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Impact of Rising Interest Rates on the Capital Structure of the Company

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ABSTRACT:

Tämän kandidaatin tutkielman tarkoituksena on selvittää korkotason muutosten vaikutusta yrityksen pääomarakenteeseen. Erityisesti tutkielmassa tarkastellaan, miten eri teorit selittävät yritysten käyttäytymistä pääomarakenteeseen liittyvien päätösten tekemisessä. Lisäksi tutkielmassa selvitetään, onko lyhyen ja pitkän aikavälin pääomarakenteen muutoksilla eroja. Yrityksen pääomarakenteeseen liittyviä päätöksiä selitetään useilla eri teorioilla, ja nämä teorit tarjoavat erilaisia näkökulmia päätöksenteon taustalla oleviin tekijöihin. Erityisesti normatiivisten ja kuvailevien teorioiden välillä on eroja. Tämä tutkielma tarkastelee yritysten käyttäytymistä korkotason noustessa ja analysoi, miten eri teorit selittävät tätä ilmiötä. Lisäksi tutkielmassa verrataan eri teorioita keskenään ja selvitetään, mikä teoria saattaa tarjota realistisimman näkemyksen yrityksen käyttäytymiseen pääomarakenteeseen liittyen.

KEYWORDS: Interest, Capital, Capital costs, Shareholders' equity, Borrowed capital

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1 Introduction

One of the company's relevant questions is how to finance their business. How should companies decide whether they should finance their business by equity or debt? By wisely choosing the capital structure, the company could have great potential to excess profits due to smaller costs compared to competitors. At the same time, companies need a lot of information about what components affect the cost of capital. With that information the company can build a suitable capital structure.

This topic is fascinating because different theories have a different interpretation of company capital structure choice than others. At the same time, different theories explain the decisions regarding a company's capital structure. Some theories have different answers to the question of how a company should choose its capital structure. The theories are based on different assumptions and explain one kind of company better than others. On one hand, Modigliani & Miller (1958, p. 268) state that the capital structure has no impact on company market value. On the other hand, according to Baker & Wurgler (2002, p. 27), companies should make their capital structure decisions based on market misvaluation and make a profit on it.

Also, there is lots of variance between the capital structure of companies sorted by different industries (Daskalakis et al., 2023, p. 1710). What affects the differences and how do different theories explain the differences? What characteristics affect the decisions on the capital structure?

In addition, there was a long term of time when interest rate fluctuations didn't have much effect because it remained at close to 0 %. There has been a lot of increase in interest rates recently, which can be explained, for example, by the war in Ukraine and the impact of inflation. Also, due to economic growth and recovery, when the economy opened after COVID-19, inflation increased and therefore nominal interest rates rose. Due to the increase in nominal interest rates companies should consider again how they finance their business. This thesis handles more the theoretical background of how

increased interest rates affect the capital structure and how this can be explained by financial theory.

1.1 Purpose of the thesis

This thesis handles how real interest rates impact the capital structure of the company. Especially the goal is to analyse how different theories explain it. Also, is examined what components affect the choice of capital structure in different companies. This thesis compares the behavior of companies, to how theories explain the behavior of companies. Consequently, the first hypothesis is:

H1: Companies tend to increase the demand for debt when real interest rates increase.

Secondly, this thesis looks at how the real interest rates affect the capital structure in a short term. For that reason, it is important to examine how much companies tend to change their capital structure in a short term. If there is no fluctuation in a short-term real interest rates don't probably affect the capital structure. Consequently, the second hypothesis will be:

H2: Companies' capital structure varies over the short term.

1.2 Structure of the thesis

This thesis follows the structure that is introduced next. The first chapter introduces the topic and presents the purpose of the thesis. After that chapter two introduces two descriptive theories and chapter three introduces two normative theories considering capital structure. Chapter four is the literature review section and looks at the other important topics that might explain the behavior of the company in capital structure decisions. Lastly, chapter five concludes the thesis.

2 Descriptive theories

In this thesis, theoretical background section is divided into two groups. The two theoretical groups are normative theories and descriptive theories. Descriptive theories explain how companies behave, and normative theories explain how companies should behave to make better decisions (Bell et al., 1988, p. 16). In the theoretical background section, these two are handled separately, but in the literature review section, these are handled together. The first part of the theoretical background handles the descriptive theories. The theories are market timing theory and pecking order theory. These theories might give a more accurate view of companies' behavior because they examine how companies behave in the topic of the theory (Bell et al., 1988, p. 16). For that reason, those theories are more important when considering the thesis, since it is studied how companies behave.

2.1 The market timing theory

One of the theories handling company capital structure, is called the market timing theory. A couple of articles that handle this theory have been published by Stein in 1996 and Baker & Wurgler in 2002. These handle the company capital structure decisions in perspective of the market inefficiency and how does market value the company (Stein, 1996, p. 439).

2.1.1 Basics of the market timing theory

The theory states that a company should focus more on the equity side of the capital structure when the company market value is overvalued (Stein, 1996, p. 439). Also, the theory states that a company should buy its shares when the company stock is undervalued (Baker & Wurgler, 2002, p. 27). Thus, the theory is based on the inefficiency of

the market, since if the markets are efficient, companies' stocks are always at the correct price and there would not be any over- or undervaluation (Fama, 1970, p. 384).

The theory is supported by Huang & Ritter (2004, p. 29). They state that a company should prefer external equity, such as issuing new stocks when its costs are low. That is when the value is overvalued. On the contrary, the company should prefer debt when the costs of equity are high. In addition, Alzahrani & Rao (2014, p. 104) have similar findings to Stein (1996, p. 439) and Baker & Wurgler (2002, p. 27). They propose that a company could exercise company' financing by issuing new shares when the costs are low and buying its shares when the costs are high. Furthermore Ali & Gurun (2009, p. 420) support the theory. They state that companies tend to time IPOs when the company stock price is overvalued.

Market timing theory is based on the inefficiency of the market and the misvaluation of company market value. The misvaluation of the stock is hard to predict and that is the reason why companies trying to time the capital structure decisions based on the market, don't often succeed (Graham, 2022, p. 2022). In addition, the same article declares that most companies think that their market value is undervalued. According to Croci et al. (2010, p. 372), especially overconfident CFO tend to fail in the valuation of the company and therefore fail to make profit for shareholders.

Nevertheless, it is hard to predict the company's market value. Graham (2022, p. 2022) state that, most of the CFOs interpret the company valuation based on the historic level of market value. The valuation of the company through historic prices of the stock is hard. This is because of the level of efficiency of the market. A weak form of the efficient market takes historic prices into account and, that's why today's prices are reflecting it completely, and it is impossible to gain profit with this information (Fama, 1970, p. 384). According to Mobarek & Fiorante (2014, p. 231) and Hudson et al. (1996, p. 1131), markets might fill the weak form of efficiency. On the contrary, according to Lim & Brooks (2011, p. 91), the market might not be efficient in the weak form. Also, according to

Graham (2022, p. 2022), companies value their companies based on historic prices, so at least CFOs look markets are weak form inefficient. Consequently, it might be possible to make a profit based on historical prices of company stock and therefore make it possible to companies to time the market correctly based on historic prices of company stock. Also, it needs to be said that according to Graham (2022, p. 2022), CFOs tend to fail the timing. This might be due to the stiffness of the corporation or the wrong methods of valuation.

2.1.2 The market timing theory and interest rate

The market timing theory doesn't state how the real interest rates affects the capital structure. Nevertheless, the theory states that the decision to take equity or debt is based on the company's stock value and its real value (Stein, 1996, p. 439). To examine how the real interest rates affects the capital structure, we need to recognize how the real interest rates affects the company valuation.

Before continuing, it is good to make a difference between real and nominal interest rates. Introduced by Fisher (1930, p. 526) nominal interest rates include inflation and real interest rates consider only the interest rate itself. This was introduced by the Fisher equation which states

$$(1 + i) = (1 + r)(1 + \pi). \quad (1)$$

Where i is the nominal interest rate π is inflation and r is the real interest rate. Also, there is an approximation for that

$$i \approx r + \pi. \quad (2)$$

In the market timing theory, it is important to consider two different things: company market value and company real value. The market timing theory deals with the

overvaluation of the company value. If the company market value is more than the company's real value, the company stock is overvalued. In other words, if the company's market value is higher than the company's real value, the company should issue new shares for the investors (Stein, 1996, p. 439).

The theory of market timing is partly based on information asymmetry. On one hand, Stein (1996, p. 433) states that a company has the best knowledge of the company's real value and therefore makes the best decision regarding the company's capital structure through market timing. It is worth to notice that the theory is based on at least a strong form of inefficiency in the market (Fama, 1970, p. 388). On the other hand, it is hard to define the company's real value. According to Graham (2022, p. 2022), most companies make their decisions about the valuation of the company based on the historical value of the company in the market. In addition, the same article states that most companies thought their market value was undervalued continuously.

Since the objective way to predict a company real value is hard, Baker & Wurgler (2002, p. 7) state that in market timing theory, companies should calculate their valuation through the market-to-book ratio. The article states that a company is probably undervalued when the market-to-book ratio is lower than average in the same industry. For that reason, it is proposed that companies tend to raise funds through debt when the valuation of the market-to-book ratio is low (Stein, 1996, p. 439), (Baker & Wurgler, 2002, p. 27).

It is needed to be said that there is a better method to value the company. Also pricing through market-to-book ratio does not take certain things under consideration when valuing. But for the thesis, this is one way to look at this problem and predict the outcome of the interest rates.

This thesis focuses on the impact of real interest rates on the capital structure of the company. Therefore, it is important to study the correlation between the market-to-book

ratio and real interest rates, when looking at how the real interest rates affects capital structure in market timing theory. There is other variables or characteristics that affect the correlation between real interest rates and market-to-book ratio, and it might be that the correlation is not that strong or there are inverse correlation for some companies than what is presented next.

According to Ang & Liu (2001, p. 421), there might be a negative correlation between the market-to-book ratio and real interest rates, at least for some companies. Uboš Pástor & Veronesi (2003, p. 1756) support the Ang & Liu (2001, p. 421) statement of negative correlation between these variables. There aren't very many articles handling this topic so, there might be company characteristics that affect the correlation. In any case, according to these two articles, there might be a negative correlation.

According to Baker & Wurgler (2002, p. 27), companies tend to lean more on equity when the market-to-book ratio is high and hence, the company market value might be overvalued. To add, there might be a negative correlation between real interest rates and the market-to-book ratio, according to Uboš Pástor & Veronesi (2003, p. 1756) and Ang & Liu (2001, p. 421). For this reason, it might be so that when the real interest rates rise, companies' market-to-book ratio tends to decrease, and companies tend to take more on debt.

2.2 The pecking order theory

The pecking order theory compares company capital structure and the risks of different ways of financing the company. It states that a company should first choose the most risk-free option from the company's point of view, and then the riskier one if it must (Myers, 1984, p. 9). One of the articles supporting the pecking order theory, is Myers (1984, p. 9). It is important to keep in mind that the pecking order theory is descriptive and illustrates how companies behave.

2.2.1 Basics of pecking order theory

The pecking order theory states that companies should finance their business by internal sources (Myers, 1984, p. 9). Abdulsaleh & Worthington (2013, p. 36) explained the term internal source, by the company revenue and the corporate ownership finance. The main reason of financing a business by internal equity is to reduce the risk of financing and therefore reduce the riskiness of the company (Myers, 1984, p. 14).

According to Myers (1984, p. 9), companies should finance their businesses through external sources of finance only if necessary. In addition, less risky external sources are favoured over more riskier options. Myers (1984, p. 9) proposed that the company should start financing with less risky options of external sources, consider debt and move to more riskier options, like financing with equity for example issuing new shares.

Also, Huang & Ritter (2004, p. 7) state that in the pecking order theory, company has an exact order of how finance the company. The article states similarly to Myers (1984, p. 9) that companies prefer internal funds over external funds.

2.2.2 Pecking order theory and interest rates

Pecking order theory doesn't directly determine how the real interest rate affects the capital structure. To the contrary, it proposes how the company should build its capital structure based on the riskiness of the financial instruments (Harris & Raviv, 1991, p. 306). The impact of real interest rates on the capital structure can be analysed using the components of the theory. Also, the pecking order theory states that a company makes its capital structure decisions based on the riskiness of the finance method (Myers, 1984, p. 9). In addition, the same article states that the company should begin to finance its business with low-risk options, for example internal sources of financing. The main component in the internal source of financing is sales (Abdulsaleh & Worthington, 2013, p.

36). So, when starting to study how the real interest rate affects the capital structure through the pecking order theory, it should be first understood how the real interest rate affects the company sales, due to its importance of internal source. If the real interest rate rises, it probably affects the sales negatively (Heckman, 1974, p. 189). Consequently, a company could lose some revenue because the real interest rate rises. Therefore, the company might need more finance than what can be achieved through sales. Therefore, according to the pecking order theory, it should choose external sources of finance (Myers, 1984, p. 9).

The assumption behind this is that the company has the same project and needs the same amount of finance, regardless of the state of the real interest rate. On one hand, according to Lin et al. (2018, p. 620), companies tend to decrease their cost of investment if the real interest rates rise. This might change the outcome of the impact of real interest rates on the capital structure. For example, if the company decreases the volume of investments due to increasing interest rates, the company might not need that many funds. For that reason, there might not be an impact on capital structure. On the other hand, if companies see the rise of real interest rates as temporary, they might not change their cost structure, and therefore, interest rates impact the capital structure. Regardless, if the real interest rate rises too much, some financing methods can become hard to acquire. In that case, company might want to change the financing method to an easier option. According to the pecking order theory, the company chooses the next riskier option (Myers, 1984, p. 9).

If the company needs more funds than is possible to get from internal sources, the company should take external funds, especially loans (Myers, 1984, p. 9). The effect of loans and their real interest rate depend on the type of bond. If companies have already issued bonds, bonds market value declines due to increased real interest rates and the cost of debt is lower. This is due to the bond valuation formula, where the same cash flows are discounted by a higher rate of return.

$$PV = \sum \frac{CF_t}{(1+r)^t} \quad (3)$$

where PV is the present value of debt CF_t is cash flow at the time t and r is the rate of return of the bond.

To the contrary, if the company takes a new loan due to rising real interest rate, the cost of that loan rises. It must be remembered that the cost of debt changes according to the kind of debt. In the study the bond is fixed rate. Also, if the bond real interest rate varies, the cost of debt varies accordingly.

To conclude, the impact of rising real interest rates on the pecking order theory might be that the capital structure moves toward riskier options of financing. The true impact of the rising real interest rate is hard to determine, and it depends on how much the real interest rate rises, how risky it is already, how the company is financed, and so on. To summarize, it might affect some volume of company capital structure.

3 Normative theories

Next are normative theories that handle the topic of how companies should behave. The normative theories don't support the hypothesis of this thesis very much. For this reason, the theories are not emphasized much. Regardless, normative theories are good to take into account due to their importance in education. Theories, from the normative point of view that is handled in this thesis, are net income theory, Modigliani and Miller's theory and trade off theory. The trade-off theory can be seen as a partly descriptive and partly normative theory, and it can be handled in a descriptive section. This is due to its great use in companies. But in this thesis, it is counted as normative theory and therefore handled in this section.

3.1 Net income theory

The net income theory ("NIT") is a normative theory that is about the company capital structure from a weighted average cost of capital ("WACC") point of view (Durand, 1952, p. 227). In addition, it considers if the company should build its capital structure on debt and how the debt affects the WACC.

3.1.1 Basics of the net income theory

NIT proposes that when deciding the capital structure of the company, the choice should be made thinking of the WACC. The theory proposes that increasing the leverage ratio of the company decreases the WACC. Therefore, it increases the value of the company (Durand, 1952, p. 227). For that reason, company capital structure should emphasize more financing with debt (Durand, 1952, p. 227). Also, the same article states that if the company puts too much weight on the debt side of the capital structure, it increases the WACC. Then the debt benefits will cancel out. The theory states that there is an optimal point of ratio between debt and equity (Durand, 1952, p. 228).

The theory proposes that if the company is below its optimal point with leverage, it probably should finance its business more with debt. This is explained by the WACC decreasing if the company takes more debt when the leverage is below the optimal point. Therefore, the valuation of the company increases (Durand, 1952, p. 228). Also, if the company is above the optimal point of leverage, a company should be financed with equity (Durand, 1952, p. 228). In addition, this decrease the WACC and, therefore, increase the valuation of the company (Durand, 1952, p. 228).

On one hand, financing low-leverage companies by debt decrease the WACC. This is explained by that the cost of debt will be cheaper than the cost of equity on low-leverage companies. It is argued that, from an investor's point of view, it is riskier to invest in equity than investing in debt, due to its higher priority in bankruptcy situation. On the other hand, if the company increases its leverage, the cost of debt increases higher than the cost of equity. This is explained by the riskiness of the company. The article states that when the leverage of the company rises the risk of bankruptcy of the company increases and, therefore, the possibility of not repaying debt increases. Therefore, the investor demands more cost of debt for the high-leverage company than for the low-leverage company (Chen, 1978, p. 866). For this reason, the theory proposes that some optimal points of leverage ratio maximize the company value (Durand, 1952, p. 228). Also, according to Van Binsbergen et al. (2010, p. 2091), the net benefit of debt is highest when the company's capital structure is at its optimal point. Therefore, this article might support the net income theory of capital structure.

The theory of net income is quite different from other theories, that handles the capital structure of the company. Durand (1952, p. 228) states that there is an optimal point of a company's capital structure. On the contrary, many other theories state that there is no optimal point of capital structure in the long term, rather, the choice of capital structure depends on other characteristics. For example, the pecking order theory says that the optimal capital structure is based on the need for financing. In addition, Durand

(1952) states that the optimal capital structure depends on the company and its fundamentals, like the company's industry. In addition, the same article states that when the cost of capital is minimized, the company's valuation is maximized. Thus, a company should have a capital structure in which the WACC is minimized (Durand, 1952, p. 227).

3.1.2 Net income theory and interest rates

The net income theory states that when deciding the capital structure of the company it should only think about the WACC (Durand, 1952, p. 227). Therefore, the impact of real interest rates on the net income theory depends on the impact of real interest rates on the cost of debt and equity. This is because the WACC is a weighted average of different components of the capital structure. For this reason, the variables that affect the WACC are the cost of debt and equity. If the cost of debt increases more than the cost of equity when the real interest rates increase, the company rather choose equity to finance its business. This is because the debt increases the average cost of capital more than the equity. Nevertheless, if the cost of equity increases more than the cost of debt in the environment of increasing real interest rates, the company might choose debt as a financing option. This applies assuming that the company is at its optimal point before the real interest rate rises.

Many variables affect the cost of debt and equity and how these react when the real interest rates increases. In addition, these depend on company characteristics, such as industry, leverage ratio, riskiness of the investment, and so on. For that reason, it might be hard to compare how the increase of real interest rates affects the cost of equity and debt.

3.2 Modigliani and Miller theory

After Modigliani and Miller published their paper considering capital structure, there was increasing interest put on the topic. Modigliani & Miller (1958, p. 268) proposed in their paper that the company capital structure has no relation to the market value of the company.

3.2.1 Basics of Modigliani and Miller

The proposition I of Modigliani & Miller (1958, p. 269) explains that investors can build their capital structure as they want. Modigliani & Miller (1958, p. 269) explain the theory with two different companies which have the same expected returns. The first company chooses to finance its business only by equity and the second company decides to finance its business with both debt and equity. The investor can now choose the cheaper one of the two companies and still acquire the same expected returns (Modigliani & Miller, 1958, p. 269). This proposition expects that the company's expected returns stay the same even though the company chooses a different way of financing.

Also, Modigliani & Miller (1958, p. 271) in proposition II state that investors require more expected returns from companies which use debt compared to those which don't. This argues that the risk of bankruptcy rises when a company takes more debt and, therefore, requires more returns on those investments. Therefore, it is stated that the cost of debt is more than the cost of equity. Also, Modigliani & Miller (1958, p. 288) in proposition III state that a company should make investments only if the expected return of the investment is at least as good as the expected returns of the stock. Otherwise, the company isn't following the interest of the investor (Modigliani & Miller, 1958, p. 288).

3.2.2 Interest rate and Modigliani and Millers theory

According to Modigliani & Miller (1958, p. 268), capital structure has no impact on company's market value. Nevertheless, it is important to keep in mind that the Modigliani and Millers proposition I theory doesn't state how the company should build its capital structure. It only states that it doesn't matter how you build it when looking at the company's market value perspective.

Modigliani and Millers look at the problem of capital structure more from an investor's point of view. An investor can buy company bonds and, therefore, build its capital structure as they want. This would propose that investors can choose the company's capital structure as they want. So, if the company is doing a favour to its shareholders, it shouldn't focus on capital structure.

To conclude, the effect of real interest rates on the Modigliani and Miller theory is as follows. According to Modigliani & Miller (1958, p. 269), the arbitrage balances the two companies whether they have leverage or not so the expected returns are the same in the two different companies. Therefore, from the investor's point of view, it doesn't matter whether the company is more leveraged or not. For that reason, real interest rate should not affect the capital structure of the company.

3.3 Trade-off theory

The trade-off theory is a modified version of Modigliani and Millers' capital structure theory. Because the original Modigliani and Miller theory has strict assumptions, for example of no bankruptcy costs and taxes, the theory was modified to have more realistic assumptions about the behavior of the company when deciding capital structure. The trade-off theory proposes an optimal point in company capital structure where the advantages of tax benefit and the company bankruptcy risk are both at the optimal level when considering both. Hence, the company market value is maximized and the WACC

is reduced (Kraus & Litzenberger, 1973, p. 915). It is important to notice that trade-off theory can be considered as both. The normative- and descriptive theory. This is due to the great use of companies. In the thesis, it is handled as normative theory.

3.3.1 Basics of trade-off theory

Trade-off theory proposes that when the company makes decisions about capital structure it should consider the interest tax benefit and the bankruptcy cost. The theory proposes that increasing the leverage of the company reduces the amount of tax paid. Consequently, the WACC decreases, and the value of the company increases. In addition, when increasing the leverage of the company, the bankruptcy risk of the company increases. Consequently, the WACC increases, and the market value of the company decreases. For this reason, the trade-off theory proposes that when deciding the capital structure, a company should think about the optimal point of leverage tax benefit and bankruptcy risk (Kraus & Litzenberger, 1973, p. 915).

The trade-off theory proposes that if the company is focused more on the equity side of financing, the company pays too much tax. That is because the company doesn't benefit from tax deductions from debt interest payments. By taking more debt, the company can reduce costs and make better profit (Nicodano & Regis, 2019, p. 715). Besides, if the company takes too much debt, the bankruptcy costs rise and the costs reduce the company's market value (Kraus & Litzenberger, 1973, p. 915). To conclude, the theory proposes that the company WACC is at its minimum when the tax shield and bankruptcy risk are balanced by the company leverage.

3.3.2 Interest rate and trade-off theory

There are two things to be considered when looking at how increasing real interest rates affects the trade-off theory. How does increasing real interest rates affect the tax shield and how does it affect the bankruptcy risk?

Firstly, when real interest rates rise, the company should pay more cost of interest payments. Therefore, the company can reduce more on tax payable (Nicodano & Regis, 2019, p. 715). However, the tax shield doesn't fully cover the increased interest costs so the company might want to lean more on the equity side of financing. Secondly, if real interest rates rise, the cost of debt increases and, as a result, increasing the risk of bankruptcy. Consequently, when real interest rates rise the company should probably lean more on the equity side of financing the company.

4 The impact of interest rate to the capital structure

4.1 Variation of the capital structure in the short term

This thesis examines the changes in company capital structure in the short term and how the real interest rate affects it. Therefore, it is important to recognize how much variation there is in company capital structure in the short term. Next is explored how different theories explain the variation in company capital structure. There are a lot of different theories explaining both sides of the matter. On one hand, for example, according to Myers (1984, p. 9) and the pecking order theory, the company capital structure tends to be quite static if the company doesn't need any external funds. On the other hand, Stein (1996, p. 439) states in market timing theory that a company should try to gain profit in the misvaluation of the company's market value. These misvaluations might happen frequently in the short term. Thus, it is possible that the companies that need more financing have more variable corporate capital structure than those that need less financing. Next is explained how different articles explain the variation in capital structure in the short term. According to Chong & Kim (2019, p. 324), the riskiness of the company tends to rise when the company has variation in its capital structure. Also, according to el Alaoui et al. (2017), the company stock volatility and, therefore, the riskiness of the investment in the company increases when the company does not have a stable capital structure. Consequently, some companies tend to stabilize their capital structure to reduce the riskiness of the investment.

According to Graham (2022, p. 2022), companies try to time their stock repurchase and issue new stocks. That would support market timing theory and, thus, making it possible to vary corporate capital structure in the short term. Also, the same article states that CFOs tend to time the market incorrectly. To the contrary, according to Deangelo & Roll (2015, p. 389) and Chong & Kim (2019, p. 324), most companies tend to vary their leverage ratio over the long term but, it seems to stay stable in the short term.

On the other hand, according to Alti (2006, p. 1684) and Leary & Roberts (2005, p. 2614) companies that time the market, tend to have to vary their capital structure in the short term. This would support that there is variation in a short term. According to Graham (2022, p. 2022), at least corporations tend to time the market. For this reason, they usually vary their capital structure in the short term.

To conclude, there is a difference between companies when considering their leverage ratio variation over the short term. Some companies prefer to keep their leverage ratio stable, as others prefer to gain profit by changing it over time. Also, it varies between companies, their characteristics and the guidelines of the company (Abor, 2007, p. 216). Regardless, it seems like some companies vary their capital structure over the short term, according to Alti (2006, p. 1684), Graham (2022, p. 2022), and Leary & Roberts (2005, p. 2614).

4.2 Short term and long term capital structures

There have not been many articles considering the topic of dividing the capital structure into short and long term. D'Mello et al. (2018) use long-term leverage in their article concerning the cost-benefit trade-off of debt. In contrast, there are a few studies stating that companies' capital structure tends to fluctuate in the short term, although, in the long term, companies usually balance it (Alti, 2006, p. 1684), (Leary & Roberts, 2005, p. 2614).

According to Leary & Roberts (2005, p. 2614), companies tend to balance their capital structure over a few years. This supports that companies commonly have quite stable capital structures over the long term. In addition, this supports that companies usually make long-term capital structure decisions based on capital structure targets. To add, Leary & Roberts (2005, p. 2614) state that in companies that use market timing in the short term, the effect of timing tends to disappear in the long run. Also, according to Graham (2022, p. 2022), at least corporations tend to time the market while making

capital structure decisions. That gives additional support to the short-term variation and long-term stability in capital structure for big companies.

Many theories support that there might be short-term fluctuation in capital structure. On one hand, according to Graham (2022, p. 2022), companies usually make capital structure decisions based on misvaluation of the company stock. This might support that, in the short term, companies tend to have fluctuating capital structures. It depends on how much companies vary their capital structure. On the other hand, company market value tends to be quite stable over a long term (Chen et al., 2022, p. 15). This might give support that companies usually have quite stable capital structures over a long term.

4.3 Differences between theories

As explained in the fore context, different theories have varying results and approach the problem of capital structure from different points of view. Also, different theories have different models explaining the impact of real interest rates on capital structure. One of the differences between theories is the difference between descriptive and normative theories. In this thesis, theories are divided according to these two categories. These theories study the same topics from different points of view, and, therefore, these theoretical groups are covered independently. Also, this thesis is more focused on descriptive theories because they give a more realistic picture of a company's behavior.

The descriptive theories analysed are pecking order theory and market timing theory. When regarding the difference between the two descriptive theories, it can be noticed that pecking order theory, while market timing theory, states that company capital structure should be considered through the riskiness of the financing method (Myers, 1984, p. 9). It states that a company should always choose the safest version and start with an internal source of financing and then proceed to an external source of finance. Market timing theory on the contrary, expects that the company tries to make profit from the misvaluation of the market value (Baker & Wurgler, 2002, p. 27). The biggest difference

between these two theories is the different behavior regarding risk. According to the pecking order theory, companies tend to minimize risk and, according to market timing theory, companies shouldn't consider risk when deciding the financing method. These two theories have a slightly different view of companies' behavior. For this reason, these two theories describe different kinds of companies.

When comparing pecking order theory to Modigliani & Miller theory, it is noticed that the pecking order theory relies on the assumption of asymmetric information (Myers, 1984, p. 16). The theory states that a company should minimize the disadvantages of this information (Myers, 1984, p. 16). On the contrary, Modigliani & Miller (1958, p. 267) one of many assumptions is that there is no asymmetric information in the market. When comparing the differences between these theories, it is noticed that Modigliani & Miller's theory doesn't give a realistic view of a company's behavior. For that reason, the pecking order theory have a more realistic view of the company's capital structure.

Most of the differences between theories are differences in the views of the behavior of the company. Theories approach the decisions of the capital structure from different points of view. It is argued that different companies behave differently when choosing the capital structure of the company. For that reason, some theories might explain one type of company better than others because companies behave differently regarding the capital structure. For this reason, it is hard to compose one theory that explains the behaviour of all companies, and for that reason, it is hard to predict how companies capital structure change when the real interest rates increase.

4.4 Comparing different theories

As seen in section 4.3 when comparing different theories together, it is important to remember that different theories have different assumptions about the market and companies. Therefore, it is quite hard to compare different theories together. Also, it is important to keep in mind that different theories approach the same topic from different

points of view. Especially, when regarding differences between normative and descriptive theories, it is noticed that these two theoretical categories view topics from different perspectives. Normative theories state how things should be done while descriptive theories observe how things are done.

One of the main differences between theories is the assumptions about the efficiency of the market. Stein (1996, p. 439) in his articles about market timing theory makes assumptions that there is inefficiency in the capital market and, for that reason, has different outcomes than for instance Modigliani & Miller (1958). They state that capital structure has no impact on the company market value in an efficient market. Modigliani & Miller (1958, p. 267) base their theory on the assumption that markets are efficient. This section 4.5 further explores the topic of efficiency in the market.

There are differences between theories on how the companies should build their capital structure. On one hand, Myers (1984, p. 9) in his article about the pecking order theory states that a company should solely take into account the riskiness of the financing methods and that way achieve the optimal capital structure for the company. On the other hand, Durand (1952, p. 227) in his article considering the NIT of capital structure states that a company should only think about the WACC. In addition, in the same article, he states that companies should lean more on debt since most of the time it tends to decrease the WACC. It is important to keep in mind that different theories view the problem of capital structure from different perspectives. Especially small and medium-sized companies might think that they should choose a less risky option of capital structure. Contrarily, some companies might want to focus on reducing the cost of capital.

The Modigliani and Miller theorem doesn't answer totally how real interest rate affects a company's capital structure. Nevertheless, it states in proposition I that the company's capital structure doesn't affect the company's market value (Modigliani & Miller, 1958, p. 268). When viewing the differences between Modigliani and Miller's theory and NIT, it is noticed that Modigliani & Miller (1958, p. 271) take into account the difference

between debt and equity in proposition II. It states that investors might require more returns if the company has more debt, because the risk of bankruptcy increases (Modigliani & Miller, 1958, p. 273). Furthermore, Durand (1952, p. 277) in NIT states that debt is cheaper than equity and, therefore, a company should lean more on debt. This is because debt has better priority than equity in a bankruptcy situation.

On one hand, Stein (1996, p. 439) states that a company should time the market when deciding the capital structure of finance. This theory has support from Graham (2022, p. 2022) who states that companies tend to time their decisions. In addition, it is stated above that this theory has the support of many different articles. Nonetheless, Graham (2022, p. 2022) states that companies tend to fail when timing their capital structure decisions. This shows that companies are not emphasizing capital structure decisions enough and it is hard to predict the market. It is also possible that we don't have the right tools to analyze the value of the company if CFOs can't predict it correctly. It is also important to keep in mind that the market timing theory assumes that there are some forms of inefficiency in the market.

4.5 Market efficiency

The market timing theory assumes that markets are not perfect and there is a misvaluation of companies' market value (Baker & Wurgler, 2002, p. 27). This is against the efficient market hypothesis (Fama, 1970, p. 388) which most other theories about company capital structure rest on. For example, Modigliani & Miller (1958, p. 267) make this assumption. If markets are efficient, the theory of market timing and the work that companies do when timing the market are useless.

To define whether markets are efficient or not, it is first needed to define the term of efficient market. Modigliani & Miller (1958, p. 268) state in their article handling Capital Structure and its Irrelevancy of Company Market Value that a perfect market is a market where similar products are perfect substitutes to each other have the same price.

Contrarily, Fama (1970, p. 388) has a different perspective on perfect markets and defines an efficient market as a market where prices always correspond to the available information. That results, for example, that it is impossible to win the market over the long term (Hodnett & Hsieh, 2012, p. 850).

The efficient market hypothesis is quite strict, and it might be hard to accomplish completely. For this reason, the efficiency of the market is divided into three forms (Fama, 1970, p. 383). In a weak form of efficient market, stock prices only take into account the historic level of stock value. In a semi-strong form of efficiency, the stock prices additionally reflect all information available to the public. In a strong level of efficient market stock prices reflect all information, including company inside information (Fama, 1970, p. 383).

Market timing theory assumes that the condition of at least a strong level of the efficient market is not completely fulfilled, and companies can for example, make profit with capital structure by means of inside information (Graham, 2022, p. 2022). It is good to notice that market timing theory doesn't assume that other levels of efficiency need not be filled. That is because the company has all the information, both the inside and the public information of the company, that it can use to make decisions about company capital structure (Fama, 1991, p. 1607). For that reason, it can make a profit with inside information when the markets are strong form inefficient.

It is important to note that company CFOs usually believe that the company stock price is undervalued (Graham, 2022, p. 2021). For this reason, at least the company CFOs tend to think that the market is inefficient. In addition, Chen & Yeh (2002, p. 232) state that investors behave against the efficient market hypothesis.

On one hand, it is argued that if companies make decisions based on inside information, this might make the market efficient (Fama, 1991). Investors makes investment decisions based on companies' activities, such as issuing new shares or taking loans. If the price is

over the right value of the stock, the stock will be sold and the stock price tends to decline. In that case, the market is efficient. On the other hand, the first assumption of the efficient market isn't fulfilled, which is that the stock prices fully reflect all information all given times (Fama, 1970, p. 383). The assumption isn't fulfilled, especially at any given time, if investors can make arbitrage with overvalued prices. Also, it is hard to predict the change in the company's market value while making investment decisions. For that reason, it is possible that the market value of the company is not at its correct level. For that reason, the market might be still inefficient even if market participants try to make riskless profits from the company's stocks.

To support the claims that companies make the market perfect, Stein (1996) argued that companies should manipulate their stock price. The article states that stock prices tend to decline when a company is issuing new shares. Also, stock prices tend to decrease when the company is buying its shares. This theory proposes that when a company times the market, when deciding the capital structure, the market become perfect. This is true only if the company values the company stock price correctly and makes the decisions about the volume of capital structure appropriately. On the other hand, as mentioned, according to Graham (2022, p. 2022), companies tend to fail in the timing and valuation of their own company.

The efficient market hypothesis states that when investors try to beat the market, they make it efficient (Ross, 1976). So, when an investor tries to beat the market over a long time, they make the market efficient, due to arbitrage. To add, it is good to notice that it is illegal to use inside information accounts when making decisions in the stock market (Cohen et al., 2012, p. 1013). So, that should make the strong level of efficiency unnecessary.

4.6 Managing interest rate risk

According to Bodnar et al. (2013, p. 888), today many, especially corporations are using derivatives manage risk. In addition, the same article states that many companies are using derivatives for interest rate risk management. Also, according to Smithson & Simkins (2005, p. 14), there might be a positive correlation between managing risk and the value of the company.

Managing interest rate risk could be relevant when the company is using a lot of debt and is afraid of increasing the cost of its debt. This could prevent from changing the capital structure in an increasing real interest rate environment. For example, if the company is using derivatives to outweigh the increasing interest rate, the company capital structure isn't affected by changes in the interest rate (Purnanandam, 2007, p. 1804).

According to Adedeji & Baker (2002, p. 54), especially companies with high leverage tend to manage interest rate risk. To the contrary, companies with low leverage don't want to manage the interest rate risk and their capital structure might be more sensitive to interest rate changes (Purnanandam, 2007, p. 1804). In addition, there are many other variables that interest rates affect. The changes in interest rates and the total result of it might outweigh the insurance that the company obtains with managing the risk of interest rate changes.

This thesis examines how the real interest rate affects the capital structure through the theories. Therefore, it is assumed that there are not any externalities that affect the decisions of capital structure. Contrarily, it is good to keep in mind that companies tend to manage their risk and that affects the changes in capital structure.

4.7 The behaviour of companies

There has been a lot of discussion about how companies tend to determine the capital structure. Also, different theories have different results. But how does the company usually make their decisions?

According to Graham (2022, p. 2022), companies try to time the market. Also, the same article states that companies usually fail it. Mahajan & Tartaroglu (2008, p. 755) find that market timing might explain the short-term decisions of capital structure. They state that companies typically make decisions on capital structure based on the short-term inefficiency of the market. In the long run though, these changes in capital structure usually become balanced. This would give the support for short-term changes and give a reasonable explanation to it.

Also, Ratih (2021, p. 403) supports the market timing theory and that the market-to-book ratio tends to explain the company decisions of capital structure. To add, the article states that a company's capital structure typically follows the company's past market value. This supports Graham (2022, p. 2022) that most companies tend to evaluate their stock by the previous value of the stock.

Also, according to Graham (2022, p. 2022), companies usually misvalue their stock value and, therefore, they tend to make wrong decisions about their capital structure. When assumptions are made based on the previous value of the company, this implies that companies believe that markets are inefficient in the weak form of efficiency. Nevertheless, according to Hudson et al. (1996, p. 1131) and Mobarek & Fiorante (2014, p. 231) most of the market is usually efficient in the weak form of efficiency. For this reason, if the company puts more effort into the valuation of the company, it might make better profit based on capital structure decisions.

Also, Alti (2006, p. 1684) supports that companies' market timing decisions are typically, quite short-term, and in the long run companies tend to balance their capital structure.

For this reason, it might be interesting to study the question of capital structure in two different parts: a short term and long term. But since this thesis investigates the impact of real interest rates on the capital structure of the company in the short term, the market timing theory could explain it well.

The pecking order theory seems to be supported by Chen (2004). The article concerns Chinese companies. It states that the pecking order theory doesn't fully explain the company capital structure decisions, so there might be something else that affects the decisions of capital structure.

On one hand, Moradi & Paulet (2019) describe how the Euro crisis affects the capital structure of companies. The article states that companies with good financial situations usually lean more on equity and try to reduce the risk of the company. On the other hand, Moradi & Paulet (2019, p. 158) state that other companies that are riskier and are more affected in bad times, typically lean more on debt. That might be explained by investors tendency to reduce their risk by buying debt instruments when there is a lot of uncertainty in the market (Boucher & Tokpavi, 2019, p. 27). Since investors rather want to give loans, if the company needs finance and, it should issue new debt.

Thus, the article might support the pecking order theory which states which a company makes its decisions based on the risk of the financial instrument. It is also good to keep in mind that the article investigates capital structure decisions in times of crisis. In regular times in the market, those kinds of decisions might not be made and the changes in capital structure could be explained by other reasons.

Köksal & Orman (2015, p. 271) study the pecking order theory and trade-off theory. The article states that these two theories explain different kinds of companies. It states that trade-off theory generally explains non-financial firms better. On the contrary, the pecking order theory tends to explain small public companies better. This thesis focus more

on companies that are financial firms. For this reason, the pecking order theory is a more important theory for this thesis.

According to Llobet-Dalmases et al. (2023, p. 6), companies tend to make their capital structure decisions in cycles. The article states that companies usually issue debt and shares depending on time. In addition, debt cycle usually lasts longer than the share cycle. Also, they state that these cycles are explained by different economic variables and for example different patterns in GDP. When considering that article from this thesis point of view, it is also possible that these cycles are explained by real interest rates.

There doesn't seem to be a lot of articles that support this explanation of capital structure decisions. In opposition, this theory might be supported by the idea of an economic cycle and what kind of financing method better suits certain kinds of economic circumstance. To add, the article is quite new and concerns cyclical capital structure decisions. Consequently, it could be interesting to study more. With this knowledge nevertheless, it might be wise not to make any further assumptions based on this article.

Köksal & Orman (2015) investigate companies in Turkey. The results might be different depending on the country. For example, Chen (2004) gives more weight to the pecking order theory in Chinese companies. These variations in different countries might be explained by differences in taxes and other differences in countries' politics and legislation.

Also, Öztekin & Flannery (2012, p. 108) state that there are a lot of variances in capital structure decisions between different countries. They state that the financial institutions in the country have a lot of effect on the decisions of capital structure. In addition, they state that differences in the legal environment affect the variance of capital structure decisions between countries.

To conclude, different studies give different explanations about companies' behavior on capital structure. The two most supported theories are market timing theory and

pecking order theory. There is some companies that the pecking order theory explains better and some other companies that market timing theory explains better. Based on market timing theory, it is hard to explain the SME company's capital structure decisions. Also, especially companies with huge growth are hard to explain with the pecking order theory, due to their great need for financing and risk when considering from investors' point of view.

Considering the market as a whole, market timing theory might be one of the promising theories to explain a company's decisions on capital structure in the short term. This is argued by companies thinking about the inefficiency of the market. Many articles support that companies tend to think that their market value is misvalued. For example, according to Graham (2022, p. 2022), most companies think their market value is undervalued.

Also, as seen in section 4.5, market tends to be inefficient. From the perspective of the company, any other inefficiency, than strong form inefficiency, isn't needed since they have all the information about the company. For this reason, companies can time the market and make a profit on capital structure.

Yet, as proposed in Graham's (2022, p. 2022) article, most companies tend to fail the timing of the market. This also might be explained by the stiffness of the short-term capital structure changes. Especially large companies changes in capital structure are stiff so that they fail on the timing of the valuation. Also, the regulation, especially for issuing new shares, slows the process and the decisions concerning the capital structure. These all could make an impact why companies tend to fail timing of the market. Also, it is possible that we don't have the right tools to value the company, and for that reason, CFOs fail timing.

5 Conclusion

This thesis considers how real interest rate can affect the capital structure of the company. Firstly, it is described how the different theories explain the decision of capital structure and how these theories might explain the impact of real interest rates on it. Secondly, it is considered how the capital structure might vary in a short term and if there are some differences between the short and long term. Then the differences between theories are considered and the theories are compared together. After that, it is considered how companies behave on the topic of capital structure.

It is important to keep in mind that different theories give different results of what happens if the real interest rate rises. On one hand, the pecking order theory assumes that company capital structure leans more on riskier options. On the other hand, Modigliani and Miller argue that there are no changes in capital structure if the real interest rate rises.

Is the hypothesis 1 of this thesis still valid? How do companies change their capital structure if real interest rate increases? In chapter 1.1 it was made two hypotheses. H1: Companies tend to increase the demand for debt when real interest rates increase and H2: Companies' capital structure varies over the short term. This thesis has come to the conclusion that the best theories to explain the behavior of the companies are market timing theory and pecking order theory. According to market timing theory, companies might lean more on debt when real interest rate rises. For this reason, according to market timing theory, hypothesis 1 predicts the behavior of the company. Also, according to pecking order theory, companies tend to lean more on riskier options of capital structure when real interest rate rises. For that point of view, hypothesis 1 doesn't completely predict the behaviour of the company.

Also, hypothesis 2 considers how much a company's capital structure tends to vary in a short term. Different articles have different results to this question. Some articles argue that companies' capital structure tends to remain quite stable. Contrarily, some articles

state that there might be variation in the short term but in the long term capital structure tends to be balanced. For this reason, hypothesis 2 might not explain best companies' behavior but there might be some variance in company capital structure in a short term.

In addition, it is good to keep in mind that different theories are based on different assumptions, and different companies behaves differently when choosing their capital structure. According to Noulas & Genimakis (2014, p. 77), there are a lot of factors that affect the leverage ratio. Therefore, it is hard to build one theory that explains the behavior of the company and it is hard to say how the real interest rates affect the capital structure of the company.

When considering future research more weight should be put on research of capital structure. Especially it should be studied, how much the company capital structure might fluctuate in a short term and if there are differences between short and long terms. Also, more weight should be put on normative theories that consider capital structure. Especially how companies can gain when choosing the capital structure. Also, more studies should be made to consider the market timing theory and why companies might time the market incorrectly.

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Appendices

Appendix 1. Theoretical summary

Theories	Impact of increasing interest rates
Modigliani and Miller theory	Should not affect to the capital structure.
Trade off theory	Company should get more equity side of the capital structure.
Net income theory	Depends on the impact of increasing interest rate to the cost of debt and equity.
The market timing theory	Company should get more debt side of the capital structure.
The pecking order theory	Company should make more riskier version to the capital structure.

Appendix 2. Summary of hypothesis 1

Article	Summary	Impact of increasing interest rates
Alti (2006)	The paper looks how does the market timing affects the capital structure of the company through event study.	Support
Graham (2022)	The paper handles the important corporate finance themes in the point of companies' behavior.	Support
J. J. Chen (2004)	The paper explains the Chinese companies' behavior with different variables.	Support

Article	Summary	Impact of increasing interest rates
Köksal & Orman (2015)	The paper compares trade-off and pecking order theory in Turkish companies.	Depends on company.
Mahajan & Tartaroglu (2008)	The paper examines the equity markets impact of company capital structure.	Support
Moradi & Pault (2019)	The paper examines different variables and characteristics of company and how do they explain the capital structure of the company.	Depends on company.
Ratih (2021)	The paper examines how does the market timing theory works in Indonesians company and other emergency markets companies.	Support
Öztekin & Flannery (2012)	The paper compares different companies' adjustments in capital structure.	Depends on country of the company.

Appendix 3. Summary of hypothesis 2

Article	Summary	Impact of increasing interest rates
Abor (2007)	The paper looks if there are industrial differences between companies in capital structure in Ghana.	Depends on company
Alti (2006)	The paper looks how does the market timing affects the capital structure of the company through event study.	Varies
Chong & Kim (2019)	The paper examines the stability of capital structure in Korean companies.	Varies over long period and static over short period.

Article	Summary	Impact of increasing interest rates
Deangelo & Roll (2015)	The paper examines the stability of capital structure in different time periods.	Varies over long period and static over short period.
Graham (2022)	The paper handles the important corporate finance themes in the point of companies' behavior.	Varies
Leary & Roberts (2005)	The paper examines how does the companies behave on capital structure after unbalance of it.	Varies
Myers (1984)	Paper explains the static tradeoff and pecking order theories.	Static
Stein (1996)	The paper handles how do the companies should choose the capital structure in irrational world.	Varies