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Bachelor's Thesis

Does top management trustworthiness affect the capital market's response to unexpected earnings?

A study on the effect of top management trustworthiness on earnings response coefficients

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ABSTRACT

The Earnings Response Coefficient (ERC) measures the magnitude of the capital market's reaction to announced earnings surprises, and varies depending on intertemporal and cross-sectional factors. Since factors such as trust and credibility have been shown to have a significant impact on the capital market's perception of a company, we hypothesize that these factors may also affect the capital market's reactions to earnings surprises. As the first study in the Nordic region, this study examines the effect of the capital market's perception of top management trustworthiness on the ERCs for Nordic Large- and Mid cap companies between 2011 and 2015. Using a linear regression, we find that high perceived top management trustworthiness has a magnifying effect on the ERC, suggesting that the capital market reacts stronger to earnings surprises presented by companies with high perceived top management trustworthiness. Additionally, we find that the explanatory power of an ERC regression can be markedly improved by including trust variables.

Keywords: Earnings Response Coefficient, Capital Markets, Top Management, Trust

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1. Introduction

On June 11th 2015, Twitter's CEO Dick Costolo announced his resignation. After only five years as CEO, Costolo had managed to turn Twitter from being a tech start-up into a billion-dollar revenue company listed on the New York stock exchange. His way of driving the operations as well as handling the company stakeholders yielded credibility amongst investors. This perception of Costolo was however not permanent. Missed strategic opportunities and disappointing financial reports turned the earlier credit into blame, and when his resignation was finally announced, Twitter's share price appreciated more than 10% (Griffith, 2015; Meyer, 2015; Olenic, 2015).

Movements in share price are in accordance with traditional valuation theory driven by rational investors' forecasts of expected cash flows generated from the security. Newly announced value relevant information indicating altered expected cash flows should result in reactions from the capital market, just as in the case of Dick Costolo's resignation.

Capital markets seem to assess the credibility and trustworthiness in top management[1] when forecasting expected cash flows based on new information. One of the most important announcements concerning a company's cash flows is the earnings announcement, and the magnitude of the capital market's reaction to information perceived as surprises has been shown to fluctuate based on company specific traits. This means that the stock market could react stronger or weaker to announced earnings surprises depending on factors such as risk-free interest rates, growth, and earnings persistence. Since trust and credibility play important roles in assessing value relevant information, this study aims to determine the effect of top management trustworthiness on the capital markets' reactions to the announcements of unexpected earnings, in order to more accurately determine the behaviour of capital markets.

1.1 Purpose

The purpose of this study is to contribute to the existing literature by exploring how the capital markets' reactions to announcements of earnings are affected by the capital market's trust for the top management in a company. There is a myriad of previous research in the field focusing on how factors such as firm size, growth, interest rates, earnings persistence, and auditor quality

[1] Top management is defined as the senior operational management in the company, including for example the CEO, CFO, and the COO

affect the market's reaction (Collins & Kothari, 1989; Donnelly & Walker, 1995; Teoh & Wong, 1992). Top management trustworthiness is to our knowledge unexplored. Consequently, this study aims to answer the following research question:

"How does the capital market's trust for the top management in a company affect the capital market's reaction to an earnings surprise?"

The study provides valuable insights for Nordic companies and their stakeholders as it helps illustrate how the capital market takes into account top management trustworthiness when ultimately determining the value of a company. Additionally, it provides new evidence in the Nordic markets on the positive relationship between a firm's earnings surprise and its abnormal returns within a defined time window.

1.2 Delimitations

To narrow the scope of this thesis, we make the following delimitations:

- The study will be limited to Large- and Mid cap companies listed on the stock exchanges in Copenhagen, Helsingfors, Oslo, and Stockholm
- The study will be limited to earnings announcements made between 2011-2015
- The study will be limited to earnings announcements made in connection with the annual report, other earnings announcements will not be included
- The study will be limited to analyse the effect caused by top management trustworthiness and will hence not explain the drivers behind the trustworthiness
- The study's focus will be limited to providing evidence for the association between top management trustworthiness and the ERC. We do not aim to provide evidence for why the association exists

1.3 Disposition

This introductory section will be followed by the theoretical framework in the chapter 2 where relevant concepts and theories needed to understand the research question will be highlighted. In chapter 3, the hypotheses will be developed followed by descriptions of methodology and operationalization of variables in chapter 4. The results from the regression will be presented and analysed in chapter 5. The sensitivity and robustness of the model will be discussed in chapter 6 followed by the conclusion and suggestions for future research in chapter 7.

2. Theoretical framework

In this section we aim to give an overview of the relevant previous research made on accounting figures' connection to market valuation, the earnings response coefficient, and the factors causing variation in the earnings response coefficient. This section will also highlight research discussing the impact of top management's trustworthiness on capital markets.

2.1 Accounting figures and their connection to market valuation

In 1968, Ball and Brown showed that accounting information is relevant when determining the value of a company. Their study "An empirical evaluation of accounting income numbers" laid the foundation for a major part of the research within this field and will hence be described thoroughly in this study.

Ball and Brown constructed a model in which observations of earnings announcements were divided into two categories; "good news" and "bad news". Good news were defined as announcements where the reported figure was better than the capital market's expectations, bad news were defined as announcements where the reported figure was lower than the capital market's expectations. These two categories were then compared in terms of cumulative abnormal return (CAR) and an important relationship was found: Good news were generally associated with positive returns while bad news were associated with negative returns (Ball & Brown, 1968). In this study, the terms Earnings Surprise and Unexpected Earnings (UX) will be used interchangeably to refer to the difference between actual earnings and expected earnings.

In their study, Ball and Brown tested two different measures of accounting earnings: Net income and earnings per share (EPS). The capital market's expectation for each metric was approximated using either a very simple method where the capital market's expectation for each metric was approximated to equal last year's value, or a slightly more advanced time series model based on historical trends. The capital market's expectation was compared to the actual announced earnings figure in order to categorize the observations. The CAR for each observation was obtained by subtracting the expected risk adjusted return from the observed return. This difference was then cumulated during a relatively large time window, from 12 months before announcement to 6 months after.

Not only did Ball and Brown confirm the theory that the relationship between accounting figures and stock price movements existed, they also found that a large portion of price movements occur before the actual announcement has taken place. This indicates that yearly announcements of earnings/net income are not the only sources of value relevant information in any given year. Rather, information regarding a company is made public during the course of the year through for example interim reports and news announcements.

While Ball and Brown's main focus was investigating the relationship between abnormal returns and the sign of the unexpected income change, it merely touched upon the subject of the magnitude.

2.2 The Earnings Response Coefficient (ERC)

Later studies built upon the work of Ball and Brown, and investigated the magnitude of the relationship between UX and abnormal returns, stated as the ERC. Using event studies surrounding the announcement of earnings, the model in Table I was used to measure the ERC, defined as the beta coefficient β_1 (Collins & Kothari, 1989):

Table I
The ERC regression

$$CAR_{it} = \beta_0 + \beta_1 * UX_{it} + \varepsilon_{it}$$

CAR_{it}	Cumulative abnormal return for firm *i* in period *t*
β_0	Intercept
β_1	Earnings response coefficient (ERC)
UX_{it}	Unexpected Earnings for firm *i* in period *t*
ε_{it}	Error term for firm *i* in period *t*

Table I shows a summary of the variables included in a traditional ERC regression.

The component β_0 is the intercept, the dependent variable CAR_{it} is some measure of risk-adjusted return of security *i* cumulated over period *t*, the independent variable UX_{it} is a measure of unexpected earnings and ε_{it} is an error term assumed to be normally distributed.

Inferences from the regression are based on the size of the beta coefficient and the model's explanatory power. The size of the coefficient β_1 (ERC) is interpreted as the magnitude of the capital market's reaction to unexpected accounting earnings. The explanatory power (adjusted

R^2) signifies how much of the cumulative abnormal return can be explained by the linear regression model (Collins & Kothari, 1989).

2.3 Factors affecting ERC

While the early research treated the ERC as homogenous across firms, Collins and Kothari (1989) argued that the ERC varies between firms based on temporal and cross-sectional determinants. These determinants include factors such as earnings persistence, earnings predictability, exposure to market risk, growth opportunities, and industry membership (Kormendi & Lipe, 1987; Collins & Kothari, 1989; Easton & Zmijewski, 1989; Lipe, 1990). The most relevant factors will be discussed below, including the potential impact of top management's trustworthiness.

2.3.1 Growth opportunities

The logical reasoning behind the relationship between growth opportunities and ERC lies in valuation theory. In the widely acclaimed valuation model presented in Ohlson (1995), the present value of future expected dividends has a large impact when it comes to determining the market value of a company. Since dividends are closely connected to earnings, higher future expected earnings entails higher expected dividends, and consequently higher market valuation.

In the context of ERC, an earnings surprise alters the projected course of expected future earnings and dividends, and thus has a significant impact on market valuation. This impact is magnified in cases where companies have large growth opportunities (Martikainen, 1997). The fact that companies with larger growth opportunities are more likely to see larger market valuation changes given an earnings surprise yields the conclusion that high-growth companies have larger ERCs than firms with fewer growth opportunities (Martikainen, 1997).

2.3.2 Information availability

The ERC has an inverse relationship with information availability (Grant, 1980; Atiase, 1985; Collins et al., 1987; Freeman, 1987; Donnelly & Walker, 1995). The economic intuition behind the relationship is based on the fact that when more information is available throughout the year, less emphasis is put on the earnings announcements. Such information becomes available through for example interim reports, Capital Market Days, and other types of exposure in media. Moreover, Linderholm (2001) shows that for a sample of listed Swedish companies, the

ERC was lower in 1999-2001 than 1989-1991. Linderholm argues that a reason for this may be that technology has increased the information availability throughout the years, and the announcement of accounting information is thus less surprising.

2.3.3 Earnings quality

Earnings quality[2] is another factor causing variations in ERC. Higher perceived earnings quality is associated with a higher ERC, explained by the fact that investors who perceive unexpected earnings as of higher quality, i.e. originated from sustainable drivers, will to a greater extent be willing to base investment decisions on the announced earnings information (Teoh & Wong, 1992).

2.3.4 Earnings management

The perception of earnings quality is affected by two types of earnings management: real earnings management (REM) and accounting earnings management (AEM) (Robinson et al., 2012). REM is the name used to describe operating decisions made in attempts to manage cash flows, revenues and expenses. An example of REM would be implementing a discount or incentive program to increase sales near the end of a period when revenue targets are not being met (Robinson et al., 2012). Since REM relates to operating decisions rather than accounting decisions, this study will not directly target REM. Instead, the main focus will be on AEM.

AEM refers to the practice of top management's decision making and reporting intended to depict the company's current state more accurately. Examples of AEM include making estimates regarding revenue recognition, depreciation rates, and revaluations of assets. Hence, AEM is subject to the discretion of the top management in the firm (Schilit & Perler, 2010). These qualitative estimations enable strategic earnings manipulation to meet or beat market earnings expectations (Robinson et al., 2012). The exposure to, or incentives for, earnings management will decrease investors' perception of the company's earnings quality (Robinson et al., 2012). This extends the causality of earnings quality and ERC to include earnings management, where high exposure to, or incentives for, earnings management is likely to decrease the ERC.

[2]Earnings quality is defined as the quality of presented earnings, cash flows and balance sheet items. High earnings quality constitutes earnings that the company is likely to sustain in the future (Robinson et al, 2012)

The most frequently researched factors affecting ERC through earnings quality are Default risk and Auditor quality, which are argued to have large impact on the perceived earnings quality by investors. See Figure I and the discussion below for how ERC is affected by these factors.

Figure I
The link between factors affecting earnings quality

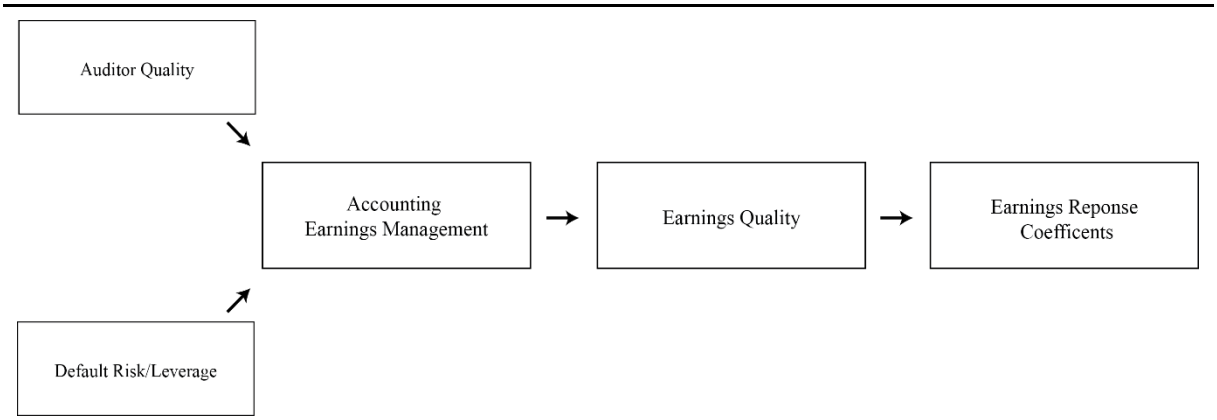


Figure I shows the link between the discussed factors affecting earnings quality - high default risk and low auditor quality is associated with more earnings management which in turn implies a lower earnings quality. Finally, low earnings quality is associated with low earnings response coefficents

2.3.4.1 Default risk

The empirical evidence on default risk and AEM is mixed. According to the debt hypothesis (Sweeney, 1994) and the financial distress theory (Jaggi & Lee, 2002), higher default risk and leverage increases the likelihood for AEM. The reason behind this is that firms may manipulate earnings in order to reach debt covenants (Hodgson & Stevenson-Clarke, 2000; Dichev & Skinner, 2002). Whilst there is some empirical evidence that default risk and leverage reduces AEM (Jelinek, 2007), the majority of research on this subject agrees that higher default risk and leverage implicates more AEM.

Furthermore, default risk has been shown to have an explicit relationship with the ERC, as firms with higher default risks tend to be associated with lower ERCs (Dhaliwal et al., 1991).

2.3.4.2 Auditor quality

Auditor quality has been shown to reduce AEM as the auditor is likely to object to top management's accounting choices that overstate, or in other aspects misrepresent, earnings. Additionally, the auditor is more likely to be sued when associated with financial statements

that are have undergone AEM. Consequently, there are incentives for the auditor to ensure that the company's does not engage in excessive AEM (Becker et al. 1998).

ERC variation can be explained in part by perceived auditor quality (Teoh & Wong, 1992). By comparing the ERCs of "Big Eight"[3] audited companies to non-Big Eight audited firms, Teoh and Wong shows that companies associated with higher auditor quality tend to have higher ERCs[4].

2.3.5 Top management trustworthiness

Societal trust and capital market reactions to announcements of value relevant information has been shown to have an association. In their study of capital market reactions following unexpected earnings announcements, Pevzner et al. (2013) determine that investors in more trusting societies and countries on average perceive announced earnings as more credible, and react stronger to earnings surprises.

While the effect of top management trustworthiness on capital markets' reactions to unexpected earnings announcements has not been explored, social psychology research concludes that the credibility of the messenger is a highly important factor in assessing the credibility of the message (Birnbaum & Stegner, 1979). When analysing a similar announcement, Jian and Lee (2011) shows that capital markets take CEO reputation into consideration when evaluating announcements of major capital investments. The market's response to announcements of capital investments tend to be more favourable for firms with more reputable CEOs, even in cases where companies have high cash free cash flow and low growth opportunities, usually associated with agency costs such as empire building (Jian & Lee, 2011). Additionally, Williams (1996) determined that when a company's top management announce earnings forecasts, the size of revisions in analysts' own earnings forecasts are affected by their perception of top management's competence and credibility (Williams, 1996; Hirst et al., 1999).

While there is no explicit previous research on the relationship between top management trustworthiness and ERC, there are indicators that such a relationship exists as similar connections have been explored.

[3] The eight largest auditing firms, today known as "Big Four" due to consolidation
[4] Since 99% of the companies in our sample are audited by a Big Four firm, this variable will not be operationalised

3. Hypothesis

This study focuses on examining the association between the capital market's trust in companies' top management and the Earnings Response Coefficient. In summary, capital markets react positively to earnings which are higher than expected. If these earnings are perceived as being of higher quality, the capital market's reaction is stronger. High levels of societal trust give magnified responses to earnings surprises, and high levels of CEO trustworthiness give magnified responses to capital investments announcements. Moreover, research has shown that the credibility of a message is largely determined by the credibility of the messenger. In accordance with these findings, we hypothesize that high perceived trustworthiness of top management has a magnifying effect on the Earnings Response Coefficient. We formulate this hypothesis as:

HA: *The capital market's reaction to an earnings surprise is stronger for companies whose top management is associated with high trustworthiness than companies whose top management is associated with low trustworthiness*

4. Method

This chapter will discuss the methods and data used for testing the hypothesis. The first and second parts will describe the sample and the test design. The third part will further elaborate on the methods and data that have been used for operationalizing the variables presented in the theoretical framework.

4.1 Sample

The initial sample consists of 270 Large and Mid cap companies listed on the stock exchanges in Copenhagen, Helsingfors, Oslo, and Stockholm, including firms which are listed during one or more years between 2011 and 2015. After conducting data gathering and omitting of special case observations, missing values and data shortfall, the final sample is made up of 175 companies[5], and 583 observations. The procedure for data gathering and choices made regarding omitting observations will be discussed for each variable in the following sections and the shortfalls are summarized in section 4.4.

4.2 Test design

To test the hypothesis, we construct an event study focusing on announcements of annual earnings between 2011 and 2015. Full year earnings announcements are studied rather than quarterly earnings announcements since the annual report has been scrutinized by an auditor and is perceived as more reliable (Lee & Park, 2000). The events will be studied through a linear regression where CAR is the dependent variable and UX is the primary independent variable. Top management trustworthiness will be incorporated in the model through an independent variable and an interaction variable. Finally, the relevant control variables will be included to increase the explanatory power and accuracy of the model. The variables will be described more thoroughly and operationalized in the coming sections. Since the relationship varies depending on year- and firm-specific factors, using a pooled estimation model has been shown to give incorrect estimations of the ERC (Teets & Wasley, 1996). Instead, we include year- and firm fixed effects to better incorporate variations related to year- and firm-specific factors.

[5] For sample distributions, see Appendix B

Table II
The linear regression model

$$CAR_{it} = \beta_0 + \beta_1 * UX_{it} + \beta_2 * TRUST_{it-1} + \beta_3 * INTERACTION_{it} + \beta_4 * SIZE_{it} + \beta_5 * MTB_{it} + \beta_6 * LEVERAGE_{it} + \varepsilon_{it}$$

CAR_{it}	Cumulative abnormal return for firm *i* in period *t*
UX_{it}	Unexpected Earnings for firm *i* in period *t*
$TRUST_{it-1}$	Top Management Trustworthiness for firm *i* in period *t-1* (dummy variable)
$INTERACTION_{it}$	$TRUST_{it-1} * UX_{it}$
MTB_{it}	Market-to-book ratio for firm *i* in period *t*
$SIZE_{it}$	Natural logarithm of book value of assets for firm *i* in period *t*
$LEVERAGE_{it}$	Debt-to-Assets for firm *i* in period *t*

Table II shows a summary of all the variables included in the linear regression. Firm-fixed and year-fixed effects are also included in the model

4.2.1 Event window

The event window is the time horizon around the announcement of full year accounting earnings that will be analysed in the regression. Most studies on the ERC recommend the use of a multiple day window rather than a single day window since it is often difficult to determine which day the information reaches the market (Epps & Oh, 1997). The length of the event window should be appropriately designed to capture the entire effect of the earnings surprise, which can run over the course of several days due to delayed market reactions through "post-earnings-announcement-drift" (Ball & Brown, 1968). Simultaneously, the event window needs to be limited in size as to minimize noise in the form of changes in CAR due to reasons other than the earnings surprise (Lee & Park, 2000). The event window used in this study will be from two days prior to the announcement up to two days after, a total of five days (see Figure II).

Figure II
Event Window

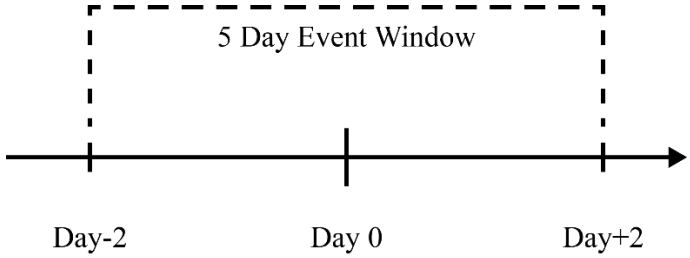


Figure II shows the design of the primary event window used in this study
Day 0 refers to the earnings announcement date

4.3 Operationalization of variables

In this section, the operationalization of the variables presented in the theoretical framework will be discussed. Since the operationalization of the variables is limited by data availability, certain variables will be operationalized using proxies anchored in previous research.

4.3.1 Cumulative Abnormal Return (CAR)

The CAR is measured as the accumulated daily abnormal returns (AR) observed over the lapse of the event window. The AR is the difference between observed stock returns and expected stock returns given by estimation models, measured for each trading day during the event window.

Actual observed prices of company stocks are used for calculating the actual return. These prices can easily be observed through data suppliers such as Thomson Reuters Datastream, and can be regarded as highly reliable given the extensive use of this database by finance professionals. The actual return of company stock for period *t* in the event window is measured as in Table III:

Table III
Observed stock return

$$R_{it} = \frac{P_{it+1} - P_{it}}{P_{it}}$$

R_{it}	Observed stock return for firm *i* in period *t*
P_{it}	Stock price at event window for firm *i* in period *t*
P_{it+1}	Stock price at event window for firm *i* in period *t+1*

Table III shows the calculation of observed stock return

The estimated stock returns will be calculated using the Capital Asset Pricing Model (CAPM). The CAPM estimates the expected rate of return using the prevalent risk-free rate, the company's exposure to the underlying market, and the market risk premium of equity. This implies that the model assumes a well-diversified portfolio with no additional impact from specific company risk, and only evaluates firm exposure to systematic risk and the risk-free rate when calculating the expected rate of return. Using the CAPM can make the model less accurate when assessing required return for a specific company, however the model has great advantages given its widespread usage and simple operationalization, which is why this study will primarily use the CAPM as expressed in Table IV:

Table IV
Expected return using the CAPM

$$E(r_{it}) = r_{fit} + \beta_{it} * (r_{mit} - r_{ft})$$

$E(r_{it})$	Expected stock return for firm *i* in period *t*
r_{ft}	The applicable risk free rate for firm *i* in period *t*
β_{it}	Risk exposure for stock *i* in period *t*
r_{mt}	The applicable market return for firm *i* in period *t*

Table IV shows the operationalization of expected return using the Capital Asset Pricing Model

The Market Model is a simpler estimation model which assumes an expected return based solely on the underlying market's return. The Market Model in Table V will be used as a point of reference in this thesis. For further information on the data used in the estimation of expected returns, see Appendix A.

Table V
Expected return using the Market Model

$$E(r_{it}) = r_{mt}$$

$E(r_{it})$	Expected stock return for firm *i* in period *t*
r_{mt}	The applicable market return in period *t*

Table V shows the operationalization of expected return using the Market Model

Finally, the formula of operationalized variables used for calculating CAR is shown in Table VI:

Table VI
Operationalization of cumulative abnormal return (CAR)

$$CAR_{it} = \sum_{t=1}^{T} R_{it} - E(r_{it})$$

CAR_{it}	Cumulative abnormal return for firm *i* in period *t*
R_{it}	Observed stock return for firm *i* in period *t*
$E(r_{it})$	Expected stock return for firm *i* in period *t*

Table VI shows the calculation of the cumulative abnormal return

4.3.2 Unexpected Earnings (UX)

The definition of UX which will be used in this study is: the difference between actual earnings and the market's expectation on earnings. EPS is used as the metric for earnings rather than measures such as EBIT or Return on Equity since EPS is consistently presented and forecasted for each company, and has a clear link to equity valuation through for example the price to earnings (P/E) ratio (Damodaran, 2005).

The proxy for the capital market's expectation of EPS used in this study is the analysts' consensus earnings forecast which is the mean of reported earnings forecasts from all analysts covering the company. Under the assumption that analysts make forecasts based on rational predictions, the consensus forecasts should be an accurate proxy of what the market expects. Using the consensus forecasts has clear advantages over time series models in that they more

accurately incorporate the market's view (Schipper, 1991; O'Brien, 1986). The adjusted EPS forecast mean will be retrieved from the I/B/E/S database.

Since information about a company's prospects is made available on a continuous basis throughout the year, the market's expectation is updated during the lapse of the year (Ball & Brown, 1968). Consequently, we base the metric for the market's expectation on the most recent analyst consensus forecast before the announcement, usually made around two weeks before. By using the most recent consensus, the information made available earlier in the year is incorporated and a more accurate proxy for the expected earnings is estimated (Thomas, 2002).

When forecasting earnings, analysts make estimates of "street earnings" adjusted for certain items affecting comparability, rather than for example IFRS earnings. Using street earnings gives a potentially better view of the expected earnings as adjustments have been made by the analysts to get a more relevant estimation of the earnings (Cohen et al., 2007). Since the analysts' forecasts have been made on street earnings, the actual figures need to be adjusted in the same way. Thomson Reuter's I/B/E/S database provides actual EPS with the same adjustments as for the forecasted consensus EPS, ensuring consistency in the operationalization of unexpected earnings.

The measure of UX is then deflated with the standard deviation of the analysts' earnings forecasts. This causes two firm-year observations with the same absolute value of earnings surprise but with different standard deviations to be treated differently. Imhoff and Lobo (1992) showed that earnings uncertainty prior to announcement is inversely related to the value of the ERC. Whilst the UX is usually deflated with expected EPS (Collins & Kothari, 1989, Beaver et al., 1979) or stock price (Ghost et al., 2005; Hayn, 1994), this does not take into account the full effect of earnings uncertainty. By deflating the variable with the standard deviation of the forecast, we are thus making sure observations with large uncertainty are not given undue influence in our model.

The data used for operationalization of the unexpected earnings is compiled in Table VII:

Table VII
Operationalization of unexpected earnings (UX)

$$UX_{it} = \frac{EPS_{it} - E(EPS_{it})}{\sigma_{E(EPSit)}}$$

UX_{it}	Unexpected earnings for firm *i* in period *t*
EPS_{it}	Observed earnings per share for firm *i* in period *t*
$E(EPS_{it})$	Analysts' consensus earnings per share forecast for firm *i* in period *t*
$\sigma_{E(EPSit)}$	Standard deviation of forecasted earnings per share for firm *i* in period *t*

Table VII shows the calculation of the unexpected earnings variable

To ensure the quality of our data, we remove observations where there is a risk for inaccuracy in the proxy of the capital market's earnings expectations. Imhoff and Lobo (1995) limit their sample by only including firms where five or more analysts are part of the consensus forecast. If the forecasts are few, the analyst consensus forecasts is a weaker proxy for the capital market's expectation. Since our sample is based on Nordic Large and Mid cap companies which are on average smaller and not followed by as many analysts as the US firms studied by Imhoff and Lobo, we choose to include observations with two or more analysts as to not give undue influence to a single analyst while at the same time maintaining an adequate sample size.

Observations where the market expects a negative value of EPS are removed since the linear regression model has been shown to have shortcomings in explaining the relationship between returns and negative accounting figures (Lipe et al., 1998). While there are always risks with omitting observations from the regression, observations where the UX has a remarkably high value has been shown to cause the estimation of the ERC to be lower and less accurate for the sample (Lipe et al., 1998). Hence, observations where the UX exceeds a 300% positive or -300% negative magnitude are removed as these observations would likely have an undue influence on the estimated coefficients.

4.3.3 Top management trustworthiness

For the operationalization of the capital market's trust for top management, this study will use a proxy based on surveys by research company Regi. In these surveys Regi conducted telephone interviews with sell-side financial analysts to find out about their perception of top managements in Large and Mid cap companies from the Nordic region. The questionnaire

contained questions regarding for example their perception of "CEO Trustworthiness" and "Top Management Trustworthiness"[6]. The questions were answered using a scale of 1-10, where 1 represents the lowest score of perceived trustworthiness, and 10 the highest. The survey assesses 270 companies listed as Large or Mid Cap in Sweden, Finland, Denmark, or Norway. The survey was conducted using a similar questionnaire each year from 2010 to 2015, between August and November. This created a sample of close to 8700 observations on top management trustworthiness according to financial analysts. Under the assumption that the analysts are considered well-informed market participants, their average rating of top management trustworthiness in a given year is an efficient proxy for the capital market's perception.

Top management trustworthiness will be specified in the model with a dummy variable. Using this approach avoids the problem of analysing a potential ordinal variable. Since the trust ratings are assigned subjectively by the financial analysts, it is probable that the ratings could be seen as an ordinal variable rather than an interval variable. An ordinal variable is a variable where the difference between two adjacent values is not the same as between two other adjacent values. In our case, this means that the financial analysts would see the difference in magnitude between two numbers, e.g. 6 and 7, as different than between e.g. 7 and 8. When specifying our model with a dummy variable, we create a categorical variable and thus avoid this problem, which allows us to more accurately analyse our linear regression.

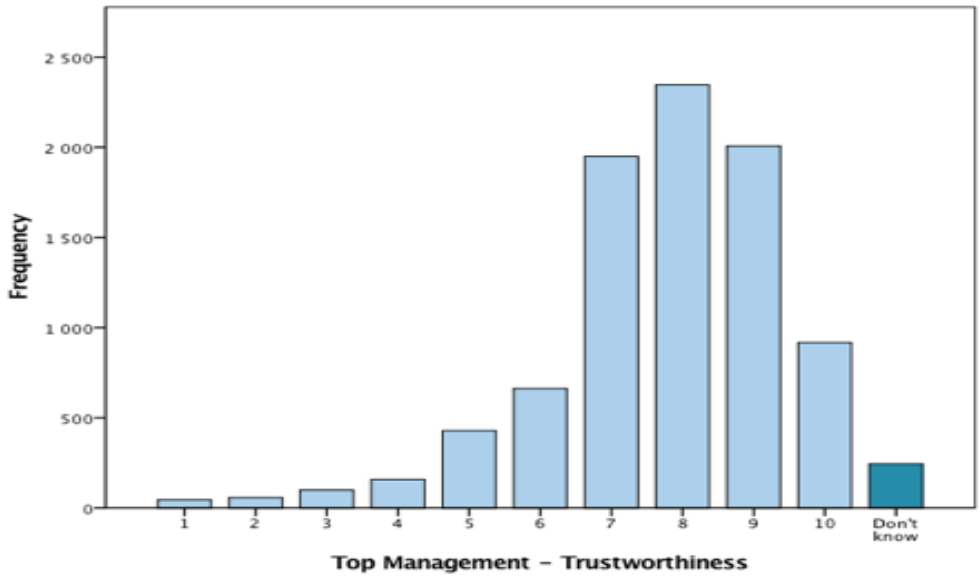
The dummy variable (TRUST) will take the value 1 when the mean of a company's yearly ratings is above the sample's median rating of 8. The preferred method for assessing an average rating a specific year for an ordinal variable would be through a weighted average. However, such weightings are not available, which is why we use an arithmetic mean. While using a mean is not the ideal method for determine the average of an ordinal variable, it better accounts for the dynamics in the ratings than e.g. the median.

In order to assess the effect of high top management trustworthiness on ERC, the interaction variable UX * TRUST is included in the regression. This interaction variable's coefficient will represent the capital market's additional reaction magnitude to an earnings surprise for companies with high levels of top management trustworthiness. To answer the hypothesis, the value and significance of the interaction beta coefficient (β_3) will be the focus of the study.

[6] For full details on the relevant questions from the questionnaire, see Appendix C

Additionally, observations where the average score of trustworthiness has been based on less than three analysts are omitted in order to achieve an as accurate proxy as possible, as well as not give undue influence to a single financial analyst.

Graph I
Frequency distribution of top management trustworthiness



Graph I shows the frequency distribution of financial analysts' rating of top management trustworthiness. This graph illustrates the original dataset rather than the final sample. As can be seen, a majority of the observations in the original dataset are above 7, and the median of the observations is 8

There is a possible endogeneity problem between perceived top management trustworthiness and announced UX. Normally, a company's annual earnings in a given year are presented around March. When the surveys are conducted between August and November, the financial analysts' perception of the top management's trustworthiness may be positively or negatively influenced by the UX, causing the variables to correlate with the error term. To mitigate this problem, the trust ratings of year t-1 will be used with the UX of year t. This way the trust score measured between August and November has not been affected by the UX measured in March. Furthermore, only firms with a fiscal year coinciding with the calendar year will be used, making sure that the endogeneity problem is treated equally between observations.

4.3.4 Control variables

In order to correctly assess and isolate the impact of TRUST on the association between UX and CAR, control variables must be added to the model in order to adjust for specific factors affecting the ERC.

4.3.4.1 Growth

The most common operationalization of growth is the market-to-book ratio, as it serves as an efficient proxy for the market's expectation of future growth in a company (Collins & Kothari, 1989; Teoh & Wong, 1993; Martikainen, 1997). Hence, perceived growth will be operationalized using the year's ingoing market-to-book ratio of the firm, retrieved from Thomson Reuters Datastream.

4.3.4.2 Default risk

Default risk can be operationalized either through ratings from credit rating institutes or through accounting measures. Credit ratings are less available and possibly subject to the bias of the rating institute and their relevance could be criticised. Hence we choose to operationalize default risk with financial leverage defined as ingoing debt-to-assets ratio since the accounting measures are available for each company and their validity is easy to control. The raw data is retrieved from Thomson Reuters Datastream.

4.3.4.3 Information availability

Size is the most frequently used proxy of information availability and can be operationalized using either market capitalization (Atiase, 1985; Ghosh et al., 2005; Donnelly & Walker, 1995) or book value of assets (Thomas, 2002; Carcello & Nargy, 2004; and Nwaeze, 2011). Since market capitalization is unstable and dependent on a myriad of factors[7], we operationalize information availability using book value of assets retrieved from Thomson Reuters Datastream. Given that firm size is often determined by industry, a centered variable could be used to determine each firm's deviation from the industry average. However, centered size variables in ERC regressions have been found to give little to no increase in the model's explanatory power (Atiase, 1985). Consequently, this study uses the book value of assets.

[7] E.g. state of the economy, interest rates and future prospects

Finally, by calculating the natural logarithm of the book value of assets, the variable is scaled down in order to better fit in the model.

4.4 Observation shortfall and summary

The data gathering originated from "Top management Trustworthiness" ratings for 270 companies over a five-year period, which yielded an initial sample size of 1007 observations of average top management trustworthiness. After gathering of data for CAR, UX, and control variables, the final sample is made up of 583 observations. The missing values and data shortfall is presented in Table VIII below:

Table VIII
Observation shortfall

Variable	**Amount**	**Reason**
TRUST	-105	Less than three analysts per trust mean
CAR	-67	Missing values in Thomson Reuters Datastream
Missing earnings forecast	-114	Missing values in I/B/E/S database
Negative earnings forecast	-63	Negative values of estimated EPS
Fewer than two analysts	-12	Consensus EPS forecast with less than two analyst forecasts
Omitted extreme values of UX	-45	Observations where |UX| exceeds 300%
Market-to-book	-9	Missing values in Thomson Reuters Datastream
Leverage	-9	Missing values in Thomson Reuters Datastream
Total observation shortfall	**-424**	
Total remaining observations	**585**	

Table VIII shows the shortfall in amount of observations caused by missing values and operationalization decisions. The number of firms included in the final sample is 175

It should be noted that the sample has not been limited to companies with observations all five years, hence we avoid the survivorship bias commonly present in ERC studies. The operationalization of all variables is shown in Table IX:

Table IX
Summary of operationalized variables

Variable	**Operationalization components**	**Operationalization calculations**
CAR_{it}	Risk-free rate, market return, equity beta	$CAR_{it} = \sum_{t=1}^{T} R_{it} - E(r_{it})$
UX_{it}	EPS_{it}, $E(EPS_{it})$, σ_{EPSit}	$UX_{it} = \frac{EPS_{it} - E(EPS_{it})}{\sigma_{EPSit}}$
$TRUST_{it-1}$	Top management trustworthiness dummy	1 for avg. rating larger than 8, otherwise 0
$INTERACTION_{it}$	UX_{it}, $TRUST_{it-1}$	$INTERACTION = TRUST_{it-1} * UX_{it}$
MTB_{it}	Ingoing Market Value of equity (MV_{it}), Ingoing Book Value of equity (BV_{it})	$MTB_{it} = {MV_{it}}/{BV_{it}}$
$SIZE_{it}$	Ingoing book value of assets (A_{it})	$\text{SIZE}_{it} = \ln(A_{it})$
$LEVERAGE_{it}$	Book value of assets (A_{it}), book value of debt (D_{it})	$LEVERAGE_{it} = {D_{it}}/{A_{it}}$

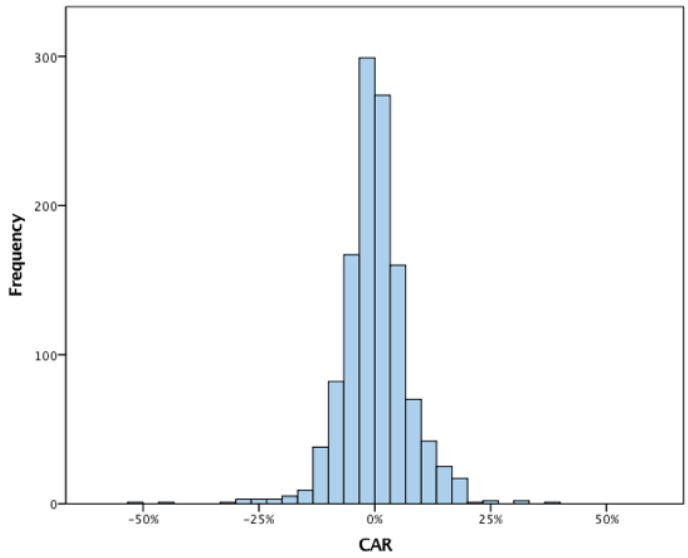
Table IX shows the operationalization and calculations of all components

5. Results & analysis

5.1 Descriptive statistics

The sample's average CAR over the five year period was 0.74%, meaning that adjusted for risk, the sample on average outperformed the market during the studied event windows. As shown in Graph II, the observations of CAR show tendencies of a normal distribution centered around 0%, decreasing in frequency further away from the average.

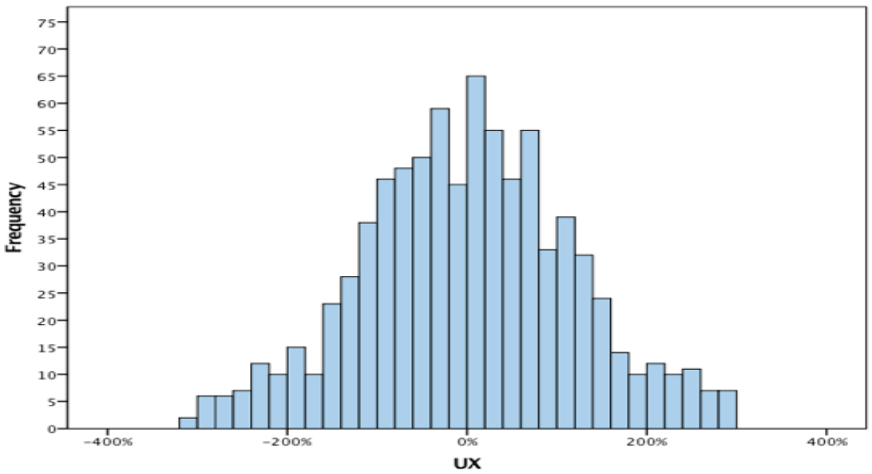
Graph II
Frequency distribution of cumulative abnormal return (CAR)



Graph II shows the frequency distribution of CAR using the CAPM model and a 5 day event window
The CAR is centered around 0% and the sample has a mean of 0.74%

The UX for the sample is shown in Graph III. Similarly to the CAR, the distribution of UX approximates a normal distribution centered around 0%. The average value of 0.49% is in line with the positive average value of CAR. Since the reported earnings on average outperform the market's expectation, the positive average CAR is substantiated.

Graph III
Frequency distribution of unexpected earnings (UX)



Graph III shows the frequency distribution of UX in our sample (excluding |UX|>300%).
The observations are centered around 0% and the sample has a mean of 0.49%.

5.2 Estimated coefficients

Table X presents the estimated beta coefficients, standard deviations, and their corresponding significance given the two different operationalization methods for the dependent variable[8]. Additionally, the estimated coefficients, standard deviations, and significance using the Market Model are included as a point of reference.

Table X
Regression results

UX	CAPM	Market Model
Coefficient (β_1)	*0.0071811***	*0.0072757***
Standard error	*0.0035394*	*0.0035919*
Significance	*0.044*	*0.044*
INTERACTION	CAPM	Market Model
Coefficient (β_3)	0.0095413*	0.0087485*
Standard error	0.0050106	0.0051434
Significance	0.059	0.091
Adjusted R^2	0.156	0.146

Table X shows the primary results from the regression using a 5-day event window and clustered standard errors
** Significant at the 0.05 level, * Significant at the 0.1 level

[8] The full results from the regression including control variables are found in Appendix D

When using the CAPM model, the estimated ERC is 0.0071811. This is statistically significant at the 5% level (0.044). When using the Market model, the estimated ERC is 0.0072757 and significant at the 5% level (0.044). These results are not the main focus of the study, but their significance and estimated coefficients, which are in line with previous research, are fundamental for further analysis of the interaction variable. Essentially, these results confirm that for the sample, capital markets reacted positively to earnings which are greater than expected and negatively to earnings which are worse.

The interaction variable yields similar estimated coefficients regardless of operationalization model for the dependent variable. Using the CAPM model, the interaction variable shows an estimated coefficient of 0.0095413. This coefficient is statistically significant at the 10% level (0.059). Using the Market Model, the estimated interaction coefficient is 0.0087485. This coefficient is statistically significant at the 10% level (0.091).

To assess our hypothesis that the market reaction to UX is larger for companies associated with high trustworthiness, we design the decision rule as:

Decision rule of H_0
$Reject\ H_0\ if: \beta_3 \leq 0$

As we can see from the results in Table X, the value of the beta coefficient of the interaction term β_3 is positive and the null hypothesis can be rejected on a 10% significance level when using the CAPM to estimate expected return and a 10% level when using the Market Model to estimate expected return.

5.3 Analysis

The results infer that for the final sample, the capital market's reaction to UX is significantly stronger in observations with high perceived top management trustworthiness than in observations with low perceived top management trustworthiness. Under the assumption that the missing values from the sample have been random, this result should be statistically significant for our initial sample of Nordic Large and Mid cap companies.

6. Discussion

Naturally, the results are dependent on the operationalisations made in chapter 4. Before any conclusions can be made regarding other samples or populations, the robustness of the results have to be tested and the validity of the method and operationalisations analysed.

6.1 Robustness tests

6.1.1 Event windows

The results from a sensitivity test based on the size of the event window and choice of expected return model are presented in Table XI. While no clear pattern in the estimated coefficients can be inferred, the beta coefficient for the interaction term becomes less significant the larger the event window is, possibly due to the larger exposure to noise from factors outside the model. In contrast, the estimated ERC becomes even more significant when the largest event window of 9 days is used compared to the original window of 5 days. Despite some fluctuations, we consider the regression model robust in terms of time window size since the deviations are relatively small.

Table XI
Sensitivity test on event window size

Event window	5 days		7 days		9 days	
UX	CAPM	Market Model	CAPM	Market Model	CAPM	Market Model
Coefficient	0.0071811**	0.0072757**	0.0060142*	0.0058998*	0.0079715**	0.0077909**
Standard error	0.0035394	0.0035919	0.0033946	0.0034565	0.0036065	0.0036526
Significance	0.044	0.044	0.078	0.09	0.028	0.034
INTERACTION	CAPM	Market Model	CAPM	Market Model	CAPM	Market Model
Coefficient	0.0095413*	0.0087485*	0.009084*	0.0088641*	0.0086452	0.0090407*
Standard error	0.0050106	0.0051434	0.005062	0.0052208	0.0052498	0.0053907
Significance	0.059	0.091	0.074	0.091	0.101	0.095
Adjusted R^2	0.156	0.146	0.114	0.106	0.145	0.133

Table XI shows a sensitivity test of the estimated coefficients based on the size of the time window
** Significant at the 0.05 level, * Significant at the 0.1 level

6.1.2 Heteroscedasticity

To assess the reliability of the estimated coefficients, the regression model has to be tested to ensure that heteroscedasticity does not cause problems with the estimations. Heteroscedasticity

arises when the variance of the error term is dependent of the values of an independent variable. If the error term shows signs of heteroscedasticity, there is a risk that the regression is inaccurate and the model needs to be adjusted.

By using a Breusch-Pagan/Cook- test, we test the null hypothesis of homoscedasticity (residuals independent of the values of the independent variables) against the alternative hypothesis of heteroscedasticity (residuals dependent of the values of the independent variables). The results from the Breusch-Pagan test yield a χ^2-value of 5.82 which indicates that can we reject the null hypothesis of homoscedasticity on a 5% significance level. Additionally, we use a White test to further investigate if there is heteroscedasticity. The White test yields a χ^2-value of 33.08 and we can reject the null hypothesis of homoscedasticity on a 10% significance level and we can be relatively certain that our model has heteroscedastic traits.

We use clustered standard errors to adjust for the heteroscedasticity. This way, each firm is treated as a cluster of observation varying across time, giving a more efficient linear regression model. Using clustered standard errors does not change how the beta coefficients are estimated, yet it may affect the standard errors and the significance values. In our model, the clustered standard errors give slightly lower significance yet do not change the significance levels. The standard errors are not markedly affected and therefore we consider it an efficient adjustment for the heteroscedasticity.

6.1.3 Autocorrelation

Autocorrelation or serial correlation signifies the relationship between a dependent variable's values over time. Autocorrelation occurs when a variable's value in one time period is related to its value in another time period through a function of the time-lag between the observations. Much like heteroscedasticity, autocorrelation does not directly affect the estimation of the Beta coefficients but can have implications regarding the efficiency of the estimations. We perform a Breusch-Godfrey test for autocorrelation in our model with the results $\chi^2 = 0.272$ and $p = 0.6023$. Hence, it is unclear whether we can reject the null hypothesis of no serial correlation on a 5% significance level. Additionally, we perform a Wooldridge test for autocorrelation as this is more fitting when dealing with panel data. The results of the Wooldrige test ($\chi^2 = 915.417$ and $p = 0.021$) suggest that we can reject the null hypothesis of no autocorrelation on a 5% significance level. The autocorrelation that is likely present in our model is corrected using the previously mentioned clustered standard errors and the firm-fixed effects.

6.1.4 Multicollinearity

Finally, we test the model for multicollinearity. Multicollinearity is present if the independent variables are correlated with each other, thus making it difficult to interpret the effect of the single variables. In Table XII, we demonstrate the collinearity statistics for each of the dependent variables.

Table XII
Collinearity Statistics

Variable	Tolerance	VIF
UX	0.623	1.605
MTB	0.444	2.253
SIZE	0.630	1.586
LEVERAGE	0.364	2.751
TRUST	0.977	1.023
INTERACTION	0.624	1.602

Table XII shows collinearity statistics of the regression components

As none of the variables has a high Variance Inflation Factor (VIF-value), it seems there are no problems with multicollinearity. To further test the multicollinearity, we use a correlations matrix.

Table XIII
Pearson Correlations

	UX	MTB	SIZE	LEVERAGE	TRUST	INTERACTION
UX						
MTB	-0.006					
SIZE	0.047	-0.015				
LEVERAGE	-0.018	0.326***	0.286***			
TRUST	-0.048	0.038	-0.032	-0.036		
INTERACTION	0.605***	0.012	0.028	-0.01	-0.053	

Table XIII shows the Pearson correlation matrix for the dependent variables
*** Significant at the 0.01 level

As we can see from Table XIII, the only correlation that is cause for concern is between UX and the interaction term. This is a natural consequence of the interaction variable being a

product of the trust dummy and the UX, hence multicollinearity is likely not a problem in our model and we can keep all independent variables in our regression.

6.2 Discussion of test design and variables

6.2.1 The linear regression model

In line with the majority of research, we use a linear regression to estimate the ERC. However, there is evidence indicating that the relationship between UX and CAR is not linear (Lipe et al., 1998). The estimated ERC has been shown to be smaller for negative announced earnings than positive and the extreme values of UX are also associated with smaller ERCs. In this study, adjustments of the extreme values of UX have been done to increase the explanatory power and mitigate the shortcomings of the linear regression, resulting in an adjusted R^2-value between 0.1 and 0.15 depending on event window size and expected return model. Whilst this explanatory power may seem low, the fact that stock markets are affected by a vast amount of factors needs to be taken into consideration, and studies on ERCs often exhibit R^2-values as low as 0.05 (Lev, 1989). Lev (1989) also shows that by controlling for factors affecting the ERC, the explanatory power can be significantly increased. As shown in Table XIV, the inclusion of the trust and interaction variables has a marked effect on the explanatory power of the model which further speaks for the effect of top management trustworthiness on the ERC.

Table XIV
Adjusted R^2-change depending on the inclusion of trust and the interaction

Event window	5 days		7 days		9 days	
Adjusted R^2	CAPM	Market Model	CAPM	Market Model	CAPM	Market Model
*Without TRUST**	0.105	0.105	0.076	0.075	0.102	0.091
*With TRUST**	0.156	0.146	0.114	0.106	0.145	0.133
Difference	**+0.051**	**+0.041**	**+0.038**	**+0.031**	**+0.043**	**+0.042**

Table XIV shows the difference in adjusted R^2-value depending on the inclusion of TRUST for each time window and expected return model. *TRUST includes the dummy variable and the interaction variable

6.2.2 Unexpected Earnings (UX)

Several ways of operationalizing the capital market's expectation on earnings have been made in previous research and making an accurate estimation is important for measuring the earnings surprise. Using an incorrect measure for the capital market's expectation is detrimental to the estimated coefficients as the model then misinterprets the capital market's reaction. Since using

the analyst forecast consensus has been shown to be more accurate than for example time series models, the estimation of the capital market's expectation in this study is deemed the most efficient proxy available. The model has also been tested using the analyst earnings forecast made one year prior to the announcement. Such a regression yields no significant results which further supports the view that the most recent forecast is the most accurate representation of the capital market's expectation.

It should be noted that the estimated coefficients in our regression are smaller than what is common in ERC studies. The reason for this lies in that the UX is scaled with the standard deviation of the analysts forecasts. Since the observed standard deviations are always smaller than expected earnings or stock price which are commonly used in ERC studies, the estimated UX becomes larger and the ERC smaller. Seeing as the scaling only affects the size of the estimated coefficients and not the sign, it should not change the interpretation of the model.

As can be seen in Table XV, increasing the cut-off limit for extreme values to 1000% has a significant impact on the results of the regression model. Whilst the less narrow limit allows for more observations, the estimated ERC is markedly lower since the reactions to an earnings surprise of for example 700% is disproportionately lower than for a 50% surprise. The explanatory power R^2 also decreases and the interaction variable is no longer significant. On the whole, the ERC regression model lacks in accuracy and significance when extreme values are included which was expected based on prior research.

Table XV
Sensitivity test of UX limit

UX	Limit at 300%	Limit at 1000%
Coefficient	*0.0071811***	*0.004047***
Standard error	*0.0035394*	*0.0020373*
Significance	*0.044*	*0.049*
INTERACTION	Limit at 300%	Limit at 1000%
Coefficient	0.0095413*	0.0038716
Standard error	0.0050106	0.0030717
Significance	0.059	0.0209
Adjusted R^2	0.156	0.129
Observations	583	623

Table XV shows the original regression results and the sensitivity of changing the UX limit value to 1000% with a 5 day event window and robust standard errors
** Significant at the 0.05 level, * Significant at the 0.1 level

6.2.3 Operationalization of expected return

We use the CAPM for our primary estimation of the expected return and the market model as a benchmark. In recent years, the CAPM has been criticised for lacking empirical value and other models such as for example the Fama-French three factor model have been advocated (Fama & French, 2004). Despite this, the CAPM is still widely used due to its simplicity and utility. Notably, some studies on ERC disregard the use of expected return in the model and thereby measure cumulative returns rather than cumulative abnormal returns. However some sort of expected return model is normally used and for the scope of this thesis, we deem the CAPM as sufficient.

6.2.4 Operationalization of top management trustworthiness

Naturally, since the direct effect of top management's trustworthiness on earnings response coefficients is unexplored in the existing empirical research, its operationalization could be criticised. When dealing with and collecting survey data, there is always a risk of low response rates and sample selection bias. The problems with nonresponse have been partly remedied by using telephone interviews rather than e.g. e-mail questionnaires. In order to maintain consistency in the data collection, the same survey questions have been used for every year of

the study. While intangible data is always difficult to gather, the relevant precautions have been taken in order for the data to accurately depict top management's trustworthiness.

Moreover, our choice of top management trustworthiness rather than for example CEO trustworthiness could have an effect on the results of the regression. However, since the ratings of "Top Management Trustworthiness" and "CEO Trustworthiness" in our sample correlate to about 90%, and the fact that the CEO is included in the top management, the results are likely very similar. In the sense that the top management bears the ultimate responsibility for the business, choosing "Top Management Trustworthiness" will likely provide a more exhaustive view on analysts' perception on how the company is managed.

7. Conclusion and thoughts for future research

This study concludes that for the sample of Nordic Large- and Mid Cap companies between 2011-2015, the capital market's reaction to an earnings surprise is significantly affected by the perception of top management trustworthiness. Given the scope of this study, the reasons for why high perceived top management trustworthiness would magnify the ERC have not been conclusively analysed. Moreover, the sensitivity and robustness tests show that the while the model is sensitive to assumptions, the inferences from the results are sustained throughout all our robustness- and sensitivity tests.

7.1 Reliability, validity, and generalizability

Since the research method is entrenched in the traditional ERC linear regression framework, the reliability and replicability of this study ought to be high. The risk for potential errors in measurement and calculations has been mitigated by thorough double-checking of all calculations and data retrievals. However, the existence of measurement- and calculation errors from our side as well as database errors cannot be completely ruled out.

In regards to the validity of our results, the capital markets' perception of top management's trustworthiness cannot be directly observed and has been approximated using ratings from interviews with financial analysts. Since trust is a largely unexplored research subject, different methods of operationalizing trust variables are yet to be tested. The direct effects of the control variables are also difficult to determine since they lack in statistical significance. However it is important to include the control variables as previous research has shown that they have an impact on the ERC. Omitting the control variables risks that the model insufficiently analyses the relationship and reduces its explanatory power.

Finally, the results of this study ought to be fairly generalizable. However, limitations in terms of geography, public listing, and analyst coverage are potential causes for bias and the conclusions should not be transferred to other samples/populations without caution.

7.2 Suggestions for future research

Due to the limitations of the linear regression, using an alternative method outside the scope of this study such as a non-linear regression could possibly come even further in estimating the relationship. The operationalization of variables such as expected return, expected earnings,

and top management trustworthiness should also be further researched. Given the fact that top management trustworthiness is largely unexplored in existing empirical research, there are a myriad of areas that should be of great interest for capital market participants to examine. The low adjusted R^2-values in ERC research suggests that top management trustworthiness is only one of many variables whose effects should be more thoroughly explored to more accurately determine the behaviour of capital markets.

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9. Appendix

Appendix A

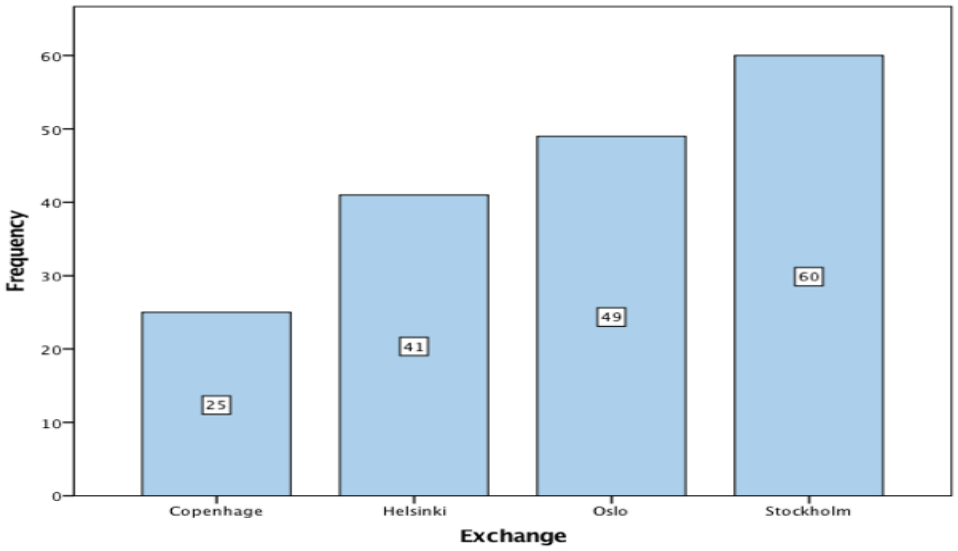
Appendix A
Data used in estimation of expected returns

Theoretical Variable	**Operationalized variable**	**Data source**
Risk-free rates (r_f)	10 year government bonds daily rate for Sweden, Norway, Denmark, Finland	Swedish Central Bank Norwegian Central Bank The Wall Street Journal Finnish Central Bank
Market returns (r_m)	OMX SGI (Sweden General Index) OMX HI (Finland General Index) OMX CGI (Denmark General Index) OSEAX Index (Norway General Index)	NASDAQ OSEAX
Equity Betas (β_i)	Daily equity beta	Thomson Reuters Datastream

Appendix A shows the sources for the market data used to estimate expected returns

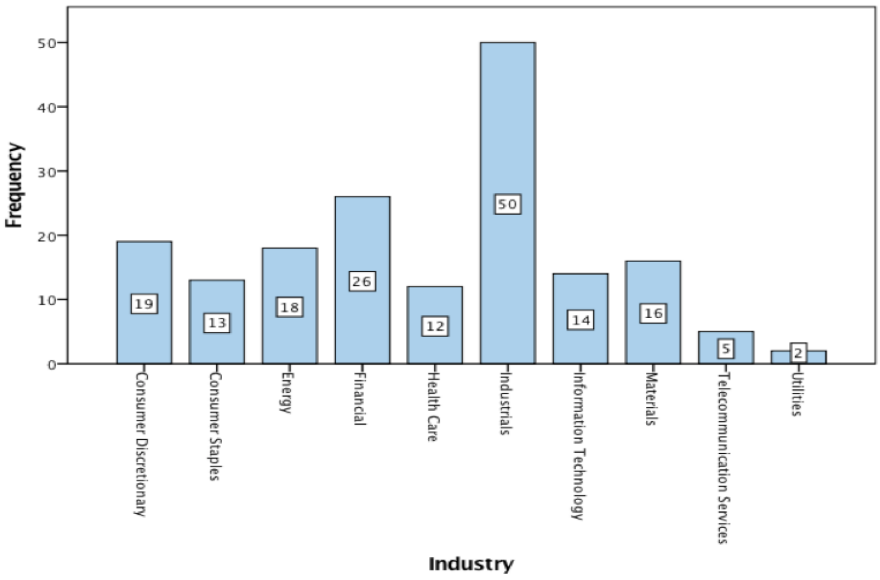
Appendix B

Appendix B: I
Distribution of companies in the sample, by exchange



Appendix B: I shows the distributions of companies in our sample by exchange
As can be seen, the Stockholm exchange provides the most companies to our sample, followed by Oslo and Helsinki, and finally Copenhagen

Appendix B: II
Distribution of companies in the sample, by industry



Appendix B: II shows the distributions of the companies in our sample by industry. Noticeable industries are Industrials and Utilities, providing the most and fewest number of companies to the sample, respectively.

Appendix C

13. Top management – Availability										
Refers to all top executives, primarily headquarters.										
Is it easy to gain access to top management and to what extent do they respond to your inquiries?										
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*Do not know*
Please comment on your answer. Your opinions are valuable to the company.										

14. Top management – Openness										
Is the top management transparent and understandable or uncertain and vague in their communication? Refers to the extent in which the top management answers questions.										
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*Do not know*
Please comment on your answer. Your opinions are valuable to the company.										

15. Top Management - Trustworthiness										
To what extent do you feel that the top management is trustworthy?										
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*Do not know*
Please comment on your answer. Your opinions are valuable to the company.										

Appendix D

Appendix D
Full table of estimated β-coefficients

Event window:	5 days		7 days		9 days	
Return model:	CAPM	Market Model	CAPM	Market Model	CAPM	Market Model
UX	0.0071811**	0.0072757**	0.0060142*	0.0058998*	0.0079715**	0.0077909**
	(0.0035394)	(0.0035919)	(0,0033946)	(0.0034565)	(0.0036065)	(0.0036526)
INTERACTION	0.0095413*	0.0087485*	0.005062*	0.0088641*	0.0086452	0.0090407*
	(0.0050106)	(0.0051434)	(0.005062)	(0.0052208)	(0.0052498)	(0.0053907)
TRUST	0.0017198	0.0012605	-0.0001889	-0.0000231	-0.0007353	-0.0005024
	(0.006894)	(0.0071467)	(0.007345)	(0.0075216)	(0.007763)	(0.0079645)
MTB	-0.0008203	-0.0009469	-0.0005537	-0.0006514	-0.0006584	-0.0008515
	(0.001188)	(0.0012084)	(0.001321)	(0.0013454)	(0.0013411)	(0.0013648)
SIZE	0.0142835	0.0140712	0.0158289	0.0155002	0.0142578	0.013406
	(0.190691)	(0.0189552)	(0.0217122)	(0.0215801)	(0.0243145)	(0.0241164)
LEVERAGE	0.0040788	0.0046927	0.0029534	0.0032851	0.0035563	0.0041513
	(0.0056884)	(0.0057923)	(0.0062954)	(0.0064164)	(0.0063954)	(0.0065084)
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.156	0.146	0.114	0.106	0.145	0.133

Appendix D shows the full table of estimated β-coefficients based on the size of the time window and return model. ** Significant at the 0.05 level, * Significant at the 0.1 level, clustered standard errors in parenthesis