \Delta \text{Retained Earnings}}{\text{Total Assets}}$
PPE/TA	= $\frac{\text{Property, Plant and Equipment}}{\text{Total Assets}}$
EBITDA/TA	= $\frac{\text{EBITDA}}{\text{Total Assets}}$
