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Market timing and capital structure: Evidence from a Finnish sample

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ABSTRACT:

The market timing theory is one of the most popular frameworks frequently employed by academics to examine the rationale behind the changes in companies' debt and equity issues. While it has been examined in multiple settings, little is known about the presence of market timing effects in the capital structure decisions of Finnish companies. The results of previous research on market timing in the Nordic region have been fragmented and inconsistent. To address this research gap, the current study sought to examine the determinants of corporate financing decisions of Finnish companies. It used data on large and mid-cap companies listed on OMX Helsinki during the period between 2012 and 2023. The main research goal of the current study is to conduct a critical analysis of the applicability of market timing theory in explaining the capital structure decisions of OMX Helsinki's large and mid-cap companies during the period between 2012 and 2023. The research hypotheses of this study revolve around the link between companies' market-to-book ratios and the dependent variables of book leverage, market leverage, and changes in net equity issues, net debt issues, and retained earnings. The findings of the linear regression analysis suggest that there is a positive and statistically significant relationship between market-to-book ratios and book leverage, while both tangibility and profitability show negative effects, opposite to firm size that shows a positive association. In contrast, the market-to-book ratio is negatively and significantly related to market leverage. This indicates, that Finnish companies reduce market leverage when valuations are high, consistent with the market-timing hypothesis. Weak effects of market-to-book ratios are observed in the regression models involving changes in retained earnings (negative) and net equity issues (positive but insignificant), while no relationship is confirmed for changes in net debt issues. This research provides partial, but mixed support for the market timing hypothesis. They show that Finnish companies with high growth opportunities tend to increase their book leverage but reduce market leverage highlighting that the observed relationship depends on how leverage is measured. At the same time, the study illustrates the significance of firm-specific and external factors in moderating market timing effects, which explains the absence of a statistically significant relationship between this variable and the construct of market leverage. This research suggests that capital structure decisions are affected by a broad set of market conditions and firm-specific factors. Therefore, market timing theory alone is not capable of predicting the changes in Finnish companies' capital structure in response to perceived mispricing trends. Complementary frameworks, such as the pecking order theory, should be incorporated to gain a better understanding of the financial decisions of Finnish companies.

KEYWORDS: Market Timing Theory, Book Leverage, Market Leverage, Capital Structure Decisions, Corporate Financing Decisions, Pecking Order Theory

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TIIVISTELMÄ:
Markkinoiden ajoitusteoria on yksi suosituimmista viitekehyksistä, joita tutkijat käyttävät tutkiakseen yritysten velka- ja pääomasuhteiden muutosten taustalla olevia syitä. Vaikka sitä on tarkasteltu useissa yhteyksissä, tiedetään markkina-ajoittamisen vaikutuksista suomalaisten yritysten pääomarakennepäätöksiin vain vähän. Aiempien tutkimusten tulokset markkinoiden ajoituksesta Pohjoismaissa ovat olleet hajanaisia ja epäjohdonmukaisia. Tämän tutkimusvajeen korjaamiseksi tässä tutkimuksessa pyrittiin selvittämään suomalaisten yritysten yritysrahoituspäätöksiin vaikuttavia tekijöitä. Se käytti OMX Helsingissä listattujen suurten ja keskisuurten yhtiöiden tietoja vuosilta 2012–2023. Tämän tutkimuksen päätavoitteena on tehdä kriittinen analyysi markkina-ajoitusteorian soveltuvuudesta OMX Helsingin suurten ja keskisuurten yhtiöiden pääomarakennepäätösten selittämiseen vuosina 2012–2023. Tämän tutkimuksen hypoteesit keskittyvät yritysten markkina- ja tasearvojen suhteen (market-to-book) välisen yhteyden ja riippuvien muuttujien, kuten tasevelan (book leverage), markkinavelkaantuneisuuden (market leverage) sekä netto-osakeantien, nettovelkaantumisen ja kertyneiden voittovarojen muutosten välillä. Lisäksi kannattavuuden, koon ja konkreettisuuden kontrollimuuttujia tarkastellaan aiempien tutkimuksien mukaisesti. Lineaaristen regressioanalyysien tulokset osoittavat, että market-to-book -suhteella on positiivinen ja tilastollisesti merkittävä yhteys tasevelkaan, kun taas aineellisten hyödykkeiden osuudella (tangibility) ja kannattavuudella (profitability) on negatiivinen yhteys, kun taas yrityksen koolla (size) on positiivinen yhteys. Tämä viittaa siihen, että paremmin arvostetut ja suuremmat yritykset tietoisesti pitävät korkeampaa velkaantuneisuusastetta, kun taas kannattavuudeltaan ja pysyviä vastaavia laajasti omistavat yritykset turvautuvat vähemmän velkarahoitukseen. Markkinavelkaantuneisuuden osalta market-to-book -suhde on negatiivinen ja tilastollisesti merkitsevä, mikä tukee markkinoiden ajoitusteoriaa ja osoittaa, että suomalaiset yritykset vähentävät markkinavelkaansa korkeiden arvostusten aikana hyödyntämällä osakeantimahdollisuuksia. Kertyneiden voittovarojen osalta market-to-book -suhteella havaittiin negatiivinen vaikutus, kun taas netto-osakeantien yhteys oli positiivinen mutta ei tilastollisesti merkitsevä. Nettovelkaantumisen osalta yhteyttä ei havaittu. Tämän tutkimuksen tulokset osittain, mutta hieman ristiriitaisesti tukevat markkinoiden ajoitushypoteesia. Ne osoittavat, että suomalaisilla yrityksillä, joilla on hyvät kasvumahdollisuudet, on taipumus lisätä tasevelkaansa, mutta vähentää markkinavelkaantumisastettaan, mikä korostaa sitä, että havaittu vaikutus riippuu velkaantuneisuuden mittaamistavasta Samalla tutkimus havainnollistaa yrityskohtaisten ja ulkoisten tekijöiden merkitystä markkinoiden ajoitusvaikutusten muokkaamisessa, mikä voi selittää sen, että markkina-arvoihin perustuvien rahoitusmuuttujien yhteydet jäivät heikoiksi. Tämä tutkimus viittaa siihen, että pääomarakennepäätöksiin vaikuttavat laaja joukko markkinaolosuhteita ja yrityskohtaisia tekijöitä. Siksi markkinoiden ajoitusteoria ei yksin pysty ennustamaan suomalaisten yritysten pääomarakenteen muutoksia havaittuihin väärinhinnoittelutrendeihin. Muita kehyksiä, kuten nokkimisjärjestysteoria (pecking order theory), tulisi sisällyttää näiden yritysten taloudellisten päätösten perustelujen ymmärtämiseksi.

AVAINSANAT: Markkinoiden ajoitusteoria, kirjanpidollinen velka, markkinavipuvaikutus, pääomarakennepäätökset, yritysrahoituspäätökset, nokkimisjärjestysteoria

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Abbreviations

IPO	Initial Public Offering
MTB	Market-to-Book
WACC	Weighted average cost of capital

1 Introduction

The use of effective corporate financial strategies is a decisive factor in shaping organizational performance and its relations with stakeholders. Academic research states that capital structure, which can be defined as “the mix of financing sources that a corporation prefers or is able to hold” (Llobet-Dalmases et al., 2023, p. 1), is a cornerstone of corporate financial strategy. It has a strong influence on a company’s growth trajectory and its ability to adjust to changes in its’ external business environment and consistently deliver value to stakeholders (Gupta, 2022; Madaza, 2021; Mattson, 2021; Sjolie & Skjold, 2022). Therefore, it is unsurprising that the drivers of capital structure decisions have received a significant amount of attention in academic literature.

The main objectives of capital structure decisions are to maximize firm value and minimize the cost of capital. Particular capital structure decisions have been linked to financial stability, risk profile, and the Weighted Average Cost of Capital (Kim et al., 2015; Mudalige, 2023; Nguyen, 2021). Maintaining an optimal balance between debt and equity is a crucial priority for modern organizations. Even though debt is usually cheaper, owing to tax benefits, the available evidence indicates that excessive debt results in high equity costs and causes financial distress risks (Asai, 2020). The level at which debt can be considered excessive, however, varies across industries and even different organizations from the same sector (Dong et al., 2020; Kulmala, 2020; Ohanyan & Roos, 2024; Ye et al., 2023). Therefore, making specific decisions on capital structure is a challenging task that requires a comprehensive understanding of the unique specifics of a particular industry and organization. Moreover, some evidence suggests that capital structure decisions might lead to distinct outcomes at different times, reflecting current overvaluation or undervaluation trends (Humta & Ghafourzay, 2023; Ratih, 2021). Consequently, the timing effect, along with the issues outlined above, should be considered when discussing capital structure decisions.

The critical significance of capital structure for modern organizations predetermines the growing amount of attention to particular factors that shape capital structure decisions. There is currently no consensus among researchers on the conditions under which companies should seek to rely on debt or equity in their financing. In particular, the tradeoff, pecking order, and agency -theories propose fundamental explanations of how and when companies use debt and equity (Asai, 2020; Adair et al., 2015; Ronoowah & Seetanah, 2024). Opposed to these three theories, the market timing theory suggests that the decisive role in shaping capital structure decision is timing (Ma et al., 2024; Zhao et al., 2020). The advantages and disadvantages of these frameworks in various settings create a popular research field.

1.1 Research Background

Various theories offer different theoretical viewpoints to analyze the thought process for specific capital structure decisions. The tradeoff theory balances between multiple advantages and disadvantages of debt, such as lower taxes but financial distress, to explain how companies try to minimize their cost of capital through optimizing the balance between their debt and equity (Adair et al., 2015; Asai, 2020; Lindset et al., 2024). The pecking order theory however rejects the main assumption of the tradeoff theory and suggests that a company typically uses its own preferences to make financial decisions rather than aiming for an optimal debt-equity balance (Adair et al., 2015; Mardani et al., 2023). The agency cost theory, in turn, puts an emphasis on the interaction of diverse stakeholders in the context of capital structure decisions (Ronoowah & Seetanah, 2024). All these theories offer interesting insights into the reasons behind changes in capital structure, but they do not fully account for the role of external forces in shaping financing decisions, due to mainly discussing organizations' internal processes and preferences.

Unlike the theories described above, market timing theory examines capital structure decisions in the current market situation. Baker and Wurgler (2002), who introduced this theory, state that companies monitor their valuation and try to take advantage of market fluctuations to make optimal financial decisions. In particular, a company is likely to issue equity when believed to be overvalued, which is evident through high market-to-book (MTB) ratios (Gomes et al., 2019; Huang, 2014). In contrast, undervaluation signals, that are seen through low MTB ratios, often trigger decisions to repurchase equity or issue more debt (Ma et al., 2024; Zhao et al., 2020). By studying a large number of market timing events over time, this theory assumes that there is a consistent relationship between companies' historical market valuations and their debt levels (Baker & Wurgler, 2002). Therefore, the market timing theory challenges most other capital structure frameworks by claiming that the primary driver of financial decision of companies are the market conditions.

An important theorem to consider also is the Modigliani-Miller theorem of capital structure irrelevance. Introduced in the 1950s, the theorem shows that the value of a company is not affected by the mix of debt and equity, when operating in an environment that does not have taxes, transaction costs, and information asymmetries (Brusov et al., 2022). According to the theorem, in this kind of environment, capital structure choices do not tend to have a strong impact on shareholder wealth and the cost of capital. According to Brusov (2022), the Modigliani-Miller theorem is the foundation of many later theories, including the trade-off and market structure theories. Thus, the theorem must be mentioned in this introduction.

Several previous studies show that the market timing theory can explain capital structure decisions of companies in different circumstances. A recent study on Indonesian companies after initial public offerings (IPO) shows that these companies track their market valuations and adjust their debt levels accordingly (Ratih, 2021). This kind of behavior of companies is aligned with the principles of market timing theory (Ratih, 2021). Humta and Ghafourzay (2023) indicated that this theory is highly effective in explaining Canadian companies' financial decisions. In particular, they confirm a hypothesis concerning the negative impact of the MTB ratio on both market and book leverage. Ye et al. (2023)

presented a series of studies that support the high explanatory power between market timing theory and stock returns. Dong et al. (2020) also state that the market timing theory can explain the IPO and capital structure decisions of several Chinese companies. Their paper on Chinese companies revealed that market timing attempts have a strong impact on the capital structure of the companies over a long period that extends to a post-IPO period. Research by Elliott et al. (2008), Gomes et al. (2019), Lian et al. (2024), Kim et al. (2015), and Setyawan (2011) also provides compelling evidence for the high explanatory power of the market timing theory in different contexts. These studies claim that market timing theory can explain financial decisions under many circumstances.

While the research reviewed in the previous paragraph praises market timing theory for being a highly effective framework for exploring changes in financial decisions, other scholars have not found compelling evidence for the effectiveness of this theory. Madaza's (2021) thesis on the determining factors of capital structures of real estate investment trusts from South Africa found that the tradeoff and pecking order theories are more illustrative than market timing theory in explaining the leverage of these companies. Gupta (2022) determines that the pecking order theory is the best option available to explain the capital structure decisions of equity and debt balance of Indian companies, where both the market timing and tradeoff theories are found to be less effective. Khan et al. (2024), who explored a sample of non-financial companies from Gulf Cooperation Council countries during a period between 2011 and 2021, concluded that not one singular theory could explain the determinants of their capital structure decisions. Allini et al. (2018) and Zavertiaeva and Nechaeva (2017) also found no confirmation of the validity of the assumptions of the market timing theory. All the aforementioned studies argue that market timing theory cannot serve as a universal one-fit-all solution to interpret financial decisions.

This thesis seeks to examine the applicability of market timing theory to the Finnish market. Finland's economy has several distinctive features. Firstly, it is highly export-oriented, which makes most sectors sensitive to changes in market conditions (Gulati et al., 2013;

Holz, 2023). Moreover, recent research suggests that most companies operating in Finland do have concentrated ownership structures, with founders, public entities, and institutional investors holding significant ownership (Elimäki, 2024; Ghezzi et al., 2024). Dutta and Dutta (2021) also state that Finnish companies have strong corporate governance traditions and maintain healthy investor relations that is common in the Nordic nations. These factors show that the relationship between market conditions and financial decision-making observed in other developed countries might not fully apply in the unique Finnish context. Therefore, examining the application of market timing theory to Finnish companies' capital structure decisions is an intriguing research area.

Academic research does not provide many insights into the market timing theory's ability to explain the capital structure decisions of Finnish companies. The existing studies that have addressed this research problem imply that the principles of the market timing theory rarely apply to Finnish companies (Jauhiainen, 2020; Kumala, 2020; Mattson, 2021; Nguyen, 2021). Furthermore, they do not directly discuss the applicability of the market timing theory and rather examine general determinants of capital structure decisions. These are not sufficient to reach a decisive conclusion on whether market timing has an influence on the capital structures of Finnish companies. Given the unique features of the Finnish economy (Dutta & Dutta, 2021; Elimäki, 2024; Ghezzi et al., 2024), it is important to investigate how does the market timing theory fit into how capital structure decisions are made in the companies. By investigating this research problem, this study will address an evident research gap and advance scientific knowledge of Finnish companies' market timing efforts within dynamic market environments.

1.2 Purpose of the Study

The applicability of market timing theory in predicting the capital structure decisions of Finnish companies remains a poorly understood research area characterized by a high level of uncertainty. While some studies provide insights into the drivers of Finnish companies' capital structures, their findings do not directly support hypotheses related to this theory's ability to explain the variation in debt levels. The main research goal of the current study, which seeks to address this research gap, is to conduct a critical analysis of the applicability of market timing theory in explaining the capital structure decisions of OMX Helsinki's large and mid-cap companies during the period between 2012 and 2023.

The purpose of this thesis is twofold. First, it seeks to examine the impact of large and mid-cap Finnish companies' MTB ratios on their leverage as measured by book and market leverage. Second, this research will analyze the influence of the Finnish companies' MTB ratios on their leverage changes as measured by net equity issues, changes in retained earnings, and debt issues. In addition, it will investigate the role of profitability, tangibility, and size as control variables within the context of the relationship between the Finnish companies' MTB ratios and their leverage and leverage changes.

The full list of research hypotheses that assist in completing these objectives is presented in the research methodology chapter.

1.3 Intended Contribution

As stated above, the existing knowledge of the applicability of the market timing theory in explaining the capital structure decisions of Finnish companies is fragmented and inconsistent. Even less is known about the applicability of this theory to the capital structure decisions of Nordic companies. These companies usually have peculiar corporate governance features and operate in an environment that exhibits the unique features of Nordic cultures. Thus, the lack of sufficient studies on the relevance of the market timing theory in the Nordic context constitutes a significant research gap that the current study seeks to address. In addition to advancing scientific knowledge of the determinants of capital structure in the Nordic region, this research will also provide insights unique to Finnish companies. The existing studies on Finnish companies' capital structures are scarce. Moreover, the findings of previous research focus on the pecking order, agency, and tradeoff theories. Their results provide some information about the possible role of market timing efforts in changing leverage, but they do not explicitly support or reject the applicability of the market timing theory in the case of Finnish entities. This thesis, therefore, will contribute to the existing knowledge of the drivers of capital structures of Finnish companies while also illustrating the role of market timing in shaping financial decisions within established corporations in the country.

Besides addressing the research gaps outlined above and contributing to the scientific knowledge on the problem under investigation, this thesis will also provide certain valuable practical insights. The market environment in Europe is becoming increasingly dynamic and uncertain, with many unpredictable factors, such as sanctions against Russia, possible trade barriers introduced by President Trump's administration in the US, and evolving EU-wide policies on sustainability and immigration having major implications for the operations of various companies. Such a high level of uncertainty in the external environment is eroding for the business confidence of Finnish companies (Bank of Finland, 2025) since, as stated above, Finland has an export-oriented economy. The findings of this study can be the basis for useful recommendations for managers on how to adjust the capital structure of their companies to changes in their external environment. They might help companies take advantage of undervaluation and overvaluation patterns and time the market, contributing to lower cost of capital, shareholder value, and financial stability. Therefore, the results of this thesis can be helpful in supporting the capital structure decision-making within Finnish large- and mid-cap companies.

1.4 Limitations and Assumptions

First, the exclusive focus on Finland is a crucial limitation that must be considered when trying to use the results of this thesis in any other settings besides Finnish markets. The Finnish economy has some distinctive features, including those typical for the Nordic region and those exclusive to Finland, which might limit the external validity of the study's results. Second, this research is concerned exclusively with large-cap and middle-cap companies. Third, it was carried out within a particular timeline that included only 12 years. This timeline excludes the Great Recession, during which companies from different corners of the globe made uncommon capital structure decisions but includes the time of the COVID-19 pandemic.

This research is based on several assumptions. First, it is assumed that the data on all the relevant financial metrics retrieved from the OMX Helsinki database is accurate. Second, the research assumes that most Finnish companies enjoy certain flexibility in terms of capital structure and are not restrained by binding constraints that prevent them from changing leverage in response to overvaluation and undervaluation trends. Finally, the study also operates under the assumption that Finnish companies are capable of recognizing undervaluation or overvaluation patterns and making decisions on this basis.

2 Theoretical Framework

Corporate finance theory has been strongly influenced by the Modigliani-Miller theorem (Brusov et al., 2022). The original version of the theorem states that debt-equity financing decisions become irrelevant in an environment that lacks transaction costs, information asymmetries, and taxes. The 1963 revision of the theorem incorporated corporate taxes, thus showing that the value can be created through the tax shield on interest payments (Macias, 2022). Such an insight led to the emergence of the trade-off theory, which seeks to balance tax benefits against financial distress costs (Brusov et al., 2022). Later theories, including the market timing theory, assume that the Modigliani-Miller theorem does not consider some relevant market imperfections and thus must be adapted to real-world conditions.

Market timing theory is a popular corporate finance framework that links companies' attempts to time financial markets to changes in their capital structure. According to the theory, managers approach debt and equity issuance as a strategic decision that should align with the current valuation trends of the company (Asai, 2020). The focus on valuation trends highlights the distinctiveness of market timing theory compared to other popular concepts in corporate finance, where financial decisions usually follow companies' particular financial preferences or their preferences concerning particular debt-equity levels. The main principle of the market timing theory is that managers try to identify periods when the equity of their companies is either undervalued or overvalued and respond by taking more leverage and repurchasing stocks or vice versa issuing more equity (Allini et al., 2018; Chen et al., 2013; Elliott et al., 2008; Zavertiaeva & Nechaeva, 2017). Therefore, using market timing theory means acknowledging that the capital structure of a company reflects its previous attempts to time the market.

Market timing theory is based on several assumptions, such as market mispricing, the role of capital structure, the long-term effects of market timing, and managerial opportunism (Asai, 2020). It challenges the efficient-market hypothesis and states that sometimes the equity of a company does not fully reflect its intrinsic value (Asai, 2020). Such an assumption is one of the principles used in equity valuation techniques that seek to calculate the intrinsic value of a company and compare it to its current stock price (Baker & Martin, 2011). The real-life application of the valuation techniques based on this assumption can be problematic due to the lack of information about a company available to external experts. Managers, on the other hand, possess better information about their company and, therefore, are in a good position to assess its value, thus making a more accurate statement regarding overvaluation or undervaluation trends. According to Baker and Wurgler (2002) though, the critical assumption is that the managers think they are able to time the market and not so much if they are capable. Market mispricing can occur due to multiple reasons. Lee (2021), for instance, believes that asymmetric information is the most common cause of this phenomenon, whereas Verma and Verma (2021), in turn, point to investor sentiment as a relevant factor in this area. Identifying the signs of such mispricing and acting upon them is, in accordance with market timing theory, a common managerial behavior pattern.

One of the most important assumptions of the market timing theory is that capital structure is a peculiar byproduct of financial decisions. Whereas the tradeoff theory describes it in terms of an optimal balance that companies try to achieve, the market timing theory states that it is just a cumulative result of previous decisions (Asai, 2020). Moreover, these decisions were responsive in nature rather than proactive since they were made following the discovery of evident mispricing (Asai, 2020). This principle is closely connected with the assumption of managerial opportunism, which is another foundation of the market timing theory (Babenko et al., 2020). Managers tend to behave opportunistically and take advantage of varied market conditions to reduce the cost of capital and maximize shareholder wealth (Babenko et al., 2020). Also, it is important to point out that the effects of market timing efforts persist over long periods. If a company makes a situational decision to issue equity due to high stock valuation, the consequences of this decision should be observable in its capital structure over many years (Asai, 2020).

Although, such an assumption does contradict with some empirical studies. Kornher and Stiernstrom (2022) found, that market timing affects capital structure in the short-term perspective, but its long-term effects are insignificant. Therefore, the assumption of long-term effects of market timing is one of the most problematic assumptions of the market timing theory.

Market timing theory has several essential implications. It emphasizes the dynamic and constantly shifting nature of capital structure, since it is a product of past decisions rather than a consistent ratio that companies maintain over time (Mabrouok & Boubaker, 2020; Mudalige, 2023). The framework also provides convenient perspective for analyzing the company's cost of capital. One of the interesting implications of market timing theory is that particular decisions such as taking debt, issuing equity, or repurchasing stock send signals to stakeholders and shareholders regarding the current patterns of a company's valuation. This pattern can lead to unpredictable responses from investors, but it is common to believe that equity issuance does increase the risk of stock price decline. This is due to the prevailing perception that the stock of this particular firm is currently overvalued (Dissanaike et al., 2014). Finally, the market timing theory also asserts that the efficient market hypothesis is not relevant under current market conditions and instead puts forward the concept of "timing windows", which refers to favorable market conditions on which companies can capitalize to reduce the cost of capital and increase shareholder value (Bougateff & Kassem, 2023). These assumptions are fundamental in determining whether the market timing theory applies to the financial decisions of a particular firm or a group of companies.

2.1 Alternative Capital Structure Theories

Given that the market timing theory offers unique framework for examining companies' capital structure decisions, it is important to consider how it compares to other popular theories in capital structure studies. The tradeoff theory is fundamentally different from the market timing theory since it insists on the existence of an optimal ratio of debt to equity that all companies pursue (Lindset et al., 2024; Mardani et al., 2023). Its proponents argue that the risk of financial distress associated with high debt levels can be compensated by tax benefits; accordingly, the tradeoff between these two factors drives the financial decisions of many companies (Adair et al., 2015). Whether a firm maintains a higher or lower ratio mainly depends on the nature of its cash flows, business risks, earnings, and assets. The tradeoff theory directly contradicts the principles of the market timing theory and thus, these theories are incompatible with each other.

The pecking order theory is similar to the market timing theory in its rejection of such a concept as an optimal capital structure. However, whereas the market timing theory links capital structure decisions to market conditions, the pecking order theory explains them by the so-called hierarchy of financing preferences (Adair et al., 2015; Asai, 2020). This hierarchy establishes the subsequent order of such options as internal, debt, and equity financing, with each next option being less appealing than the previous one (Mardani et al., 2023). The fact that internal financing is preferable to debt financing in the pecking order theory makes it fundamentally different from the market timing theory. The market timing theory states that the attractiveness of each option depends on the current valuation trends. At the same time, the theories are similar in rejecting the efficient market hypothesis and stating that market inefficiency is often the result of asymmetric information (Baker & Martin, 2011). Despite these similarities, the strict hierarchy suggested by this framework makes it incompatible with the market timing theory except for a limited number of cases like interpreting market inefficiencies and rejecting the existence of an optimal market structure.

The agency cost theory is another popular capital structure framework. It states that the majority of financial decisions are a result of interactions of managers with shareholders and debt holders (Ronoowah & Seetanah, 2024). In many cases, as this theory explains, the pressure from these parties predetermines the particular financial decisions of managers. This framework fundamentally differs from all the three theories reviewed above because it explains most financial decisions by referring to managers’ attempts to reduce agency costs. Some scholars believe that such an explanation is overly simplistic (Asai, 2020). The agency cost theory can hardly be integrated with the market timing theory given its emphasis on reducing agency costs. As in market timing theory, the rationale for most financial decisions, rather than managerial opportunism, is taking advantage of the current market conditions.

3 Literature Review

The term “capital structure” is often used in financial research and can be defined as “the mix of financing sources that a corporation prefers or is able to hold” (Llobet-Dalmases et al., 2023, p. 1). This concept is crucial for understanding the growth trajectory of a company and its access to capital. Capital structure is comprised of equity and debt capital. Companies raise equity capital via common and preferred stock and debt capital through bonds, loans, and other borrowing channels (Asai, 2020). The ultimate goal of capital structure decisions is to find a way to maximize a company’s value while minimizing its cost of capital and reducing its exposure to risks.

Capital structure strategies predetermine how the firm raises capital that funds its investments, operations, and growth. Academic research links capital structure decisions to multiple outcomes related to risk profile, cost of capital, financial stability, and others (Dong et al., 2020; Kulmala, 2020; Ohanyan & Roos, 2024; Ye et al., 2023). The weighted average cost of capital (WACC) is a metric that is directly correlated with the capital structure decisions of the company, as it shows a blended cost of a company’s debt and equity (Asai, 2020). Debt financing is usually cheaper than equity financing owing to tax deductions, but high debt levels increase the cost of equity financing, leading to a higher WACC (Asai, 2020). The use of debt can drive financial distress and risk and magnifying losses under unfavorable market conditions or when a company displays poor performance due to some internal factors. On the other hand, the use of debt can boost the company’s returns or growth when market conditions are favorable. Effective capital structure decisions theoretically lead to increased firm value, enhanced investor relations, and improved market perceptions (Kim et al., 2015; Mudalige, 2023; Nguyen, 2021) and therefore it is not surprising that capital structure plays a central role in many organizational studies.

3.1 Empirical Studies on Market Timing

Following the introduction of the market timing theory, many researchers conducted empirical studies to test its main hypotheses. An early study by Elliott et al. (2008) showed that a firm's MTB ratio plays a major role in shaping decisions to invest in various securities. Their study is crucial from the perspective of the problem under investigation since it focuses on the variable of mispricing to ensure an interpretation of the book-to-market ratio that is intended within the market timing theory. Similarly, research by Setyawan (2011) shows that the MTB ratio of IPO companies in 2008 and 2009 had a statistically significant negative impact on the dependent variable of market leverage. After achieving certain earning levels, most companies chose to decrease their leverage since their stock prices were overvalued, a pattern that fully aligns with the assumptions of the market timing theory.

Several other studies also support the market timing theory based on evidence from different countries. Lian et al. (2024) found that the pecking order and tradeoff theories do not apply to the capital structure decisions of Chinese companies, whereas the market timing theory partially explains these companies' adjustment speed. Another study conducted in China illustrates that Chinese companies' time their share repurchases and the announcements of these repurchases aim to take full advantage of the current market conditions (Ma et al., 2024). Kim et al. (2015) showed that both the pecking order and market timing theories applied to Korean companies. The fact that significant evidence was found in support of both these theories could be explained by the authors' attempt to account for specific conditions of the Great Recession. Gomes et al. (2019) confirmed the strong effects of market timing on primary share issues in the Brazilian capital market. They found that abnormal returns positively influence the likelihood of share issuance, thus supporting the market timing theory.

Contrary to the results of the studies reviewed above, various other research papers show that the market timing theory often fails to explain companies' financial decisions.

Allini et al. (2018) showed that neither the market timing nor the pecking order theory explains the financial decisions of Egyptian companies. Their analysis of 1,270 companies revealed that a typical Egyptian companies follows the reversed pecking order theory, where most companies issue equity during deficit periods rather than in response to overvaluation (Allini et al., 2018). Research by Zavertiaeva and Nechaeva (2017) showed that the market timing hypothesis did not apply to Russian companies, as the debt decisions of these companies mainly resulted from interest rate changes. Several other studies, including the ones by Khan et al. (2014), Madaza (2021), and Gupta (2022), reject the applicability of the market timing theory to cases in different markets as well. The number of studies that demonstrate the absence of compelling evidence to support the market timing theory has been growing, making it more certain that the applicability of this theory strongly depends on the various moderating variables.

Some studies offer nuanced insights into the conditions in which the main assumptions of the market timing theory are held. Mabrouk and Boubaker (2020) revealed that the current stage of a company's life cycle is a relevant factor from this perspective. Their empirical data on French and Tunisian companies shows strong evidence for effects of marker timing when life cycle is used as a dummy variable. However, when it serves as the explanatory variable, this evidence becomes insignificant. Therefore, as the researchers conclude, the life cycle of a company has a substantial impact on its market timing efforts. Mudalige (2023) found weak evidence supporting the association between MTB ratios and IPO companies' capital structures in Sri Lanka. They conclude that the weak association between the variables illustrates the need to consider other variables that affect capital structure choices besides current valuation trends. Local cultural trends can be such variables.

Country-specific factors might play a major role in shaping the applicability of the market timing theory. The research paper by Arosa et al. (2015) states that culture directs the impact of market timing on capital structure decisions. In particular, high uncertainty avoidance and power distance ratios increase the likelihood of low leverage ratios during times of rising share prices; these three cultural dimensions reduce the impact of market timing on capital structure decisions (Arosa et al., 2015). Interestingly, the findings of this study show that this association between cultural dimensions and capital structure decisions applies only to companies in developed countries (Arosa et al., 2015). Therefore, local economic factors apparently also moderate the significance of market timing effects. In support of this hypothesis, one might point out that studies on the applicability of the market timing conducted in the same countries often reach similar conclusions. For instance, both Chen et al. (2013) and Huang (2014) state that this theory no longer explains the financial decisions of Taiwanese companies. Chen et al. (2013) found that the market timing theory applied to the capital structure decisions of Taiwanese companies during the period between 1990 and 2001, but it lost its explanatory power in 2002. During the period between 2002 and 2005, companies in Taiwan changed their debt and equity issuance behavior dramatically contrary to the assumptions of the market timing theory. Another study focusing on Taiwan discovered that market timing influences IPO but not capital structure decisions (Huang, 2014). In particular, the authors did not confirm an association between equity market timing and the debt ratio.

There is a consensus among scholars that the market timing theory is not a one-fit-all framework and, therefore, might have different explanatory capacities in varied settings. One of the most popular arguments against this theory is that its timing measures are not independent of the capital structure features of particular companies (Asai, 2020). To address this shortcoming, Zhao et al. (2020) proposed changes in individual security accounts of equity funding supply as a relevant market timing indicator. Using this new measure, Zhao et al. (2020) confirmed the main hypotheses of the market timing theory using the data on the Chinese equity market. Scientists also criticize this theory for having limited predictive power, mainly explaining past decisions and offering little guidance for forecasting future financial decisions, which might make this theory less appealing for practitioners than the pecking order or tradeoff theories (Dichtl et al., 2016; Zhang, 2023). The market timing theory also does not account for capital structure adjustment strategies, managerial behavioral bias, and the existence of efficient markets at least during certain periods (Asai, 2020; Zhang, 2023). These constraints are among the popular reasons why many scholars prefer using other theories to explain capital structure decisions or use the market timing theory along with other frameworks that have higher predictive power and offer more nuanced insights into flexible decision-making.

3.2 Market Timing in the Nordic and Finnish Contexts

The studies conducted on the applicability of market timing theory to Nordic countries usually do not support its significance in explaining local companies' capital structure decisions. Mansson and Tonell (2010) did not find a significant correlation between Nordic companies' MTB ratios and their equity issues. They conclude that the equity market hypothesis does not hold in the Nordic region. Kornher and Stiernstrom (2022) found the short-term effects of Swedish real estate companies' MTB ratios on their capital structure decisions, but they did not confirm the presence of long-term effects. Moreover, the scholars assert that companies are likely to rebalance their capital structures following equity market timing attempts (Kornher & Stiernstrom, 2022). These two studies show the high level of uncertainty and confusion related to the applicability of market timing theory to Nordic companies.

One reason for such a difference might be the unique regulatory landscape in Nordic countries. While Nordic companies exhibit common patterns related to the determinants of their capital structures (Sjolie & Skjold, 2022), one might assume that they are subject to certain uncommon external factors that shape their decision-making. For example, the thesis by Ohanyan and Roos (2024) recently found that contrary to previous research, Swedish publicly traded companies decreased their leverage during the COVID-19 pandemic, a finding that contradicts common principles of corporate financial decisions. Evidence for the uniqueness of the regulatory environment, where Nordic companies operate, can also be found in the study by Ohanyan and Roos (2024). In general, the regulatory and economic landscape in Nordic countries differs significantly from the external conditions of most other nations, highlighting the need to observe this context when examining the drivers of corporate structure decisions in Nordic nations.

Academic research provides some insights into the determinants of capital structure in Finnish companies, but the findings of most recent studies on this topic are inconclusive and do not provide direct evidence to support or reject market timing theory in the Finnish context. Mattson (2021) argues that the pecking order theory can be useful in predicting the capital structure of Finnish companies, while the tradeoff theory applies only to cases where managers modify leverage under the influence of shareholders. Previous research does not directly examine the applicability of market timing theory to Finnish companies' capital structures, but one can infer from the context of the findings that this theory is unlikely to have high explanatory significance given that managers usually make corporate financial decisions based on internal rather than external factors.

Nguyen's (2021) study of large-cap companies listed on the Helsinki Stock Exchange discovered a significant relationship between firm size and tangibility and companies' leverage levels. At the same time, profitability and growth variables were found to be insignificant from this perspective, which might be seen as inconsistent with market timing theory. Jauhiainen (2020) distinguishes between the drivers of short-term and long-term debt in Finnish companies. Profitability and tangibility could predict both short-term and long-term debt, but liquidity applied only to short-term debt as opposed to growth and non-debt tax shield, which predetermined long-term debt levels (Jauhiainen, 2020). Contrary to most other studies on Finnish companies, Kulmala's (2020) thesis concludes that neither the pecking order nor the tradeoff theory can explain the capital structure decisions of Finnish companies. While this study does not explicitly advocate for the use of market timing theory, the findings suggest that theories that account for firm valuation factors might be influential in explaining these companies' financial decisions.

3.3 Research Gaps

The literature review illustrates that the market timing theory is a popular framework for explaining capital structure decisions. Contrary to the tradeoff and pecking order theories, this theory links companies' financial decisions to current valuation trends and suggests that these decisions are responsive and, thus, do not pursue a long-term strategy. Previous research offers evidence-based insights into the applicability of the market timing theory in different contexts, but the findings of past studies have been inconsistent. Some authors, such as Kim et al. (2015) and Setyawan (2011), praise the market timing theory for having high explanatory power, while authors like Allini et al. (2018) and Zaveriaeva and Nechaeva (2017) did not find a strong timing effect in their datasets. Some scholars, including Arosa et al. (2015) and Zhao et al. (2020), argue that the market timing theory works only in certain cases and fails to explain the financial decisions of companies in the presence of restraining variables. In general, the literature does demonstrate a lack of consensus among scholars on the explanatory power of the market timing theory and its applicability in different contexts.

It is also important to point out that most studies that examine market timing effects focus only on a small number of specific variables related to capital structure decisions. For instance, many of these examine the construct of market and book leverage without reaching how changes in these values occur over time. The focus on leverage indicators without considering leverage changes might be considered an evident limitation of previous research. Those studies that looked exclusively at the annual values of market and book leverage did not produce a comprehensive picture of market timing effects. Furthermore, numerous studies did not account for the necessary control variables, such as organizational size, tangibility, and profitability. By advancing the understanding of the research problem using five regression models accounting and not accounting for control variables, this study produces insights that are nuanced and specific, which increases their external validity.

Another aspect of the research gap uncovered in this study is that previous research does not offer enough information about the unique context of the Nordic region from the perspective market timing. Most studies on Nordic companies do not support the relevance of the market timing theory in explaining the reasoning behind their capital structure decisions (Kornher & Stiernstrom, 2022; Ohanyan & Roos, 2024; Sjolie & Skjold, 2022). However, the exact reasons why the market timing theory has such a low explanatory power in the Nordic region are unknown. It is also important to point out that the number of such studies is too low to reach a final conclusion that the market timing theory does not apply to Nordic companies.

Many studies examined in this literature review provide insights into the applicability of this theory to Finnish companies. At the same time, there is still an evident research gap in literature related to this topic. The existing knowledge of market timing effects and their impact on Finnish companies' capital structure decisions is fragmented. Given that the unique features of the Finnish economy, such as its export orientation and the strong traditions of corporate governance and accountability, might have a significant impact on the financial decisions of companies, one might assume that the findings of previous research on nations outside the Nordic region might not fully apply to the unique Finnish context. Thus, there is an evident research gap in relation to the applicability of the market timing theory in when analyzing the financial decisions of Finnish companies.

4 Research Methodology

The main purpose of this study is to conduct a critical analysis of the applicability of the market timing theory in explaining the capital structure decisions of OMX Helsinki's large and mid-cap companies during the period between 2012 and 2023. The study uses an explanatory research design and quantitative research methodology. Given the need to test hypotheses concerning the link between particular variables, qualitative techniques would not be useful in this thesis since they mostly focus on uncovering deep knowledge of research objects and producing new meanings and interpretations.

4.1 Research Hypotheses

The applicability of market timing theory is studied using the MTB ratios of Finnish companies, which was the only independent variable. Its adoption in the current study aligns with the traditions of adopting the market timing theory (Gomes et al., 2019; Huang, 2014).

Book and market leverage ratios were used as the dependent variables of leverage, using the same approach as in the studies by Baker and Wurgler (2002) and Mansson and Tonell (2010). This study's first hypothesis is based on the relationship between the independent variable of companies' MTB ratios and their leverage. It is based on extensive evidence from previous research on the link between MTB ratios and market and book leverage (Arosa et al., 2015; Humta & Ghafourzay, 2023; Setyawan, 2011). This hypothesis is the core assumption of the market timing theory. Therefore, testing this hypothesis is crucial for achieving the goal of the present study. It stems directly from the premise of the theory (Baker & Wurgler, 2002), suggesting that companies tend to adjust their financing mix following the perceived mispricing of equity valuation. Multiple studies have shown the relevance of this theory to companies from different countries, such as Canada (Humta & Ghafourzay, 2023), Indonesia (Ratih, 2021), and Brazil (Gomes et al., 2019). The market timing effect can also be observed in some Nordic companies

(Kornher & Stiernstrom, 2022; Mansson & Tonell, 2010). The first hypothesis of the study aims to determine whether this effect also applies to Finnish companies, a research area that previously has not received much attention in academic research.

H1: Finnish companies' market-to-book ratios have a statistically significant impact on their leverage as measured by book and market leverage after accounting for profitability, tangibility, and firm size.

Based on the recommendations from the same studies (Baker & Wurgler, 2002; Mansson & Tonell, 2010), equity issues, changes in retained earnings, and debt issues were chosen as three additional dependent variables to refer to leverage changes. Accordingly, the second hypothesis focuses on the relationship between the independent variable of companies' MTB ratios and their leverage change indicators.

H2: Finnish companies' market-to-book ratios have a statistically significant impact on their leverage changes as measured by equity issues, changes in retained earnings, and debt issues after accounting for profitability, tangibility, and firm size.

Unlike the first hypothesis, H2 concentrates on the dynamic aspect of capital structure decisions, specifically how leverage evolves over time. Previous studies show that financing flows exhibit clear market timing effects (Baker & Wurgler, 2002; Elliott et al., 2008). In particular, companies with high MTB ratios are more likely than others to issue equity, retain earnings, and reduce debt. Therefore, including these dependent variables in the study offers additional information on how valuation signals lead to financing actions.

4.2 Data Collection

The data used in this research comprises information about OMX Helsinki's large and mid-cap companies during the period between 2012 and 2023, excluding financial institutions and companies that have not been listed for the whole period. Specifically, data was retrieved on 51 companies. The dataset offers information about such indicators as total assets, total shareholder equity, total capital, total liabilities, book value, preferred stock, deferred taxes, convertible debt, long-term debt, net debt, short-term debt, total debt, retained earnings, market capitalization, market value to book, property, plant & equipment, and EBIT & depreciation. While some of these constructs are the final variables that are used to test the hypotheses, most other variables are calculated using the indicators listed above. Table 1 provides detailed information about the calculations.

It is important to emphasize that both hypotheses account for control variables, including profitability, tangibility, and firm size. The studies by Baker and Wurgler (2002), Mansson and Tonell (2010), and Setyawan (2011) use these three control variables in contexts similar to the context of this study. Whereas there is currently no reason to believe that not using such variables would result in significant material issues, utilizing these control variables, as shown above, is common in studies on market timing theory.

Table 1. Presentation of the variables.

Variable	Type	Calculation
Book Debt	-	Total Assets – Book Equity
Book Equity	-	Total Assets – Total Liabilities – Preferred Stock + Deferred Taxes + Convertible Debt
Market Equity	-	Price × Shares Outstanding
Book Leverage	Dependent	Book Debt / Total Assets
Market Leverage	Dependent	Book Debt / (Total Assets – Book Equity + Market Equity)
Change in Retained Earnings (ΔRE)	Dependent	ΔRetained earnings / Total Assets
Change in Net Equity Issues	Dependent	(ΔBook Equity - ΔRetained Earnings) / Total Assets
Change in Net Debt Issues	Dependent	ΔBook Debt / Total Assets
MTB Ratio	Independent	Market Equity / Book Equity
Profitability	Control	EBITDA / Total Assets
Tangibility	Control	Property, Plant and Equipment / Total Assets
Organizational Size	Control	Log(Total Assets)

4.3 Data Analysis

Both hypotheses were tested using linear regressions in Microsoft Excel. Five separate regressions were conducted to account for each hypothesis independently. Two models focus on companies' capital structure, measured by book and market leverage, while three models analyze financing flows, including changes in equity, retained earnings, and debt. All the data analysis procedures were carried out in Excel. In addition to running regressions, descriptive statistics of the variables were analyzed to introduce context of the data and summarize distributional properties of the data.

The equations below correspond to the main hypotheses of this study.

$$BookLeverage_i = \beta_0 + \beta_1 MTB_i + \beta_2 Prof_i + \beta_3 Tang_i + \beta_4 log(Size_i) + \varepsilon_i \quad (1)$$

$$MarkLeverage_i = \beta_0 + \beta_1 MTB_i + \beta_2 Prof_i + \beta_3 Tang_i + \beta_4 log(Size_i) + \varepsilon_i \quad (2)$$

$$\Delta Equity_i = \beta_0 + \beta_1 MTB_i + \beta_2 Prof_i + \beta_3 Tang_i + \beta_4 log(Size_i) + \varepsilon_i \quad (3)$$

$$\Delta RE_i = \beta_0 + \beta_1 MTB_i + \beta_2 Prof_i + \beta_3 Tang_i + \beta_4 \log(Size_i) + \varepsilon_i \quad (4)$$

$$\Delta Debt_i = \beta_0 + \beta_1 MTB_i + \beta_2 Prof_i + \beta_3 Tang_i + \beta_4 \log(Size_i) + \varepsilon_i \quad (5)$$

The equations above operationalize the two hypotheses of this research. They include the independent, dependent, and control variables examined in the study. In each equation, MTB ratio is the key independent variable. The dependent variable, at the same time, differs across equations. They include book leverage, market leverage, change in new equity issues, change in retained earnings, and change in net debt issues. Finally, tangibility, size, and profitability serve as the control variables.

5 Results and Analysis

The sample includes 51 companies. The table below shows the industry distribution of the sample. From the distribution it can be seen that the OMXH is very industrial with traditional manufacturing companies representing 35% of the sample. With this in mind, the paper still assumes that the diversity of the data is enough to not be influenced by industry specific factors.

Table 2. Industry distribution of companies.

	Count
Manufacturing and Industrials	18
Technology and Telecommunications	8
Consumer goods and Retail	8
Media and Leisure Services	6
Real Estate and Construction Services	4
Healthcare and Pharmaceuticals	3
Media	2
Consumer Staples	2

The table below provides detailed information about the tangibility, profitability, and size of the companies from the sample. The variable of organizational size was taken directly from the sample as the value of total assets, whereas tangibility and profitability were calculated using the formulas provided in Table 1.

Table 3. Descriptive statistics for organizational size, tangibility, and profitability.

	Mean	Median	SD	Kurtosis	Skewness	Observations
Book equity	4.46	0.51	14.88	28.82	5.28	673
Book debt	5.74	0.73	20.07	34.50	5.77	673
Book leverage	0.53	0.54	0.16	0.01	-0.16	673
Net debt issues	0.01	0.00	0.10	4.53	0.03	616
Change in retained earnings	0.03	0.02	0.07	3.92	0.88	636
MTB ratio	2.60	1.90	2.40	6.76	2.40	669
Net equity issues	-0.01	0.00	0.05	9.49	-0.94	616
Market equity	6.84	0.91	21.37	37.60	5.93	683

Market leverage	0.40	0.40	0.21	-0.62	0.28	669
Profitability	0.12	0.12	0.08	1.42	0.80	689
Tangibility	0.25	0.22	0.20	0.50	0.90	689
Size (total assets)	10.36	1.40	35.22	32.41	5.57	689

* Book Equity, Book Debt, Market Equity, and Size are presented in € million

* Winsorized at pooled 1st/99th percentiles for each variable

An average Finnish company included in the scope of this study had average total assets of 10.36 M€ during the period between 2011 and 2023. At the same time, the standard deviation (35.22) is very high compared to the mean value. Moreover, there is a significant difference between the mean and median values, while both kurtosis (32.41) and skewness (5.57) are critically high. Such results of descriptive statistics point to the presence of extreme values in the dataset. In other words, the dataset includes some companies whose size significantly exceeds the size of the remaining companies. For example, Telia Company AB's total assets averaged 243.22 M€ during the period under investigation, which is 20 times bigger than the mean of the companies.

From the perspective of tangibility, at the same time, the difference between the companies is not that evident. The mean (0.25) and median (0.22) values are close, whereas the standard deviation (0.20) is slightly lower than the mean. Both kurtosis (0.50) and skewness (0.90) are lower than 1.0. While the dataset does not meet the criteria of normal distribution, it also does not have such extreme values as the organizational size variable. Citycon OYJ (0.91), Finnair OYJ (0.57), Stora ENSO OYJ (0.53), and Viking Line ABP (0.69) maintained the highest tangibility rates during the period under investigation. The results illustrate that the tangibility of a company is very much influenced by the industry-specific characteristics. Simultaneously, the patterns reported for the profitability variable resemble those reported for organizational size. There is no difference between the mean (0.12) and median (0.12) values. The standard deviation (0.08) falls behind the mean value slightly.

The difference between the mean (2.60) and median (1.90) values of MTB ratios is moderate. It is important to point out that the skewness of 2.40 indicates a substantial positive skew, meaning that the distribution is weighted toward lower values and has a long tail that stretches toward higher values. The kurtosis is 6.67, which means that the distribution has heavy tails and, thus, is leptokurtic. The highest MTB ratios were reported by Revenio Group OYJ (11.74), Kone Corporation (8.76), Withsecure OYJ (5.40), and Orion OYJ (6.68). At the same time, Outokumpu OYJ (0.67) reported the lowest MTB ratio.

In general, as the data above indicates, the dataset includes diverse organizations in terms of their size, tangibility, and profitability. There are also significant differences between these companies in terms of their valuation trends. This issue is important from the perspective of the problem under investigation since it points to the fact that the dataset includes a variety of companies; thus, the findings of this study are likely to apply to a broad Finnish context rather than a specific subgroup of Finnish companies. The diversity of the sample is a positive sign from the perspective of the generalizability of the study's results and their external validity.

Table 3 also shows extreme values for kurtosis for market equity (37.60), book debt (34.50), and book equity (28.82). Variables with high kurtosis also show the highest skewness values. Such a situation can create significant threats to the validity of this study. This risk was addressed by winsorizing the data for 1^{st} and 99^{th} percentiles for each variable.

5.1 Results of the Regression Analysis

The regression analysis allows for testing all the research hypotheses of this study. As mentioned earlier, the regressions analyze the relationship between the MTB ratios and measures of leverage and financing flows. Profitability, tangibility and firm size served as control variables.

Table 4. Results of regression analysis: the dependent variable of book leverage.

Regression Statistics	
Multiple R	0.430
R Square	0.185
Adjusted R Square	0.180
Standard Error	0.144
Observations	689

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	3.125	0.804	38.876	2.4E-29
Residual	684	14.140	0.021		
Total	688	17.355			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	0.472	0.044	10.635	0.000	
MTB ratio	0.010	0.003	3.294	0.001	
Profitability	-0.826	0.085	-9.716	0.000	
Tangibility	-0.096	0.029	-3.287	0.001	
Log(Size)	0.026	0.007	3.811	0.000	

The first regression model shows a statistically significant relationship between the independent and dependent variables, and the model explains around 18.5% of the variation in book leverage for Finnish companies. For the MTB ratio, the results show a positive and statistically significant effect on book leverage (coefficient = 0.010, p-values = 0.001). This means that companies with higher valuations do tend to have higher book leverage. Meanwhile, profitability (coefficient = -0.826, p < 0.001) and tangibility (coefficient = -0.096, p = 0.001) both have strong negative effects, which suggests that more profitable and asset-heavy companies do not rely as much on debt financing.

Table 5. Results of regression analysis: the dependent variable of market leverage.

Regression Statistics	
Multiple R	0.706
R Square	0.498

Adjusted R Square	0.495
Standard Error	0.149
Observations	689

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	14.996	3.749	169.830	6.2E-101
Residual	684	15.099	0.022		
Total	688	30.095			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	0.491	0.046	10.699	0.000	
MTB ratio	-0.028	0.003	-8.990	0.000	
Profitability	-1.054	0.088	-11.992	0.000	
Tangibility	0.067	0.030	2.219	0.027	
Log(Size)	0.015	0.007	2.202	0.028	

The second regression model explains almost half of the variance in market leverage (R square = 0.498, Adjusted R square = 0.495, Significance F = 6.2E-101), implying a strong fit. In this model MTB ratio shows a negative and highly significant (coefficient = -0.028, p < 0.001) effect, which suggests that companies with higher valuations are less leveraged when market values are taken into consideration. In this light, the market timing theory aligns with the results, as it speculates that companies issue equity during times of higher valuations and hence reduce their market leverage. Profitability (coefficient = -1.054, p < 0.001) shows a strong negative relationship, meaning that more profitable companies depend less on external debt, while tangibility (coefficient = 0.067, p = 0.027) and size (coefficient = 0.015, p = 0.028) are both positive. This suggests that larger companies tend to have higher market leverage ratios.

Table 6. Results of regression analysis: change in net equity issues.

Regression Statistics	
Multiple R	0.066
R Square	0.004
Adjusted R Square	-0.001
Standard Error	0.230

Observations	689

ANOVA

	df	SS	MS	F	Significance F
Regression	4	0.160	0.040	0.757	0.554
Residual	684	36.131	0.053		
Total	688	36.291			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	-0.065	0.071	-0.916	0.360	
MTB ratio	0.006	0.005	1.229	0.219	
Profitability	-0.070	0.136	-0.516	0.606	
Tangibility	-0.033	0.047	-0.700	0.484	
Log(Size)	0.008	0.011	0.759	0.448	

The third model, focusing on changes in net equity issues, demonstrates a weak overall explanatory power (R square = 0.004; Adjusted R square = –0.001; Significance F = 0.554). Hence, none of the variables reach statistical significance at the 5% level and hence they do not show meaningful relationship between equity issues and MTB ratios for example. This suggests that fluctuations in the market valuations do not explain changes in companies' equity issuance decisions, contradicting the assumptions of market timing theory.

Table 7. Results of regression analysis: change in retained earnings.

Regression Statistics	
Multiple R	0.369
R Square	0.136
Adjusted R Square	0.131
Standard Error	0.069
Observations	689

ANOVA

	df	SS	MS	F	Significance F
Regression	4	0.519	0.130	26.944	8.8E-21
Residual	684	3.297	0.005		
Total	688	3.816			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	

Intercept	0.035	0.021	1.619	0.106
MTB ratio	-0.005	0.001	-3.341	0.001
Profitability	0.369	0.041	8.990	0.000
Tangibility	-0.016	0.014	-1.154	0.249
Log(Size)	-0.006	0.003	-1.851	0.065

The fourth model, shown in table 7, (R square = 0.136; Adjusted R square = 0.131; Significance F = 8.8E-21) shows significant effects in relation to changes in retained earnings. The MTB ratio (coefficient = -0.005, p = 0.001) is negative and statistically significant. This suggests that companies with higher valuations report smaller increases in their retained earnings. This could mean that these companies pay higher dividends during strong market conditions. Profitability (coefficient 0.369, $p < 0.001$) shows a strong positive effect as by definition, profitable companies should accumulate higher retained earnings than less profitable companies. Tangibility and firm size show insignificant p-value levels.

Table 8. Results of regression analysis: change in net debt issues.

Regression Statistics	
Multiple R	0.067
R Square	0.004
Adjusted R Square	-0.001
Standard Error	0.104
Observations	689

ANOVA

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	4	0.033	0.008	0.767	0.547
Residual	684	7.340	0.011		
Total	688	7.373			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	-0.026	0.032	-0.817	0.414	
MTB ratio	0.002	0.002	0.738	0.461	
Profitability	0.050	0.061	0.813	0.416	
Tangibility	0.009	0.021	0.440	0.660	
Log(Size)	0.004	0.005	0.796	0.426	

The final regression model for changes in net debt issues shows minimal explanatory power (R square = 0.004; Adjusted R square = –0.001; Significance F = 0.547) and none of the independent variables are statistically significant. MTB ratio (coefficient = 0.002, p = 0.461) shows that there is no relation to the debt issuance of companies, and hence debt issuance decisions are not sensitive to the valuations of the companies.

5.2 Discussion

The results of the study show a strong positive relationship between Finnish companies' MTB ratios and their book leverage. This finding conflicts with the market timing hypothesis, which suggests that companies try to use high market valuations to issue equity rather than debt, which results in decreased leverage (Allini et al., 2018). Instead, the positive correlation could imply that companies with higher valuations have higher debt capacity and hence enable them to maintain higher book leverage even when market values are on higher levels. In line with the conclusions by Kim et al. (2015) and Setyawan (2011), this research states that perceived company valuation mispricing patterns play a major role in shaping the capital structure decisions of Finnish companies. At the same time, interestingly, this research showed that profitability and tangibility both had significant negative effects on book leverage that Finnish companies with substantial tangible assets and higher profitability rely less on debt financing. This finding can imply that companies that have substantial tangible assets are inclined toward using internal financing, which can be attributed to the unique features of Finnish companies and the Nordic region discussed in the literature review (Jauhiainen, 2020; Kulmala, 2020; Mattsson, 2021; Nguyen, 2021). Firm size on the other hand showed a positive and significant relationship with book leverage, suggesting that larger companies might have lower borrowing constraints as opposed to smaller companies.

The MTB ratio was found to predict the variation in Finnish companies' book leverage, whereas a negative and statistically significant relationship was identified for market leverage. Thus, in line with the findings of Mattsson (2021) and Nguyen (2021), but in contrast with the book leverage results, this analysis supports the existence of market-timing effect in the context of Finnish companies' market leverage. When companies are highly valued, they appear to lower their market leverage and hence be consistent with issuing equity during more favorable market environments. One possible explanation for this pattern is that Finnish companies opportunistically adjust their capital structure when equity valuations are high, while the book-based leverage measures lag behind such market adjustments. Tangibility shows a positive association with market leverage, while profitability remains negative, supporting the pecking-order theory that profitable companies prefer internal funds. Given that the Finnish economy is stable and has a reliable banking sector (Jauhiainen, 2020), it is possible that these findings imply that Finnish companies do not rely solely on debt financing during short-term market fluctuations. Such results indicate that other frameworks besides the market timing theory, such as the pecking order theory (Adair et al., 2015; Mardani et al., 2023), might be useful in explaining the debt financing behavior of Finnish companies.

The study's results provide limited evidence to support the market timing hypothesis in explaining the link between MTB ratios and changes in companies' net equity issues and retained earnings. When it comes to retained earnings, it was found that Finnish companies with higher market valuations experience smaller increases in retained earnings. This may indicate that they distribute more dividends or rely on equity issuance rather than internal financing, which is consistent with the predictions of the market timing theory (Kim et al., 2015; Setyawan, 2011). Profitability on the other hand remains a strong indicator for the growth of retained earnings. However, the relationship between the variables is slight, suggesting the presence of some mediating or moderating variables, such as tax considerations or dividend policies. The same conclusion can be reached in relation to net equity issues. Some Finnish companies might try to time the market when issuing equity, but the regression analysis did not capture the impact of other factors influencing net equity issues. Therefore, the market timing effect in this case is slight. Similarly, there was no strong relationship found between the MTB ratio and changes in net debt issues, suggesting that debt financing decisions are mostly unaffected by the companies' market valuations.

This research partially confirmed the hypotheses outlined in the methodology chapter. It was found that Finnish companies tend to increase book leverage when valuations are high but decrease market leverage under the same conditions. This duality suggests that valuations' effects are dependent on how leverage is measured. The relevance of market valuation was therefore confirmed with opposite signals for both book and market leverage. The influence of market valuation on retained earnings and equity issuance turned out to be weak and its impact on debt issuance was found to be statistically insignificant. Therefore, it is justified to state that the market timing theory alone cannot fully predict the capital structure decisions of Finnish companies. This is aligned with the findings of the previous studies on Nordic equity markets (Kornher & Stiernstrom, 2022; Ohanyan & Roos, 2024; Sjolie & Skjold, 2022). For better explanations and understanding for the changes of capital structures of Finnish companies, it is necessary to incorporate other frameworks, such as the trade-off and pecking order theories. Furthermore, it might be a promising idea to divide Finnish companies into a series of groups to isolate market timing effects. For example, the market timing hypothesis should be tested separately on companies with stable stock prices to determine whether the market timing effect could be observed in the case of market leverage when stock price fluctuations do not interfere with the relationship between the variables.

Although this study sought out to test market timing effects, it is important to emphasize that the results of the regression analysis also provide partial support for other frameworks, which are often used to examine capital structure decisions. In particular, the fact that the study did not confirm the impact of MTB ratios on changes in net debt issues provides a premise to assume that the pecking order theory, rather than the market timing theory, can be instrumental in explaining the debt financing behavior of Finnish companies in this context. Evidently, the debt issuance decisions of these companies are strongly influenced by internal policies and other firm-specific factors that go beyond profitability, size, and tangibility. In this situation, the pecking order theory could be utilized to better understand the rationale behind the Finnish companies’ debt issuance behavior. A similar conclusion can be reached in relation to the changes in retained earnings and net equity issues. Whereas a weak market timing effect was observed regarding both these variables, the results of the regression analysis clearly indicate the presence of other factors that play a decisive role in shaping changes in net equity issues and retained earnings. Discovering such factors is a promising area for future research.

6 Conclusion and Recommendations

This research aimed at analyzing the determinants of capital structure decisions of Finnish firms by investigating the influence of firm-specific variables on leverage and financing decisions. The findings from the regression analyses show that book leverage is positively influenced by MTB ratios and firm size but negatively by tangibility and profitability. This finding indicates that larger and high-valuation Finnish companies have Tender book leverage, while companies with more tangible assets or profitability employ debt financing to a lesser extent. This finding does not support the market timing theory and can reflect that high-valuation companies may have better creditworthiness in the eyes of the lenders, and thus they can employ higher levels of leverage.

Concurrently, a significant negative relationship between MTB ratios and market leverage was observed, which supports the market-timing hypothesis. This aligns with the assumption that companies issue equity during favorable valuation periods and thus lower their leverage. Tangibility and firm size both had a positive relation to market leverage, as opposed to profitability, which remained negative, confirming that more profitable companies prefer internal financing in line with the pecking-order theory. The market-timing effect was not detected in relation to changes in net debt issues, and only weak relationships were found between MTB ratios and the variables of changes in net equity issues and retained earnings.

The results of this research provide partial, but mixed evidence for the market timing theory. The study shows that the market timing effect can be examined from the capital structure decisions of Finnish companies, but the results are conditional on how the leverage is measured. The effect is positive for book leverage and negative for market leverage, which proposes that valuation may influence capital structure differently in accounting and market terms. For retained earnings and equity issues the relation remains weak while having no explanatory power for debt issuances. The results point to the need to consider the dynamic nature of financial decision-making, challenging the static assumptions of popular capital structure models. It is shown that firm-specific factors alone cannot predict capital structure decisions. Simultaneously, the companies' attempt to time these decisions cannot be approached through a one-fit-all approach. The findings of this research imply that the impact of market timing on capital structure decisions is multifaceted and is evidently affected by a range of different moderating and mediating constructs besides the control variables of profitability, size, and tangibility.

Future research may elaborate on many results of this study to advance a comprehensive understanding of the research problem. First, scholars might consider isolating the role of stock price fluctuations to investigate the presence of market timing effects in the market leverage behavior of Finnish companies. As stated above, it seems justified to assume that high fluctuations in stock prices were the main reason behind the surprising result of this study concerning the absence of a statistically significant relationship between MTB ratios and market leverage. Thus, conducting a study that specifically focuses on companies with relatively stable stock prices would be beneficial. Second, researchers are recommended to carry out a qualitative study to better understand the reasons behind the capital structure decisions of Finnish companies. Such a study could help delve into the unique attributes of Finnish companies and Finnish corporate traditions, thus explaining why the market timing effect was found to be limited and inconsistent in most regression models. Finally, the last recommendation for further research is to extend the analysis to private companies to study how does market visibility affects the company's capital structure decisions.

From a practical standpoint, the findings of this research highlight the need for a strategic, market-oriented approach to making capital structure decisions. Rather than relying on internal characteristics as suggested by some capital structure frameworks, when making capital structure and financing decisions, companies should consider a broad range of factors, such as investor sentiment and macroeconomic indicators. The partial support for the market timing theory provided in this study implies that Finnish companies should ensure flexibility in their policies in order to enable opportunistic financial decisions that take advantage of market timing effects. This option is likely to bring significant benefits to these companies compared to rigid financial frameworks.

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