DOES EARNINGS RESPONSE FOLLOWING CEO TURNOVERS DEPEND ON SUCCESSOR ORIGIN?

A STUDY ON POST-TURNOVER EARNINGS RESPONSE COEFFICIENTS IN NORTH AMERICA

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Does earnings response following CEO turnovers depend on successor origin?: A study on post-turnover earnings response coefficients in North America

Abstract:

A change in CEO represents a significant event in the life of a firm and can have a large impact on its subsequent direction and performance. This study investigates the effect of CEO turnover on the stock market's response to earnings announcements. Previous research has shown that earnings response coefficients (ERCs) increase following turnovers (Clayton et al., 2005). We extend this research by showing that the size of post-turnover ERCs depend on successor origin. The market response to the first quarterly earnings announcement following a CEO change is larger after outside successions compared to inside successions. This finding is statistically significant. We also show that the difference in ERCs between the successor types declines with the number of earnings announcements following the turnover. Our results can be explained by the greater information asymmetries associated with outside successions compared to inside successions. The market is assumed to be more uncertain about the new CEO's ability and the firm's future strategy following outside successions.

Keywords:

CEO turnover, CEO succession, Earnings response coefficient, ERC, Unexpected earnings

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1. Introduction

1.1. Background

A CEO turnover is a significant event in each firm's life, and it can have a real effect on the strategic direction and stock performance of the firm. For this reason, it is not strange that the installment of a new CEO and the departure of an old CEO in listed companies is of great importance for financial markets. From an investor perspective, the installment of a new CEO usually implies more uncertainty about the future performance and direction of the firm. This has been documented in previous literature as increased levels of stock price volatility following CEO turnovers (Clayton et al., 2005).

In light of the study by Clayton et al. (2005) and information on stock volatility, an interesting question to consider is the effect of firm-specific news on stock performance in situations with newly appointed CEOs. Firm-specific news can present itself in many forms. We limit ourselves to consider the effect of quarterly earnings announcements. A frequently used method for measuring the effect of earnings announcements on stock return is to develop regressions with earnings response coefficients (ERCs). In these regressions, ERCs are interpreted as the size of the capital market's response to unexpected earnings.

There have been many cases, both recently and historically, where the quarterly earnings announcements following a CEO turnover event has caused a substantial change in stock price, meaning large ERCs. A relevant example of this from the Swedish stock market is the recent "turnaround" by the global telecom corporation Ericsson, after the installment of their new CEO Börje Ekholm in 2017. Since Mr. Ekholm assumed office, a lot of strategic changes have been made and Ericsson has continuously delivered above market expectations in its quarterly earnings announcements following the turnover event. Even more remarkable is the stock performance, since the turnover the stock has appreciated with more than 50% (Yahoo, 2019).

The case of Ericsson and Mr. Ekholm has inspired us to investigate the effect of CEO turnover events on the stock market's response to quarterly earnings announcements. Previously, a general relationship between CEO turnovers and a subsequent increase of

ERCs has been established by Clayton et al. (2005). Our contribution to the previous literature is to investigate this relationship further. We develop two regression models based on two previous studies in order to investigate the potential difference in post-turnover earnings response depending on successor origin. Specifically, we consider ERCs in relation to the first eight quarterly earnings announcement following CEO turnovers, where each turnover event is identified as either an outside succession or an inside succession.

1.2. Delimitations

As mentioned in the background our study focuses solely on one type of firm-specific news, namely quarterly earnings announcements. The reason for this is first of all to limit the scope of the study. It would be beyond the scope of the study to examine other types of company news. The second reason has to do with access to data and limitations of our regressions. We use data from North America for the time period 1985-2018 because that is the only market and time period for which we have been able to find comprehensive data on CEO changes. In addition, we only include turnover events for which we are able to determine whether the new CEO was internally or externally recruited. Therefore, our dataset does not include all CEO changes in listed American companies between 1985 and 2018. Finally, our regressions include a limited set of variables. This set could potentially be extended in future studies.

1.3. Disposition

The disposition of the thesis is as follows. First, in section two, we describe the theoretical framework and relevant previous research surrounding the thesis. A lot of previous studies has been conducted within the field of earnings response coefficients. We also look in to previous research on CEO turnovers and discuss our contribution to this literature. In the third part of the thesis we formulate our two hypotheses and in the fourth part we describe our method, data collection and data management process. In the fifth part we present the results from our regressions and provide a statistical interpretation. Following this, in the sixth part, we provide a discussion based on three different

economic theories. In the seventh and final part we summarize our conclusions and present suggestions for future research.

2. Theoretical framework and previous research

The following section presents the theoretical context of the study and gives an overview of relevant previous research on CEO turnover. We first give some background to earnings response coefficients (ERCs) and explain the basics of them. We then review previous literature on ERCs and literature on the effects of CEO turnover, before we conclude by describing our contribution.

2.1. The relationship between stock return and earnings news

A study by Ball and Brown in 1968 laid the foundation for much of the research that have been conducted on the relationship between stock return and accounting data, in particular earnings data. They constructed a model where observations of earnings announcements were divided into two categories; "good news" and "bad news". Good news was defined as announcements which outperformed the market expectations, while bad news was defined as the opposite. Ball and Brown then compared the two categories of observations in terms of their cumulative abnormal return (CAR) versus the market and found that the difference was substantial: The portfolio with good earnings news had a positive abnormal return and outperformed the portfolio with bad earnings news, which had a negative abnormal return.

2.2. The Earnings Response Coefficient (ERC)

While Ball and Brown (1968) presented a clear relationship between abnormal returns and the sign of the unexpected earnings, their study merely touched upon the magnitude of this relationship. Later studies have introduced a concept called earnings response coefficients (ERCs), which addresses the magnitude. The ERC is operationalized as the coefficient in a regression, where the cumulative abnormal return (CAR) is the dependent variable and the earnings surprise is the independent variable (Collins & Kothari, 1989). Thus, the ERC is interpreted as the size of the capital market's response to unexpected earnings. In this study, we will refer to the dependent variable as "unexpected return" (UR) instead of cumulative abnormal return. This term is also commonly used in the literature on ERCs, for example by Chambers et al. (2005).

Table 1. The traditional ERC regression

$$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \varepsilon_{jt}$$

UR_{jt}	Unexpected return (cumulative abnormal return) for firm *j* in period *t*
β_0	Intercept
β_1	Earnings response coefficient (ERC)
UE_{jt}	Unexpected earnings for firm *j* in period *t*
ε_{jt}	Error term for firm *j* in period *t*

Note: Table 1 presents a traditional ERC regression and a summary of its terms.

Previous research have found that the response to unexpected earnings differs depending on industry and the type of firm. For example, ERCs tend to be lower for firms with high systematic risk. Such firms have a higher expected rate of return, meaning that a revision in expected dividends caused by unexpected earnings has a smaller present value compared to firms with lower systematic risk (Collins & Kothari, 1989; Easton & Zmijewski, 1989). Another study finds a positive relation between ERCs and total risk, which is the sum of systematic and unsystematic risk (Chambers et al., 2005). The rationale behind this is that the sensitivity of dividend expectations to firm-specific news is an increasing function of risk. Chambers et al. (2005) could, however, not find empirical support for the negative relation between ERCs and systematic risk that were presented in other studies. Ertimur et al. (2003) investigated how ERCs differ between growth companies and value companies. That is, companies with low book-to-market ratios and companies with high book-to-market ratios, respectively. Their results show that the ERCs are significantly higher for growth companies, indicating the greater importance investors attach to earnings in these companies.

ERCs have been thoroughly studied in many different settings with different regression designs. Regressions with the earnings surprise as a single independent variable, as in Table 1, tend to generate rather low R^2-values (Lev, 1989). In general, only 2-5% of the abnormal return can be explained by unexpected earnings. Therefore, additional independent variables are often added to improve the explanatory power of the regression. For instance, both Chambers et al. (2005) and Clayton et al. (2005) add an interaction variable to control for nonlinearity in price responses to unexpected earnings.

Other factors that have been incorporated into the regression in different studies include earnings persistence, earnings predictability, exposure to market risk, growth opportunities and industry membership (Kormendi & Lipe, 1987; Collins & Kothari, 1989; Easton & Zmijewski, 1989; Lipe, 1990; Chambers et al. 2005).

The unexpected earnings variable (UE) also tends to be operationalized in different ways. The main differences between previous studies are what measure is used for the market expectation of earnings, and what denominator is used to deflate the difference between actual and forecasted earnings. For the market expectation of earnings, the most commonly used measure is analysts' consensus forecasts of earnings per share. For the denominator, it typically consists of either the stock price (Ertimur et al., 2003; Chambers et al., 2005; Clayton et al., 2005), the expected EPS (Collins & Kothari, 1989; Beaver et al., 1979) or the standard deviation of the quarterly earnings growth (Jegadeesh & Livnat, 2006).

2.3. CEO turnover

Previous research conducted within the area of CEO turnover and its effects on for example operating performance and stock return is extensive. In general, the research has confirmed the picture that CEOs are an important determinant of firm value.

With regard to the stock market response to CEO turnover announcements, Furtado & Karan (1990) describes two aspects of the response: it can either be viewed as a reflection of the gain or loss of "human capital" due to the change, or as a response to the "signal" of the change. As regards the first aspect, managers are believed to possess firm-specific or general human capital. Firm value should only be affected by turnovers that implies a change in the amount of firm-specific human capital. As regards the second aspect, a CEO change can release signals about a firm's current and future status to the public. It could for example be signals of redirection in firm policy or change in investment opportunities, and they could be good, bad, or neutral in terms of their effect on firm value (Furtado & Karan, 1990). To summarize Furtado and Karan's conclusions, the effect of CEO change on stock return depends a lot on the setting.

In a later study, Huson et al. (2004) found that turnover announcements are associated with average abnormal stock returns that are significantly positive. They also studied

changes in accounting measures of performance relative to other firms surrounding turnovers. Performance tend to deteriorate prior to the CEO change. This is not surprising given that poor performance may be the trigger for management change. Following the turnover, Huson et al. (2004) found that performance improves, and the improvement is greater when the incoming CEO is externally recruited rather than internally recruited. However, reported improvements in performance following turnover should be tempered by the knowledge that post-turnover "earnings baths" are common (Furtado & Karan, 1990).

Like Huson et al. (2004) and Furtado and Karan (1990), most studies examining the stock market effect of CEO turnover have mainly focused on the reaction to the announcement of the turnover. Clayton et al. (2005), on the other hand, studied the market response to earnings announcements following turnovers. Using the ERC methodology, they found that responses are stronger in the first few years of a CEO's tenure, as compared with the years preceding the change in CEO. The rationale is that earnings news following a CEO change are more informative. For a given deviation of reported earnings from the expected value, such an announcement should be more informative for a new CEO than for an established CEO. This is because an announcement by a new CEO typically contain more new information about the CEO's ability and the viability of his or her strategy (Clayton et al., 2005).

The study of ERCs is, however, only a subsection in the paper by Clayton et al. (2005). Instead, their main focus is on general stock price volatility following CEO turnovers, not specifically related to earnings announcements. Their results demonstrate drastically increased volatility over an extended period following turnovers. Furthermore, these increases are greater after forced departures. After voluntary departures, volatility increases are greater when the new CEO is externally recruited rather than internally recruited. The volatility increases are a result of increased uncertainty following CEO turnover, according to the researchers. They suggest two main sources of this uncertainty: Doubt about the new CEO's ability, which they refer to as the "ability hypothesis", and possible changes in the firm's strategy, which they refer to as the "strategy hypothesis". The latter is explaining why volatility increases are greater following forced departures; a CEO turnover event initiated by the board is more likely to signal a coming strategy change compared to a voluntary turnover. The ability hypothesis, on the other hand, is

explaining why volatility increases are greater after outside successions than inside successions following voluntary departures; in general, the board should have a more precise estimate of the ability of an inside successor. Therefore, investors are less concerned about the new CEO's ability following an inside succession.

In a recent study, Geertsema et al. (2018) expanded the literature on ERCs following CEO turnover. They show that firms with new CEOs experience greater stock price increases when good earnings news are announced, a phenomenon that the authors refer to as the "new-CEO quality effect". By contrast, when bad earnings news are announced, firms with new CEOs experience smaller stock price decreases compared to firms with established CEOs. This is referred to as the "new-CEO honeymoon effect". In addition, both these effects are found to be more pronounced for CEOs appointed during challenging situations. The rationale behind the new-CEO quality effect is based on the same reasoning as in Clayton et al. (2005); earnings news in the first year following a CEO change are more informative. Good earnings announcements by new CEOs are seen as a proof for the new CEO's ability and add to the credibility of his or her strategy. By contrast, good earnings news announced by firms with established CEOs contain less new information about the CEO's quality, as the market have already formed an opinion about those CEOs. The rationale behind the new-CEO honeymoon effect, on the other hand, is that bad earnings news are less informative during a post-turnover honeymoon period. Stock prices could underreact to initial bad earnings news because the bad earnings are assumed to be temporary. Shareholders might believe that the new CEO needs time to organise resources and implement new strategies (Geertsema et al., 2018).

2.4. Contribution to previous research

With this study, we extend the research on stock price volatility following CEO turnover by studying if market responses to post-turnover earnings announcements are different between firms depending on successor origin. To our best knowledge, this has not been examined before. In particular, our study adds to the results by Clayton et al. (2005) by showing that their findings of greater volatility following outside successions compared to inside successions also applies to ERCs. Furthermore, compared to their study which pools together quarterly reports in groups based on the year relative to the turnover, we treat all the reports on a quarterly basis. This makes our results more transparent. We

particularly focus on the market response to the first quarterly report following CEO turnover.

3. Hypotheses

This study focuses on market responses to earnings announcements following CEO turnover and aims to examine whether these responses are different between firms where the new CEO is externally recruited and firms where the new CEO is internally recruited. The study will be carried out by examining earnings response coefficients (ERCs) for post-turnover quarterly earnings. Previous research has found increases in ERCs following CEO turnover on an overall level, irrespective of successor origin (Clayton et al., 2005). It has also found long-lived increases in general stock price volatility following turnovers. After voluntary departures, the long-lived volatility increases are greater for outside successions compared to inside successions. After forced departures, there is no notable difference between outside and inside successions (Clayton et al., 2005).

In this study, we will not make any distinction between forced and voluntary departures because we do not have access to enough data on departure types. However, given that volatility increases are greater for outside successions after voluntary departures, while there is no difference between the succession types after forced departures, simple mathematics imply that volatility increases should also be greater for outside successions when the two departure types are pooled together. Then, if outside successions are associated with greater increases in volatility following CEO changes, our belief is that they should also be associated with greater ERCs, as compared to inside successions. As mentioned, we will examine if this is the case for the first earnings announcement following CEO turnovers in particular. Furthermore, we hypothesize that the difference in ERCs should decline over time as the market learns about the new CEOs' ability. This is consistent with the "ability hypothesis" presented by Clayton et al. (2005). Following the turnover, earnings news will be more informative for firms with outside successors compared to inside successors. This difference in informativeness should decrease with the number of earnings announcements.

To summarize, we formulate our hypotheses as follows:

H1: *The market response to the first earnings announcement following CEO turnover is stronger after outside successions compared to inside successions.*

H2: *The difference in market response between outside and inside successions declines with the number of earnings announcements following turnover.*

4. Methodology & data

All in all, we use two different regression models in this study. The first regression model is used to estimate the ERCs for each of the first eight quarterly reports following CEO turnover. We run this regression model for two separate groups of observations: firms with internally recruited CEOs and firms with externally recruited CEOs. The second regression model focuses solely on the first earnings announcement following turnover. It includes a dummy variable that specifies CEO origin. The model is used to investigate whether the ERC after outside successions is significantly different from the ERC after inside successions for the first quarterly report following turnover.

4.1. Theoretical development of the method

In order to develop the regression models we have looked closely at two previous studies (Chambers et al., 2005; Clayton et al., 2005). In both these studies, ERC regressions are used to study the relationship between unexpected earnings (UE) and unexpected returns (UR).

The basic idea behind UE's effect on UR is that investors' perception of future dividends is changed when unexpected earnings are released. The rationale behind the effect on UR is that the value of a firm is the sum of all future dividends. There are several methods for estimating this value (Berk & DeMarzo, 2017). One of the simpler and most illustrative methods to determine firm value is the dividend-discount model (DDM). In DDM the value of the firm is the sum of the present value of all future dividends:

$$P_0 = \frac{Div_1}{r_e - g}$$

r_e is the equity cost of capital and g is the expected constant growth rate for dividends, Div_1 is the current period dividends and P_0 is the market value of the company in question (Berk & DeMarzo, 2017). As presented in the equation above it is quite obvious why the value of the firm (P_0) change if Div_1 or g changes, which essentially is what happens when unexpected earnings are announced. When a change of the perception of future dividends take place a revision in the stock price takes place. For this reason, the total return over a given time period t is:

$$R_{jt} = \frac{P_{jt} - P_{jt-1}}{P_{jt-1}}$$

Where R_{jt} is the total return over the period, P_{jt} is the current period market price and P_{jt-1} is the previous period market price. The return over the period consists of two parts. One part is expected, and one part is unexpected. The unexpected part of the return is the reaction to the announced unexpected earnings (UE). The signal that UE sends provides new information to investors, which causes a price change. Following on this, the UR corresponds to the unexpected change in price:

$$UR = \frac{P_{jt} - E_{t-1}(P_{jt})}{P_{jt-1}}$$

It is the $E_{t-1}(P_{jt})$ (expected future price) that changes when a change in perceived future dividends takes place. This results in a change in the later, actual, P_{jt}. This is also how UE and UR intuitively are related. The result of the announcement of unexpected earnings is a certain amount of unexpected return. How much can be estimated through ERCs (Chambers et al., 2005). Normally, with an empirical approach, this relationship can be expressed as follows:

$$UR_{jt} = ERC_{jt}\frac{UE_{jt}}{P_{jt-1}}$$

The price deflated (prior period price $t-1$) UE multiplied with the ERC equals the UR (Chambers et al., 2005). This is the fundamental theoretical basis of our method.

What we want to investigate in order to confirm or reject our first hypothesis (H1) is whether there is a difference in the ERC factor at the first earnings announcement following CEO turnover between firms with externally recruited CEOs compared to firms with internally recruited CEOs. We also want to investigate if the potential difference in ERC declines over time following the CEO turnover event, to either confirm or reject our second hypothesis (H2).

In order to test these hypotheses, we create a modified version of the two regressions presented in Clayton et al. (2005) and Chambers et al. (2005). We do this for two reasons. First of all, we want to avoid comparisons of ERCs over long time periods, in order to avoid as much "noise" as possible. This "noise" could present itself if longer time periods

would be used in the regression (for example five years) since other factors could then affect the stock price, such as macroeconomic events. The second is that we want to test the direct effect of UE on UR. We do not wish to test for other things, for example systematic risk, as this would not be relevant for the regressions. Our first regression equation is thus formulated as[1]:

$$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \varepsilon_{jt} \quad (1)$$

where UE_{jt} is

$$UE_{jt} = \frac{X_{jt} - F_{jt}}{P_{jt-1}}$$

and $NLUE_{jt}$ is

$$NLUE_{jt} = UE_{jt} \cdot \frac{R\left|UE_{jt}\right| - 1}{N - 1}$$

and

$$UR_{jt} = \sum_{(t-1)+(3\ days)}^{t+(2\ days)} UR_{daily}$$

$UR_{jt} =$ unexpected return for firm j over quarter t

$UE_{jt} =$ unexpected earnings deflated by the beginning of the period market value

$NLUE_{jt} =$ the product of UE_{jt} and the standardized rank of the absolute value of UE_{jt}

UR_{jt} is the accumulation of daily abnormal returns starting 3 days after the previous report day $t-1$ and stopping 2 days after the current report day t. We use the CRSP portfolio (β version) from WRDS in order to compute the accumulated daily abnormal

[1] The variables and the variable explanations are largely the same as in (Chambers et al., 2005), the model is however different and is more similar to the model used in (Clayton et al., 2005).

returns, through collection of daily abnormal returns from the entire database. The accumulated daily abnormal returns are then downloaded directly from WRDS.

UE_{jt} is the unexpected earnings for each firm in each observable quarter. It consists of X_{jt} which is the actual reported EPS and F_{jt} which is the median analyst's EPS forecast. The difference between the actual and forecasted earnings is deflated with P_{jt-1}. It is the observed closing price for each individual stock two days after the prior quarterly earnings announcement. As mentioned in the review of previous literature, different studies have used different denominators in the calculation of UE_{jt}. We have chosen to use the stock price because it is used by Clayton et al. (2005), who also study ERCs in connection with CEO turnover.

In accordance with Chambers et al. (2005) and Clayton et al. (2005), we include the variable $NLUE_{jt}$ in the regression. This variable reduces the effect of nonlinearity in case the price response to unexpected earnings is nonlinear. As previously described, it is the product of UE_{jt} and the absolute rank of each individual observation of UE_{jt} minus 1 divided by the number of observations minus 1 in each quarter.

In order to control for nonlinear S-shaped returns we create FR_{jt}. FR_{jt} is the price deflated revision in analysts' consensus forecast of the following $(t+1)$ quarter for firm j when the earnings announcment for quarter t is released. If $|FR_{jt}|\ or\ |UE_{jt}| > 0.1$, the observation is dropped (Freeman & Tse, 1992).

The data is prepared for a linear regression model on quarterly basis. What this means is that we run a regression for data collected in conjunction with each quarterly earnings announcement, after a CEO turnover event in a company. The data is thus sorted on which quarterly earnings report after the CEO turnover event it is related to and then regressed. This implies that there is a unique regression for each quarter after the turnover event. The maximum numbers of quarters we use in this study after the CEO turnover event is eight. The succession type (inside or outside) is identified with a dummy variable. This dummy variable $Dummy_{jt}$ is equal to 0 if the CEO is internally recruited and equal to 1 if the CEO is externally recruited. Our definition of external recruitment is that the appointed CEO should not have been with the company for more than one year before the appointment. This definition is similar to the one used in Clayton et al. (2005). By

dropping all observations with $Dummy_{jt} = 1$, linear regressions using Equation 1 can be performed for quarterly reports following inside successions. This generates eight regressions, one for each quarter following the turnover events, with only internally recruited CEOs. By dropping all values with $Dummy_{jt} = 0$ linear regressions using Equation 1 can be performed for quarterly reports following outside successions. This generates eight additional regressions, one for each quarter following the turnover event. That is, in total, we generate 16 unique regressions using Equation 1.

Our second regression model is then used to investigate the statistical difference between the ERC after inside successions and the ERC after outside successions for the first quarterly report following turnover. In this model, the dummy variable and an interaction variable are also included:

$$Interaction_{jt} = Dummy_{jt} \cdot UE_{jt}.$$

Our second regression model is thus:

$$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \beta_3 \cdot Dummy_{jt} + \beta_4 \cdot Interaction_{jt} + \varepsilon_{jt} \quad (2)$$

4.2. Data & method development details

All data is collected in the same way as in Chambers et al. (2005). We use the Wharton Data Research Service in order to acquire all the necessary data. We use four different databases, namely Compustat, I/B/E/S, WRDS Beta Suite and CRSP. From all databases we initially download all available data, meaning that the information is searched for on entire database level. All downloaded data is for companies listed in North America. We try to use the longest possible time period for all data. However, data availability eventually restricts the time period to 1985-2018. The number of observations used in the regressions is limited by the different databases, forcing a lot of available data to be dropped because of missing information in some of the databases. The strongest limiting condition is that we only keep observations for which we know when the CEO in question was appointed and when the CEO joined the company. This eventually limits the datasets heavily. A table is provided below with information on how many observations are included in each download and how many are dropped through the different stages of creating the final datasets.

Table 2. Showing data management

	No. of observations
Compustat original download	1 469 392
No. of observations dropped from original download due to (1)	(1 161 792)
I/B/E/S original download	5 249 021
No. of observations dropped from original download due to (1)	(4 941 421)
(1) Compustat & I/B/E/S merged file	307 600
No. of observations dropped from merge (1) due to (3)	(113 696)
(2) WRDS Beta Suite original download	49 981 938
No. of observations dropped from original download due to (3)	(49 787 765)
CRSP original download	56 761 638
No. of observations dropped from original download due to (3)	(56 567 465)
(3) Several appends between CRSP, (1) & (2)	194 173
No. of observations dropped from (3) due to (4)	(160 715)
CEO data original download	291 762
No. of observations dropped from original download due to (4)	(258 304)
(4) Append between CEO data & (3)	33 458
Sample after removal of outliers and observations from not relevant quarters*	6 856

Note: Table 2 shows how many observations there are in all originally downloaded datasets (total number of 5 datasets from 4 databases), and how many of these observations that are dropped throughout the data management process from each original download. The data is presented in chronologic order, meaning that the information above corresponds to the presented method. *Outliers and not relevant quarters are defined as observations not compliant with the condition $|FR_{jt}|\ or\ |UE_{jt}| > 0.1$ and/or if the quarterly report number following the turnover event > 8.

From Compustat (Fundamentals quarterly) the earnings announcement dates are collected. From the I/B/E/S (summary statistics) database information on actual reported earnings and median analyst forecast are acquired. Both the Compustat data and the I/B/E/S data is thoroughly checked for duplicates. The data from Compustat and the data from I/B/E/S is then merged based on cusip code and dates (forecast period end dates from I/B/E/S are matched with earnings announcement dates from Compustat).

The merged dataset is then prepared for appending with the data on excess returns. The data on excess return is created with WRDS Beta Suite tool. We use the CAPM (Capital asset pricing model). It would be possible to use the same tool but with a different underlying model, for example Fama-French three-factor model or similar. The data on excess return for each company, between each quarterly report, is then accumulated. We exclude the excess return from the first three days in the period and include the excess return from the first two days in the following period. This creates the dependent variable UR_{jt} for each company and each quarter.

Data on security prices is downloaded from the CRSP database (security daily). In order to create the dependent variable UE_{jt} the CRSP file is appended with the previously merged Compustat – I/B/E/S file, containing information on actual earnings and median forecasted earnings. This allows for the creation of the UE_{jt} variable for each quarter and company. As before, observations with missing values are removed. From this appended and merged dataset the $NLUE_{jt}$ variable is created according to the equation presented in 4.1.

The two merged and appended datasets containing information on UR_{jt} and UE_{jt} is then appended. Information about CEO turnover dates and dates when the CEOs joined their companies is also collected from Compustat (Compustat, Executive Compensation). This data is used to create the dummy variable. The data is then combined with the merged and appended data presented above, sorting the previous data in to the matching cases of CEO changes.

5. Results

5.1. Descriptive statistics

5.1.1. Sample distribution

Table 3 presents the distribution of the quarterly earnings announcements by their order following turnover and by successor origin for our sample of 6,856 announcements. As shown, outside successions are less common than inside successions. For the first earnings announcements following turnover, 23.2% of these were presented by firms where the new CEO was externally recruited. The frequency is similar to that found by Clayton et al. (2005), who's sample of turnover events consisted of 21% outside successions.

Table 3. Distribution of the sample of post-turnover quarterly reports

Quarterly report after succession	Inside successions	Outside successions	All
1st	690	209	899
2nd	678	210	888
3rd	671	210	881
4th	660	208	868
5th	647	203	850
6th	643	199	842
7th	624	195	819
8th	619	190	809
Quarter 1-8	5,232	1,624	6,856

Note: Table 3 shows the sample distribution of the post-turnover quarterly reports that are used in our regressions. They are presented by succession type and by their order following the turnover. For example: our sample consists of 6,856 quarterly reports in total, distributed over the first eight quarters following CEO turnovers. 899 of these represent the first quarterly report following CEO turnovers, of which 690 observations represent reports after inside successions and 209 observations represent reports after outside successions.

Table 3 also shows that the number of observations declines for every earnings announcement following turnover, which is to be expected given that CEOs leave their employer after some time.

5.1.2. Summary statistics for UR and UE variables

Table 4 and 5 present the means and standard deviations for the dependent variable UR and the independent variable UE, respectively. For the UR variable, there is a clear difference in mean values and standard deviations between inside and outside successions. Unexpected return is on average larger and more varying following outside successions.

Table 4. Summary statistics for UR (Unexpected return)

Quarter after	Inside successions		Outside successions		All	
succession	Mean	SD	Mean	SD	Mean	SD
1st	0.0129	0.2162	-0.0049	0.2333	0.0088	0.2203
2nd	0.0204	0.1874	0.0682	0.3161	0.0317	0.2253
3rd	0.0348	0.1988	0.0411	0.2967	0.0363	0.2258
4th	0.0252	0.2434	0.0619	0.2983	0.0340	0.2579
5th	0.0252	0.1730	0.0096	0.2446	0.0215	0.1925
6th	0.0217	0.1864	0.0543	0.2616	0.0294	0.2070
7th	0.0011	0.1720	0.0340	0.2660	0.0089	0.1988
8th	0.0137	0.1839	0.0126	0.2594	0.0134	0.2040
Quarter 1-8	0.0195	0.1970	0.0348	0.2743	0.0231	0.2179

Note: Table 4 presents the means and standard deviations of the dependent variable *UR*, across the first eight quarterly reports following turnover and across succession types. *UR* is the dependent variable for unexpected return (cumulative abnormal return), which is calculated using CAPM. The last row in the table (Quarter 1-8) shows the means and standard deviations for all reports during the first eight quarters.

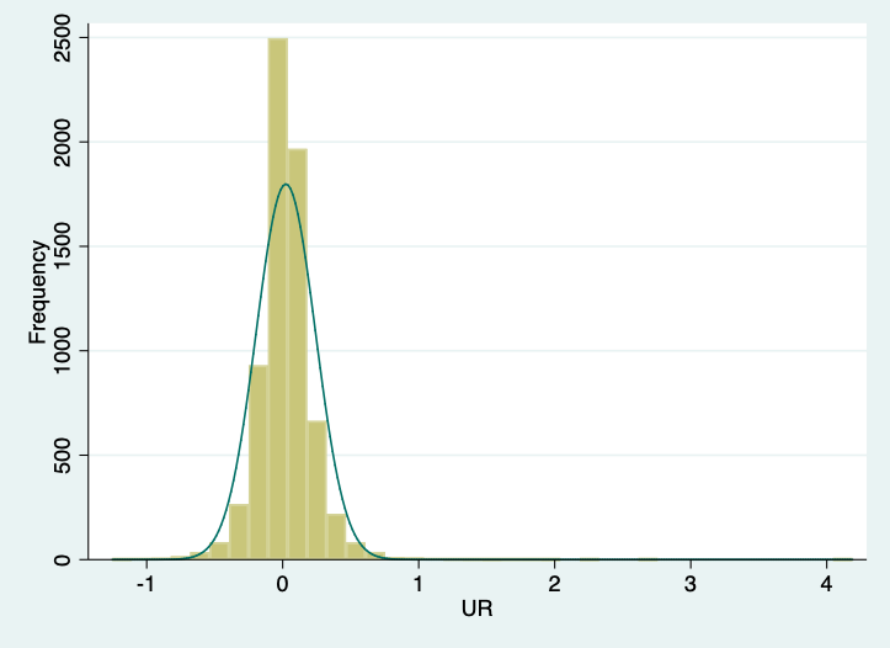
As shown in Table 5, the UE variable demonstrates the same pattern as the UR variable when it comes to differences between the two succession types. In absolute values, unexpected earnings are on average larger and more varying following outside successions as compared to inside successions. After inside successions, unexpected earnings tend to be around zero on average for the first eight quarters following turnover. After outside successions, they tend to be slightly negative on average, meaning that reported earnings are lower than expected earnings. It is notable that despite this, the unexpected return is on average larger for outside successions compared to inside successions, as mentioned in the previous paragraph.

Table 5. Summary statistics for UE (Unexpected earnings)

Quarter after	Inside successions		Outside successions		All	
succession	Mean	SD	Mean	SD	Mean	SD
1st	-0.0009	0.0092	-0.0014	0.0109	-0.0010	0.0097
2nd	0.0000	0.0102	-0.0029	0.0133	-0.0007	0.0111
3rd	0.0000	0.0078	-0.0006	0.0117	-0.0001	0.0089
4th	-0.0001	0.0067	-0.0010	0.0088	-0.0003	0.0072
5th	0.0003	0.0059	-0.0007	0.0107	0.0001	0.0073
6th	0.0010	0.0077	-0.0011	0.0105	0.0005	0.0085
7th	-0.0002	0.0070	-0.0014	0.0097	-0.0005	0.0077
8th	-0.0001	0.0076	0.0003	0.0089	0.0000	0.0079
Quarter 1-8	0.0000	0.0079	-0.0011	0.0107	-0.0003	0.0087

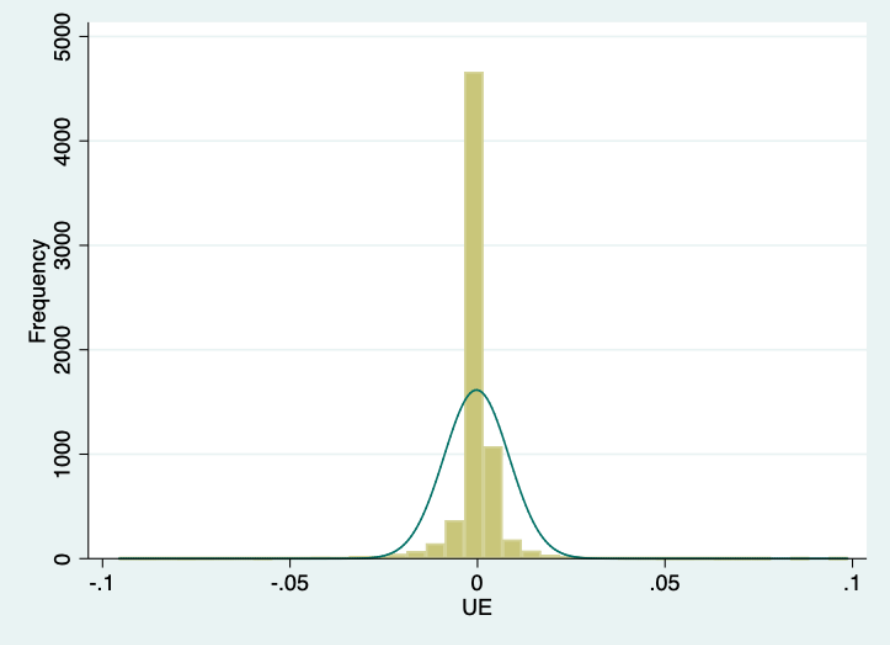
Note: Table 5 presents the means and standard deviations of the independent variable *UE*, across the first eight quarterly reports following turnover and across succession types. *UE* is the independent variable for unexpected earnings. The last row in the table (Quarter 1-8) shows the means and standard deviations for all reports during the first eight quarters.

The frequency distributions of UR and UE are presented in Figure 1 and 2, respectively. The graphs show that both variables demonstrate tendencies of normal distribution.



Note: Figure 1 shows the frequency distribution of *UR* for our full sample of 6,856 observed quarterly reports. *UR* is the dependent variable for unexpected return (cumulative abnormal return), which is calculated using CAPM. *UR* has a mean of 0.0231 and show strong tendencies of normal distribution.

Figure 1. Frequency distribution of UR (Unexpected return)



Note: Figure 2 shows the frequency distribution of *UE* for our full sample of 6,856 observed quarterly reports. *UE* is the independent variable for unexpected earnings. It has a mean of -0.0003 and show tendencies of normal distribution.

Figure 2. Frequency distribution of UE (Unexpected earnings)

5.2. Regressions

5.2.1. Regression of Equation 1

Table 6 presents the estimated UE coefficients, that is the ERCs, from our quarterly regressions using Equation 1. Almost all of the estimated coefficients for the different quarters and succession types are significant at the 1%, 5% or 10% level. All ERCs are positive, which was expected since it means that the stock market reacted positively to earnings which were better than expected and negatively to earnings which were worse than expected.

Table 6. Quarterly regression results using Equation 1

$$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \varepsilon_{jt}$$

Quarter after	Inside successions			Outside successions		
succession	β_1 (ERC)	SE	Adj. R2	β_1 (ERC)	SE	Adj. R2
1st	15.508	9.926	0.012	46.329**	18.295	0.091
2nd	20.819**	9.314	0.049	84.226***	28.341	0.032
3rd	45.012***	10.033	0.055	79.145***	19.212	0.175
4th	53.817***	12.29	0.061	53.737**	24.471	0.040
5th	40.478***	9.785	0.087	56.218***	15.477	0.095
6th	54.845***	9.174	0.118	42.142**	18.047	0.079
7th	39.099***	9.408	0.030	38.972*	20.276	0.049
8th	23.136**	10.029	0.081	16.197	21.837	0.102

Note: Table 6 presents the primary regression results using Equation 1 across the first eight quarterly reports following turnover and across succession types. That is, we run 16 regressions in total; one for each quarter including only inside successions, and one for each quarter including only outside successions.
β_1 = The earnings response coefficient, SE = Standard errors. *** p<0.01, ** p<0.05, * p<0.1
The full results from the regression including all variables are found in Table A1 in Appendices.

On average, the ERC is found to be larger after outside successions compared to inside successions. Furthermore, the difference in ERCs between the two succession types are as largest in the first few quarters following CEO turnover. As seen in Table 6, the ERCs after outside successions are substantially larger in the first few quarters following the turnover. Thereafter, the size of the ERC declines for the group of firms with externally recruited CEOs. The pattern between the different quarters for the firms with internally recruited CEOs is more unclear. According to the regression results, ERCs following inside successions are smallest for the first two quarterly reports after the turnover, then increases, and then declines again.

Table 6 also contains adjusted R^2-values for every regression. The value varies substantially between the different quarters and successions types. This is however not surprising given similar results in the study by Chambers et al. (2005).

5.2.2. Regression of Equation 2

Table 7 reports the regression outcome for the UE and interaction variables using Equation 2 for the first earnings announcement following CEO turnover. The most important result to highlight is that the estimated interaction coefficient is positive and statistically significant at the 5% level. This result has the following interpretation: for the first quarterly earnings announcement following CEO turnover, we know with more

than 95% confidence that the market response to unexpected earnings is greater after outside successions as compared to inside successions.

Table 7. Regression results using Equation 2

$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \beta_3 \cdot Dummy_{jt} + \beta_4 \cdot Interaction_{jt} + \varepsilon_{jt}$		
UE	Estimated coefficient (β_1)	22.073**
	Standard error	8.720
	P-value	0.012
interaction	Estimated coefficient (β_4)	3.604**
	Standard error	1.644
	P-value	0.029
Adjusted R-squared		0.032

Note: Table 7 presents the primary regression results using Equation 2 for the first quarterly report following CEO turnover. *UE* is the independent variable for unexpected earnings. *Interaction* is an interaction variable, calculated as *UE*Dummy*. *Dummy* is equal to 0 for internally recruited CEOs and equal to 1 for externally recruited CEOs.
*** p<0.01, ** p<0.05, * p<0.1
The full results from the regression including all variables are found in Table A2 in Appendices.

5.3. Evaluation of hypotheses

Our main hypothesis (H1) was that "*the market response to the first earnings announcement following CEO turnover is stronger after outside successions compared to inside successions*". To test H1, we use the regression results from Equation 2 presented in Table 7. Our null hypothesis and decision rule are designed as follows:

$$H_0: \beta_4 \leq 0$$

$$\text{Reject } H_0 \text{ if } \beta_4 > 0$$

As could be concluded based on the regression results presented in Table 7, the estimated interaction coefficient (β_4) is positive and statistically different from zero at the 5% level. This implies that the null hypothesis can be rejected at the 5% significance level. In other words, the results of the study support our hypothesis (H1).

Our second hypothesis (H2) was that "*the difference in market response between outside and inside successions declines with the number of earnings announcements following turnover*". We do not perform any statistical test of this hypothesis. Instead we evaluate the estimated ERCs from the quarterly regression of Equation 1 to determine whether there is support for the hypothesis. These results, presented in Table 6, suggest

that the hypothesis holds. The ERCs after outside successions are substantially larger than after inside successions for the first few earnings announcements following CEO turnover. Thereafter the ERCs are more similar between the two succession types.

5.4. Evaluation of model assumptions

The OLS regressions that are used in this study assume certain characteristics regarding the data. It is important that these assumptions are fulfilled in order to obtain reliable results from the models. If they are not fulfilled, they have to be adjusted for. In this section, we therefore evaluate two essential assumptions underlying the main model of our study (Equation 2 which contains the dummy and interaction variables). We test for heteroscedasticity and multicollinearity.

5.4.1. Heteroscedasticity

One assumption underlying the regression model is that the error term is of homoscedastic nature. The opposite, heteroscedasticity, arises when the variance of the error term is dependent on the value of an independent variable. If heteroscedasticity exists, the regression results should be considered less accurate and the model might have to be adjusted.

We test for heteroscedasticity by conducting a Breusch-Pagan/Cook-Weisberg test. The null hypothesis of homoscedasticity is tested against the alternative hypothesis of heteroscedasticity. The test generates a χ^2-value of 1.85 and a p-value of 0.7629, meaning that we are not able to reject the null hypothesis. In other words, the test suggests that the data is homoscedastic and therefore we do not make any adjustments of our model.

5.4.2. Multicollinearity

Another assumption underlying the OLS regression model is that it does not suffer from multicollinearity. Multicollinearity means that the independent variables are correlated with each other, which makes it difficult to interpret the effect of each individual variable. To assess the potential presence of multicollinearity, we analyse the variance inflation factors (VIFs) for all the independent variables. These are presented in Table 8.

Table 8. Variance Inflation Factors for the regression using Equation 2

Variable	VIF	1/VIF
NLUE	135.81	0.007363
UE	135.37	0.007387
interaction	1.44	0.692322
dummy	1.02	0.985215
Mean VIF	68.41	

Note: Table 8 presents the Variance Inflation Factors (VIFs) for all independent variables included in the regression using Equation 2. The variable *NLUE* controls for the effects of non-linearity in earnings response. *UE* is the variable for unexpected earnings. *Interaction* is an interaction variable, calculated as *UE*Dummy*. *Dummy* is equal to 0 for internally recruited CEOs and equal to 1 for externally recruited CEOs.

A high VIF-value indicates that multicollinearity is present, while a value lower than 10 typically means that multicollinearity can be regarded as absent (Neter et al., 1996). The results in Table 8 thus present clear signs of multicollinearity in the UE and NLUE variables but not in the dummy and interaction variables. The multicollinearity in the former variables is, however, both expected and completely natural. As described in the methodology section, the NLUE variable is derived from the UE variable to control for the effects of non-linearity in earnings response. Thus, the two variables should be highly correlated with each other and this should not be considered a problem in our model.

As a further robustness check for multicollinearity, we examine the correlations across all of the independent variables using a correlation matrix.

Table 9. Pearson correlations

	UE	NLUE	dummy	interaction
UE	1.0000			
NLUE	0.9963*	1.0000		
dummy	-0.0237	-0.0243	1.0000	
interaction	0.5435*	0.5456*	-0.1130*	1.0000

Note: Table 9 shows the Pearson correlation matrix for all independent variables included in the regression using Equation 2. The variable *NLUE* controls for the effects of non-linearity in earnings response. *UE* is the variable for unexpected earnings. *Interaction* is an interaction variable, calculated as *UE*Dummy*. *Dummy* is equal to 0 for internally recruited CEOs and equal to 1 for externally recruited CEOs. *** p<0.01

The correlation matrix clearly confirms the very strong correlation between UE and NLUE discussed above. Furthermore, it shows that also the interaction variable is correlated with UE and NLUE, as well as with the dummy variable. This is a natural

consequence of the interaction variable being a product of UE and the CEO origin dummy variable. As a consequence of the relation between UE and NLUE, the interaction variable then becomes highly correlated not only with UE but also with NLUE.

Given that all the signs of multicollinearity have legitimate explanations in the design of our model, the signs should not be of concern and we can therefore keep all the independent variables in our regression.

6. Discussion

As presented in Clayton et al. (2005) there are two ways that CEO turnover could cause an increase in stock price volatility. The sheer volume of firm-specific news could increase following a turnover, or each news item could be considered more important. In our study we have considered one type of firm-specific news, quarterly earnings announcements. Since the number of earnings announcements does not change because of CEO turnover, the important thing to consider in our study is the importance of the individual news items. With this in mind, it is important to consider, from a theoretical perspective, why both our hypotheses (H1 and H2) are confirmed.

6.1. Information asymmetry and signaling theory

According to Akerlof (1970) there are many circumstances which makes it profitable for the seller in a market to sell goods of lower than average quality. An example of this is the car market. As a buyer it is very hard to determine the quality of each individual car, before the car in question have been purchased. This provides the seller with incentives to deliver a car of lower quality, in order to increase profits. The problem from a market perspective is however that the buyers are aware of the sellers incentives, which causes market prices to deteriorate. The buyers are not interested in paying the actual value of the car, because of the risk that the car is in a bad condition (the car being a lemon). The seller is aware of the quality of the car, but there is no way for the buyer to determine the quality of the car before the purchase is made. This has been generally known as the lemon problem.

On a more general level this can be formulated as the following: Market prices are reduced because of the presence of asymmetric information in the market. The more asymmetric information there is, the more the market price will be reduced.

Akerlof (1970) also concludes that a way of reducing the information asymmetry is to sell things under famous brands or including warranties, which shifts the risk of the information asymmetry from the buyer to the seller. This is what has come to be known as signaling theory, originally developed in variety of management literature. Signaling theory can, in general, be described as how one party in a transaction choose to

communicate its own knowledge about something to the other party in the transaction, and how the other party chose to interpret that information (Connelly et al., 2011). This might be slightly hard to grasp. However, in the lemon car context it becomes much clearer: Suppose that the car seller tries to sell a used car to the buyer. The buyer is completely unaware of the quality of the car and can form no opinion on this before the car has been driven for a year or two (post-purchase). Because of the risk that the car is a lemon the buyer wants a price reduction. The seller, completely aware of the great quality of the car will not agree on a price reduction. What the seller can do is to agree to take responsibility for any kind of car failure within the first 3 years of purchase. This shifts the risk of the purchase from the buyer to the seller and sends a strong signal about the quality of the car to the buyer, which in turn allows the buyer to revoke the risk related price reduction.

If the two theories of signaling and information asymmetry are applied to the context of the stock market the reasoning is slightly different, but the basic idea is still the same. When a change in CEO occurs the market moves from a state in which it knows fairly much about the strategy and the leader of a company to a state where it knows less about the strategy and the leader. This is because the existing relationship between the market and the leader disappears. The new leader, however, knows all about him-/herself and also all about his/her potentially new strategy. For this reason, the information asymmetry between the parties increases following turnover. With more uncertainty surrounding the company, the relative value of each individual news item increases. Furthermore, when an earnings announcement is released, it is a signal about the quality of the new leader and his/her potentially new strategy to the market. This reduces the amount of asymmetric information, which allows investors to pay more for the stock, and revoke the risk-related price reduction. This reasoning could explain our finding that average unexpected return is positive following CEO turnovers, as presented in Table 4. According to the same table, we also found that the unexpected return was greatest following outside successions. Our results could potentially be a reflection of what Huson et al. (2004) found in their study about post-turnover improvements in financial performance. As mentioned in the literature review, they found that these improvements were greater following outside successions compared to inside successions. All else equal, this should imply better stock performance for firms with outside successions.

Our findings of large differences in post-turnover ERCs for firms with internally recruited CEOs compared to firms with externally recruited CEOs are also in line with the presented theories on asymmetric information and signaling value. An extension of what has already been discussed above explains this. As presented in Clayton et al. (2005), an internally recruited CEO is likely to have managed a large part of the company prior to the CEO appointment. This causes the market to be less concerned about the quality of the new CEO. To use Furtado and Karan's (1990) terminology, the market's perceived risk of a loss of firm-specific human capital is smaller. Thus, there is less information asymmetries between the market and the CEO following inside successions as compared to outside successions. For this reason, the market puts relatively more value to a quarterly earnings announcement when the CEO was externally recruited compared to when the CEO was internally recruited, implying larger ERCs in the case of externally recruited CEOs. In the light of this, it is worth to mention that there may be several cases in which the opposite applies. An example of this is if the company in question is part of an industry where there are several competitors with similar conditions. If a CEO is recruited from one of the competitors, where he or she has held an official role, the market might even know more about the externally recruited CEO, compared to if the CEO had been internally recruited.

Our findings that ERCs following outside successions start to decline after the first few quarterly reports are also in line with the previous reasoning. The market learns more about the new CEO for each earnings news. This continuously reduces the amount of information asymmetry. One could also explain the trend of declining ERCs by applying the "ability hypothesis" and "strategy hypothesis" presented in Clayton et al. (2005). As time passes following the turnover, quarterly reports become less informative about the new CEO's ability and the viability of his or her strategy. Why the declining trend is more difficult to identify following inside successions could potentially be explained by less information asymmetries between the market and the CEO to begin with.

6.2. Agency Theory

In a general context agency theory can be applied to a large variety of areas, including everything from management, economics and finance. The basic idea behind the agency theory is that management and ownership is separated, resulting in a large conflict of

interest between agents (managers and CEOs) and principals (shareholders). The main problem in this context is that managers are prioritizing their own needs before the companies and the owners. Meaning that the most important thing for a CEO is to prioritize its salary (Panda & Leepsa, 2017). This can result in an unwanted risk behavior and a short-term mindset in decision making, resulting in behaviors that are not in the best interest of the owners. There is also a strong connection between agency theory and the previously discussed information asymmetry problem. Owners are relying on management to provide correct and accurate information about the company in order for the owners to be able to determine the value of the company and the qualities of the management team and the CEO.

There are several costs associated with the agency problem (Jensen & Meckling, 1976). The first being the cost of monitoring. Owners employ people with the sole purpose of monitoring management, an example of this is the board of directors. The second is residual loss which is the cost of previously mentioned problem of conflicting interests between management and owners. The third is bonding costs which are costs associated with the implementations of schemes to make management act in line with the interests of the owners, an example of this is carefully thought through compensation schemes.

In the context of our research there are several different things suggesting that agency theory plays a role in explaining our result. The installment of a new CEO implies larger uncertainties with regards to what interests the new CEO really has compared to the old CEO. Owners cannot be sure of the information a new CEO provides on the company (the accuracy of the information), implying even larger information asymmetries. This uncertainty should be of greater magnitude when the CEO is externally recruited, compared to when the CEO is internally recruited, apart from in the special cases when the market knows more about an externally recruited CEO (discussed in 6.1). When a quarterly earnings announcement takes place after a change in CEO, the quality of schemes and other procedures put in place in order to make the CEOs interests align with the owners is shown. The owners get a definitive answer to if the CEO do as they want her/him to do. For each report released the owners perception of the CEO increases. This reduces the importance of each individual earnings announcement, as more and more quarterly earnings reports are released after the change in CEO. This would further

explain the difference in ERC during time progression and explain why the earnings response is greater when the CEO is externally recruited compared to when the CEO is internally recruited.

The problem with the application of the agency theory on this thesis is however that the framework or basis for the agency problem varies heavily from company to company, depending on everything from compensation scheme to board transparency etc. Ultimately, it appears as an asymmetric information problem. Therefore, information asymmetry and the signaling theories are more applicable to this study and serve as better explanations of our results.

7. Conclusion

7.1. Summary and interpretation of results

This thesis has investigated the effect of CEO turnover on the stock market's response to earnings announcements. We have shown that earnings announcements following CEO turnover events with external recruitment are associated with larger earnings response coefficients (ERCs) compared to earnings announcements following CEO turnover events with internal recruitment. We have been able to show this through confirmation of our two hypotheses H1 and H2. The difference is greatest during the first few quarters following the turnover event and eventually fades. Building upon previous research findings, we have concluded that the difference is related to the information asymmetry between the new CEO and the capital market. We have also concluded that the difference fades due to the signal value of each individual quarterly earnings announcement, which reduces the amount of asymmetric information over time.

7.2. Suggestions for future research

It would be interesting for future research to further examine why post-turnover differences in ERC occur. With access to more data on why CEOs leave their position the study could be developed. Another topic for future studies is how the board of directors should act in relation to this knowledge. Our suggestion for studies within this field is to use the three economic theories (asymmetric information, signaling and agency theory) presented above as a basis point, in order to develop a framework for action. Finally, future studies on post-turnover ERCs could extend the set of variables included in the regression models, for example to incorporate effects of firm-specific attributes and performance, or other relevant circumstances surrounding the turnover.

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9. Appendices

Table A1. Full summary of quarterly regression results using Equation 1

$$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \varepsilon_{jt}$$

Inside successions					
Quarter after succession	β_1 (ERC)	β_2	β_0	Observations	Adj. R2
1st	15.508	-13.869	0.015*	690	0.012
	(9.926)	(10.622)	(0.008)		
2nd	20.819**	-17.924*	0.018***	678	0.049
	(9.314)	(9.889)	(0.007)		
3rd	45.012***	-43.820***	0.030***	671	0.055
	(10.033)	(10.863)	(0.008)		
4th	53.817***	-50.817***	0.020**	660	0.061
	(12.290)	(13.428)	(0.009)		
5th	40.478***	-36.821***	0.017***	647	0.087
	(9.785)	(11.032)	(0.007)		
6th	54.845***	-51.625***	0.009	643	0.118
	(9.174)	(9.854)	(0.007)		
7th	39.099***	-40.411***	-0.003	624	0.030
	(9.408)	(10.312)	(0.007)		
8th	23.136**	-17.864	0.013*	619	0.081
	(10.029)	(10.964)	(0.007)		
Outside successions					
Quarter after succession	β_1 (ERC)	β_2	β_0	Observations	Adj. R2
1st	46.329**	-42.876**	0.003	209	0.091
	(18.295)	(19.390)	(0.016)		
2nd	84.226***	-88.527***	0.062***	210	0.032
	(28.341)	(29.668)	(0.022)		
3rd	79.145***	-75.906***	0.037**	210	0.175
	(19.212)	(20.762)	(0.019)		
4th	53.737**	-53.608*	0.066***	208	0.040
	(24.471)	(27.396)	(0.020)		
5th	56.218***	-56.799***	0.012	203	0.095
	(15.477)	(17.217)	(0.016)		
6th	42.142**	-38.361**	0.053***	199	0.079
	(18.047)	(19.386)	(0.018)		
7th	38.972*	-36.087	0.039**	195	0.049
	(20.276)	(22.013)	(0.019)		
8th	16.197	-7.293	0.008	190	0.102
	(21.837)	(24.384)	(0.018)		

Note: Table A1 presents the full regression results using Equation 1 across the first eight quarterly reports following turnover and across succession types. That is, we run 16 regressions in total; one for each quarter including only inside successions, and one for each quarter including only outside successions.
β_1 (ERC) = the estimated UE coefficient, or in other words the estimated ERC. *UE* is the variable for unexpected earnings.
β_2 = the estimated NLUE coefficient. *NLUE* controls for the effects of non-linearity in earnings response.
β_0 = the estimated constant in the equation.
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2. Full summary of regression results using Equation 2

$UR_{jt} = \beta_0 + \beta_1 \cdot UE_{jt} + \beta_2 \cdot NLUE_{jt} + \beta_3 \cdot Dummy_{jt} + \beta_4 \cdot Interaction_{jt} + \varepsilon_{jt}$		
UE	Estimated coefficient (β_1)	22.073**
	Standard error	8.720
	P-value	0.012
NLUE	Estimated coefficient (β_2)	-20.923**
	Standard error	9.320
	P-value	0.025
dummy	Estimated coefficient (β_3)	-0.012
	Standard error	0.017
	P-value	0.501
interaction	Estimated coefficient (β_4)	3.604**
	Standard error	1.644
	P-value	0.029
Constant	Estimated constant (β_0)	0.015*
	Standard error	0.008
	P-value	0.072
Observations		899
Adjusted R-squared		0.032

Note: Table A2 presents the full regression results using Equation 2 for the first quarterly report following CEO turnover.
UE is the independent variable for unexpected earnings.
NLUE controls for the effects of non-linearity in earnings response.
Dummy is equal to 0 for internally recruited CEOs and equal to 1 for externally recruited CEOs.
Interaction is an interaction variable, calculated as *UE*Dummy*.
*** p<0.01, ** p<0.05, * p<0.1