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School of Business

Master of Strategic Finance Programme

Master's Thesis

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# **The Determinants of Financial Leverage of Large Publicly Listed Companies:**

## **Evidence from Nordic Telecom Sector**

**Examiner: Professor Eero Pätäri**

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## **ABSTRACT**

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This thesis examines the determinants of financial leverage ratio of large publicly listed companies within Nordic Telecom sector. The study is done as a case study and it covers 5 case companies headquartered in Nordic countries during period of 2002 - 2014 and by using restated values of quarterly observations from each case company's interim reports. The chosen hypotheses are tested with multiple linear regressions firm by firm.

The Findings of the study showed that uniqueness of Telecom sector and the region of our sample could not provide us unequivocal determinants of leverage ratio within the sector. However, e.g. Pecking order theory's statement of Liquidity was widely confirmed by 3 out of 5 case companies which is worth to be taken into account in the big picture. The findings also showed that theories and earlier empirical evidence are confirmed by our case companies individually and non-systematically. Though Telecom sector is considered as quite unique industry and we did not discover absolute common relationships that would have held through all the Nordic case companies, we got unique and valuable evidence to conduct the research of this sector in future.

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Tutkimus tarkastelee velkaantuneisuuteen vaikuttavia tekijöitä listattujen pohjoismaisten teleoperattorien keskuudessa. Tutkimus kattaa 5 case-yhtiön tarkastelun aikavälillä 2002-2013. Tutkimus on tehty case-työnä, jossa käytetään edellä mainittua aikaväliä ja case-yhtiöiden tunnusluvuista koostuvaa kvartaaleittain jaoteltua aineistoa, jota testataan lineaarisen monimuuttujaregression avulla. Regressiot mittaavat tunnuslukujen vaikuttavuutta kunkin case-yhtiön velkaantuneisuuteen yhden kvartaalin viiveellä.

Tutkimuksen tulokset eivät toimialan yksilöllisyydestä huolimatta havainneet selkeää ja yhtenäistä velkaantuneisuuteen vaikuttavaa tekijää listattujen pohjoismaisten teleoperaattorien välillä. Tutkimustulokset tarjosivat kuitenkin useamman case-yhtiön vahvistamia teoreettisia näkökantoja, kuten Pecking Order teorian kannan likviditeetin yhteydestä velkaantuneisuuteen. Tutkimuksen tulokset vahvistivat myös useampia teorioita ja empiirisiä tutkimuksia yksittäistasolla sekä toisaalta antoi vastaväitteitä joidenkin teorioiden kannoille. Vaikka emme saaneet näinkin uniikista toimialasta ja alueellisesta fokuksista yksiselitteistä ja yhtenäistä todistetta, tutkimustuloksemme antavat paljon arvokasta tietoa pääomarakenteen tutkimusten lähtökohtiin tulevaisuudessa.

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In Espoo 17<sup>th</sup> April 2015

Jukka Tyrylahti

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## 1. Introduction

Numbers of examinations are being conducted in order to figure out a kind of universal sense in capital structure research. Whether it has concerned searching for optimal capital structure or investigation for determinants of capital structure, the results provided has usually tend to remain majority of questions still wide open. Some rule of thumbs could have been formed without dependence of region, industry or characteristics of a firm. Still the most important thing to see from all the researches is that one individual research simply could not provide all the information at once to cover the field of exploration within capital structure. No matter what kind of capital structure research are we conducting, in order to get what we want, there is a quite long checklist to be taken into account.

Basically it is all about evaluation of prevailing risks, sector by sector. Political risk is evaluated in accordance of region a particular company operates in. Still this can relatively vary a lot within a particular region as well e.g. Europe. Thus more reasonable specifications are usually needed for the evaluation. Risks in each businesses and key financials are rated in accordance to the central characteristics of a certain industry and worldwide prospects that affect pivotal components of the industry. Also exceptional asset structure will bring in its necessary demands e.g. high amount of tangible assets require a long term plan in order to keep business under control. In addition some industries are categorized as kind of “multi-industries” which means that particular industry can basically consist of relatively very different sectors in between.

This study aims to figure out the most important factors to determine the financial leverage ratio within large and publicly listed Telecom sector companies of Nordic countries. Despite capital structure has been in focus of numerous papers, there is not much earlier evidence from the exact point of view of Telecom sector. From regional point of view is shown that many studies have found out Nordic area to be generally more different than other regions due to its legislation, transparency, investor protection and stricter banking policies. Telecom sector itself is very interesting target for examination as telecom firms are commonly strongly characterized as their own type of firms, e.g. level of

operating leverage is extremely high within telecom companies. (Sheffer, 2015) This kind of distinctiveness could bring regional differences in a more central role. In addition, the results of examination made by Bancel and Mittoo (2004) shows actual evidence that Nordic area that we are focusing on, do strongly differ from other Europe in search of determination of capital structure. Their paper will be glanced closer in the section of literature review. When compared, not with only with other Europe, but globally, Nordic countries are all high level welfare states with extremely low corruption perception index.

As a starting point for our examination we can see some possible differences between the results of the five case companies. Differences could assumingly be explained in accordance to each firm's operating areas and allocation of services that each firm provides in all the regions they are operating. Still it is important to understand that previous point of view possibly concerns only indirect explanations for the results.

This examination is done as a case study that consist of five large publicly listed Nordic case companies, which are Elisa from Finland, TDC from Denmark, Telenor from Norway and TELE2 and Teliasonera from Sweden. The research is done by using linear multiple regression that covers 12 year period of each firms' 7 firm-specific key financial items of which relationships are tested between the leverage ratio of a particular company. In our research we use leverage ratio values that are lagged by one quarter in between the independent factors. As we use quarterly observations, each firm's dataset consist of 48 observations. The chosen independent variables are Revenues, Growth rate, Net margin, Free cash flows (henceforth FCF), liquidity (Current ratio), Tangibility and Net investments. Robustness checks of our results are done with values lagged with 2- and 3-quarters.

Hypotheses are formed from theoretic statements and / or earlier empirical evidence, and set to test whether particular variable is positively or negatively related to dependent variable, leverage ratio of a particular case company. Each hypothesis aims to figure out if particular Capital Structure theory holds or not, by using our data. Revenues, net margin, liquidity, and tangibility are hypothesized

to be in positive relationship with leverage ratio of a respective case company. Growth rate, FCF and Net investments are supposed to be negatively related to leverage ratio of each case company. Backgrounds for these assumptions will be seen more detailed on the section of "Data and Methodology".

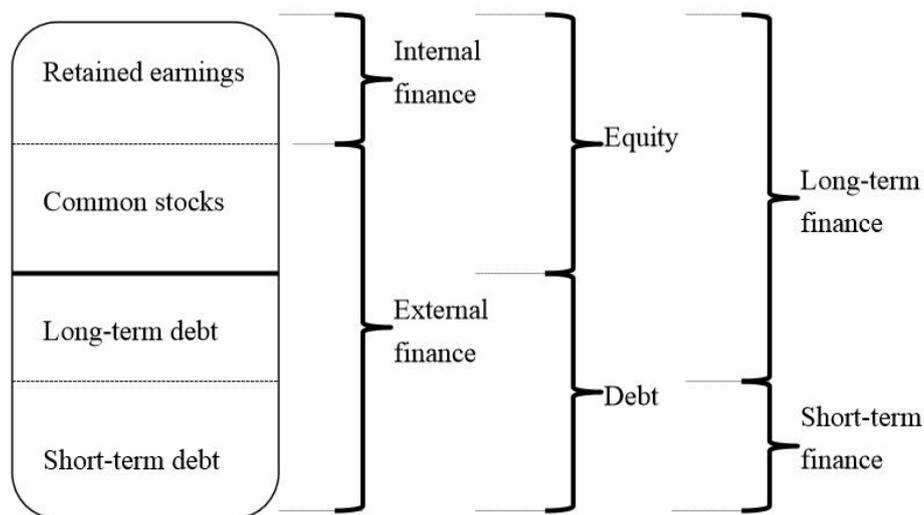
Our findings showed that uniqueness of Telecom sector and the region of our sample did not provide us unequivocal determinants of leverage ratio within the sector. However, our hypothesis 5 that tested if Pecking Order Theory holds was confirmed from behalf of three case companies (Elisa, Tele2 and Telenor) which is worth to be taken into account in the big picture. In addition Tele2 and Telenor can be also integrated by hypothesis 6 that tested if Trade-off Theory was confirmed, which was. Other firm-specific findings were Elisa's confirmation of Agency Theory in hypothesis 2 and Teliasonera's strong argument against statement of Trade-off Theory in hypothesis 6. Even though Telecom sector is considered as quite unique industry and still we did not discover absolute common relationships that would have held though all the Nordic case companies, we managed to gather favorable evidence to conduct the research of this sector in future.

This thesis is structured as follows: Firstly, section two provides theoretical background of capital structure theories. In third section we focus on literature review where can be seen the most commonly tested and found relationships with leverage ratio from behalf of capital structure theories and empirical findings. The fourth part takes an approach to Scandinavian area and its' Taxation and differences in taxation between the Scandinavian countries. Fourth part also represents all the case companies and includes qualitative analysis of last six years' revenues, profitability and other actions each company has recently taken. The fifth section gives more specified information of sample of this study and represents the hypotheses and research method used in the examination. Sixth section shows the findings of multiple regressions run using each company's dataset. Seventh part concludes the results and whole study's examination. Some thoughts for future research are also provided in this section.

## 2. Theoretical Background

There are many theories to make us see the optimal capital structure in different conditions under the real world's imperfection. In case capital structure is irrelevant in a perfect market, then imperfection that exist in the real world must be that cause of its relevance. Basically it exists two ways to explain financial decisions of firms. First endeavor is to figure out the optimal relationship between debt and equity during the tax deductibility and bankruptcy costs are also taken into account. When such point is found the weighted average cost of capital (WACC) is minimized and value of firm maximized instead. Second way to explain choices of capital structure is based on existing asymmetric information between firm and stakeholders. (Brealey at al. 2006)

Figure 1 provides a simplified framework for capital structure categorization where hybrid financing and grants are excluded from the view. Management do have three decisions and/or trade-offs to consider in order to make up their minds: 1. Internal and external finance, 2. Equity and debt and 3) short-term and long-term debt.



**Figure 1: Framework for capital structure categorization (Salminen 2013)**

The existing theories try to address some of these real world imperfections, by particular assumptions made by Modigliani and Miler (1958). The Modern Theory

of Capital Structure was built up late in the 60's by Modigliani and Miller (Modigliani & Miller, 1958) who pointed, that existing capital structure theories must be taken into account by showing under what conditions capital structure is irrelevant.

Whatever is the chosen way of financing there are always good and bad point of views and differences of each source of financing. After all, it can be said that decision makers are on "right track" when their decision also provides an answer to a question "Which characteristics of financing fits best for their industry, sector of industry or even their firm itself when possessing a unique type of business". Table 1 illustrates the main differences between debt and equity financing (Laurila 2008, 93-95)

**Table 1: Main Differences between Debt and Equity. (Laurila 2008, 93-95)**

Characteristic	Debt	Equity
Security requirements	Demand of collateral	No security collaterals
Payment of profit	Fixed interest	Dividend <sup>7</sup>
Payment priority	Primary priority	Residual claimant
Control allocation	No control rights	Managerial control rights
Tax deductibility	Tax deductible interests	No tax deductions allowed
Maturity	Predefined maturity	No maturity date
Repayment to investor	Obligated repayment	No repayment obligation

## 2.1 Optimal Capital Structure

In search of optimal capital structure, firm is striving for such balance where value of a firm and value of equity are maximized. In other words, Executives are supposed to do such decisions to choose the best possible distribution between equity and debt.

Usage of financial leverage is a way to adjust capital structure of firm by increasing the relative share of long term debt in capital structure. Bigger the financial leverage, higher the expected profits (in equity). On the other hand in case of highly indebted firm when the share of debt is continuously growing, will

riskiness grow continuously too. Because there are both positive and negative effects of leverage, it is usually difficult to figure the optimal capital structure. (Davis & Pointon, 1994) Both, characteristics of the industry and current trends of each market often possess a remarkable effect in the choice of capital structure.

As earlier mentioned Modigliani and Miller has given huge effort to examine and develop capital structure theories. The first MM theorem (1958) points that in perfect market conditions financial executives simply could not increase the firm value by fixing capital structure. Thus value of the firm is independent of the capital structure of the firm. (Brealey et al. 2006)

The first MM proposition is proved mathematically as follows (Levy & Sarnat, 1994)

$$(1) \quad V_L = V_U$$

where:  $V_U = S_U$  = Market value of firm with no debt is equal with equity value of with no debt.

$V_L = S_L + B_L$  = Market value of a levered firm

$S_L$  = Equity value of a levered firm

$B_L$  = Debt value of a levered firm

As a logical step Modigliani and Miller (1963) also took corporate taxes into account. When corporate taxes are taken into account, it brings firm value to be dependent in choice of capital structure. That's because interests of firm debt are tax-deductible, but profits distributed to owners, are not. When dividends are truly taxed twice, thus it exist a clean tax-advantage of debt in comparison to equity. So basically we can say that because of the tax-advantage, higher the leverage, higher the firm value. (Brealey et al. 2006)

As corporate taxes were involved the second theorem was formed. Theory indicates that increasing of leverage brings also higher profit margin for equity and then optimal capital structure would be reached with almost 100% leverage,

when particular limitations are involved. (Brealey et al. 2006) Theorem is based on thought where increasing level of debt brings higher financial risk for equity investors. In order to get equity financing must equity investors get higher risk premium. Levy and Sarnat (1994) illustrated profits of debt and equity mathematically with following steps. (The Case of a household with no taxes)

$$(2) \quad Y_U = \frac{X}{V_U}$$

And

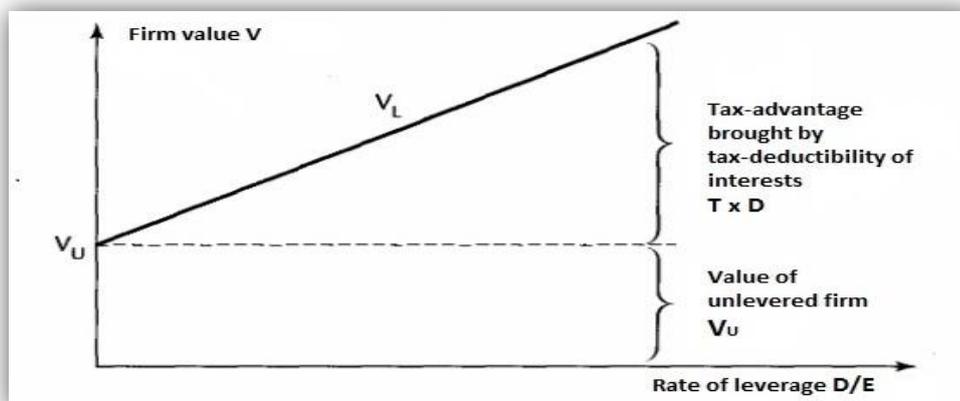
$$(3) \quad Y_L = \frac{X}{S_L} + \frac{rB_L}{S_L}$$

Where:  $Y_U$  = Profit margin of Equity  
 $X$  = Operational profit of firm  
 $V_U$  = Market value of unlevered firm  
 $Y_L$  = Profit margin of debt  
 $r$  = Interest rate of firm debt

In addition, Profit margin of high levered firm can be presented with following reformations: To divide and multiply equation 3 with  $V_U$  and add in  $(X/V_U)(B_L/S_L)$  with remembrance that  $V_U - B_L = S_L$ . (Levy & Sarnat, 1994)

$$(4) \quad Y_L = Y_U + (Y_{U-R}) \frac{B_L}{S_L}$$

Equation 4 shows that profit margin of levered firm ( $Y_L$ ) is equal to unlevered firm profit margin ( $Y_U$ ) when risk premium  $(Y_{U-R}) \frac{B_L}{S_L}$  is added as well. Level of risk premium is naturally dependent of firm debt to equity ratio (D/E). Higher the amount of debt, bigger the financial risk of investors. Thus is profit margin also higher as the following Graph 1 shows. (Levy & Sarnat 1994)



**Graph 1: How does corporate taxes effect to firm value (Niskanen, 2000)**

This theorem has faced criticism as Modigliani and Miller does not notify how risk of bankruptcy would effect to market value of a firm. Usually firms that go bankrupt has recently experienced of relative growth of debt. In bankruptcy e.g. lawyer fees and depreciations of assets cause expenses to owners and creditors. When firm is more and more indebted, those expected bankruptcy costs are lowering value of firm and bringing the probability of bankruptcy higher. (Davis & Pointon, 1994) So it is been stated that in order to find optimal capital structure, one have to use credit information, taxes, level of bankruptcy risk and bankruptcy costs in a formed function. The next represented aspect is Trade-Off theory.

### **2.1.1 Trade-Off Theory**

As the name on theory also indicates, the idea of Trade-Off theory is to find an optimal compromise between equity and debt. Firms that obey this kind of thinking try to balance between the advantages of debt, like tax-deductibility of interests and disadvantage like direct and indirect costs of bankruptcy. Firms are striving for their goal of balance between debt and equity. (Chirinko et al. 2000)

In Trade-Off theory, particular needs for investments and capital expenditures of each industry are taken into account when searching for optimal balance between debt and equity. Thus each firm owns a theoretical optimum of debt rate that differs between firms' business nature. According to theory, those firms with high

amount of tangible assets and stable revenues, are tended to be financed with debt. Other aspect comes out in case of firms with mostly intangible assets that could not be used as collateral. According to Trade-Off theory those firms usually finances their business with equity. (Brealey at al. 2006)

Fama and French (1998) have examined a lot how central role do Trade-Off Theory own in firm's capital structure choices all over the world. Theory points that high level of net income and high profitability should refer that firm should be capable to manage their commitments of debt. So on the expected return of equity becomes higher by using high leverage. In practice, rare firms are following the principles of trade-off theory. Results point that profitable firms usually avoid debt financing and prefer internal financing instead. Thus we will focus on reasons to choose internal financing later on when the introduced theory is based on asymmetric information.

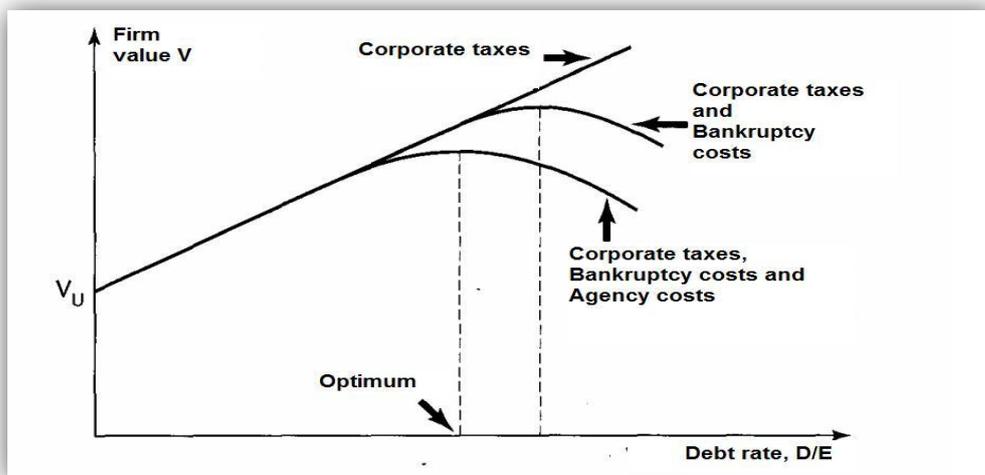
### **2.1.2. Agency Theory**

Agency theory also looks for it's own kind of compromise to find out optimal capital structure by balancing between agency costs and advantages of debt. The explanation of Agency Theory states that scenario where the amount of debt that set the limit to management actions is the most widely accepted approach to explain choices of capital structure. (Eisenhardt K. M., 1989)

There are possibilities of some "classic" conflicts to get involved between owners and creditors. "Dividend problem" exists when owners decide to distribute assets to themselves and thus position of creditors is remarkably weakening. Among creditors, there is a possibility for "claim dilution problem" when firm issues new debt with identical or even more favorable terms than anterior debt has gotten. "Asset substitution problem" instead becomes reality when firm has issued debt with low interest in order to invest to low-risk project but decides to change the target into a project with higher riskiness. Fourth possible problem is called "underinvestment problem". Scenario comes true when firm decides not to invest into a project with positive net present value, a project that would be beneficial for creditors, but not for owners. (Smith & Warner, 1979)

Like Titman and Wessels (1988) gave their statement, due to the agency cost of debt firms with high growth opportunities are expected to rely more on retained earnings and stakeholder's co-investment than choosing debt finance. Thus, they stated that according to Agency theory there is a negative relationship between growth opportunities and leverage ratio. This statement is tested in this thesis as well.

In order to reduce agency costs, bank loans and publicly quoted bonds are being attached by special terms also called covenants. Covenants are contracts to restrict debtors' actions that can be classified in many ways. Prohibitive covenants are made to set limits for dividend distribution or property selling. Corroborative covenant instead, defines limit value for particular financial indicators, such as debt rate and current ratio. (Niskanen, 2000)



**Graph 2: Firm value with effects of corporate taxes, bankruptcy costs and agency costs. (Niskanen, 2000)**

## **2.2 Theories Based on Asymmetric Information**

Asymmetric information refers to a problem where available information is not evenly distributed between partakers. When compared to other stakeholders, there is a belief that insiders of firms do possess more advanced information of firm economic conditions or incoming investing possibilities. Theories based on asymmetric information points that capital structure choices does matter to value of firm, even under conditions where taxes are not involved. Thus these theories do argue strongly against theorems set by Modigliani and Miller (1958, 1963). Theories are named Pecking Order theory and Market timing theory.

### **2.2.1 Pecking Order Theory**

This hierarchic theory was built up by Myers and Majuf in 1984. Theory is explained by asymmetric information between management and outsider investors. In addition signaling problem related to external financing also has remarkable explanatory power according to the theory. Theory pushes firms to prefer internal finance when funding their investments. In practice financial decisions obey particular hierarchy where firm chooses first economical internal finance and if needed, will fulfill the funds with external finance, starting from debt because of its' lower level of riskiness. After debt firm usually finance the project by using forms between debt and equity, such as convertible bonds. In case firm still need more funds it should decide to arrange share issue.

Puttonen and Leppiniemi (2002) demonstrated reason to choose internal finance and on the other hand reasons to not to choose it. There are many reasons to prefer internal finance. It does not cause any separate costs and do not lower the controlling power of present stockholders either, in comparison to share issue. Internal finance also attract because firm is not obligated to predicate their use on financial market. The weakness of internal finance comes from its' uncertainty. In case of financial years with weaker profitability internal finance is simply not possible when firm does not make any profit. Other aspect is based on thought

that internal finance is concerned as “free capital”, which may lead into inefficient investments from point of view of firm owners.

Theory explains why profitable firms tend to keep their debt rate as low as possible. That is because of their big profits that could be used for internal finance. According to the Pecking order theory, there is no such thing as desirable optimal capital structure. Rather changes of capital structure are driven by possible need for external finance. Thus each formed capital structure is a cumulative result from bygone hierarchic financing (Shyam-Sunder & Myers, 1999).

Still Pecking Order –theory does not provide explanation for industrial differences how capital structure is dependent of firms’ business area and circumstances. This is one of the remarkable differences when compared to Trade-off –theory. Brealey et. al (2006) also gave couple of examples for particular scenarios. Firstly, despite there is always a definite need for external finance in industries of high growth and high technology, is gearing ratio usually pretty low among the circumstances. Second demonstration comes from strong and stable industrial sectors, like lumber industry where cash flows are rather paid as dividends to owners than usage for loan paybacks.

Financial decision making has been examined in various circumstances to find out how particular industries follow the theories of capital structure. Rajan and Zingales (1995) did an examination of large firms in industrialized countries. According to their results gearing –ratio of firms depends of four different factors. Largest firms and firms with high amount of tangible assets had the highest gearing ratios. Correspondingly, firms with better profitability and higher market value of shares, had lower gearing ratios. Results bring together both Trade-Off - theory and Pecking Order Theory. Trade-Off –theory tells that large firms and firms with high amount of tangible assets tend to finance their actions by debt. Pecking order theory instead, tells that profitable firms preferring internal finance.

### **2.2.2. Market Timing Theory**

Market timing theory which is also known as “Signaling theory” is very closely related to Pecking order theory, but often it is concerned as a separate theory since the fundamental idea is different. In accordance to Market timing theory firms would practice kind of “tactical finance” as management owns favorable information of firm in their hands, when compared to outsiders. Thus they do have some incentive for particular actions. Actions are based on nominal, desirable gearing –rate of firm. Rate can be changed aggressively to indicate and give market a signal of current trend, direction or condition of firm. Gearing –rate tells the relation between debt and equity. Thus higher the gearing rate, more indebted the company (Franke, 1987).

Ross (1977) brought some scenarios through how this actual signaling of Market timing theory, could be done. In case management decides to strongly raise debt - rate of the firm, it gives market a signal of stable trust for the future and also that firm has capabilities to manage their liabilities. Investors have adopted high debt-rate as a sign of good profitability of firm and that particular firm as an attractive investment object. So debt issuance is good news for market, when share issue is known as last chance of financing and thus a bad news that leads into decline in share price.

Despite theories does explain their statements, empirical evidence usually tells the truth “better” as results are based on real practice. However there are innumerable influencing things in results, sometimes reality and theory do fit. As a summary for this section, on next page, table 2 illustrates the main ideas and aspects of theoretical approach in capital structure choice.

**Table 2: Suggestions for capital structure choice according to capital structure theories. Table is divided in sections between theories seeking for optimal capital structure and the ones to explain choices with asymmetric information.**

<b>Theory</b>	<b>Basis</b>	<b>Point of View</b>	<b>Strength &amp; Weakness</b>	<b>“Claim” of The Theory</b>
Trade-Off Theory	Optimal Capital Structure	Optimal compromise between equity and debt. Balancing between the advantages and disadvantages of debt.	+ Industrial differences are taken into account - Visibility of advantages and disadvantages.	The <u>higher</u> amount of tangible assets, <u>higher</u> the leverage ratio.
Agency Theory	Optimal Capital Structure	Also kind of compromise. Balancing between debt agency costs and advantages. Agency theory argues that amount of debt sets limit to management actions.	+ Covenants to avoid management moral hazard - Covenant costs because of moral hazard risk.	The <u>more</u> the volatility in sales (growth), <u>lower</u> the leverage ratio of the firm.
Pecking Order Theory	Asymmetric Information	Explained by asymmetric information between management and outsider investors. financial decisions obey particular hierarchy where firm chooses first economical internal finance and if needed, will fulfill the funds with external finance	+ Using the approach of the theory provides information of firm profitability - Industrial differences are NOT taken into account in the theory.	The <u>higher</u> the firm profitability, the <u>lower</u> the leveraged ratio of the firm.
Market Timing Theory	Asymmetric Information	Concerned as “tactical finance” where management owns favorable information of firm in their hands, when compared to outsiders.	+ Possibility to enhance firm image WITHOUT moral hazard - Also possibilities for moral hazard.	<u>Higher</u> the leverage ratio, <u>better</u> the profitability

### **3. Literature Review: The Most Common Factors to Effect Leverage Ratio**

This section represents a view of recent studies of capital structure where the evidence is chosen in accordance to the findings that which factors are found to be related to indebtedness of the companies. Therefore this section is also divided in accordance to the findings in order to ease comparability between each other's empirical results. As theoretic statements are many times proven not to be truth in practice, it is easy to admit empirical results as more attractive to follow and set as tested hypothesis. Still this section provides both theoretical and empirical statements for each of the variable-based categories. Whereas the particular characteristics are proven to own explanatory power in a particular examination, it is also remarkably important to understand and utilize the information of prevailing characteristics in Telecom sector to see the big picture.

The Results presented from each examination are somehow chosen according to their relevance and comparability to this thesis. There are also studies where European policy is compared to some other region in order to illustrate all those factors that may have effect of their own in capital structure choice despite they are not taken into account in this thesis. Basically we have assorted the survey that covers the following factors: Bankruptcy costs and Riskiness, Profitability, Size, Growth Opportunities, Dividends, Taxation / Tax Shields and Liquidity. From behalf of the empirical evidence of this study, we have exceptionally replaced variables Bankruptcy costs and Riskiness, Size, Dividends and Tax Shields with more suitable ones for Telecom sector; Revenues, Free Cash Flows, Tangibility and Net Investments.

#### **3.1. Bankruptcy Costs and Riskiness**

Fama and French (2002) pointed that higher the volatility of profits, bigger the probability of financial crisis, when company could no longer manage their liabilities. And whereas volatility keeps growing, it violates firms' capacity to raise

new debt. Trade-off Theory also states that firms with lower level volatility of profits and thus lower risk for financial crisis tends to be more indebted.

Pecking Order Theory states that volatility of free cash flows has negative effect to level of gearing ratio. In this case this is based to fact where companies with higher volatility are striving for lower debt ratio in order to maintain their capacity to raise debt that they can finance their profitable investments. (Fama and French 2002)

Examination by Leland (1994) found out that companies with higher bankruptcy costs tend to be less indebted than companies with lower bankruptcy costs. This also agrees with Trade-off theory's statement. Similar findings were provided by De Miguel and Pindado (2001) as they examined the determinants of capital structure of Spanish companies in years 1990-1997.

As the case companies of this study consists both multinational (MNC) and domestic corporations (DC) is the examination of Akhtar and Oliver (2009) very good point of view to see whether capital structure determinants differ between MNCs and DCs. Sample of the study was gathered from Japan and divided to MNC and DC groups. Findings showed that on univariate basis the Japanese MNCs differ significantly on most variables relative to Japanese DCs from behalf of Leverage, age, collateral value of assets, free cash flows, foreign exchange risks, growth, non-debt tax shields, political risks, profitability and size. Still both firm age and collateral value of assets were found significant variables in explaining leverage for whole sample regardless of whether firms are MNCs or DCs. Business risk was negatively related to leverage on MNCs. As DCs were found more indebted than MNCs there was no significance between Leverage and business risk on DCs.

### **3.2. Profitability**

According to the model of Trade-off theory, Fama and French (2002) pointed that agency costs, taxes and bankruptcy costs drives firms towards higher debt rate. Firms with best profitability could control the agency problems of free cash flows

by paying major part of profits before interests as dividends and liabilities. Therefore, in order to control investment opportunities, paying dividend and level of debt are positively dependent to profitability.

Pecking order theory explains well how remarkable profitability is when we are making our choice of capital structure. Reason why equity is the last choice of financing is simply due to its' relatively high cost of issuance. In such cases all the undivided profits are a very important factor when choosing the capital structure. Thus Pecking order theory argues that higher profitability of firm makes its' debt ratio lower. (Titman & Wessels 1988)

Qiu and La (2010) investigated if Australian firms' characteristics were related to capital structure. 367 firms were observed from period of 1992-2006. Levered firms were found more profitable than the unlevered ones. Profitability seemed to decrease the debt ratio of levered firms. Thus results confirm Pecking Order and Agency Cost theories but differ from Trade-Off Theory.

Moosa et. al. (2011) made an investigation using Extreme Bound Analysis (EBA) to figure out which of the mainly used variables would be fragile and which not. In practice the question was: if model specifications are changed, does the explanatory power or significance of those variables change? Tests of the study were based on **Table 3** (on page 25 where is another research by Moosa et al.) assumptions and used dataset consisted of 344 listed Chinese companies. Variables tested with different specifications were size, liquidity, profitability, tangibility, growth opportunities, the payout ratio, stock price performance, the age of the firm and income variability. The dependent variable was the leverage ratio. Results showed that the robust variables that determine the capital structure of Chinese firms were size, liquidity, profitability and growth opportunities. The other variables were considered as fragile as they did not hold the explanatory power or statistical significance.

Psillaki and Daskalakis (2008) examined if determinants of capital structure were more conducted with country or firm specific factors. The sample was gathered from Greek, French, Italian and Portuguese SMEs (small and medium sized firms). They found out that capital structuring did not differ between the countries. Firm

characteristics showed that asset structure, profitability and riskiness had negative relationship with leverage. In addition, as usually assumed, firm size was positively related with leverage ratio.

### **3.3. Firm Size**

There is a common belief that; bigger the corporation, better the economical stability. Trade-off theory also has a statement based on this; bigger the corporation, higher the debt ratio. Trade-off also states that more stable firms should have more debt. Another point is the fact that larger firms are able to raise debt with lower costs than smaller firm could (Fama & French 2002). Bigger corporations also have smaller agency costs of debt, costs of monitoring and they actually need more debt in order to take the benefit from tax-shields. (Deesomsak et al. 2004)

Akhtar (2005) also conducted a study from the this point of view refer to his earlier in the section of “Bankruptcy Costs and Risks”, but this time used data of Australian MNCs and DCs. Study covered 4287 firms from 1992 to 2001. Results indicated that level of leverage did not differ significantly between MNCs and DCs. Cross-sectional Tobit regression showed that for both MNCs and DCs, growth-related agency costs, profitability and size were significant determinants of leverage. Growth-related agency costs with negative relationship and Profitability and Size with positive relationship. Test of industry effect indicated that there is no consistence across domestic and multinational corporations. When related to variation in leverage and the determinants of capital structure, they both seemed to vary across DCs and MNCs.

Quite close to Nordic region focused on this thesis, Norvaišienė and Stankevičienė (2007) conducted an examination that focused on Baltic listed companies from Estonia, Lithuania and Latvia. Research covered period from 2000 to 2005 and items usually related to leverage ratio were employed. Lithuanian data weakly confirmed hypothesis of trade-off theory as tangible assets were related positively to level of liabilities. Firm size has similar relationship with long term debt. Pecking order theory was also confirmed from behalf of free cash flows and level of

financial debt, as they were negatively related in between, like the theory hypothesis also indicate. Among Latvian companies there were no clear relationships with capital structure. Estonian data instead was in line with pecking order theory as average relationships between return on assets and total liabilities ratio, and even stronger between firm size and long-term liabilities.

Some industry focused evidence was gathered by Feidakis and Rovolis (2007) as they examined capital structure choice in EU with evidence from the construction industry. Sample consisted of large listed firms and tests were made with nine chosen factors and covered period 1996-2004. Size and leverage were once again positively related, profitability was found negatively related with both total debt and ST (short term) debt, liquidity and tangibility were both positively related with long term debt. Share Price performance was also positively related with total debt ratio.

### **3.4. Growth Opportunities**

Myers (1977) compressed the relationship between growth opportunities and indebtedness in accordance to Trade-off theory: Higher the growth opportunities are, the more agency costs are involved and so company's ability to raise debt gets weaker.

Pecking order theory instead provides two points of views in case of growth opportunities: Frank and Goyal (2004) described how firms with high profitability are less indebted, as debt is not the primary source of their financing. Thus Frank and Goyal concluded that profitable firms are tended to possess higher market value and also better / higher growth opportunities. Another approach is perhaps given less often, as it supposes growth-companies to need always more funding in accordance to their development of growth opportunities, whereas the relationship is positive instead. (Gatward & Sharpe, 1996)

Frank and Goyal (2004) also brought an approach of Market timing theory, which states that Market-to-book –item has its' own effect in company's capital

structure. In this assumption, if market-to-book- value is high, companies tend to use equity financing which decreases their share of debt in capital structure.

Hall et. al. (2004) examination was done within European SME firms and if firm-specific or country-specific factors do own higher explanatory power in capital structure choices. Profitability was found negatively related to ST (short term) debt, whilst LT (long term) debt was negative was it of negligible statistical significance. Growth was similarly, according to hypothesis, negatively related to ST debt when LT debt still had not significance in its' positive relation.

The very same investigation from earlier section, made by Qiu and La (2010) also found out that Debt-ratio was positively related to asset-tangibility, whereas relationship between debt-ratio and growth prospects was negative.

### **3.5. Dividends**

Trade-Off –Theory states that there are multiple interpretations of relationship between dividends / dividend policies and indebtedness. As companies that pay dividends are supposed to possess lower business risk, Trade-Off -Theory points that less risky companies own higher shares of debt as their bankruptcy costs are lower. Thus companies that pay dividends are supposed to be more indebted than companies that do not pay dividends. (Frank and Goyal, 2004)

Second possibility builds a scenario where firms to pay dividends do have lower agency costs of equity and thus they are able to gather more equity. This settlement states that dividend payers should have less debt than non-payers. (Easterbrook, 1984) Fama and French (2002) also agree with approach of Agency Theory whereas they settle dividends and debt as substitutes in controlling of issues in free cash flows. Here indebtedness and dividends are negatively related as well. Trade-off provides two approaches to lean on. Fama and French still verifies that negative relationship is widely recognized phenomena.

Some further evidence of testing Agency Theory was gathered as Gaud et. al. (2006) examined debt-equity choice in Europe using big sample of 5000 European firms. Results showed that firms with continuously enhancing profitability prefer to increase dividends rather than decreasing debt levels.

In accordance to Myers (1984), Pecking Order –theory does not provide actual explanation why companies pay dividends. Still when a company decides to pay dividends, it is supposed that Pecking Order –model do have an actual effect to decisions concerning dividends. As Fama and French (2002) points, companies are not in favorable position to pay dividends in case they possess relatively low profitability, lots of current and awaiting investments and high debt-ratio as well. In this scenario firms would get benefit by using income financing into investments instead of dividends. So better the profitability of firm is, simply higher are their paid dividends. Since higher profits signs lower debt-ratio, also higher dividends do lead lower debt ratio too.

In addition Frank and Goyal (2004) are examined the development of dividends' significance to explain capital structure. Examination covered period of 50 years (1950 – 2000) with observations from U.S. markets. Dividends have become more and more remarkable in accordance to the period of the study. Frank and Goyal also concluded that in U.S. markets, companies that pay dividends are tended possess lower debt ratio than companies that do not pay dividends.

### **3.6. Taxation / Tax Shield**

Taxes do possess two balancing effects in search of optimal capital structure. Tax deductibility drive firms to raise more debt but on the other hand higher personal tax-rate for debt than equity, pushes companies to keep their debt-ratios lower, as interest incomes are more taxed than dividends. In big picture we need to see and understand the relationship between savings of the marginal corporate-taxes and personal costs of taxation. This is evidence of Fama and French (2002) from U.S markets. In Scandinavia the scene is based on deductibility of interest costs. Some of the investments normally could bring a situation of non-debt tax

benefits, which are not bounded to the way the company do manage its' crediting. These investments are substitutes to tax-shields and they do work similarly as deductible interest costs.

Trade-off theory compresses that, Companies with higher amount of tax-shields (e.g. Depreciations of amortizations or costs of research and development) are simply having lower expected tax rate and to have lower debt ratio as well. (Fama and French, 2002)

Graham (1996) examined over 10 000 companies during years 1980-1992 and found out that there is a positive relationship between companies' tax status and indebtedness, whereas companies with higher tax-rate are using more debt than companies with lower tax-rates.

Bancel and Mittoo (2004) surveyed European managers from 16 countries on the determinants of capital structure. As the point is to figure out whether taxation, legal environment or institutional environment does matter, policies were also compared to corresponding information from U.S. data. Where each country's legal environment was found an important determinant of debt policy, was its' role in common stock policy quite scarce. Despite there were differences between each country, the dimensions used in comparison did differ especially between Scandinavian and non-Scandinavian countries. Thus the region of our study provides both regionally (Scandinavian countries) and industrially (Telecom sector) a unique point of view for capital structure examination.

Brounen et. al. (2005) examined whether it exists certain Capital Structure policies among countries of Europe. Results consisted of capital structure choices made by 313 Chief Financial Officers (CFO) from UK, The Netherlands, Germany and France. Results were compared to findings from U.S. Results stated that static Trade-off theory was confirmed by the existence and importance of target debt ratio in general. Trade-off was also confirmed by tax effects and bankruptcy costs with positive relationship. What comes to Agency Theory there was no substantial evidence found that agency problems would be important in capital structure choice. Previous was indicated by lack of controlling covenants set for management.

### 3.7. Liquidity

The findings of Deesomsak et. al. (2004) brings in the basic idea that Pecking Order Theory says about the relationship between liquidity and leverage ratio. The example becomes from scenario where firms possess high liquidity which allows them to fund their investments instead of raising new debt. Thus their relationship is negative. Also Agency Theory agrees with the idea that indebtedness is negatively related to level of liquidity. On the other hand, management could in practice have an incentive to bring benefit for share holders by manipulating their liquid assets, whereas position of lenders respectively gets weaker which naturally increases agency costs of debt.

Moosa and Li (2012) conducted another identical examination with respective assumptions of Table 3 to test the robustness of relationship between firm leverage and the independent variables. The Dataset was gathered from 162 listed Indonesian companies. Results were gathered straight away and by usage of restricted EBA (regressions with the highest 40% R-squared). Results indicated that in accordance of Indonesian data, the only robust explanatory variable was liquidity. When restricted EBA was used, also profitability, tangibility and income variability were found robust variables.

**Table 3: Expected relations between leverage and the explanatory variables (Moosa & Li, 2012)**

Explanatory variable	Expected relation
Size ( <i>SIZ</i> )	Positive
Liquidity ( <i>LIQ</i> )	Negative
Profitability ( <i>PRF</i> )	Positive/negative
Asset tangibility ( <i>TAN</i> )	Positive
Growth opportunities ( <i>GOP</i> )	Negative
Payout ratio ( <i>POR</i> )	Positive/negative
Stock price performance ( <i>SPP</i> )	Negative
Firm's age ( <i>AGE</i> )	Positive
Income variability ( <i>VAR</i> )	Negative

Listed Polish non-financial firms were examined by Mazur (2007), as he attempted to figure out whether capital structure was better determined by Pecking Order Theory or Static Trade-Off theory. Sample was gathered from Warsaw Stock Exchange from 2000-2004. Findings were mainly consistent with pecking order theory as they indicated that firms with better profitability and high liquidity were tended to use internal finance. So higher the profitability and level of the liquidity, lower the leverage ratio. Except other results there was also one “violation” of the pecking order theory that came up as profitability and leverage ratio were positively related among highly profitable firms.

**Table 4: Summary: Relationships between particular factors and indebtedness in accordance to theories and majority of empirical evidence.**

<b><u>Factor</u></b>	<b>Trade-Off theory</b>	<b>Agency Theory</b>	<b>Pecking Order Theory</b>	<b>Market Timing Theory</b>	<b>Majority of Empirical evidence</b>
<b>Bankruptcy costs and Riskiness</b>	Negative		Negative		Negative
<b>Profitability</b>	Positive	Negative	Negative		Negative
<b>Size</b>	Positive	Positive			Positive
<b>Growth opportunities</b>	Negative	Positive / Negative		Negative	Negative
<b>Dividends</b>	Positive / Negative	Positive	Negative		Negative
<b>Taxation/Tax Shield</b>	Positive				Positive
<b>Liquidity</b>	Negative		Positive / Negative		Negative

## **4. Differences in Taxation & Presentation of The Case Companies**

Whereas capital structure policies of Nordic countries were found clearly deviated from other Europe countries, is telecom sector itself also having its own characteristics that remarkably differs the point of view from other industries. Still within telecom sector, there are a lot of choices to operate differently between the competitors. Differences in taxation policies among the Scandinavian countries are representing one remarkable factor to do such decisions as well. This section starts with comparative analysis of taxation policies in common and also between the Scandinavian countries. After that we go through presentations of each case company. The idea is to demonstrate the most important operative characteristics of the case companies. The main idea of this section is to bring more broadness in comparability and also improve the quality of comprehension in the analysis of incoming results.

Part of presentations provides a qualitative analysis focuses on each company's business area, structure of revenues, the recent development of revenues from both regional and structural point of views, effects of conducted acquisitions and mergers and other remarkable events during the sample period. Each set of revenue distribution is formed in accordance of information's availability with periods of five and six years in dependence of the company. Instant effect of acquisitions and mergers could not be tolerated straight away as usually reformations and several other relevant actions are needed there too. The latter part is naturally strongly dependent of both timing and the prevailing environment of purchase targets' area. More detailed backgrounds for each company analysis can be found from tables in appendices.

## 4.1. Differences in Taxation Policy

The prospects of our interests are the most valuable things whenever we are glancing for some baselines to do our business under particular/dynamic circumstances or looking for attractive investment target. At times we still awake ourselves from situation where no unequivocal solution can be found between our candidates to operate or invest in. Under such conditions taxation policy of countries governments usually becomes more and more pivotal to be taken into account.

Now that we are aware of our business areas and strategic and operational facts of the companies we focus, the differing aspect comes from Governmental issues between the countries of the case companies. Like we already pointed in Chapter 2 by referring Davis & Pointon (1994): It is been stated that in order to find optimal capital structure, one have to use credit information, taxes, level of bankruptcy risk and bankruptcy costs in a formed function. In this case, we focus on taxes and taxation policy.

As we already went through in our Literature review, taxes do possess two balancing effects in search of optimal capital structure. Tax deductibility drive firms to raise more debt but on the other hand higher personal tax-rate for debt than equity, pushes companies to keep their debt-ratios lower, as interest incomes are more taxed than dividends. In big picture we need to see and understand the relationship between savings of the marginal corporate-taxes and personal costs of taxation. This is evidence of Fama and French (2002) from U.S markets. In Scandinavia the scene is based on deductibility of interest costs. Some of the investments normally could bring a situation of non-debt tax benefits, which are not bounded to the way the company do manage its' crediting. These investments are substitutes to tax-shields and they do work similarly as deductible interest costs.

Trade-Off theory compresses that, Companies with higher amount of tax-shields (e.g. Depreciations of amortizations or costs of research and development) are

simply having lower expected tax rate and to have lower debt ratio as well. (Fama and French, 2002)

Graph of Niskanen (2000) was already showed in Theoretical part, on page 10 with nomination “Firm value with effects of corporate taxes, bankruptcy costs and agency costs”. The graph reveals the scenario of relationship between Firm value V and Debt rate D/E. Idea is to show how each firm is supposed to balance their decision making with following three components taken into account; Corporate tax rate, Bankruptcy costs and Agency costs.

Table 5 beneath shows how the Governments of each case company countries have adjusted their corporate tax rate during the latest century. Finland and Sweden deviates clearly as they have strongly decreased the tax-rate.

**Table 5: View of a 9-year period for corporate tax rates in Scandinavia (KPMG, 2014)**

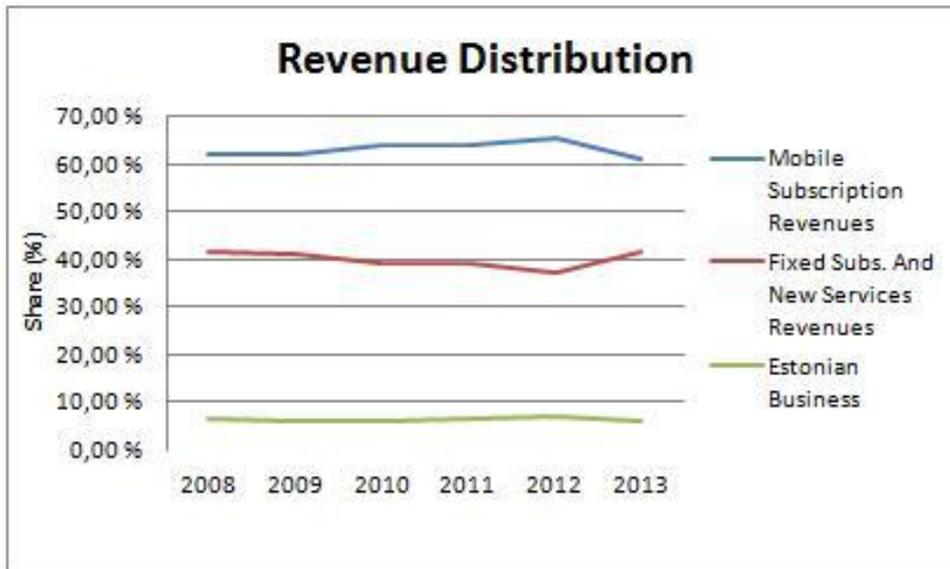
<u>Corporate tax rates (%)</u>	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Finland</b>	26	26	26	26	26	26	24,5	24,5	20
<b>Sweden</b>	28	28	28	26,3	26,3	26,3	26,3	22	22
<b>Norway</b>	28	28	28	28	28	28	28	28	27
<b>Denmark</b>	28	25	25	25	25	25	25	25	24,5

## 4.2. Elisa Corporation

When measured in revenues, Finnish Elisa is the smallest of the case companies with its relatively stable net sales of 1 547 (2013, annual revenues) million Euros. Position is mostly consequence of their choice to primarily focus on Finnish markets. Operating level in Estonia has been growing year by year but still owns very marginal share in Elisa's business. Revenues have even faced some depreciation during the sample period when compared to year 2002 when sales level was 1 560 m€. Situation is not that bad as we're aware that competition in Finnish markets has been tough and challenging for a while. The most remarkable change has happened in their average revenue per unit (ARPU) mobile subscriptions as ratio has fell 33% among consumer customers (21,8 Euros – 14,6 Euros) and even 49% among corporate customers from year 2008. In contrast Elisa has enhanced and diversified their service business products and also the growing amount of mobile data transfer has eased filling the "hole" left from ARPU. In accordance to our Graph 3 and its' baselines as we're glancing a six year period, when first numbers are given just before the crisis, must the effect of the crisis to be taken into account. (Elisa Corporation, annual report 2013)

The trend of revenues' structure illustrates the situation more specific on graph 3, where changes are measured year by year between mobile subscription revenues and revenues of fixed network and new services. New services mainly consist of TV services with additional and other online services.

Graph 3 clearly indicates the recent trends between mobile subscriptions' declination and growth of new services from 2012 to 2013. As the trend of mobile subscriptions is expected to continue, has Elisa focused on investing in new services, especially products of service business. Whereas domestic markets are limited is Elisa forced for actions of basically spread their operations into foreign markets or look for possibilities of acquisitions in Finnish markets. This far they have controlled the pressure and satisfied the need by choosing the latter option.



**Graph 3: Revenue structure of Elisa in 6-year period**

### Recent Actions in Markets

During 2013 Elisa did a huge remarkable action concerning their positions in Finnish market area. All in all Elisa practically conducted three mergers during 2013, PPO Yhtiöt Oy was the merger itself, but also Kymen Puhelin Oy (KYMP) and Telekarelia was part of the mergers as they were under PPO's ownership. Each merger was simultaneously registered into company register on date 31.12.2013.

Elisa also made a merger plan with PPO Yhtiöt Oy networks during second quarter in 2013. Plan was accepted later during Q2/2013 as well. The acquisition brought Elisa the following additions to their services; traditional telephone lines with 39 900, Broadband lines with 60 600 and Cable-TV households with amount of 38 300. (Elisa, 2013 annual report)

As consequence of PPO merger, secondly remarkable merging of KYMP was carried out with respective schedule. In accordance of merger registration of KYMP were Elisa's networks added with 32 511 Fixed broadband subscriptions, 26 775 cable-TV subscriptions and 13 577 telephone subscriptions. (KYMP, 2013 annual report)

In accordance to PPO's ownership also Telekarelias' merging followed similar schedule. Mergers plan was made and accepted during Q2/2013. Telekarelias' merger provides their networks to Elisa with 9254 of Fixed broadband subscriptions that consists of fiber networks (19%) and cable networks (75%) and marginal share of 4G subscriptions (5%). (Telekarelia 2013, annual report)

Whereas mergers are recently carried out, their actual effect and benefit for Elisa will be seen in near future. Any way as Finnish markets are relatively small, the potential there is very limited in fact. Thus these actions can be considered as very beneficial "time-outs" for Elisa's plans for future. Assumably Estonian markets are a one strong candidate as Elisa is already implemented their business there.

From point of view of profitability, Elisa provides a 6-year period view with option to glance each business sector using EBITDA or EBIT. EBITDA is more usually available approach within other case companies so to maintain comparability that is the choice in this case as well. Among consumer customers the range of EBITDA varies 27-35% with final ratio of 32,5%. Q3 seems to be continuously the best of each financial year. Any systematic trend of increase/decrease could not be found within consumer customers' EBITDA development. EBITDA ratio performance enhances a bit when it comes to corporate customers. Ratio ranges between 30-37% with final ratio of 34% and once again Q3 seems to be the best period of financial year. Slight upward development can be found as the smallest ratios are weighted in the beginning of the view. (Elisa 2013, annual report)

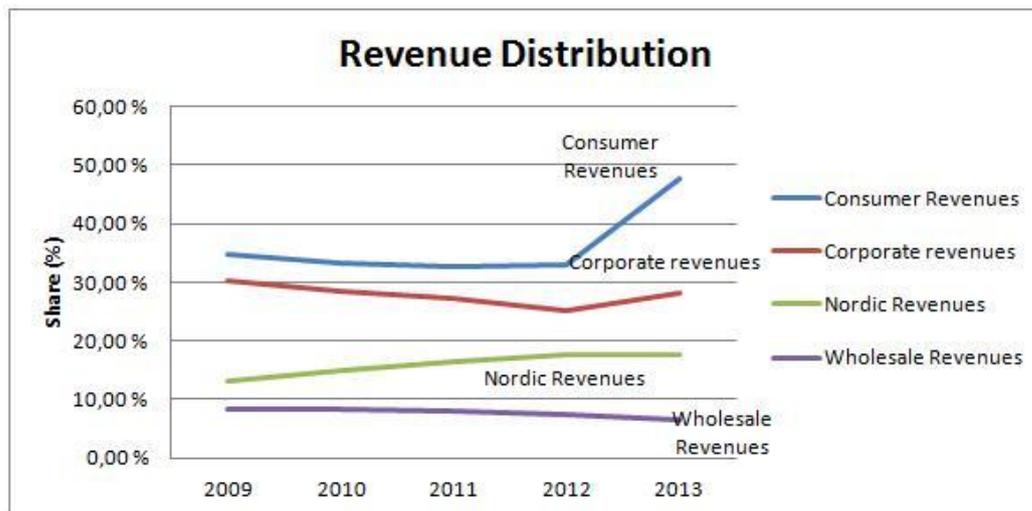
### **4.3. TDC Corporation**

TDC possess the second smallest revenues among the case companies with 24 912 mDKK (3 338 mEUR) in 2013. During the sample period Revenues of TDC has been dramatically decreased as it has faced 51.7 % depreciation from 2002 level of 51 155 MDKK (6 908 M EUR) in comparison to revenues of their business in 2013. Strong difference in revenues is far explained with acquisitions made by other companies as TDC has accepted to relinquish their ownership of particular business. TDC consumer services are focused solely in Danish markets. Corporate

customer services are provided also in Nordic countries (Sweden, Norway and Finland).

The revenues of TDC consist of consumer, wholesale and business sectors where Nordic operations are reported separately. In year 2013 relations between each section were; consumer products with 50.1% (50.2%), Business products with 27.7% (28.1%), wholesale with 6.4% (7.0%) and Nordic sector with 17.3% (16.9%). Like Elisa does, TDC is also strongly focused on their domestic markets. Potential and basis in other markets are still unquestionably in better shape than e.g. Elisa does. The lowering ARPU (average revenue per unit) ratio has similarly forced TDC for actions to keep revenues somehow stable. Service business products have been the answer this far in case of TDC as well. As Graph 4 does indicate, the operations in Nordic countries have remarkably focused in Swedish markets with share of 61% in year 2013. Chart also shows that TDC provides hosting services with marginal share of their Nordic operations. (TDC, 2013, annual report)

As Nordic sector represents the “external growth potential” of TDC we must face the fact that each Nordic country is dealing with very challenging competitive situation so simply there is no market space unless there won't be coming any exceptional competitive advantages or reformation. A thing worth to be mentioned; Now that the business sector of TDC is more tended for changes and innovations, it gives TDC better potential for their solely business (corporate customers) focused operations in other Nordic countries. The approach of revenues structure in Graph 4 shows well particular trends in TDC. Whereas 5-year period revenues has decreased 5,7% (mostly within last year) are Danish consumer products (YouSee notified as well) maintained their revenues within the period , Nordic (corporate) revenues has increased 21.3% and domestic corporate revenues decreased 16.8%. Despite these are quite clear indications the year-by-year approach shows that each sector's trend still varies from positive to negative and vice versa.



**Graph 4: Revenue structure of TDC in 5-year period**

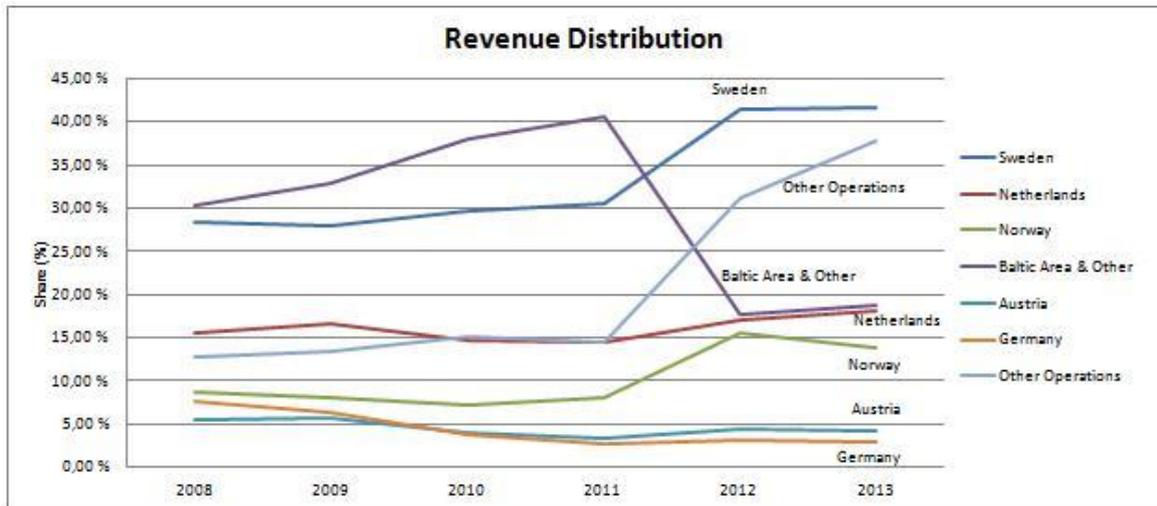
When we take a deeper glance to background events for development of revenues during the 11 year period of the study, it provides quite transparent picture for visions and interests of TDC – Choose particular markets and focus on the enhancement of profitability within the chosen ones. Cutting the potential of growth gives TDC on the other hand, operations with lower risk and better predictability. Quite many could have asked TDC management whether those relinquishments of operations were necessary or not and why there would not have been chances or resources to manage on their own. (TDC 2013, 2012, 2011, annual report)

TDC's EBITDA margins of each business unit as indicators for operational profitability were available not before 2009. In accordance to chapter above, stability and levels of EBITDA have been as expected. Both domestic operations, consumer between 60-65% and business between 65-70% has performed very well. Also wholesale reached in range 65-70%. Nordic operations instead have performed with clearly lower ratio varying between 10-17%, even though with upward trend. In comparison to earlier announced EBITDAs, present ratios levels have nominally increased from level of 40% in consequence of Q2 2013 reorganization in Danish operations. Restatements of items and ratios were done due business areas of YouSee brand is organized together with its' equivalents in TDC A/S. In sector of operations, service business products are the only one to reach growth together with enhancement of profitability.

#### 4.4. Tele2 Corporation

Tele2 is headquartered in Sweden and is strongly focusing in mobile operations that consists solely consumer customers. Company nominates itself as a “growth company”, and the “claim” seems to be based on their diverse and relatively broad business area. In revenues Tele2 possess the third place among case companies. The strategy and operations of Tele2 have faced numerous regional changes and reformations within the sample period. Despite revenues of 2012 (31 299 SEK in millions) and 2013 (29 871 SEK in millions) do not differ in between, all the mergers and acquisitions during the period makes revenues very volatile indicator. Tele2, all in all, has been operating (during the period) and still operates in Sweden, Netherland, Norway, The Baltic Countries, Russia (until 2012), Kazakhstan (from 2010), Croatia, Austria and Germany. As operations can be considered quite multilateral it expectedly relates with profitability, as the best 6-year period percent is 10.26% and weakest is the latest one from 2013, 2.19%. Figures 3 and 4 demonstrate recent distribution of Tele2 revenues. Operations are highly centered both from point of view of the region (Sweden 42%) and service type (mobile operations 73%).

Despite Tele2 determinedly strives for growth with more and more multilateral area of operations the view of Graph 5 and its’ 6-year approach to revenues structure and development shows how challenging that is in practice. In big picture quitting operations in Russia has left remarkable (10 000 mSEK in year) hole in revenues although it was done due both lack of profitability and weakening future prospects. When we exclude that action and focus on prevailing operations we see both calming and rising trends. Especially operations in Baltic countries, Norway and Sweden have been enhancing. Germany (-71%), Austria (-44%) instead seemed to be no longer worth investing and refocusing in future prospects of Tele2. Another visible trend is that operations are weighted more and more in mobile especially among countries with stable revenues or growing revenues.



**Graph 5: Revenue structure of Tele2 in 6-year period.**

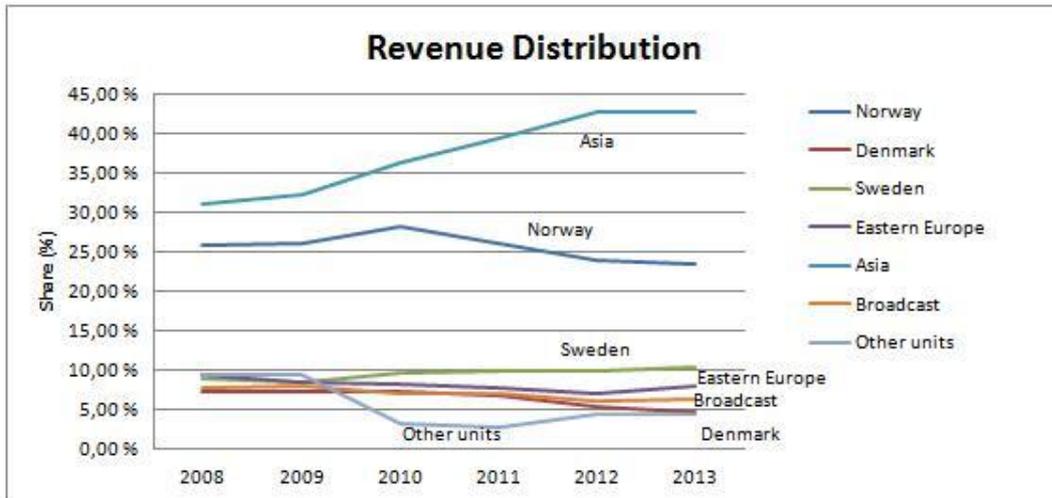
As we take respective 6-year approach of profitability between regional businesses we get clear indications for the most significant problem areas in profitability. EBIT (Earnings before Interests and Taxes) have been negative in Norway for last four years and in Kazakhstan as long Tele2 has been operated there. Also section classified as “other operations” has been unprofitable during the whole period. Other operations mainly consist of numerous marginal operations in areas Tele2 is about to leave or penetrate in future. Therefore unprofitability is far perceivable as we are aware that new targets require lots of investing and targets company plans to relinquish instead, do cause nothing but costs as operations are driven down. (Tele2, 2009, 2011, 2013, annual report)

Tele2 has conducted a lot of mergers and acquisitions during the period. That may indicate relatively strong volatility in figures we have set in hypotheses of this study. Also the fact that operations are highly weighted in mobile, do bring in uncertainty and weak predictability as costs are more tended to be variable than fixed. These kinds of indications and expectations can be mirrored and figured out company by company in section of results.

## 4.5. Telenor Corporation

Norwegian Telenor is the other one of the two to possess overwhelmingly largest operations of thesis' case companies. Company's profitability is also good and relatively stable, when large operations are taken into account. Especially profit margin of 2013, 15.93% gives an indication of efficient business. One of the reasons for that can be found, e.g. from their mission, that is, in the end, quite simple. Telenor produce fixed operations and service business products only in Nordic countries (Norway, Sweden and Denmark). Nevertheless, service business products and broadcasting are both produced only in Norway. In their other regions there are solely mobile operations produced. During sample period Telenor has grown rapidly as 2002 annual revenues (48 668 mNOK) has more than doubled with total growth of 113.7 % when compared to revenues of year 2013 (104 027 mNOK). All in all after Nordic countries, Telenor operates in Hungary, Bulgaria (since 2013), Serbia, Montenegro, Ukraine (until 2009), Thailand, Malaysia, Bangladesh, Pakistan and India.

In comparison to other case companies' Nordic operations there are no remarkable differences between operations of Telenor. Despite lowering ARPU (average revenue per unit) in Nordic area has its effect also in Telenors' operations. Still revenues in Sweden have grown 15.11% from level of year 2008. In contrast, operations in Denmark have been decreasing. Sector of Eastern Europe has faced lot of changes within the six year period and depreciated 14.3% in level of revenues. The change is mostly a consequence of relinquishment of Ukrainian operations in 2009. Asian sector has been the ultimate and strongest driver of Telenors' growth. All in all, Asian sector has grown 37.8 % (33 113 -> 45 616 mNOK). Thailand and Malaysia are the major drivers for the high rate as their own growth rates were 51% (Thailand) and 54.8% (Malaysia) during the period. The development of 6-year period of Revenues can be seen in Graph 6.



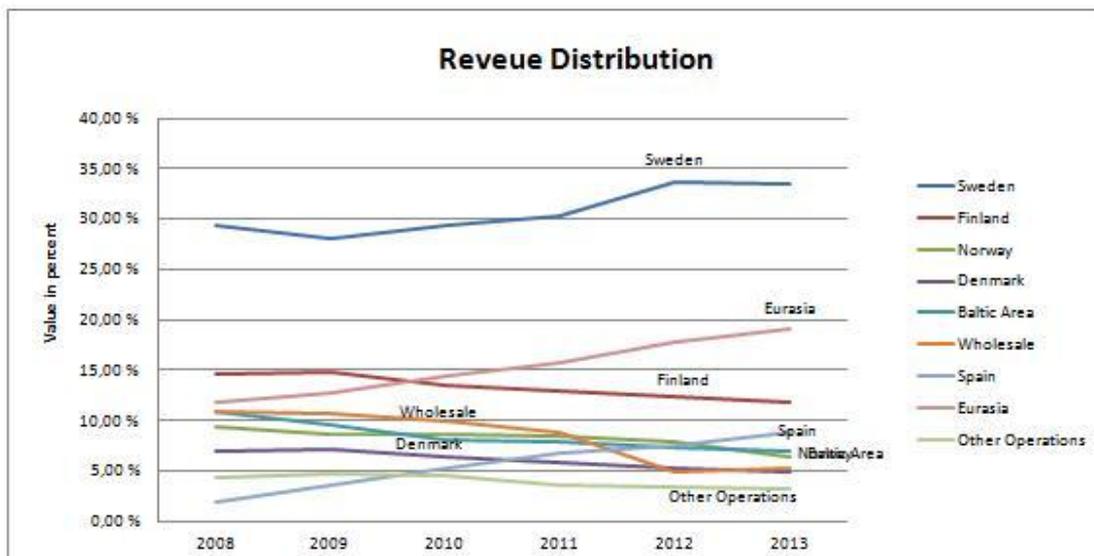
**Graph 6: Revenue structure of Telenor in 6-year period.**

Telenor announces their regional profitability by using EBITDA (earnings before interests, taxes, depreciations and amortizations). EBITDA margins have been very stable in Nordic countries, in order Norway, Sweden, Denmark. In Norway and Sweden profitability has been slightly enhancing but in Denmark the margin has declined from 25% to level of 20%. In sector of Eastern Europe EBITDA has varied around 30-40%. The Ukrainian operations were conducted with over 50% EBITDA level, thus it would be interesting to see behind the “veils” why to relinquish such a business. Despite strong growth, in Asia we can also see quite stable EBITDA development, Thailand between 30-35%, Malaysia around 45% and Bangladesh between 45-55%. Whereas operations in Pakistan have not been grown more than 25% within the 6-year period, EBITDA-margin has been strongly enhancing from 17.7% to almost 40%. The only unprofitable sectors of Telenor through the period has been Indian operations and other operations, basically due to their marginal volumes and reasons earlier mentioned what type of operations are classified there. (Telenor 2013, 2011, 2009, annual report)

## 4.6. Teliasonera Corporation

Teliasonera (henceforth TS) is a Swedish company that operates in almost same level of revenues as the biggest case company Telenor does. They respectively do also have very multilateral area of operations. Profitability however is not that stable as Telenor has. 12-year development of annual revenues reveals very strong growth, with rate of 71% (59 483 mSEK -> 101 700 mSEK). Our deeper 6-year approach shows that top of the growth this far, was reached in year 2009 (109 161 mSEK) when sales have stabled on level of slightly over 100 billion Krone per year. Sweden and Finland are the only ones where TS provides the whole scale of their operations. In addition to mobile operations, fixed broadband is also provided in Norway, Denmark, Estonia and Lithuania. Mobile operations are also provided in Spain, Latvia, Turkey, Russia, Kazakhstan, Azerbaijan, Uzbekistan, Tajikistan, Georgia, Moldova and Nepal. All in all 48% of revenues consist of European mobile operations, 33% of fixed operations and rest comes from Eurasian region and other operations. (Teliasonera 2013, 2011, 2009, annual reports)

6-year approach in Graph 7 provides a glance for revenue structure and its' recent development. In contrast to conventional trend within Nordic area, revenues of Sweden are grown a bit surprisingly 10.2% which is mainly due to enhancement of service business products. The expectation of depreciation of operations in Finland (21.4%), Norway (33.4%) and Denmark (31.6%) instead kept the familiar "mood" during the period. Baltic area has also been decreasing 48.4% from level of 2008. In contrast as TS implemented mobile operations to Spain in 2008, those operations has grown almost 4-times (361.8 % growth) in comparison to 2008's level of 2 050 mSEK. The rest operation areas of TS forms Eurasian region which faced strong growth during the period. 2008's 13 204 mSEK grew relatively steadily year-by-year with total of 54.6% growth in six years.



**Graph 7: Revenue structure of Teliasonera in 6-year period**

What comes to profitability from point of view of EBITDA, The European mobile and fixed operations do basically possess better profitability in accordance to country's level of welfare and other relevant risk lowering factors. EBITDA margins are quite stable whereas they vary couples of percent per year. In mobile, Denmark is exception of this area as EBITDA margin is already lower than other Nordic countries have, and in addition, has decreased even more from 2008's level of 20.1% to level of 14.7%. Denmark also has contrasting movement in fixed operations as margin has been negative until 2008 and since 2009 constantly slightly below 10%. Even Baltic Countries' both (mobile and fixed operations) margins have been higher than Denmark's, as they have been varying strongly between 25-40%. As a consequence of 2008's implementation to Spanish markets EBITDA margin has been positive not earlier than 2011, when 5.6 %. Due to challenges of being a new market party, there has not been further leveling up as 2013 margin was not higher than 7.3 %.(Teliasonera, 2013, 2011, 2009, annual report)

TS has not formed similar country-by-country assortment of EBITDA margins before 2012 from Eurasian area, but overall margin is available year-by-year. Overall margin has been already high in level 49% and even rose in 52.9 %. Country-by-country approach 2012-2013 does mainly show quite stable indications when compared to overall margin. Kazakhstan (55 %), Nepal (59 %,

Moldova (42 %) and Georgia (36 %) can be considered as contrast of whole Eurasian “group” when glancing EBITDA margins. (Teliasonera, 2013, annual report)

This chapter was meant to provide the baselines for our empirical examination. Thought it does not change our method or assumptions, this section aimed to bring out those strategic and operational differences between the 5 case companies of the study. Despite all the case companies are headquartered side by side, they truly seem to have their own priorities to focus on operations. Though each firms’ baseline is definitely to prioritize in accordance to their strategy, the prioritization is also directly conducted by regional legislations and indirectly by the markets themselves.

## **5. Data and Methodology**

This chapter represents the study sample and chosen research method of the study. At first we start with baselines of the chosen variables used in the examination. The idea is to bring in the relevant background for each variable and their motivations and assumptions to be used as a hypothesis of this study. The second part of Methodology simply reveals the method of examination step by step and provides all the detailed information. Also robustness check for our results will be gone through.

### **5.1. Data**

The sample of observations of this study is gathered quarterly from period starting from first quarter of 2002 and ending in third quarter of 2014. The independent variables do cover the 12-year period from first quarter of 2002 to fourth quarter of 2013, and dependent variable instead do cover respective time period in length but lagged with three quarters which is divided in three steps. First step lag is part of the primary examination and step 2 and 3 do represent the part of our robustness check. Sample provides all the information needed to test the chosen hypotheses. Data itself consists of 7 chosen firm-specific variables of the 5 biggest Nordic Telecom companies and one variable within the Telecom sector. The used financial information is downloaded from Thomson One Database, in which information is provided by Reuters Group Plc. The figures which were not available from Thomson One have been picked up manually from companies' annual reports. Due to mergers and acquisitions in case firms during the period, we had option to whether use original financial information or restated items. As restated items are the ultimate values, we experienced them as more reasonable choice to use in this study.

Despite our case companies announces their financial information using 4 different currencies, it still has not been an issue as all the relations are tested in between the own items of each firm.

### 5.1.1 Descriptive Statistics

Appendix 1 (Table 17) provides us descriptive statistics of our independent variable of each case company and the dependent variable as well. From behalf of **Revenues** Elisa has the most stabile set of Standard Deviation when mirrored to their Mean values. TDC and Telenor instead are the most volatile ones in Revenues with Standard Deviation of roundabout 25% share of their Mean. The very same indications are found when commonly taking a glance of the Range of the data. **Growth rates** do offer a same kind of scenario, as Elisa's volatility (0,077) is the lowest and the others are clearly higher. The Means of Growth rates definitely cut a dash as Telenor and Teliasonera has averages of 7,7% and 5,4% of growth which is huge. TDC's Mean is -5,4% of Growth rate. The Mean of **Net margin** does show the common stability of Telecom sector in Scandinavia. TELE2 appears to be very volatile but it only fit the picture of their strategy of being a "growth company". As assumed **Free Cash Flows** provides huge differences. Elisa and TELE2 are the only ones to represent their Standard deviations lower than the Mean of their **FCF**.

Teliasonera clearly got the best Mean of the level of **Liquidity (Current Ratio)**, though it also has very high Standard deviation (volatility) and of course the Range (12,91 the highest). Levels of **Tangibility** instead do provide relatively stable and calm dataset of volatility and other changes. It is interesting to see if these differences between the variables are somehow also mirrored in the regressions results. Whereas **FCF** are very sensitive of changes, also **Net investments** do have the same situation, big time. Every company's Standard deviations are multiply values when compared to their Means. Still Telenor elegantly stands out to be the only with positive Mean of their **Net investments** which is relatively high as well. What comes to **Leverage ratios**, TDC posses the highest mean and also has the highest volatility from behalf of financial leverage. Since Telenor has clearly highest **Growth rate**, they still do have the lowest volatility in **Leverage ratio** which is mainly due to their excellent profitability.

### 5.1.2 Variables

The quantitative part of this study consists of 7 independent variables of which explanatory power is tested with the chosen dependent variable, Leverage ratio of each case company. Leverage ratio is simply formed by using Long-Term Debt to Equity –ratio. Explaining variables are chosen in accordance to background of theories and/or anterior empirical evidence. The point of view of firm economic stability is also taken into account in selection of the variables. In accordance to these baselines we end up choosing Revenues, Growth margin (%), Net margin (%), Free Cash Flows (FCF), Liquidity, Tangibility and Net investments as the firm specific variables. Next we are going through each hypothesis with both their theoretical and empirical backgrounds.

Revenues provide a strong indication about firm's positions within the market they operate in, and thus is a very central part in measurement of predictability of firm performance in future. In theoretical part we brought out that Trade-Off theory suggests revenues and liabilities to be tended to develop hand in hand. Whereas the baseline is that revenues are relatively stable, in the long run the relationship between revenues and financial leverage is supposed to be positive. In other words we are about to figure out whether Trade-Off theory holds or not.

*Hypothesis 1: Revenues and Financial Leverage are **positively** related*

As revenues are the indication of market share, Growth rate shows if particular firm is becoming more or less interesting within its markets. Growth rate is tested from point of view of the particular firm and average growth of Telecom sector. In accordance to both Agency theory and empirical evidence of study made by Titman and Wessels (1988), growth opportunities are tended and supposed to be negatively related with the leverage ratio. So we are testing if Agency Theory holds with our data. The respective assumptions of theory and empirical evidence are taken in this study as well as follows:

*Hypothesis 2: Firm growth opportunities and Financial Leverage are **negatively** related*

Profitability of firm shows investors if the firm can handle its business they are operating in, usually from aspect of long time interval. Net margin / profitability have both positive and negative relationships suggested between firm leverage ratio. As pecking order theory does the assumption of negative relationship with no industrial differences taken into account we do not see this approach suitable in the case of telecom sector firms. Market timing theory instead suggests that profitability is related positively to firm's financial leverage. We are also aware that telecom firms are tended to possess very high operating leverage. Thus as Ross (1977) stated, also our assumption of positive relationship is much closer to the relevance we are looking for. In case we find Market timing theory to hold with our data, also the following hypothesis will be confirmed:

*Hypothesis 3: Profitability and Financial Leverage ratio are **positively** related*

Cash flow information gives a strong note of firm's preconditions to their business challenges and thus the level of vulnerability is known more specified. Free cash flows are stated to be negatively related to leverage ratio by Norvaišienė and Stankevičienė (2007) from behalf of Pecking Order Theory. Theoretic point of view was also confirmed in the paper. Thus our fourth hypothesis tests whether Pecking Order Theory holds as we assume that the respective relationship is negative within Telecom companies as well.

*Hypothesis 4: Free cash flows (FCF) and Financial Leverage are **negatively** related*

It is usually reasonable to beware of changes in business. Whether the changes come or not, at least the short term liabilities require each firm to take care of their sufficient liquidity. Current ratio is the most usual item to indicate the measure. Feidakis and Rovolis (2007) stated that there is a positive relationship

between level of liquidity and firm leverage ratio. The perspective of Pecking Order Theory states that firms with adequate liquidity do not need to raise debt and hence have lower leverage, which indicates the relationship assumed to be negative. This is our assumption in this study as well as we figure out if the theory holds or not.

*Hypothesis 5: Liquidity and Financial Leverage are **negatively** related*

Capital expenditures are investments to tangible assets. Share of tangible assets are often tested in capital structure examinations. Trade-off theory shows that the more tangible assets of firm are, the higher is the leverage ratio of the firm (Brealey et. al. 2006). Also Qiu and La (2010) provide evidence for respective relationship. Tangibility is ratio between fixed assets and total assets. In this study we test if Trade-Off theory holds in case the tangibility ratio is supposed to be in positive relationship between the ratio of financial leverage.

*Hypothesis 6: Tangibility and Financial Leverage ratio are **positively** related*

Capital expenditures are investments to tangible assets. Net investments instead tell the difference of capital expenditures and depreciations. Thus net investments indicate it further if total of tangible assets are growing or decreasing. Pecking Order Theory was formed by Myers and Majuf in 1984. As indicated before in this study, “theory pushes firms to prefer internal finance when funding their investments “. Thus also we test if Pecking Order Theory holds and assume that relationship between Net investments and leverage ratio is negative.

*Hypothesis 7: Net investments and Financial Leverage ratio are **negatively** related*

All the absolute independent variables are announced in currencies as they are given in each company’s quarter reports. Numbers in percents are given with 2

decimals and absolute financial key items with 1 decimal. Figures are restated as far as restated values were available. In cases of back up figures, they are taken from annual reports. If restated values were not provided from ThomsonOne or annual reports either due to unavailability of particular period, we have used original value as a final choice.

## 5.2. Methodology

Hypotheses of the study are tested with multiple linear regressions. The used method is the very same that Abdou et. al. (2012) used on their examination of “Determinants of Capital Structure in UK Retail Industry”. Whereas there are several hypotheses the number of regressions can be controlled by using multiple linear regression that is also known as a generalization of linear regression. Multiple linear regression provides a consideration for more than one independent variable in order to figure out relationship between dependent variable. The baselines of the model for simple linear regression and multiple linear regressions do not differ in between with except of the amount of independent variables set in the model.

The basic model for linear regression is:

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_p X_{ip} + \epsilon_i.$$

In this basic formula  $n$  observations of one dependent and  $p$  observations of independent variables are concerned. In the model, as  $Y_i$  represents the  $i^{\text{th}}$  observation of the dependent variable,  $X$  instead is  $i^{\text{th}}$  observation of the  $j^{\text{th}}$  independent variable, as  $j$  develops in values 1,2, ...,  $p$ . All values of  $\beta$ , more commonly  $\beta_j$  are the parameter that model is supposed to estimate. Finally  $\epsilon_i$  in the end represents the  $i^{\text{th}}$  independent identically distributed normal error.

Now that we want to see the relationship as a result of the independent variables we use lagged values. Thus each of our models are specified as follows (example of Revenues):

(5)

$$\begin{aligned} \text{Leverage}_t = & \beta_0 + \beta_1 \text{Revenues}_{t-1} + \beta_2 \text{Revenues}_{t-1} + \dots \\ & + \beta_p \text{Revenues}_{t-p} + \epsilon_t \end{aligned}$$

The examination of the study is done with respective model with all the variables together within a particular case company. In case of high correlations between particular variables, we run the regressions in separated models. The way we defined the possible need of separation of our models will be gone through later in this section. One-step lag (from  $t$  to  $t-1$ ) stands for one quarter which is also the used interval between our observations of the data.

The robustness checks of our results are done in two-step regressions, using independent values of  $t-2$  and  $t-3$  between the dependent values of Financial Leverage at time  $t$ . The regression models of our robustness check are formed in respective way as models of our results:

(6)

$$\begin{aligned} \text{Leverage}_t = & \beta_0 + \beta_1 \text{Revenues}_{t-2} + \beta_2 \text{Revenues}_{t-2} + \dots \\ & + \beta_p \text{Revenues}_{t-p} + \epsilon_t \end{aligned}$$

Each independent variable is being fit into the model in accordance to descriptive statistics of the data and correlations between independent variables within each figure. Data is standardized to figure out if there was remarkable difference between general and standardized values. With our data we found that normal values fit better when standardized and values measured in percents tend to fit better when not standardized. The standardization was done by using a following formula:

$$z = \frac{x - \mu}{\sigma}$$

Where:

$x$  is the variable itself

$\mu$  is the mean of particular variable

$\sigma$  is the standard deviation of particular variable

As the correlation matrices of Appendix 1 (continued) do indicate, in case correlation coefficient between variables is 0,7 or higher (also – 0,7 or “lower”) independent variable is automatically tested in separated regression in order to avoid scenarios where model explanatory power would be causations of correlations between variables. These are highlighted with background of red. Whereas correlation coefficient is in between 0,5 and 0,7, particular variable is tested in regression with others and separated to figure out whether the correlation matters or not. Thus, when R-Square of our model is higher without particular variable it will be tested in its’ own regression and vice versa. These cases instead are highlighted with yellow background in respective tables of Appendix 1.

According to our correlation tests, data of Elisa could be barely run all together in the same model. Net investments and Net margin had coefficient of 0,698. Also Growth and Revenues had high coefficient of 0,565. Both cases were tested in regressions and there was no remarkable difference whether we run all variables together of in separated models.

Data of TDC instead had to be divided in two models as Revenues do have high coefficients with Current Ratio (0,733) and Tangibility (0,803). Thus Revenues are run in simple regression and other variables together in multiple regressions.

Data of Tele2 had a lot of high correlation coefficients between the variables. Growth had high coefficient with Current Ratio (0,694), Tangibility (-0,669) and Net Investments (-0,713). Net Investments also had high coefficients between Current Ratio ( -0,548) and Tangibility (0,666). After test runs variables Growth

and Net Investments were left out and run in their own simple regressions. Other variables were together in the same model.

Sample of Telenor had two higher correlation coefficients: Revenues & Tangibility (-0,939), and Net Investments and Free Cash Flows (-0,565). Test regressions showed that only Revenues had to be divided in it's own model and other variable can be run together.

Like Tele2, also data of Teliasonera provided a lot of high correlation coefficients. Revenues had high coefficients with Net Margin (0,584), Current Ratio (-0,524) and Tangibility (-0,833). Also Current Ratio and Tangibility had high coefficient (0,793) in between. Revenues and Tangibility were divided in their own simple regression models. Instead of Current ratio Tangibility was chosen as it had high coefficients between other variables as well.

## 6. Results

This section goes through the results received from multiple linear regressions and simple linear regressions, when needed. Our procedure is to advance company by company and refer to tables of results to ease the following. Each referred indicator is highlighted in accordance to its' fit or effectiveness to confirm the tested theoretical background. In the end the results of each case company are gathered and mirrored in between from behalf of systematic similarities or deviations in the findings. Also possible insignificance is notified in case it deviates from logic expectations e.g. if independent variable did not explain financial leverage of a company in range of statistical significance. Each regressions' significance is defined in accordance to 95% confidence level. After regressions with values t-1 from values of leverage, we will conduct robustness test in two steps. The idea of robustness test is to figure out if our results do hold with longer time span. The robustness of our results is conducted with values t-2 and t-3 from leverage ratio values.

The results of each table are indicated and highlighted with underlining and bolding. The most focused parts of results are explanatory power of the model "adjusted R square", Significance of the model "Significance F" and explanatory power of each variable against the dependent variable, "Coefficient". In case value of Coefficient has been under 0,001 it is rounded to 0,001 as p-values are still provided higher and we use accuracy of 3 decimals. Adjusted R-square and Coefficient are same kind of indications that do have an important difference in between:

- Adjusted R-square shows how much the whole model explains the variations in Leverage Ratio.
- Coefficients instead show an effect of a particular variable in variations of Leverage Ratio.

Our data of Elisa was suitable to be run in one model as there were no cross-correlation issues. The model itself fit quite well with adjusted R-square of 0,58 and had statistical significance ( $< 0,05$ ). From behalf of variables, Agency Theory was confirmed by Growth (-0,168) and Pecking Order Theory by Liquidity / Current ratio (-0,12). Trade-off theory was violated instead as Profitability had negative (-13,3) relationship between Leverage ratio. The models of robust check are both fitting well with Adj. R-squares of 0,543 (t-2) and 0,636 (t-3) and had statistical significance. Also both confirmations of Agency theory (t-2: 0,136 & t-3: -0,10 ) and Pecking Order Theory ( t-2: -0,144 & t-3: -0,135) were found robust. The results of Elisa are provided in Table 6.

**Table 6: Results of regressions run with data of Elisa**

MODEL 1								
ELISA (t-1)			ELISA (t-2)			ELISA (t-3)		
Adjusted R Square		0,581	Adjusted R Square		0,543	Adjusted R Square		0,636
<b>Significance F</b>		0,000	<b>Significance F</b>		0,000	<b>Significance F</b>		0,000
	<i>Coefficients</i>	<i>P-value</i>		<i>Coefficients</i>	<i>P-value</i>		<i>Coefficients</i>	<i>P-value</i>
Intercept	-1,983	0,000	Intercept	-2,122	0,000	Intercept	-2,491	0,000
<b>Revenues</b>	0,008	0,000	<b>Revenues</b>	0,008	0,000	<b>Revenues</b>	0,009	0,000
<b>Growth</b>	<u>-0,167</u>	0,000	<b>Growth</b>	<u>-0,136</u>	0,000	<b>Growth</b>	<u>-0,102</u>	0,000
<b>Net Margin</b>	-0,132	0,005	<b>Net Margin</b>	-0,101	0,041	<b>Net Margin</b>	-0,065	0,141
<b>FCF</b>	0,001	0,105	<b>FCF</b>	0,001	0,131	<b>FCF</b>	0,001	0,035
<b>Current Ratio</b>	<u>-0,122</u>	0,082	<b>Current Ratio</b>	<u>-0,144</u>	0,057	<b>Current Ratio</b>	<u>-0,135</u>	0,048
<b>Tangibility</b>	-0,080	0,542	<b>Tangibility</b>	-0,148	0,298	<b>Tangibility</b>	-0,102	0,422
<b>Net Investments</b>	0,001	0,502	<b>Net Investments</b>	0,001	0,583	<b>Net Investments</b>	0,001	0,766

From behalf of TDC our data had to be divided in two models due to high correlations, whereas Revenues were run separately and the other variables in their own model. Both models provided weak adjusted R-squares (-0,084 & -0,009) and had no statistical significance ( $> 0,05$ ). The model of Revenues turns into statistical significance when checking the robustness of the model. Still the model or its' variable had no remarkable explanatory power. Results of TDC are provided in Table 7.

**Table 7: Results of regressions ran with data of TDC. Regressions were run with two models.**

MODEL 1								
TDC (t-1)			TDC (t-2)			TDC (t-3)		
Adjusted R Square		-0,084	Adjusted R Square		-0,065	Adjusted R Square		-0,053
Significance F		0,877	Significance F		0,788	Significance F		0,723
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value
Intercept	-5,163	0,485	Intercept	4,052	0,580	Intercept	6,174	0,397
<b>Growth</b>	0,663	0,329	<b>Growth</b>	-0,371	0,580	<b>Growth</b>	-0,982	0,145
<b>Net Margin</b>	-0,265	0,867	<b>Net Margin</b>	-1,857	0,241	<b>Net Margin</b>	-1,754	0,265
<b>FCF</b>	0,001	0,850	<b>FCF</b>	0,001	0,420	<b>FCF</b>	0,001	0,730
<b>Current Ratio</b>	0,268	0,944	<b>Current Ratio</b>	4,109	0,282	<b>Current Ratio</b>	2,492	0,510
<b>Tangibility</b>	7,489	0,403	<b>Tangibility</b>	-2,249	0,799	<b>Tangibility</b>	-1,912	0,828
<b>Net Investments</b>	-0,001	0,734	<b>Net Investments</b>	0,001	0,876	<b>Net Investments</b>	0,001	0,915
MODEL 2								
TDC (t-1)			TDC (t-2)			TDC (t-3)		
Adjusted R Square		-0,009	Adjusted R Square		0,031	Adjusted R Square		0,062
Significance F		0,453	Significance F		0,121	Significance F		0,048
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value
Intercept	0,052	0,992	Intercept	-3,746	0,444	Intercept	-5,695	0,238
<b>Revenues</b>	0,001	0,453	<b>Revenues</b>	0,001	0,121	<b>Revenues</b>	0,001	0,048

Our data of Tele2 had to be conducted in three models whereas Growth and Net Investments provides high correlations between other variables. Thus Growth and Net Investments were run with simple regressions. The model of other variables fit moderately with Adj. R-square of 0,198 and with statistical significance (0,013 < 0,05). Our model strongly confirmed Pecking Order Theory from behalf of Current ratio / Liquidity (-0,456) and Trade-off theory from behalf of Tangibility (0,128). The models of Growth and Net Investments do not provide additional confirmations. The robustness checks of the multiple regression model maintained its' Adj. R-squares (0,261 & 0,146) and statistical significance (0,003 & 0,039). Both of the variables, Current ratio / Liquidity and Tangibility maintained their explanatory power in the models of robustness check. Our Results of Tele2 are provided in Table 8.

**Table 8: Results of regressions ran with data of Tele2. Regressions were run with two models.**

MODEL 1										
Tele2 (t-1)			Tele2 (t-2)			Tele2 (t-3)				
Adjusted R Square		0,198	Adjusted R Square		0,261	Adjusted R Square		0,146		
Significance F		0,013	Significance F		0,003	Significance F		0,039		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	0,942	0,004	Intercept	0,699	0,022	Intercept	0,461	0,152		
Revenues	0,001	0,064	Revenues	0,001	0,559	Revenues	0,001	0,463		
Net Margin	-0,012	0,212	Net Margin	-0,008	0,370	Net Margin	-0,006	0,555		
FCF	0,001	0,205	FCF	0,001	0,024	FCF	0,001	0,332		
Current Ratio	-0,456	0,061	Current Ratio	-0,447	0,055	Current Ratio	-0,449	0,073		
Tangibility	0,128	0,204	Tangibility	0,188	0,054	Tangibility	0,160	0,124		
MODEL 2										
Tele2 (t-1)			Tele2 (t-2)			Tele2 (t-3)				
Adjusted R Square		0,162	Adjusted R Square		0,080	Adjusted R Square		0,008		
Significance F		0,003	Significance F		0,029	Significance F		0,243		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	0,215	0,000	Intercept	0,228	0,000	Intercept	0,248	0,000		
Growth	-0,014	0,003	Growth	-0,010	0,029	Growth	-0,006	0,243		
MODEL 3										
Tele2 (t-1)			Tele2 (t-2)			Tele2 (t-3)				
Adjusted R Square		0,055	Adjusted R Square		0,089	Adjusted R Square		0,089		
Significance F		0,059	Significance F		0,023	Significance F		0,022		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	0,299	0,000	Intercept	0,300	0,000	Intercept	0,298	0,000		
Net investments	0,001	0,059	Net investments	0,001	0,023	Net investments	0,001	0,022		

Data of Telenor had to be divided in two models as well. Even the reason was equal with TDC: Revenues highly correlated with other variables and were tested separately. The model of other variables does fit quite well with Adj. R-square of 0,237 and with statistical significance ( $0,008 < 0,05$ ). Our model confirmed Pecking Order Theory from behalf of Liquidity/Current Ratio (-0,244) and Trade-off Theory by Tangibility (0,460). The models of robustness check also fit well and were statistically significant but explanatory power of Current ratio (-0,244 -> -0,18 -> -0,018) and Tangibility (0,46 -> 0,345 -> 0,279) remarkably decreased. Still our

results of Tangibility could be characterized as robust as they did not decrease that much. The Results of Telenor are provided in Table 9.

**Table 9: Results of regressions ran with data of Telenor. Regressions were run with two models.**

MODEL 1								
Telenor (t-1)			Telenor (t-1)			Telenor (t-1)		
Adjusted R Square		0,237	Adjusted R Square		0,181	Adjusted R Square		0,237
Significance F		0,008	Significance F		0,025	Significance F		0,008
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value
Intercept	0,327	0,131	Intercept	0,376	0,100	Intercept	0,271	0,222
<b>Revenues</b>	0,030	0,133	<b>Growth</b>	0,044	0,042	<b>Growth</b>	0,045	0,034
<b>Net Margin</b>	-0,018	0,496	<b>Net Margin</b>	-0,019	0,491	<b>Net Margin</b>	-0,037	0,178
<b>FCF</b>	0,001	0,582	<b>FCF</b>	0,001	0,512	<b>FCF</b>	0,001	0,316
<b>Current Ratio</b>	-0,244	0,314	<b>Current Ratio</b>	-0,188	0,460	<b>Current Ratio</b>	-0,014	0,954
<b>Tangibility</b>	0,460	0,017	<b>Tangibility</b>	0,345	0,083	<b>Tangibility</b>	0,279	0,149
<b>Net Investments</b>	0,001	0,233	<b>Net Investments</b>	0,001	0,207	<b>Net Investments</b>	0,001	0,017
MODEL 2								
Telenor (t-1)			Telenor (t-2)			Telenor (t-3)		
Adjusted R Square		0,205	Adjusted R Square		0,149	Adjusted R Square		0,105
Significance F		0,001	Significance F		0,004	Significance F		0,014
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value
Intercept	0,882	0,000	Intercept	0,844	0,000	Intercept	0,807	0,000
<b>Revenues</b>	0,001	0,001	<b>Revenues</b>	0,001	0,004	<b>Revenues</b>	0,001	0,014

Data of Teliasonera had to be divided in three models, whereas Revenues and Tangibility were run in their own models. Our model of multiple regression with data of Teliasonera did not fit very well with only Adjusted R-square of 0,086 and had no statistical significance (  $0,11 > 0,05$  ) either. Growth (-0,041) and Profitability (0,036) do have a weak theory confirming connection with financial leverage. Though the weak connections are not reasonable to be taken into account, they refer Growth to confirm Agency theory and Profitability to confirm Market timing theory. Our simple regressions were run from behalf of Revenues

and Tangibility, where Revenues did not offer anything remarkable, but Tangibility strongly argues against our hypothesis with coefficient (-0,523) as it was supposed to be in positive relationship with financial leverage. Thus the result violates the statement of Trade-off Theory.

Our robustness check with values t-2 and t-3 reveals our multiple model to fit better with Adjusted R-squares of 0,151 & 0,206 and they also turned into statistical significance ( $0,035 < 0,05$  &  $0,011 < 0,05$ ). Robust check of the multiple model also shows that those weak connections of Growth and Profitability are still there. From behalf of Tangibility and it's robustness it showed to maintain or even strengthen the argument of the theory with higher negative values of -0,627 & -0,687 whilst the fit of the model (0,103 & 0,12) and statistical significance ( $0,015 < 0,05$  &  $0,009 < 0,05$ ) are enhanced as well. Results of Teliasonera are provided in Table 10.

**Table 10: Results of regressions ran with data of Teliasonera. Regressions were run in three models.**

MODEL 1										
Teliasonera (t-1)			Teliasonera (t-2)			Teliasonera (t-3)				
Adjusted R Square		0,086	Adjusted R Square		0,151	Adjusted R Square		0,206		
Significance F		0,117	Significance F		0,035	Significance F		0,011		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	0,358	0,000	Intercept	0,355	0,000	Intercept	0,380	0,000		
<b>Growth</b>	-0,041	0,012	<b>Growth</b>	-0,046	0,005	<b>Growth</b>	-0,051	0,002		
<b>Net Margin</b>	0,036	0,436	<b>Net Margin</b>	0,042	0,361	<b>Net Margin</b>	0,047	0,300		
<b>FCF</b>	0,001	0,824	<b>FCF</b>	0,001	0,522	<b>FCF</b>	0,001	0,897		
<b>Current Ratio</b>	-0,007	0,651	<b>Current Ratio</b>	-0,010	0,501	<b>Current Ratio</b>	-0,013	0,374		
<b>Net Investments</b>	0,001	0,836	<b>Net Investments</b>	0,001	0,884	<b>Net Investments</b>	0,001	0,967		
MODEL 2										
Teliasonera (t-1)			Teliasonera (t-2)			Teliasonera (t-3)				
Adjusted R Square		0,377	Adjusted R Square		0,446	Adjusted R Square		0,476		
Significance F		0,000	Significance F		0,000	Significance F		0,000		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	-0,462	0,006	Intercept	-0,554	0,001	Intercept	-0,600	0,000		
<b>Revenues</b>	0,001	0,000	<b>Revenues</b>	0,001	0,000	<b>Revenues</b>	0,001	0,001		
MODEL 3										
Teliasonera (t-1)			Teliasonera (t-2)			Teliasonera (t-3)				
Adjusted R Square		0,071	Adjusted R Square		0,103	Adjusted R Square		0,120		
Significance F		0,038	Significance F		0,015	Significance F		0,009		
	Coefficients	P-value		Coefficients	P-value		Coefficients	P-value		
Intercept	0,863	0,000	Intercept	0,964	0,000	Intercept	1,026	0,000		
<b>Tangibility</b>	-0,523	0,038	<b>Tangibility</b>	-0,627	0,015	<b>Tangibility</b>	-0,687	0,009		

From behalf of Elisa our findings from the results were confirmations of Agency Theory and Pecking Order Theory by variables growth and liquidity which were also found robust as well. Thus hypothesis 2 and hypothesis 5 were confirmed. Results of TDCs' data did not provide confirming evidence for the tested hypotheses. Results of Tele2 strongly confirmed Pecking Order Theory by variable of liquidity. Tele2 also confirmed Trade-off Theory by variable Tangibility. The

both confirmations were found robust as well. Thus hypothesis 5 and hypothesis 6 were confirmed. Telenor respectively confirmed Pecking Order Theory and Trade-off Theory by variables of Liquidity and Tangibility. Our robust check revealed Tangibility to maintain its' explanatory power but results of liquidity were not found robust. Despite the robustness check, hypothesis 5 and hypothesis 6 were confirmed. Results of Teliasonera did reveal weak connections of Growth and Profitability to confirm their hypotheses (hypotheses 2 and 3). Connections that indicated Agency Theory's (Growth) and Market timing theory's (Profitability) confirmations were found robust on that respective level. Perhaps the biggest mystery was found from Tangibility's strong violation of Trade-off Theory whereas the relationship between financial leverage was highly negative and got even stronger in robust checks.

According to our results, in big picture, we can see similarities between Elisa, Tele2 and Telenor by respective confirmations. In addition, especially Tele2 and Telenor are worth to be focused with both similar confirmations. TDC and Teliasonera instead could not offer evidence with similarities between other case companies. Also in accordance to our results, the hypothesis 5 that tested if Pecking Order Theory was confirmed can be concerned as the most integrative factor within the 5 case companies that are examined in this study.

## 7. Conclusions and Future Research

This thesis examined the determinants of financial leverage ratio of large publicly listed companies within Nordic Telecom sector. The theoretical framework was constructed on capital structure theories with support of earlier literature and empirical evidence reached in earlier examinations of determinants of capital structure and leverage ratio. The study covered 5 case companies (Elisa, DC, TELE2, Telenor and Teliasonera) headquartered in Nordic countries during period of 2002 - 2013 and by using restated values of quarterly data from each case companies' interim reports. The chosen hypotheses are tested with multiple linear regressions firm by firm whereas we had no differing issues e.g. currencies.

Our findings showed that uniqueness of Telecom sector and the region of our sample did not provide us unequivocal determinants of leverage ratio within the sector. However, our hypothesis 5 was confirmed by three case companies (Elisa, Tele2 and Telenor) which is worth to be taken into account in the big picture. The findings also still showed that theories and earlier empirical evidence are confirmed by individual case companies non-systematically. Though Telecom sector is considered as quite unique industry and we did not discover absolute common relationships that would have held through all the Nordic case companies, we got evidence to conduct the research of this sector in future.

As mentioned, some of the tested capital structure theories did hold from behalf of particular companies. Elisa, Tele2 and Telenor did confirm Pecking Order Theory from behalf of hypothesis 5, though Telenor's evidence was found not to be robust. In addition Tele2 and Telenor can be also integrated by hypothesis 6 that tested if Trade-off Theory was confirmed, which was. Other firm-specific findings were Elisa's confirmation of Agency Theory in hypothesis 2 and Teliasonera's strong argument against statement of Trade-off Theory in hypothesis 6.

In practice results give us some strategic indications of firms that confirmed the tested hypothesis. Elisa tends to keep their financial leverage lower in periods of higher growth and vice versa. Elisa, Tele2 and Telenor do all balance their level of

liquidity reversely in accordance to financial leverage by taking Long term debt when short term commitments (needs for liquidity) are decreasing. In addition to Tele2 and Telenor their level of Tangibility goes hand in hand with their financial leverage. As a violation for Agency Theory, Teliasonera has been recently raising new long term debt during their level of Tangibility has decreased and vice versa.

### **Future Research**

Though we examined comparably a very unique sector and focused on a small and specific geographical position, it is important to remember the truth that telecom sector seem to be always, at some level, under a wind of change. As we also concluded in chapter of case companies' presentations, each firm seem to have their own priorities to focus on. Though each firms' baseline is definitely to prioritize in accordance to their strategy, prioritization is also directly conducted by regional legislations and indirectly by the markets themselves. It is also possible that there are at least indirectly priorities that are based on particular characteristics of Telecom markets. Thus deeper and more comprehensive pre-examination for figuring out those telecom-characteristics could help us to find right hypotheses to test in context of Telecom sector. Previous aspects strengthened how the 12-year period of this study is very challenging interval to find out any generalized indications, though it truly tells us the findings under economically challenging circumstances worldwide.

Now that this study focused on Nordic Telecom sector in accordance to companies' headquarter country, the aspect could be more market-based or even operation-based. On market-based aspect our case companies would be replaced as Countries (Markets) whereas the examination would be no longer violated by legislative restrictions or market-area-based differences. Still there would be challenges made by Multinational corporations (MNC's) as their strategy covers the big picture of all the different markets they are penetrated in. Also the number of market participants may not be sufficient within some countries.

All this could be also put totally upside down when MNC's would be precisely to be focused on. In this settlement countries would be replaced by regions of many

options e.g. level of legislation, emerged markets VS emerging markets, level of political risk etc. With a reasonable limitations and background these baselines would provide us a worldwide scope of Telecom sector that can be generalized under each regions of the sample. MNC's with operations in more than one defined regions, should be simply excluded from the sample or as a compromise, placed in accordance to distribution of their operations into the closest option.

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# Appendix 1

## Descriptive statistics

Table 17: Descriptive statistics

<u>ELISA</u>	<i>Revenues</i>	<i>Growth</i>	<i>Profitability</i>	<i>FCF</i>	<i>Current Ratio</i>	<i>Tangibility</i>	<i>Net Investments</i>	<i>Avg. Profitability</i>	<i>Avg. Growth</i>
<b>Mean</b>	372,71	0,00	0,00	159,11	0,98	0,00	-9,80	0,02	0,04
<b>Median</b>	377,75	-0,08	0,18	156,80	0,96	-0,03	-7,35	0,06	0,04
<b>Standard Deviation</b>	2168	1,00	0,65	106,32	0,32	0,18	22,34	0,13	0,06
<b>Kurtosis</b>	-0,70	1,48	2,87	-0,92	0,04	16,29	10,34	2,27	0,22
<b>Skewness</b>	-0,55	0,83	-1,28	0,23	0,65	-2,83	-2,30	-1,62	0,07
<b>Range</b>	80,50	4,85	3,55	396,20	1,33	1,23	153,10	0,59	0,26
<b>Minimum</b>	325,50	-1,93	-1,91	-10,00	0,50	-0,93	-116,00	-0,37	-0,07
<b>Maximum</b>	406,00	2,52	1,64	396,20	1,83	0,31	37,10	0,22	0,18
<b>N</b>	48	48	48	48	48	48	48	48	48

<u>IDC</u>	<i>Revenues</i>	<i>Growth</i>	<i>Profitability</i>	<i>FCF</i>	<i>Current Ratio</i>	<i>Tangibility</i>	<i>Net Investments</i>	<i>Avg. Profitability</i>	<i>Avg. Growth</i>
<b>Mean</b>	9150,27	2,96	0,14	1585,08	0,94	0,83	-487,33	0,02	0,04
<b>Median</b>	9750,50	2,31	-0,02	1361,50	0,92	0,84	-526,50	0,06	0,04
<b>Standard Deviation</b>	2314,14	1,96	0,86	2262,02	0,41	0,17	344,58	0,13	0,06
<b>Kurtosis</b>	-1,32	0,65	8,95	10,33	-0,81	-0,84	7,05	2,27	0,22
<b>Skewness</b>	0,02	0,89	2,07	3,45	0,49	0,10	-1,20	-1,62	0,07
<b>Range</b>	7302,00	9,03	6,04	17784,00	1,51	0,69	2359,00	0,59	0,26
<b>Minimum</b>	6069,00	-1,08	-1,89	-4167,00	0,37	0,47	-1880,00	-0,37	-0,07
<b>Maximum</b>	13371,00	7,95	4,05	13617,00	1,88	1,16	379,00	0,22	0,18
<b>N</b>	48	48	48	48	48	48	48	48	48

<u>TELE2</u>	<i>Revenues</i>	<i>Growth</i>	<i>Profitability</i>	<i>FCF</i>	<i>Current Ratio</i>	<i>Tangibility</i>	<i>Net Investments</i>	<i>Avg. Profitability</i>	<i>Avg. Growth</i>
<b>Mean</b>	9776,60	-1,75	750,08	0,90	0,69	-4,59	-361,67	0,02	0,04
<b>Median</b>	10029,00	-2,02	790,50	0,91	0,67	-5,39	6100	0,06	0,04
<b>Standard Deviation</b>	1468,63	2,75	694,39	0,12	0,31	5,59	908,47	0,13	0,06
<b>Kurtosis</b>	-0,73	37,69	0,27	0,49	-1,65	-0,12	-0,62	2,27	0,22
<b>Skewness</b>	-0,22	5,70	-0,66	-0,42	0,12	-0,10	-0,52	-1,62	0,07
<b>Range</b>	5337,00	22,42	2899,00	0,58	0,86	24,26	3830,00	0,59	0,26
<b>Minimum</b>	7298,00	-6,58	-896,00	0,59	0,29	-16,86	-2182,00	-0,37	-0,07
<b>Maximum</b>	12635,00	15,84	2013,00	1,17	1,15	7,40	1648,00	0,22	0,18
<b>N</b>	48	48	48	48	48	48	48	48	48

<u>Telenor</u>	<i>Revenues</i>	<i>Growth</i>	<i>Profitability</i>	<i>FCF</i>	<i>Current Ratio</i>	<i>Tangibility</i>	<i>Net Investments</i>	<i>Avg. Profitability</i>	<i>Avg. Growth</i>
<b>Mean</b>	20764,21	-0,25	-0,05	2154,71	0,78	0,81	524,92	0,02	0,04
<b>Median</b>	23145,00	-0,38	0,02	2003,00	0,77	0,74	132,50	0,06	0,04
<b>Standard Deviation</b>	4943,09	1,25	1,05	2442,11	0,11	0,19	848,96	0,13	0,06
<b>Kurtosis</b>	-1,17	0,59	7,23	1,64	1,06	-0,72	2,67	2,27	0,22
<b>Skewness</b>	-0,63	-0,29	-1,23	-0,26	0,64	0,67	1,26	-1,62	0,07
<b>Range</b>	16093,00	6,28	7,34	13904,00	0,95	0,65	8382,00	0,59	0,26
<b>Minimum</b>	11510,00	-3,63	-4,47	-5545,00	0,56	0,57	-1692,00	-0,37	-0,07
<b>Maximum</b>	27611,00	2,65	2,87	8959,00	1,12	1,22	6690,00	0,22	0,18
<b>N</b>	48	48	48	48	48	48	48	48	48

<u>TeliaSonera</u>	<i>Revenues</i>	<i>Growth</i>	<i>Profitability</i>	<i>FCF</i>	<i>Current Ratio</i>	<i>Tangibility</i>	<i>Net Investments</i>	<i>Avg. Profitability</i>	<i>Avg. Growth</i>
<b>Mean</b>	23537,94	-1,11	0,06	3570,00	1,54	-390,31	0,88	0,02	0,04
<b>Median</b>	24670,00	-1,61	0,25	3287,00	1,10	-190,50	0,86	0,06	0,04
<b>Standard Deviation</b>	3582,42	2,11	0,94	4044,71	2,07	1993,61	0,12	0,13	0,06
<b>Kurtosis</b>	0,88	6,63	35,08	23,48	23,92	8,69	9,04	2,27	0,22
<b>Skewness</b>	-1,11	2,52	-5,57	3,51	4,88	-2,29	2,83	-1,62	0,07
<b>Range</b>	14211,00	9,93	6,75	34415,00	12,10	12409,00	0,61	0,59	0,26
<b>Minimum</b>	13885,00	-3,06	-5,88	-7901,00	0,81	-9283,00	0,76	-0,37	-0,07
<b>Maximum</b>	28096,00	6,86	0,87	26514,00	12,91	3126,00	1,37	0,22	0,18
<b>N</b>	48	48	48	48	48	48	48	48	48

## Appendix 1 continued

**Table 18: Correlation matrices of the independent variables**

<b>ELISA</b>	Revenues	Growth	Net Margin	FCF	Current Ratio	Tangibility	Net Investments
Revenues	1						
Growth	<b>0,565</b>	1					
Net Margin	-0,104	-0,142	1				
FCF	0,218	-0,137	0,227	1			
Current Ratio	-0,321	-0,228	-0,224	-0,083	1		
Tangibility	-0,401	-0,478	0,009	-0,013	0,233	1	
Net Investments	0,001	-0,017	<b>0,698</b>	0,305	-0,137	-0,070	1
<b>TDC</b>	Revenues	Growth	Net Margin	FCF	Current Ratio	Tangibility	Net Investments
Revenues	1						
Growth	0,287	1					
Net Margin	-0,088	0,245	1				
FCF	0,060	-0,018	-0,071	1			
Current Ratio	<b>0,733</b>	0,144	0,065	0,123	1		
Tangibility	<b>0,803</b>	0,079	-0,201	0,006	0,492	1	
Net Investments	-0,041	-0,050	-0,021	0,102	-0,258	-0,029	1
<b>Tele2</b>	Revenues	Growth	Net Margin	FCF	Current Ratio	Tangibility	Net Investments
Revenues	1						
Growth	0,136	1					
Net Margin	-0,250	-0,099	1				
FCF	-0,146	0,026	0,086	1			
Current Ratio	0,037	<b>0,694</b>	-0,149	0,156	1		
Tangibility	-0,205	<b>-0,669</b>	0,181	0,366	-0,424	1	
Net Investments	-0,003	<b>-0,713</b>	0,079	-0,286	<b>-0,548</b>	<b>0,666</b>	1
<b>Telenor</b>	Revenues	Growth	Net Margin	FCF	Current Ratio	Tangibility	Net Investments
Revenues	1						
Growth	-0,304	1					
Net Margin	0,304	0,162	1				
FCF	0,198	-0,138	-0,050	1			
Current Ratio	-0,428	-0,009	0,137	0,165	1		
Tangibility	<b>-0,939</b>	0,255	-0,385	-0,254	0,278	1	
Net Investments	0,271	0,070	0,162	<b>-0,656</b>	-0,326	-0,232	1
<b>Teliasonera</b>	Revenues	Growth	Net Margin	FCF	Current Ratio	Tangibility	Net Investments
Revenues	1						
Growth	-0,257	1					
Net Margin	<b>0,584</b>	-0,054	1				
FCF	0,155	0,081	0,122	1			
Current Ratio	<b>-0,529</b>	-0,100	-0,190	-0,187	1		
Tangibility	<b>-0,833</b>	0,026	-0,547	-0,143	<b>0,793</b>	1	
Net Investments	0,469	-0,355	<b>0,660</b>	-0,167	-0,037	-0,311	1

## Appendix 2

### Tables of Operations of The Case Companies

#### Operations of Elisa Corporation

Subscription & Revenue Structures of Elisa in EUR, millions (6 yrs)	2008	2009	2010	2011	2012	2013
<b>Total number of mobile subscriptions</b>	<b>2 879 700</b>	<b>3 329 000</b>	<b>3 796 900</b>	<b>4 157 800</b>	<b>4 446 200</b>	<b>4 535 200</b>
Change %		15,60 %	14,06 %	9,51 %	6,94 %	2,00 %
<b>Consumer Customer subscriptions</b>	<b>2 257 500</b>	<b>2 601 600</b>	<b>2 951 100</b>	<b>3 181 100</b>	<b>3 327 400</b>	<b>3 340 300</b>
Subscriptions in Finland	1 979 500	2 308 800	2 591 000	2 770 100	2 864 100	2 867 100
Subscriptions in Estonia	278 000	292 800	360 100	411 000	463 300	473 200
<b>Corporate Customer subscriptions</b>	<b>622 200</b>	<b>727 400</b>	<b>845 800</b>	<b>976 700</b>	<b>1 118 800</b>	<b>1 194 900</b>
Subscriptions in Finland	562 400	662 100	767 700	888 400	1 016 400	1 082 000
Subscriptions in Estonia	59 800	65 300	78 100	88 300	102 400	112 900
<b>Mobile subscriptions – ARPU, €/month *</b>	<b>26,4</b>	<b>23,6</b>	<b>21,6</b>	<b>19,1</b>	<b>17,5</b>	<b>15,9</b>
Consumer Customer ARPU	21,8	20,0	18,8	16,8	15,8	14,6
Corporate Customer ARPU	40,6	34,8	32,1	27,5	24,1	20,7
<b>Total number of Fixed and New Service subscriptions</b>	<b>1 247 800</b>	<b>1 166 300</b>	<b>1 113 500</b>	<b>1 037 000</b>	<b>998 300</b>	<b>1 112 600</b>
Change %	-	-6,53 %	-4,53 %	-6,87 %	-3,73 %	11,45 %
<b>Consumer Customer subscriptions</b>	<b>928 900</b>	<b>866 000</b>	<b>838 000</b>	<b>819 200</b>	<b>816 300</b>	<b>928 400</b>
<b>Corporate Customer subscriptions</b>	<b>318 900</b>	<b>300 300</b>	<b>275 500</b>	<b>217 800</b>	<b>182 000</b>	<b>184 200</b>
<b>Consumer customer Revenues</b>	<b>882</b>	<b>848</b>	<b>885</b>	<b>930</b>	<b>962</b>	<b>949</b>
Change %		-3,85 %	4,36 %	5,08 %	3,44 %	-1,35 %
<b>Corporate customer Revenues</b>	<b>603</b>	<b>583</b>	<b>578</b>	<b>600</b>	<b>591</b>	<b>598</b>
Change %		-3,32 %	-0,86 %	3,81 %	-1,50 %	1,18 %
<b>Mobile subscription revenue, 1m</b>	<b>919</b>	<b>884</b>	<b>938</b>	<b>979</b>	<b>1 018</b>	<b>944</b>
Change %	-	-3,79 %	6,08 %	4,37 %	3,98 %	-7,27 %
<b>Fixed and New Services revenue, 1m</b>	<b>615</b>	<b>591</b>	<b>571</b>	<b>596</b>	<b>582</b>	<b>642</b>
Change %	-	-3,92 %	-3,37 %	4,38 %	-2,35 %	10,31 %
<b>Estonian Business **</b>	<b>98</b>	<b>84</b>	<b>90</b>	<b>100</b>	<b>112</b>	<b>95</b>
Change %		-14,29 %	7,14 %	11,11 %	12,00 %	-15,18 %
<b>TOTAL REVENUES</b>	<b>1 485</b>	<b>1 430</b>	<b>1 463</b>	<b>1 529</b>	<b>1 553</b>	<b>1 547</b>
Change %		-3,70 %	2,31 %	4,51 %	1,57 %	-0,39 %
<b>Profitability</b>	<b>177</b>	<b>177</b>	<b>150</b>	<b>201</b>	<b>208</b>	<b>196</b>
profitability %	11,92 %	12,38 %	10,25 %	13,15 %	13,39 %	12,67 %

\* ARPU stands for average revenues per unit in a month

\*\* Estonian business (mobile and fixed subscriptions) are included in total revenues so the number indicates their share of total revenues

## Appendix 2 continued

### Operations of TDC Corporation

Revenue Structure of TDC in DKK millions (5 yrs)	2009	2010	2011	2012	2013
Consumer revenues	9380	9078	8984	9032	12330
Change %		-3,22 %	-1,04 %	0,53 %	36,51 %
Landline telephony	2578	2257	1929	1658	1492
Mobility service	4338	4374	4225	3878	3352
Internet and network	1708	1587	1529	1445	2331
Terminal equipment etc.	354	274	633	1226	1080
TV & other	402	586	668	825	3284
Corporate revenues	8191	7804	7516	6926	6815
Change %		-4,72 %	-3,69 %	-7,85 %	-1,60 %
Landline telephony	1887	1771	1624	1599	1432
Mobility service revenues	2542	2529	2528	2168	1934
Internet and network revenues, €m	2551	2352	2191	2105	2366
Terminal equipment & others	1211	1152	1173	1054	1083
Nordic revenues *	3515	4087	4487	4815	4264
Change %		16,27 %	9,79 %	7,31 %	-11,44 %
Landline telephony	852	984	1007	869	763
Mobility service revenues	106	190	277	310	332
Internet and network revenues, €m	1385	1523	1647	1762	1580
Terminal equipment & others	1172	1390	1556	1874	1589
Wholesale revenues	2251	2286	2194	2001	1580
Change %		1,55 %	-4,02 %	-8,80 %	-21,04 %
Landline telephony	583	525	483	399	309
Mobility service	657	588	597	544	416
Internet and network	912	931	886	871	689
Other	99	242	228	187	166
YouSee Brand revenues**	3597	4012	4259	4572	0
Change %		11,54 %	6,16 %	7,35 %	-100,00 %
<b>TOTAL REVENUES</b>	<b>26 079</b>	<b>26 167</b>	<b>26304</b>	<b>26116</b>	<b>24605</b>
Change %		0,34 %	0,52 %	-0,71 %	-5,79 %
<b>ANNUAL PROFIT</b>	<b>2727</b>	<b>2888</b>	<b>2752</b>	<b>3784</b>	<b>3119</b>
Profit%	10,46 %	11,04 %	10,46 %	14,49 %	12,68 %

\* Nordic revenues mostly consist of corporate customers in Norway, Sweden and Finland

\*\* YouSee revenues are included in each sections in 2013\*\*\*

## Appendix 2 continued

### Operations of Tele2 Corporation

Regional revenue structure of Tele2 in SEK, millions (6 yrs)	2008	2009	2010	2011	2012	2013
<b>Sweden</b>	11373	11295	11881	12398	12 703	12 460
Change %		-0,69 %	5,19 %	4,35 %	2,46 %	-1,91 %
<b>Mobile operations</b>	7698	7722	8701	9721	10 002	10 075
<b>Fixed broadband</b>	1313	1400	1531	1544	1440	1411
<b>Fixed telephony &amp; other</b>	2362	2173	1913	1553	1261	974
<b>Netherlands</b>	6265	6718	5858	5885	5269	5436
Change %		7,23 %	-12,80 %	0,46 %	-10,47 %	3,17 %
<b>Mobile operations</b>	1060	1014	859	844	920	1682
<b>Fixed broadband</b>	2895	3529	3340	3396	3043	2632
<b>Fixed telephony &amp; other</b>	2310	2175	1659	1645	1122	1236
<b>Norway</b>	3496	3292	2931	3245	4787	4132
Change %		-5,84 %	-10,97 %	10,71 %	47,52 %	-13,68 %
<b>Mobile operations</b>	2533	2616	2618	2939	4467	3874
<b>Fixed telephony &amp; other</b>	963	686	421	380	320	258
<b>Baltic area &amp; other *</b>	12 202	13 301	15 293	16 539	5 421	5630
Change %		9,01 %	14,98 %	8,15 %	-67,22 %	3,86 %
<b>Mobile operations</b>	11245	11908	13744	14857	3082	2821
<b>Other operations</b>	98	97	84	35	61	68
<b>Austria</b>	2231	2315	1580	1377	1353	1244
Change %		3,77 %	-31,75 %	-12,85 %	-1,74 %	-8,06 %
<b>Fixed broadband</b>	996	1123	930	842	874	811
<b>Fixed telephony</b>	597	522	373	294	190	228
<b>Other operations</b>	638	670	277	241	243	251
<b>Germany</b>	3029	2542	1515	1096	946	867
Change %		-16,08 %	-40,40 %	-27,66 %	-13,69 %	-8,35 %
<b>Mobile operations &amp; Fixed broadband</b>	484	436	313	280	363	526
<b>Fixed telephony &amp; other</b>	2545	2106	1202	816	549	375
<b>Other operations</b>	1604	1102	931	666	324	152
Change %		-31,30 %	-15,52 %	-28,46 %	-51,35 %	-53,09 %
<b>MOBILE</b>	23 395	24 556	27 387	30 044	20 941	21 514
Change %		4,96 %	11,53 %	9,70 %	-30,30 %	2,74 %
<b>FIXED BROADBAND</b>	6 119	6 709	6 146	6 044	5025	5566
Change %		9,64 %	-8,39 %	-1,66 %	-16,86 %	10,77 %
<b>FIXED TELEPHONY</b>	6 916	6 026	4 764	3 697	2219	2903
Change %		-12,87 %	-20,94 %	-22,40 %	-39,98 %	30,82 %
<b>OTHER OPERATIONS</b>	3 779	3 274	2 064	1 925	1163	1393
Change %		-13,36 %	-36,96 %	-6,73 %	-39,58 %	19,78 %
<b>TOTAL **</b>	40 209	40 565	40 164	40 750	30 742	29 871
Change %		0,89 %	-0,99 %	1,46 %	-24,56 %	-2,83 %
<b>PROFIT</b>	1758	3446	4121	2056	976	655
Profitability %	4,37 %	8,50 %	10,26 %	5,05 %	3,17 %	2,19 %

\* Baltic area & other consist mostly of mobile revenues from Estonia, Lithuania, Latvia, Russia (until 2012), Kazakhstan (after 2009) and Croatia.

\*\* 2012 almost 25% decrease in revenues is far explained with ending of Russian operations.

## Appendix 2 continued

### Operations of Telenor Corporation

Regional revenue Structure of Telenor in NOK, millions (6 yrs)	2008	2009	2010	2011	2012	2013
<b>Norway</b>	<b>33 559</b>	<b>34 133</b>	<b>28 047</b>	<b>26 719</b>	<b>25 507</b>	<b>25 071</b>
Change %		1,71 %	-17,83 %	-4,73 %	-4,54 %	-1,71 %
Mobile operations	12 877	13 642	13 556	12 858	13 643	13 308
Landline telephony	4 678	4 294	3 952	3 433	3 096	2 782
Internet and TV	2 674	2 735	4 662	4 735	4 858	5 060
Data services % other fixed revenues	2 091	2 262	1 910	1 894	1 885	1 967
Wholesale	5 264	5 118	3 967	3 799	2 027	1 953
<b>Denmark</b>	<b>7 627</b>	<b>7 813</b>	<b>7 274</b>	<b>6 992</b>	<b>5 729</b>	<b>4 966</b>
Change %		2,44 %	-6,90 %	-3,88 %	-18,06 %	-13,32 %
Mobile operations	5 814	6 259	6 017	5 936	4 879	4 242
Fixed operations	1 904	1 618	1 257	1 056	850	724
<b>Sweden</b>	<b>9 532</b>	<b>9 031</b>	<b>9 497</b>	<b>10 055</b>	<b>10 607</b>	<b>10 973</b>
Change %		-5,26 %	5,16 %	5,88 %	5,49 %	3,45 %
Mobile operations	6 360	6 290	6 945	7 654	8 099	8 316
Fixed operations	3 258	2 826	2 552	2 401	2 508	2 657
<b>Eastern Europe revenues * (solely mobile)</b>	<b>10100</b>	<b>9204</b>	<b>8088</b>	<b>8026</b>	<b>7409</b>	<b>8654</b>
Change %		-8,87 %	-12,13 %	-0,77 %	-7,69 %	16,80 %
<b>Asia (solely mobile)</b>	<b>33 113</b>	<b>34 767</b>	<b>35 933</b>	<b>40 280</b>	<b>45 426</b>	<b>45 616</b>
Change %		5,00 %	3,35 %	12,10 %	12,78 %	0,42 %
Thailand (Dtac)	12 000	12 044	13 848	14 585	16 776	18 112
Malaysia (DiGi)	8 112	8 743	10 167	10 929	11 986	12 556
Bangladesh (Grameenphone)	5 049	5 947	6 492	6 730	7 294	6 541
Pakistan	4 011	4 350	4 653	5 017	5 654	5 406
India & other	3 941	3 683	773	3 019	3 716	3 001
Broadcast	8 170	8 565	7 040	7 133	6 521	6 735
Change %		4,83 %	-17,81 %	1,32 %	-8,58 %	3,28 %
Other units	10 018	10 072	3 181	2 707	4 812	4 809
Change %		0,54 %	-68,42 %	-14,90 %	77,76 %	-0,06 %
<b>TOTAL REVENUES</b>	<b>96 167</b>	<b>97 650</b>	<b>94 843</b>	<b>98 516</b>	<b>101 718</b>	<b>104 027</b>
Change %		1,54 %	-2,87 %	3,87 %	3,25 %	2,27 %
<b>PROFIT</b>	<b>14 810</b>	<b>10 430</b>	<b>14 808</b>	<b>7 990</b>	<b>9 028</b>	<b>16 572</b>
Profitability %	15,40 %	10,68 %	15,61 %	8,11 %	8,88 %	15,93 %

\* Eastern Europe consists of mobile revenues from Hungary, Bulgaria (after 2012), Serbia, Montenegro and Ukraine (until 2009).

## Appendix 2 continued

### Operations of Teliasonera Corporation

Regional revenues of Teliasonera in SEK, millions (6 yrs)	2008	2009	2010	2011	2012	2013
<b>Sweden</b>	32617	32806	33280	33468	37340	35973
Change %:		0,58 %	1,44 %	0,56 %	11,57 %	-3,66 %
<b>Mobile operations</b>	13 334	14 114	15 195	16 204	17 297	16 853
<b>Fixed broadband &amp; TV</b>	19 283	18 692	18 085	17 264	20 043	19 120
<b>Finland</b>	16 238	17 312	15 433	14 211	13 757	12 755
Change %:		6,61 %	-10,85 %	-7,92 %	-3,19 %	-7,28 %
<b>Mobile operations</b>	9 917	10 540	9 613	8 922	8 173	7 523
<b>Fixed broadband &amp; TV</b>	6 321	6 772	5 820	5 289	5 584	5 232
<b>Norway</b>	10 346	10 091	9 754	9 377	8 665	6 886
Change %:		-2,46 %	-3,34 %	-3,87 %	-7,59 %	-20,53 %
<b>Mobile operations</b>	9 433	8 977	8 597	8 314	7 582	6 797
<b>Fixed broadband</b>	913	1 114	1 157	1 063	1 083	89
<b>Denmark</b>	7 839	8 364	7 288	6 454	5 927	5 359
Change %:		6,70 %	-12,86 %	-11,44 %	-8,17 %	-9,58 %
<b>Mobile operations</b>	6 845	7 278	6 305	5 525	4 835	4 350
<b>Fixed broadband</b>	994	1 086	983	929	1 092	1 009
<b>*Baltic area</b>	7 619	6 586	5 118	4 781	4 400	3 933
Change %:		-13,56 %	-22,29 %	-6,58 %	-7,97 %	-10,61 %
<b>Mobile operations</b>	7 619	6 586	5 118	4 781	4 400	3 933
<b>Fixed broadband</b>	4465	4636	4049	3865	3676	3497
<b>International carrier (Wholesale)</b>	12 010	12 415	11 214	9 654	5 388	5 584
Change %:		3,37 %	-9,67 %	-13,91 %	-44,19 %	3,64 %
<b>Spain (solely mobile)</b>	2 050	4 086	5 979	7 451	8 382	9 467
Change %:		99,32 %	46,33 %	24,62 %	12,49 %	12,94 %
<b>**Eurasia</b>	13 204	14 866	16 458	17 330	19 731	20 414
Change %:		12,59 %	10,71 %	5,30 %	13,85 %	3,46 %
<b>***Other operations</b>	4 906	5 561	5 102	3 992	3 799	3 556
Change %:		13,35 %	-8,25 %	-21,76 %	-4,83 %	-6,40 %
<b>MOBILE</b>	48 673	51 077	50 659	51 032	50 637	48 873
Change %:		4,94 %	-0,82 %	0,74 %	-0,77 %	-3,48 %
<b>FIXED BROADBAND</b>	42 625	43 342	39 875	36 811	35 723	33 510
Change %:		1,68 %	-8,00 %	-7,68 %	-2,96 %	-6,19 %
<b>EURASIA &amp; OTHER OPERATIONS</b>	18 110	20 427	21 560	21 322	23 530	23 970
Change %:		12,79 %	5,55 %	-1,10 %	10,36 %	1,87 %
<b>TOTAL</b>	103 585	109 161	106 979	104 354	104 898	101700
Change %:		5,38 %	-2,00 %	-2,45 %	0,52 %	-3,05 %
<b>PROFIT</b>	35 181	13 940	3 538	15 707	16 815	16 931
Profitability %:		33,96 %	12,77 %	3,31 %	15,05 %	16,65 %

\* Baltic area consists of revenues from Estonia and Lithuania (mobile and fixed) and Latvia (mobile)

\*\* Eurasia consist of revenues from Turkey, Russia, Kazakhstan, Azerbaijan, Uzbekistan, Tajikistan, Georgia, Moldova and Nepal.

\*\*\* Other operations consist of other business services, Holding and Group functions.