

Stockholm School of Economics

Master thesis in Accounting and Financial Management

Spring 2019

Investors' response to CFO changes:

Do CFO characteristics matter?

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Abstract

This study aims to answer if and how investors react to CFO succession announcements. We analyze if investors value the CFO role and also if investors care about the CFO characteristics *Gender* and *Origin* in their market valuations. We use a sample of 469 observations from Nasdaq Stockholm during the period 2001-2018. The World Economic Forum ranks Sweden at the top of its gender equality index, indicating that it is a country with egalitarian attitudes. Our results show that investors react positively to female CFO announcements when the CFO change is unexpected. This indicates that the Swedish egalitarian culture favor gender equality. We do not find any evidence of that investors care about CFO succession announcements nor if the appointed CFO is external or internal. These findings contribute to recent studies on the increased importance of the CFO role. We suggest that Swedish investors' price diversity into the stock prices and question if the CFO is as important as recent studies have concluded.

Tutor: Milda Tylaite

Keywords: *CFO successions, investor reactions, stock price reactions, gender, origin.*

Acknowledgements

We would like to express our deepest appreciation to the people who have provided valuable insights to our thesis. A special gratitude to our supervisor, Assistant Professor Milda Tylaite, for her thoughtful guidance and valuable inputs throughout our work. Furthermore, we are also thankful for Assistant Professor Mariya Ivanova's useful comments.

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Stockholm, 8 May 2019

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1. Introduction

The traditional role of the Chief Financial Officer (CFO) has been to keep tabs on the money and to make sense of this information for the board of directors, top management and the investment community (Favaro, 2011). Historically, the CFO has focused purely on the financial domains. However, there has been a dramatic shift in the role of the CFO – from a supervisor of accounting and finance towards an advisor to the Chief Executive Officer (CEO) – and the CEO today gives an equal amount of management scope to the CFO (Favaro, 2011). The increased management scope refers to that CFOs are no longer only asked to have an informed view of the company, but instead they are now expected to provide guidance and direction to line managers (Favaro, 2011). 63 percent of the surveyed CEOs in a study performed by KPMG (2015) also believe that the CFO role will increase in significance over the next few years as compared to other C-suite roles. Today's CFOs are characterized with a more public role, with an intense pressure from the stakeholders (EY, 2016). This statement is also in line with Zorn (2004), who argues that CFOs are more frequently connected to firms' shareholder value and that the role has approached the investors and their focus. Investor reactions to CEO and other top management (president, chairman of the board, and vice-chairman) turnover are widely investigated while the investor reactions to CFO turnover in itself is rarely questioned and it has been given little attention. Therefore, with an increased focus on the CFO role and scarce previous literature on market reactions to CFO successions we will shed light on investors' reactions to CFO announcements in this study. Since CFO turnover literature is scarce and the CFO approaches the CEO when s/he gets closer to the role of a business partner rather than a controller (Howell, 2006), we rely on CEO and other top management literature when forming the empirical predictions.

Positive market reactions to CEO and other top management turnover are found among several scholars. Pessarossi and Weill (2012) find that CEO turnover signals a recommitment to the objective of profitable economic performance. Huson, Malatesta and Parrino (2004) find a positive correlation between CEO turnover and a subsequent change in accounting measures, signaling presaging performance improvements to investors. Denis and Denis (1995) find that forced resignations of top managers (CEO, chairperson of the board and president) are preceded by valuable operating improvements. Weisbach (1988) find that removal of poor CEO management increases firm value. However, negative market reactions to CEO turnover are

also found. Dedman and Lin 2002 find negative reactions from investors when the CEO is dismissed or leaves to take up another job. Lastly, several scholars also do not find any significant market reactions to CEO and top management turnover (Brinkhuis & Scholtens, 2018; Niño & Romero, 2007; Mian, 2001; Warner, Watts & Wruck, 1988; Beatty & Zajac, 1987; Reinganum, 1985). Despite the increased importance of the CFO, previous literature commonly either focus on only the CEO (e.g. Pessarossi & Weill, 2012; Huson et al., 2004; Dedman & Lin, 2002) or on the top management in general (e.g. Denis and Denis, 1995) when investigating CEO and top management successions. Only Brinkhuis and Scholtens (2018) and Mian (2001) investigate the stock price reaction to CFO successions in itself.

Until recently, it has been impossible to consider the influence of CFO succession events in the context of gender since few women have been appointed to this role historically. However, as the number of female CFOs grows, the need to understand the influence of female CFO successions and to develop a corresponding theory of this demographic increases. This study is a step in that direction. We have chosen a sample based on observations from companies on Nasdaq Stockholm in the period 2001-2018. Sweden is ranked as number 3 out of 149 countries in the Global Gender Gap Index (World Economic Forum, 2018), i.e. it is a country in the forefront of gender equality. Despite that Sweden has a top ranking in the Global Gender Gap Index, it is still a country that is dominated by male leaders. As an example, in the beginning of 2019, the demographic picture of Swedish CEOs was dominated by men and more than 90 percent of the listed companies on Nasdaq Stockholm had male CEOs (Rex 2019, 19 February). Hence, since it is the CEO that appoints the CFO, a new CFO may reflect male CEO characteristics since evaluations tend to rely on demographic similarities (Kanter, 1977).

Previous research has found negative reactions from appointing a female to top management (Lee & James, 2007). However, the egalitarian investors in Sweden might instead promote and value announcements of female CFO appointments since it contributes to gender equality. Regardless of investor's response, we expect investor reactions to differ between male and female CFO appointment announcements. Previous research has found indications, although insignificant, on that investors react differently to announcements of female CFO appointments in gender equal countries compared to announcements of CFO appointments in less equal countries (Brinkhuis & Scholtens, 2018). Brinkhuis and Scholtens (2018) use a sample based on several countries while Mian (2001) uses CFO data from the United States, a country who

is ranked number 51 in the Global Gender Gap Index (World Economic Forum, 2018). No studies have been performed on CFO successions with a sample exclusively from a country with a top ranking in the Global Gender Gap Index, but this will be investigated in this study.

When we rely on the insights of CEO and other top management literature when forming the empirical predictions we find that the origin of the successor, if the appointee is recruited from inside or outside the company, is one of the more frequently examined CEO succession issues (Rhim, Peluchette & Song, 2006). Lee and James (2007) highlight that origin, in addition to gender, is an important variable to consider when investigating top executive succession. This variable also commonly has an effect on the stock price movements in CEO succession literature (e.g. Furtado & Rozeff, 1987). Furthermore, boards usually face a higher performance ambiguity and social uncertainty when they evaluate outsiders (Zajac & Westphal, 1996). Since boards face a higher uncertainty when they evaluate external CEOs this might also apply to what the CEO faces when s/he appoints an external CFO. Hence, we expect investors to react different to external appointments compared to internal promotions. Therefore, this study will also examine the market reaction based on the origin of the CFO successor.

This study adds to the literature by investigating the investors' response to CFO successions, both the overall market reaction and also the market reaction based on the gender and origin of the new CFOs. We investigate the market reactions in three parts. First, we study the Cumulative Abnormal Returns (CARs) in the event window both for the entire sample and for unanticipated events (i.e. unexpected CFO successions) to gain an understanding of the overall market reaction. Second, to explore differences in investor perceptions of female versus male CFO successions, we examine the market reaction to the CFO turnover announcements split by different gender samples. Third, we study the differences in investor perceptions to internal versus external CFO successions.

Based on our findings, we can provide three main contributions to the existing literature. First, we do not find any evidence that support that investors deem CFO announcements to be value relevant, which is in line with previous CFO succession literature (Brinkhuis & Scholtens, 2018; Mian, 2001). Second, we find that investors favor female CFOs if the change is unexpected. Lastly, we do not find any evidence that the origin of the new CFO matters to investors.

This study comprises five main sections. *Section 2* introduces the theoretical framework that we will use when investigating the market reaction to CFO turnover. In addition to the theoretical framework, this section will also address our hypotheses. *Section 3* will outline the methodology used in this study, where we start with a description of our sample construction and demarcations and thereafter continue with the event study and multivariate regression methodologies. *Section 4* presents our results and analysis from the empirical tests together with an evaluation of our method and limitations to this study. We finish with our concluding remarks and suggestions for future research in *Section 5*.

2. Theoretical framework and hypotheses development

The purpose of this section is to outline relevant literature related to CFO successions. This study will examine if CFO turnover announcements contains new valuable information to investors and what impact gender and origin have. First, signaling theory by Spence (1973) is used to understand how investors react to signals from press releases related to CFO successions. Second, primarily the token status theory by Kanter (1977) is used to understand how outnumbered groups, in this context Swedish female CFOs, are characterized into stereotypes and how that affects investor reactions. Third, this study will develop the inconsistent findings and disperse results that Karaevli (2007) aimed to reconcile in his origin succession literature where we try to further understand if investors react different to internal and external CFO appointments.

2.1 Investors' reactions to CFO succession

CFOs today have more power to influence their firm's financial reporting (Geiger & North 2006). Therefore, CFO turnover might result in creative financial reporting in favor to new CFOs that makes them look better than their predecessors. Geiger and North (2006) explain one type of creative financial reporting named *big bath strategies* and that these strategies are used to manipulate the company's income statement by fabricating results to make them worse today, which enable improved results in the future. Big bath strategies mainly comprise of discretionary accruals, which are highly associated with judgment calls and fairly easy to manipulate (Geiger & North 2006). Geiger and North (2006) continue to argue that a new appointed CFO has incentives to conduct big bath strategies as these strategies are used in order for the new CFO to be perceived as better and more competent than the preceding CFO. The risk of big baths in association to a CFO change could therefore be of interest to investors, since the financial statements not necessarily give a correct view of the company's performance. While investor reactions to CEO and other top management turnover (president, chairman of the board and vice-chairman) are widely investigated, the investor reactions to CFO turnover in itself is a less studied topic. Since literature on CFO turnover is scarce, we rely on the insights of CEO and other top management literature when forming the empirical predictions.

Appointing any new CEO is connected to uncertainties (Zajac & Westphal, 1996). These uncertainties are likely to cause anxiety for those people who have a financial stake in the

company (Lee & James, 2007). One strand of previous literature finds a positive market reaction to CEO turnover. Pessarossi and Weill (2012) explain the positive market reaction with that CEO turnover signals a recommitment to the objective of profitable economic performance. Huson et al. (2004) suggest that investors interpret CEO turnover announcements as good news since they find a positive correlation between CEO turnover and a subsequent change in accounting performance measures, signaling presaging performance improvements to investors. Denis and Denis (1995) find that forced resignations of top managers (CEO, chairperson of the board and president) are preceded by valuable operating improvements and Weisbach (1988) also finds that the removal of poor CEO management increase firm value. On the other hand, there is also evidence on negative reactions, especially when the CEO is dismissed or leaves to take up another job (Dedman & Lin 2002). In addition to positive and negative stock market reactions, other studies have not found any significant reaction from CEO turnover announcements (Brinkhuis & Scholtens, 2018; Niño & Romero, 2007; Mian, 2001; Warner et al., 1988; Beatty & Zajac, 1987; Reinganum, 1985). All these, except for Brinkhuis and Scholtens (2018) and Mian (2001), is on non-CFOs. Only Brinkhuis and Scholtens (2018) study the investor response to announcements of appointments of both CEOs and CFOs while Mian (2001) studies why firms replace their CFOs and how it, among other things, affects the stock price.

In an (semi-strong) efficient market, only new, value relevant information signaled to investors affect the firm's market value (Fama, 1995, 1991, 1970; Demsetz, 1983; Jensen, 1978). If there is a signal that indicates that future values will be high, but it is not incorporated in the stock prices, competitive traders will buy on that signal. When these traders buy, they will bid the price up until it fully reflects the information in the signal to withhold an efficient market. Since the stock prices then fully reflect all available information, the only thing that can affect a firm's value is if new unexpected information is communicated (Fama, 1970). The first scholar to investigate signaling theory is Spence (1973) who argues that signals can be seen as one form of communication. When applying the signaling theory to promotions in organizations, specifically in this study to CFO successions, all new unexpected information that is being communicated to investors will immediately be interpreted as signals and consequently adjust the stock price in line with the new expectations. Another strand of literature uses signaling theory to describe behavior when two parties have access to different information (Connelly, Certo & Ireland, 2011). This information asymmetry occurs during CFO successions when

investors have limited access to information about the CFO change from what is disclosed in the press release at the announcement date compared to the information accessible for the company. The sender, in this case the company, can choose how to communicate (or signal) the news while the receiver, the investors, thereafter choose how to interpret this signal.

Applying the efficient market and signal theory to the announcement of a new CFO, this information would immediately be reflected in the stock price. If investors deem the information to be of value, the CFO announcement will result in a movement in the stock price. To conclude, there are several pieces of evidences pointing towards that CFO announcements will affect the stock price, making it an important subject to investigate and understand. As a consequence of the development of the CFO role, analysts have increased the importance of CFOs in their top management evaluation. Also, as the majority of the previous research has focused on the signaling effect from CEOs or other top management positions, the signaling effect in the announcement of the CFO in itself is a topic given little attention and earlier research. Previous literature find significant market reactions to CEO successions and even though neither Brinkhuis and Scholtens (2018) nor Mian (2001) find any significant stock price reaction to CFO turnover announcements, we expect that CFO announcements today are of interest to investors since the CFO role grows continually in importance. Therefore, we expect investors to react to these news. Thus, the first hypothesis to be tested in this study is;

Hypothesis 1; CFO turnover announcements contain new valuable information to investors

2.2 Variables affecting CFO successions

Previous research in top management succession has primarily focused on variables such as company size (Bonnier & Bruner, 1989), profitability (Mian, 2001) or reason for successions (Dedman & Lin, 2002) in order to explain and understand investors' response to successions. However, Lee and James (2007) and Brinkhuis and Scholtens (2018) highlight gender as another vital factor to investigate in order to understand investor reactions. There is a scarce of previous literature within this area, which is explained by that some women only recently managed to break through the glass ceiling (Ryan & Haslam, 2005). Therefore, since woman are nowadays achieving more high-profile positions (Ryan & Haslam, 2005), it is possible to further explore investors' reactions to CFO successions in the context of gender. However, Lee and James (2007) explain that social demographics such as gender will not be able to fully

explain investors' response to top management succession and it therefore needs to be complemented by other explanatory variables. Therefore, this study will also focus on the origin of the new CFO as suggested by e.g. Furtado and Rozeff (1987).

2.3 Investors' responses to female top position appointments

Previous literature on stock market performance in the context of gender has primarily focused on boards and other top management than on CFOs (Brinkhuis & Scholtens, 2018). Post and Byron (2015) find a small, positive reaction from investors when a female is appointed to the board. The relationship is argued to be stronger in countries with high gender parity and negative in countries with low gender parity (Post & Byron, 2015). Campbell and Vera (2010) provide another study where female board appointment is appreciated by investors arguing that it will increase the firm's competitive advantage. On the other hand, Ahern and Dittmar (2012) find a negative stock market reaction when they investigated the effect from Norway's announcement of a mandatory increase in female board representation among its listed firms. Lee and James (2007) also show a negative response from the investors when a female CEO is announced as the successor. Lastly, Brinkhuis and Scholtens (2018) did not find any statistical differences between how the investors react to announcements of female CFO appointments compared to announcements of male CFO appointments. However, it is possible to outline different triggers that help to explain the different results of positive and negative market reactions to top succession literature in the context of gender, and these are further presented below.

2.3.1 Triggers for negative reactions

Despite that females appear more commonly in the CFO position today, the distribution is far from equal between the genders. A skewed distribution with females in minority among the top management has provoked each announcement of female appointments a greater deal of attention (Lee & James, 2007). The token status theory, presented by Kanter (1977), can be used as an explanation for the increased attention and investors' negative response to females in top management positions (Lee & James, 2007). Kanter (1977) concludes that the token theory applies to groups where one part is proportionally outnumbered compared to the majority group in terms of e.g. gender, ethnicity or origin. Kanter (1977) argues that members in outnumbered groups are often characterized into stereotypes, rather than viewed as individuals. Lee and James (2007) argue that since males occupy the majority of the top

management position, the stereotypical man is commonly seen as a strong leader. The rarity of females in top management positions further risk to reinforce the stereotype of females as less qualified for senior management positions (Lee & James, 2007) and thus trigger negative reactions from the investors when a female CFO is appointed. However, when women are no longer outnumbered in leadership positions they will not be seen as anomalies anymore since they then start to blend in to their male counterparts, which should result in a more androgynous leadership stereotype (Fiske & Taylor, 1991).

2.3.2 Triggers for positive reactions

The disproportional ratio of female top executives can be explained by the glass ceiling theory, originally published 1986 in the Wall Street Journal when Carol Hymowitz and Timothy Schellhardt described how females are limited by barriers when they try to climb the corporate ladder (Eagly & Carli, 2007). While women are confronted by a glass ceiling, men on the other hand are more likely to benefit from a glass elevator (Maume, 1999; Williams, 1989). Although Sweden is a more gender equal country, ranking as number 3 out of 149 countries in the Gender Gap Index (World Economic Forum, 2018), the CFO positions in Sweden are dominated by men (S&P Global Market Intelligence, 2019), which indicates that the glass ceiling is still present to some extent. One explanation is laid forward by Neckerman and Kirchenman (1991) who argue that some employees are reluctant to hire candidates that are different to themselves. Lee and James (2007) further argue that one of the reasons for the disproportionate recruitment ratio between women and men can be explained by that like-minded, in respect to gender, are more likely to trust each other and thus as the CEO is commonly a man, a male CFO is more likely to be hired. Consequently, in order for a woman to reach the CFO position, she has to overcome both the disadvantage of stereotypes and a more challenging recruitment process. Ridgeway (2001) argues that female leaders must be perceived as more competent and display a higher performance level than males as the position is stereotypically occupied by males. Thus, if the firm appoints a female CFO, investors might interpret this as a signal of a highly competent successor as she has broken through the glass ceiling - which might result in a positive stock price reaction.

Another trigger for a positive stock price reaction in connection with CFO successions could be explained by gender diversity as equality among top executives has shown to be positively correlated with higher profitability and value creation (McKinsey, 2018). The original study

performed by McKinsey in 2014, showed that companies with the best gender diversity were 15 percent more likely to achieve above average profitability, and this number has increased to 21 percent in 2017 (McKinsey, 2018). This shows that the importance of gender equal companies has increased over time, and it indicates that investors should react positively to announcements that improve gender diversity. One explanation for the increased performance is put forward by Croson and Gneezy (2009), who argue that women have other skills than men and that women are generally more risk averse and less overconfident compared to its counterparts. Given that 23 percent of the top management in Sweden comprise of females (Bloomberg, 2018), appointing a female would improve the gender diversity and hence, investor might react more positively when publicly listed companies appoint a female CFO as it contributes to gender equality among top executives.

Another strand of literature does not find any significant difference between announcing a male or a female CFO (Brinkhuis & Scholtens, 2018). Lee and James (2007) argue “as women executives becomes less unique, there will be less difference in outcome variables between the announcement of male appointments and female appointments” (p. 239). Consequently, women may no longer apply to the token theory, where the dominated group is put into stereotypes (Kanter, 1977). Furthermore, Hofstede (1980) describes Sweden as a country with feminine societies where it prevails a consensus of gender equality that is well embedded in its culture. Therefore, females’ role as tokens in leading position could be seen as less noteworthy and unique in a top ranked country in gender equality. Hence, in an egalitarian country investor might be indifferent to the gender of the new CFO.

Relying on McKinsey’s findings, that gender diversity among top executives is positively correlated with higher profitability, and also on that a female who breaks through the glass ceiling might signal high competencies, appointing a female CFO should increase the chances of a positive stock price reaction. Therefore, investors in countries with egalitarian attitudes should be more positive to female CFO announcements rather than to male CFO announcements. However, the token status theory speaks against announcements of female appointments and previous literature shows a negative stock price reaction to female CFO appointment announcements. Hence, our second hypothesis is;

Hypothesis 2; Investors react different to female CFO announcements compared to male CFO announcements

2.4 Investors' responses to external and internal appointments

Lee and James (2007) highlight gender as an important factor to investigate in order to understand investor reactions and in addition to this, they also highlight origin as a vital factor to consider. Therefore, this study continues to investigate investor reactions to external and internal CFO appointments. The origin of the CFO refers to if the appointee is recruited from inside or outside the company. A recruitment from inside the company is referred to as insider or internal, while a recruitment from outside the company is referred to as outsider or external. Previous origin-based reaction studies provide mixed evidence to investor reactions in executive successions. Therefore, Karaevli (2007) aimed to reconcile these inconsistent findings in his study where he highlights the importance to consider contextual factors that triggers investors' reactions when evaluating the performance consequences of new CEO origin.

Negative reactions from appointing an external CEO are triggered since the outsider lack firm-specific knowledge and that they are put in a significant disadvantage, compared to insiders, since they are less likely to face a competent and supportive executive team when put to office (Shen & Cannella, 2002). Bonnier and Bruner (1989) argue that appointing an outsider signals that the current state of the company is unsatisfactory and therefore a more experienced and qualified manager has to be brought to the firm. Furtado and Rozeff (1987) also find that external appointments of top management (CEO, president, chairman and vice-chairman) are greeted far less favorably by investors than internal promotions. This is explained by that promoting an outsider is associated with higher costs since it is harder and more costly to acquire information about the candidate in question compared to an insider (Furtado & Rozeff, 1987). Additional costs with external recruitments, not born by the firm from an internal promotion, are if the motivation from insiders decrease as a consequence of that they perceive their chances to achieve top management positions as lower (Lazear & Rosen, 1981) or when the outsider has to acquire firm-specific human capital in order to function effectively (Warner et al., 1988). Given all associated cost and challenges with an external hire, the outsider must involve substantial benefits to make it worth the hire (Warner et al., 1988). Supporting this, Warner et al. (1988) argue that an outsider can give several positive effects to the firm as s/he can bring in new perspectives and a more objective evaluation of the firm. Warner et al. (1988) also argue that another advantage with appointing an outsider is that an external recruitment is not committed to the firm's previous policies.

On the other hand, there are also negative reactions from promoting an internal CFO. When assuming that the CFOs that quit are more likely to be associated to disciplinary CFO removals, Mian (2001) concludes that investors react less favorable to appointments of insiders compared to outsiders. However, when appointing an insider there is also a positive signaling effect since it confirms a value of the inventory of potential top executives and that the firm has a successful investment policy in its employees (Furtado & Rozeff, 1987). Furthermore, an internal CEO promotion is more likely to face a friendly supporting cast since internal candidates seem to have a closer relation to the board of directors than an external hire (Lauterbach, Vu & Weisberg, 1999).

Evidence show both negative and positive reactions from appointing external and internal CFOs. The negative reaction occurs for external CFOs since outsiders' lack firm-specific knowledge and since it could signal that the current state of the company is unsatisfying. The negative reaction occurs for internal CFOs when the replacement is associated to disciplinary CFO removals. The positive reaction occurs for external CFOs since they can bring in new perspectives and that s/he is not committed to the firm's previous policies. The positive reaction occurs for internal CFOs since it signals that the firm has a successful investment policy in its employees and since insiders have a closer relation to the board of directors. Since CEO succession literature find evidence to that origin matters to investors, we expect that CFO successions should also trigger a response given CFOs' increased importance. Hence, the third hypothesis tested in this study is;

Hypothesis 3; Investors react different to external CFO announcements compared to internal CFO announcements

3. Methodology

This paper combines an event study with a multiple regression analysis to test the three hypotheses. First, the event study examines short term price behavior of securities around specific events (Binder, 1998), i.e. the informativeness of an event assessed by market participants. Event studies are commonly used to measure the effect of an event on firm value (MacKinlay, 1997) and are thus common in top management succession literature. Second, the multiple regression analysis is conducted to investigate what independent variables that can explain the CARs, the dependent variable.

3.1 Sample construction

The sample in this study is set to CFO changes in Swedish public companies between the years 2001-2018. A gross list of CFO related changes from CapitalIQ has been used as a base for the sample collection. In addition to this, we have manually collected CFO related press releases and CFO relevant information (such as for e.g. age, gender and CFO experience) from annual reports. This study only includes events of CFO successions from companies listed on Nasdaq Stockholm. In order to mitigate survivorship bias, we have aimed to include every CFO change between 2001-2018, regardless if the companies are still public today or not or if they have been listed during the entire observation period or not.

3.2 Demarcations

When collecting the data for all CFO changes, we record 849 observations. However, the cleaning of this data eliminates almost half of these initial observations, which leaves us with a final sample of 469 observations. The reasons behind the cleaning is outlined in *Table 1*. First, events that miss information, either in terms of CFO characteristics or in terms of company specific financial information, have been excluded from the sample. Second, observations in the sample have been tested for confounding events within the event window that might influence market expectations. All events with other announcements in the same press release as the CFO turnover, such as for example other C-suite announcements, news of acquisitions, restructurings or financial results, have been excluded from the sample. Third, all interim CFO announcements have been excluded from this study since these events may signal other expectations to the investors rather than if a permanent CFO would be appointed. Fourth, all bank and insurance companies are excluded from this sample since those companies have a

different way of operating and a different financial structure. Lastly, the companies that have not been listed during the entire estimation window have been excluded from our sample.

Table 1. Sample selection

Description	# of observations
All CFO changes 2001-2018	849
Missing company- or CFO specific information	-138
Confounding events in the event window	-121
Interim CFO changes	-74
Companies operating within bank or insurance	-33
Not listed on Nasdaq during the entire estimation window	-14
Total main sample	469

3.3 Event study methodology

The first method used in this study is the event study methodology, which examines the stock market reaction in the event of CFO changes. By calculating the Abnormal Returns (ARs) in connection to the announcement of a CFO change, we get an indication of if investors react positive, negative or not to CFO succession announcements. When comparing actual stock returns to a modelled normal return at the time of the event, the investors' perception about the CFO's future success may be tested. In this study the OMXSPI, a value-weighted index from Nasdaq Stockholm, is used to approximate the normal return. The difference between the actual stock return and the normal return then constitutes the Abnormal Return (AR). This study follows the event study methodology presented by MacKinlay (1997) where we define the event of interest, set the sample selection, define the event window, define the estimation window, estimate the AR, aggregate the ARs and lastly test if the ARs and CARs are statistically different from zero. The event of interest in this study is CFO announcements, and the sample selection is described in *Section 3.1*. The remaining of the event study methodology is presented in three main sections. First, the event day and event windows are defined. Then, an explanation on how to estimate the ARs is given and a definition is set for the estimation window. Lastly, the aggregation of the ARs (i.e. CARs) is described.

3.3.1 Definition of event day and event window

The date of the press release, when the companies announce that they will appoint a new CFO, constitutes Day 0. The announcements that have been released on non-trading days have been treated as if they were announced on the next available trading day. The event window has to be longer than the event itself in order to examine the period surrounding the event and to better

capture the value changing effect (MacKinlay, 1997). Unusual information regarding announcements are expected to take longer time to process and thus there is a need for an event window of several days after the event (Krivin, Patton, Rose, & Tabak, 2003). On the other hand, information about CFO successions can also be leaked to or anticipated by the market days before the announcement date. Therefore, applying an event window that includes days both pre and post the event is necessary to capture the entire market reaction. However, a longer event window increases the risk of other events occurring that affect the ARs. The power to detect ARs decrease as the horizon of the event study increases (Kothari & Warner, 2007). Therefore, as in line with other studies (e.g. Lee & James, 2007), our event window consists of three days (-1, 0 and +1).

3.3.2 Abnormal returns and definition of estimation window

To examine the event's impact, a measure of ARs is essential. The AR is defined as the difference between the actual and predicted stock return, as if the event would never have taken place (Konchitchki & O'Leary, 2011). This study uses the share class with the highest volume of shares per security, which is commonly the B shares. For firm i and event date t , the abnormal return is defined as:

$$AR_{it} = R_{it} - E(R_{it}|X_t) \quad (1)$$

where AR_{it} is the abnormal return, R_{it} is the actual return and $E(R_{it}|X_t)$ is the expected normal return for the time period t . X_t is the conditioning information for the normal return model.

Actual returns, R_{it} , are calculated from actual daily stock prices:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad (2)$$

where P_{it} is the closing price of security i at day t and P_{it-1} is the closing price of security i at day $t - 1$.

In contrast to the actual returns, which are based on stock prices, the normal returns have to be predicted. When predicting the normal returns, MacKinlay (1997) suggests the use of the market model. The market model is constructed to reduce variance of ARs and it is a statistical one-factor model that assumes a stable linear relation between the stock return and the market

return. The market model is used in both Brinkhuis and Scholtens' (2018) and Mian's (2001) CFO succession studies and it is the most common model used within the literature of CEO successions (e.g. Pessarossi & Weill, 2012; Lee & James 2007; Huson et al., 2004; Dedman & Lin, 2002; Denis & Denis, 1995; Warner et al., 1988;). The market model predicts normal return within the event window as follow:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (3)$$

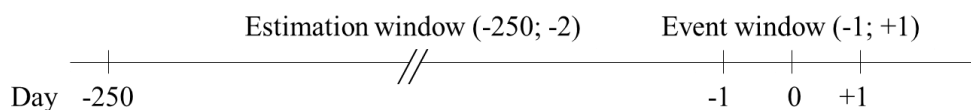
$$E(\varepsilon_{it}) = 0 \quad (4)$$

$$Var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2 \quad (5)$$

where R_{it} and R_{mt} are the period- t returns on security i and the market portfolio. ε_{it} is the zero mean disturbance term and α_i , β_i and $\sigma_{\varepsilon_i}^2$ are the parameters of the market model. α_i and β_i are estimated by Ordinary Least Square (OLS) regressions.

The event and estimation windows should not overlap with each other in order for the market model to not be affected by the event in itself. Therefore, the estimation window ends the day before the event window starts (MacKinlay, 1997). The minimum amount of trading days within the estimation window should be 120 days (MacKinlay, 1997). We apply a longer estimation window that begins 250 trading days before the event and ends two days prior to the event (-250; -2) as the baseline model in this study (similar to MacKinlay's own example). 250 trading days approximates to one calendar year and this length of the estimation window is also used in the study performed by Mian (2001). An overview of the estimation- and event windows for this study is found in *Figure 1*.

Figure 1. Overview of estimation- and event windows



A broad value-weighted stock index should be used as a proxy for the market portfolio when predicting normal returns (MacKinlay, 1997). Therefore, the OMXSPI index is used in this study since it is a value-weighted index based on all listed companies on Nasdaq Stockholm.

3.3.3 Aggregation of abnormal returns

ARs need to be calculated on an aggregated level to examine the event of interest as a final step of the event study (MacKinlay, 1997). These aggregated ARs are referred to as CARs, and it reflects how investors have valued the new information about the CFO turnover. CARs are positive if the incremental future cash flows are expected to increase after the event, and negative if the incremental future cash flows are expected to decrease after the event (Konchitchki & O'Leary, 2010). The CAR through time for each individual security is calculated as:

$$CAR_{i[t_1, t_2]} = \sum_{t=t_1}^{t=t_2} AR_{it} \quad (6)$$

where t_1 is the first day of the event window and t_2 is the last day of the event window. Lastly, we aggregate the individual securities' CARs in order to find the average CAR:

$$\overline{CAR}_{[t_1, t_2]} = \frac{1}{N_t} \sum_{i=1}^{i=N_t} CAR_{i[t_1, t_2]} \quad (7)$$

The average CARs indicate how the investors have reacted to CFO succession announcements. We use the estimated CARs in the event study to test *Hypothesis 1*. Furthermore, to test *Hypothesis 2* and *3*, CFO characteristics and firm specific factors on the CARs must be evaluated and the methodology for this is presented in the subsequent section.

3.4 Multivariate regression analysis

When continuing with the multivariate regression, we use the previously calculated CARs as the dependent variable. By using a multivariate regression, it is possible to include and control for several variables that might have an impact on the dependent variable. Thus, it allows an investigation of what factors that drives the CARs, the direction as well as the magnitude of the market reaction when the company announce a new CFO. The remaining of the multivariate regression analysis is presented in three main sections. First, the control variables that are included in the regression model are described and explained. Thereafter we define the regression model in itself. Lastly, a discussion about the robustness tests is presented.

3.4.1 Variable construction

The main goal of this study is to examine if investors react to CFO turnover announcements and how the reaction is correlated to the gender of the new CFO and to the appointed CFO's origin. Therefore, CAR is used to test *Hypothesis 1*, the independent variable *Gender* is used

to test *Hypothesis 2* and the independent variable *Origin* is used to test *Hypothesis 3*. *Gender* is coded as 1 for appointed females and 0 for appointed males. The *Origin* of the new CFO is coded as 1 if the new CFO is recruited externally to the firm and as 0 if s/he is active in the firm when the announcement is made. In addition to these focus factors of this study, it is vital to control for other variables. Previous literature often divide additional control variables into personal and firm specific factors (Lee & James, 2007; Bonier & Bruner, 1989). The personal factors are variables related to the previous or new CFO, such as reason for appointment, previous CFO experience and age of the appointed CFO. On the other hand, firm specific factors focus on firm characteristics such as company size and company performance. Firm specific factors are factors that the new CFO cannot influence at the time of appointment.

Similar to Lee and James' (2007) study, the personal factors controlled for in this study are *Reason for appointment*, previous *CFO experience* and *CFO age*. *Reason for appointment* is coded as 1 if the CFO turnover is unanticipated (related to unusual circumstances such as forced CFO resignation, personal reasons or health issues) and as 0 if the CFO turnover is anticipated (related to natural successions, retirements, replacement of temporary CFO or vacant positions). Reason for appointment is a common control variable used by several scholars (e.g. Dedman & Lin, 2002; Denis & Denis, 1995; Warner et al., 1988) since it is expected that investors react stronger to unusual (unanticipated) successions compared to natural (anticipated) successions when assuming that the (semi-strong) efficient market holds. Therefore, we will perform regressions both on the full sample and also on subsamples where we split the full sample into anticipated and unanticipated events. *CFO experience* is coded as 1 if the new CFO has previous CFO experience and as 0 if s/he does not have any previous CFO experience. *CFO age* refers to the new CFO's age, in number of years, at the time of the appointment announcement. Continuing with the firm specific factors, we first include the control variable *Size*, which Reinganum (1985) and Warner et al. (1998) highlight as another important control variable that might have an explanatory effect on the CARs. In line with practice, the *Size* of the company is estimated by the natural logarithm of total assets in each company (Elsaid, Wand & Davidson, 2011; Lee & James, 2007). Secondly, the companies' previous accounting *Performance* is used as a firm specific control variable using each company's Return On Assets (ROA). ROA is calculated by the Last Twelve Months' (LTM) operating income divided by the total assets 24 months prior. A summary of all variables and explanations are presented in *Table 2*.

Table 2. Variable description

Variables	Code
Gender	Dummy, 1 if female and 0 if male
Origin	Dummy, 1 if external appointment and 0 if internal promotion
Reason for appointment	Dummy, 1 if unanticipated and 0 if anticipated CFO succession
CFO experience	Dummy, 1 if the succeeding CFO has CFO experience and 0 if not
CFO age	The age of the new CFO at the announcement date
Size	The natural logarithm of total assets the quarter pre succession
Performance	ROA, calculated as LTM operating income divided by the total assets 24 months prior

3.4.2 Model definition

The baseline model for the regression in this study includes all independent control variables explained above in *Table 2*. Thus, the relationship between the CARs and the independent control variables is presented:

$$CAR(t_1, t_2) = \alpha + \beta_1 Gender + \beta_2 Origin + \beta_3 Reason\ for\ appointment + \beta_4 CFO\ experience + \beta_5 CFO\ age + \beta_6 Size + \beta_7 Performance + \varepsilon \quad (8)$$

where α is the constant, β is the coefficient for each independent variable and ε is the error term. This study uses OLS regressions with multiple explanatory variables when investigating the impact of *Gender* and *Origin* in CFO succession announcements.

3.4.3 Robustness

To increase the validity of the results, this section presents several robustness tests to our study. In order for the OLS regression model to be the best unbiased estimator, the following assumptions must hold; i) a linear relationship between the dependent and independent variables, ii) a random sample from the population, iii) there are no perfectly correlated or constant independent variables (i.e. not affected by multicollinearity), iv) there are no omitted variables in the model and v) the variance of error terms is constant (i.e. not affected by heteroscedasticity) and that the error terms have a conditional mean of zero (i.e. exogeneity) (Wahlin, 2011; Lewis, Saunders & Thornhill, 2012). If one or more of the assumptions are violated, the model and coefficients could be biased. Therefore, we conduct tests to ensure that all assumptions hold in our model. The assumption about a linear relationship between the dependent and independent variables holds. The potential issue of heteroscedasticity invalidating the significance in the regression models is prevented by including robust standard errors in the OLS regression. Additional tests are required to test for multicollinearity.

If multicollinearity exists, it implies that several of the independent variables are highly correlated with each other. This means that one (or more) of the independent variable(s) can explain the variation of the other independent variables in the regression model. While the predictive power of the regression models is not affected by multicollinearity, the validity of the estimated coefficients is affected. Therefore, the effect from each independent variable on the dependent variable becomes tougher to isolate in the event of multicollinearity. Similar to other studies (e.g. Lee & James, 2007), multicollinearity are tested in two steps. First, the Pearson correlation is calculated in order to establish the correlation between the independent variables. Second, a Variance Inflation Factor (VIF) test is performed to test the independent variables for multicollinearity issues.

In addition to the above mentioned five criteria for the OLS regression, other parameters and tests are evaluated and performed to ensure the validity of our results. First, Brinkhuis and Scholtens (2018) suggest that in addition to the parametric test, also a non-parametric test should be used to determine the significance when performing an event study. For the non-parametric test, Mackinlay (1997) suggests that a sign test is appropriate. Therefore, we also perform the commonly used Wilcoxon signed rank test to determine the significance of the ARs and CARs. Second, several scholars have used different performance measure for the *Performance* variable. For instance, Lee and James (2007) use net income divided by sales as their performance measurement. Therefore, alternative performance variables such as net income divided by sales, net income divided by the opening balance of equity (ROE) or the change in ROA from previous year are used. However, it shall be noticed that several scholars have presented results within top management succession where accounting measurements have small or zero explanatory effect on the result (Lee & James, 2007) and that these measurements can be twisted by big bath strategies as argued by Geiger and North (2006). Another parameter that also allows for additional measures is the *Size* variable. This study will therefore also include total equity and sales in addition to total asset as a proxy for the variable *Size*. Lastly, since the CAR has continuous outcomes, it is essential to understand the distribution of the sample as well as to control for extreme values as they otherwise can distort the result. A common method to increase the robustness is to winsorize the data (Ghosh & Vogt, 2012), which is performed as an additional test in this study. Winsorization implies that extreme values give less weight and consequently it decreases the risk of that outliers distort the result.

4. Results

This study investigates if CFO turnover announcements contain new valuable information to investors and how *Gender* and *Origin* of the new CFO affects investors' reactions. The results are presented in three sections. The first section is a presentation of the descriptive statistics and the results from the event study. The second section is a presentation of the results from the multivariate regressions followed by the third section that includes a discussion about our findings.

4.1 Descriptive statistics

Following, the descriptive statistics will be presented in four subsections. The first one presents statistics on the control variables used in this study. The second one provides sample characteristics split by *Gender*, *Origin* and a combination of the two as well as by CFO announcements over time and firm characteristics. The third one presents the results from our correlation tests, Pearson and VIF. Lastly, the fourth section presents statistics on the CARs used in this study.

4.1.1 Control variables

Table 3 summarizes the descriptive statistics for the independent control variables *Origin*, *Reason for appointment*, *CFO experience*, *CFO age*, *Size* and *Performance* in relation to *Gender*. As seen in the table, female and male appointee characteristics differ. A female CFO is not as commonly appointed externally as a male CFO (70% vs. 77%). Female CFOs are also less commonly appointed in unanticipated CFO changes (16% vs. 21%). Female CFOs usually have less CFO experience than male CFOs (49% vs. 60%). The age between the genders do not differ, and regardless of if it is a female or a male CFO appointee, s/he is approximately 44 years old at the announcement date. Also, the company size does not differ noteworthy between females and males (7.5 vs. 7.9). And lastly, females are more commonly appointed as CFOs in companies with a stronger historical accounting performance (7.4% vs. 4.2%).

Table 3. Descriptive statistics split by *Gender*

	Female CFO		Male CFO		Total	
	N = 103		N = 366		N = 469	
	Mean	SD	Mean	SD	Mean	SD
Origin	0.70	0.46	0.77	0.42	0.75	0.43
Reason for appointment	0.16	0.36	0.21	0.41	0.20	0.40
CFO experience	0.49	0.50	0.60	0.49	0.57	0.50
CFO age	44	5.8	45	6.5	44	6.4
Size	7.5	2.0	7.9	2.1	7.8	2.0
Performance	7.4%	17.8%	4.2%	16.7%	4.9%	16.9%

Table 3 includes three dummy variables that each take the value of 1 if i) the CFO is recruited externally (*Origin*), ii) the CFO succession is an unanticipated event (*Reason for appointment*), iii) the CFO has previous CFO experience (*CFO experience*). *CFO age* is the average age of the appointed CFO at announcement. *Size* displays the natural logarithm of the companies' average total assets. *Performance* refers to the average ROA.

Table 4 summarizes the descriptive statistics for the independent control variables *Gender*, *Reason for appointment*, *CFO experience*, *CFO age*, *Size* and *Performance* in relation to *Origin*. As seen in the table, internal and external appointee characteristics differ. Female CFOs are more commonly appointed internally than externally (26% vs. 20%). *Reason for appointment* does not differ materially between internal and external appointments. As expected, external CFOs have more CFO experience than internal CFOs (72% vs. 12%). The age between external and internal CFOs do not differ materially, but internally promoted CFOs are somewhat younger than externally hired CFOs (42 vs. 45 years old). Internally promoted CFOs are more commonly appointed in larger firms than external CFOs (8.4 vs. 7.6). And lastly, internal CFOs are more commonly appointed in companies with a stronger historical accounting performance (5.5% vs. 4.7%).

Table 4. Descriptive statistics split by *Origin*

	Internal CFO		External CFO		Total	
	N = 117		N = 352		N = 469	
	Mean	SD	Mean	SD	Mean	SD
Gender	0.26	0.44	0.20	0.40	0.22	0.41
Reason for appointment	0.21	0.41	0.20	0.40	0.20	0.40
CFO experience	0.12	0.33	0.72	0.45	0.57	0.50
CFO age	42	6.4	45	6.2	44	6.4
Size	8.4	2.3	7.6	1.9	7.8	2.0
Performance	5.5%	12.1%	4.7%	18.3%	4.9%	16.9%

Table 4 includes three dummy variables that each take the value of 1 if i) the appointed CFO is a female (*Gender*), ii) the CFO succession is an unanticipated event (*Reason for appointment*), iii) the CFO has previous CFO experience (*CFO experience*). *CFO age* is the average age of the appointed CFO at announcement. *Size* displays the natural logarithm of the companies' average total assets. *Performance* refers to the average ROA.

4.1.2 Sample characteristics

As presented in *Table 5*, male appointments dominate the sample. The most common CFO succession is when a male is replaced by another male (64%). A female is appointed in 22% of the total CFO succession events. Split by origin, the most common appointee is when an external man replaces a male CFO (49%).

Table 5. CFO changes split by *Gender* and *Origin*

	N	% of total	Internal	% of total	External	% of total
Male to male	300	64%	69	15%	231	49%
Male to female	78	17%	22	5%	56	12%
Female to male	66	14%	17	4%	49	10%
Female to female	25	5%	9	2%	16	3%
Total appointments	469	100%	117	25%	352	75%

The frequency of CFO succession events has increased over time, where 11% of the total sample is from year 2018 and only 3% is from the first year (2001). The increased frequency of CFO turnover nowadays could be explained by information availability, i.e. that it is easier to access more recent data and consequently more challenging to collect data points further back in time. As an example, the delisted firms are more challenging to find information about. Furthermore, the financial crisis in 2007 and 2008 is visible in our sample where we can see a slightly higher CFO turnover these years compared to the surrounding years. In addition to this we also see that the number of female CFOs has more than doubled over our time horizon, from less than 10% in the beginning of the time horizon to more than 20% at the end of the time horizon (*Table 6*).

Table 6. CFO announcements over time

Year	Cumulative females		Cumulative males		Total	
	N	%*	N	%*	N	% of total
2001	1	8%	11	92%	12	3%
2002	1	4%	25	96%	14	3%
2003	4	10%	37	90%	15	3%
2004	6	9%	58	91%	23	5%
2005	11	13%	74	87%	21	4%
2006	15	14%	95	86%	25	5%
2007	22	16%	119	84%	31	7%
2008	28	16%	151	84%	38	8%
2009	32	16%	172	84%	25	5%
2010	37	17%	187	83%	20	4%
2011	54	21%	202	79%	32	7%
2012	59	21%	222	79%	25	5%
2013	62	20%	243	80%	24	5%
2014	65	20%	261	80%	21	4%
2015	72	20%	282	80%	28	6%
2016	80	21%	304	79%	30	6%
2017	89	21%	329	79%	34	7%
2018	103	22%	366	78%	51	11%
Total	103	22%	366	78%	469	100%

* Calculated as cumulative number of female (male) CFO changes in relation to cumulative total changes.

The firm characteristics in our sample is presented in *Table 7*. Since the mean size of the companies is substantially larger than the median size of the firms, it is evident that there are a few firms that are substantially larger than others. *Table 8* presents an overview of the 11 industries included in our sample, as categorized by CapitalIQ.

Table 7. Firm characteristics

SEKm	Mean	Median	SD
Total assets	20,371	1,970	60,245
Total equity	8,325	986	24,969
Market value	17,555	1,536	60,204
Enterprise value	21,003	1,821	67,294
EBIT	1,551	85	5,609
Net income	1,083	48	4,430

Table 8. CFO announcements by industry

	Total	
	N	% of total
Industrials	106	23%
Information technology	101	22%
Consumer discretionary	66	14%
Health care	64	14%
Communication services	33	7%
Materials	31	7%
Financials	27	6%
Real estate	24	5%
Consumer staples	9	2%
Energy	6	1%
Utilities	2	0%
Total	469	100%

4.1.3 Test for correlation

As previously discussed in *Section 3.4.3*, we have to test the correlation between the independent variables as multicollinearity can invalidate the results from statistical tests. If multicollinearity exists it would imply that the contribution from each variable cannot be distinguished (Farrar & Glauber, 1967).

The results from the Pearson's correlation test (*Table 9*) indicate that the correlation between the variables is small since the majority of the variables display a correlation statistic below $|0.1|$. However, there are a few exceptions. The correlation between *Origin* and *CFO experience* is the strongest one (0.53), indicating that an external CFO is more likely to have previous CFO experience than an internally promoted CFO. This is expected, since it is more likely that external CFOs arrive from previous CFO positions in other firms. Another relatively high correlation is noticed between *CFO age* and *CFO experience* (0.27), which is also not surprising considering that it is more likely that older CFOs have more CFO experience.

Table 9. Pearson correlation matrix

	Gender	Origin	Reason for appointment	CFO experience	CFO age	Size	Performance
Gender	1.0000						
Origin	-0.0631	1.0000					
Reason for appointment	-0.0597	-0.0191	1.0000				
CFO experience	-0.0922 **	0.5263 ***	0.0569	1.0000			
CFO age	-0.0449	0.2076 ***	0.0316	0.2715 ***	1.0000		
Size	-0.0623	-0.1751 ***	-0.0457	-0.0219	0.2146 ***	1.0000	
Performance	0.0771 *	-0.0210	-0.0268	-0.0001	0.0112	0.2347 ***	1.0000

*** p<0.01, ** p<0.05, * p<0.1

Table 9 displays the correlation between the variables and takes on values between -1 till +1. -1 indicates perfect negative correlation, 0 indicates a lack of correlation, and +1 indicates perfect positive correlation.

Since the Pearson correlation results reveal mixed results, with mostly low correlations but also with a few indications of stronger correlations for some of our control variables, we also present the results from the VIF test to conclude that our model does not suffer from multicollinearity. The VIF values in *Table 10* represents how much the variance of each coefficient estimate is influenced by multicollinearity. The lowest possible outcome from a VIF test is one, which implies that there is no multicollinearity between the variables. Benchmarks for how large the VIF value should be differs between scholars (VIF<10 - Wooldridge, 2012 and VIF<4 -

O'brien, 2007). Since our VIF values are all far below the more conservative benchmark level of four, we can conclude that our tests will not suffer from multicollinearity.

Table 10. Variance Inflation Factors

	VIF
Gender	1.03
Origin	1.47
Reason for appointment	1.01
CFO experience	1.45
CFO age	1.16
Size	1.19
Performance	1.07
Mean VIF	1.20

4.1.4 CAR characteristics and results

Hypothesis 1 tests if CFO turnover announcements contain new valuable information to investors. If yes, it should be possible to distinguish a CAR in connection to the announcement. The distribution of the CARs follows a normal distribution.

In order to test *Hypothesis 1*, both ARs and CARs for the entire sample as well as the subsample of unanticipated events is analyzed. As presented in *Table 11*, both samples display the same pattern with a positive sign for Average Abnormal Returns (AARs) on the day before the announcement day (-1) and negative signs on the announcement day and the day after (0 & +1). However, the results are only significant in the full sample on the day after the announcement (+1) and in the unanticipated subsample at the day before the announcement (-1). An additional test is performed through the Wilcoxon signed rank test as presented in *Table 11*. The statistics imply a significant effect on the announcement day and the day after (0 & +1) for the full sample. However, the subsample of only unanticipated events show insignificant AARs. Furthermore, the Cumulative Average Abnormal Returns (CAARs) are negative for the full sample and positive for the unanticipated subsample. However, both CAARs are insignificant. To conclude, the tests provide mixed results and we cannot find evidence that support our *Hypothesis 1*. As a consequence, we cannot conclude that investors deem CFO announcement to be of any equity value. However, this does not imply that there is an absence of information or that the CFO announcement does not matter as different CFO or firm characteristics could have an impact on investors' reactions. This study will therefore continue with multivariate regressions in order to further understand the market reactions to CFO announcements.

Table 11. Average Abnormal Returns (AARs), Cumulative Average Abnormal Returns (CAARs) and Wilcoxon test

Day	All observations N = 469			Unanticipated events N = 94		
	AAR	p-value	Wilcoxon (p-value)	AAR	p-value	Wilcoxon (p-value)
-1	0.001249	0.279	0.779	0.004928*	0.097	0.790
0	-0.001412	0.382	0.074*	-0.001311	0.585	0.565
1	-0.002183*	0.079	0.046**	-0.000110	0.966	0.941
CAAR	-0.002345	0.316	0.937	0.003506	0.410	0.607

*** p<0.01, ** p<0.05, * p<0.1

4.2 Multivariate regressions

This section presents the results from the multivariate regressions (*Table 12* and *Table 13*). Model 1-7 are used to test *Hypothesis 2*. Model 1-3 and 6-7 are used to test *Hypothesis 3*. The control variable *Reason for appointment* is naturally omitted in Model 2-3 since it is already taken into account when focusing on the subsamples anticipated and unanticipated events.

4.2.1 The baseline regression model

Hypothesis 2, that investors react different to female CFO announcements compared to male CFO announcements, is tested in Model 1-7. Model 1 includes the entire sample. Model 2 and 3 include the subsamples of anticipated and unanticipated events. Model 4 includes the subsample of a former male CFO to a new male CFO (M→M) and a former male CFO to a new female CFO (M→F). Model 5 includes the subsample of a former male CFO to a new male CFO (M→M), a former male CFO to a new female CFO (M→F) and a former female CFO to a new female CFO (F→F). Model 6 and 7 include the subsamples of the 30% largest and 30% smallest companies respectively. In Model 3, when we only include unanticipated events, we get a significant positive coefficient for *Gender* at a 10% significance level¹. Since the *Gender* variable takes the value of 1 in the event of female appointees, this indicates that investors favor announcements of female appointments if the CFO change is unexpected. In addition to this we can also conclude that the *Performance* coefficient is positive and significant at a 5% significance level in Model 1, 2, 4, 5 and 7. This indicates that investors react positively to CFO successions in firms with higher ROA. Model 5 and 7 show positive coefficients for *Reason for appointment* (i.e. to unanticipated events) at a 10% and 5% significance level

¹ In the unanticipated subsample, the variable *Gender* remains positive and significant at 10% when using the different proxies for the variables *Performance* and *Size* as suggested in *Section 3.4.3, robustness*.

respectively. This indicates that investors react positively to unanticipated CFO successions. Going back to Model 3, the announcement of a female CFO will result in an increased average CAR of 1.66% compared to a male CFO announcement. Thus, gender has a positive effect on CARs, implying that the market reacts positively to unexpected announcements of female CFOs. This result provides support for *Hypothesis 2*.

Table 12. Regression models 1-3

VARIABLES	Model 1	Model 2	Model 3
Gender	0.000154 (0.00490)	-0.00258 (0.00546)	0.0166* (0.00985)
Origin	-0.00669 (0.00622)	-0.00548 (0.00681)	-0.00606 (0.0122)
Reason for appointment	0.00808 (0.00526)		
CFO experience	0.00395 (0.00540)	0.00404 (0.00600)	-0.00330 (0.00923)
CFO age	-0.000392 (0.000350)	-0.000634 (0.000406)	0.00102* (0.000585)
Size	0.00170 (0.00136)	0.00301** (0.00153)	-0.00397 (0.00255)
Performance	0.0508** (0.0243)	0.0663** (0.0269)	-0.0178 (0.0249)
Constant	0.000487 (0.0150)	-0.000182 (0.0173)	-0.00787 (0.0288)
Observations	469	375	94
R-squared	0.048	0.077	0.080
Sample:	All observations	Anticipated events	Unanticipated events

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Model 1-3, 6 and 7 are all used to investigate if investors react different to external CFO appointments compared to internal CFO appointments. Since it is established that there are a few firms that are substantially larger than the rest of the firms in our sample, we have performed regressions on the subsamples of the largest and smallest 30% of the firms in Model 6 and 7 respectively. The largest 30% corresponds to total assets of at least SEK 6.0bn while the smallest 30% corresponds to total assets of less than SEK 0.6bn. According to Furtado and Rozeff (1987), external hiring grows in importance as the size of the firm declines. However, we do not find any significant results for the correlation between smaller firms and *Origin* and neither any correlation between larger firms and *Origin*. We also test if the subsamples of anticipated and unanticipated CFO successions (Model 2 and 3 respectively) generate any significant results regarding origin's importance in CFO successions. Model 2 results in a

positive significant coefficient for *Size* at a 5% significance level. This indicates that investors react positive to CFO successions in larger firms if the event is anticipated. Since we do not find any significant results of that *Origin* matters in CFO succession events, we do not find any evidence of that the origin matters². Consequently, we do not know if external and internal appointments differ as suggested by *Hypothesis 3*.

Table 13. Regression models 4-7

VARIABLES	Model 4	Model 5	Model 6	Model 7
Gender	0.00502 (0.00575)	0.00189 (0.00513)	0.00428 (0.00616)	-0.00713 (0.0100)
Origin	-0.00848 (0.00721)	-0.00873 (0.00673)	-0.00454 (0.00643)	-0.0134 (0.0123)
Reason for appointment	0.00914 (0.00598)	0.0107* (0.00569)	-0.00923 (0.00751)	0.0291** (0.0122)
CFO experience	0.00627 (0.00623)	0.00605 (0.00595)	-0.00470 (0.00593)	0.000104 (0.0115)
CFO age	-0.000138 (0.000407)	-9.29e-05 (0.000390)	0.000435 (0.000475)	-0.000660 (0.000699)
Size	0.000887 (0.00160)	0.00111 (0.00149)	-0.00330 (0.00288)	0.0161 (0.0103)
Performance	0.0655** (0.0280)	0.0594** (0.0264)	-0.145 (0.107)	0.0664** (0.0307)
Constant	-0.00707 (0.0168)	-0.0106 (0.0164)	0.0338 (0.0282)	-0.0645 (0.0548)
Observations	378	403	140	140
R-squared	0.061	0.058	0.084	0.164
Sample:	M→M M→F	M→M M→F F→F	The 30% largest companies	The 30% smallest companies

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Investors' response to the origin is commonly examined in connection to CEOs succession or when managers quit (e.g. Lee & James, 2007; Shen & Cannella, 2002). Nevertheless, the origin of the new CFO in the context of gender has been foreseen and it calls for further investigation. Hence, this study will also continue on Lee and James' (2007) research on investor reactions to CEO successions where it examines if there is any correlation between how investors react to CFO successions when combining *Gender* and *Origin* of the succeeding CFO.

² The variable *Origin* remains insignificant when using the different proxies for the variables *Performance* and *Size* as suggested in Section 3.4.3, robustness.

4.2.2 Additional analysis

Since we find results that provide support for *Hypothesis 2*, we also investigate if *Origin* and *Gender* in combination has an effect on investors (a combination of *Hypothesis 2* and 3). To solely divide CEO successors into outsiders and insiders is to neglect important characteristics and differences among insider successors (Shen & Cannella, 2002). Therefore, instead of to dichotomize the origin of the CFO only into the two classifications of outsiders and insiders, we will also investigate if the origin is dependent on the gender of the appointed CFO. Consequently, Model 8-10 are not related to a specific hypothesis. Instead, it builds on both *Hypothesis 2* and *Hypothesis 3*.

Female executives (CEOs and CFOs) are significantly more likely to be appointed as insiders while male executives are more likely to be appointed as outsiders (Huang & Kisgen, 2013). This is explained by that internal executives have a better chance to demonstrate their qualities more efficiently than external candidates (Huang & Kisgen, 2013). The internal advantage generates an opportunity for women to shatter the glass ceiling easier. When Lee and James (2007) study the potential correlation between gender and origin, they also find that an internally promoted female CEO is received relatively more positively compared to an external. This relatively more positive effect from an internally appointed female CEO is explained by that the insider signals firm-specific knowledge and in-house experience to lead the organization (Lee & James, 2007).

The choice of appointing a woman could be interpreted as a signal of change since Lee and James (2007) argue that a female hire can be seen as an outsider as male CEOs are still more common. A company is more likely to hire an outsider if the company wants to initiate and signal a change (Denis & Denis, 1995). In bad times, the signal of change is generally positively received by the shareholders (Huson et al., 2004). However, since there are perceptual biases against female leaders, we expect an advantage for internal female promotions in contrast to external female appointments of CFOs. The advantage is given to the insider since its position provides an opportunity to communicate additional information about the female CFOs competencies and qualifications. Therefore, we introduce an interactive variable that combines gender and origin in our tests. This variable is named *Internal woman* and it takes the value of 1 if it is an internal woman who is being promoted to CFO.

However, when running the regressions in Model 8-10 we do not find any significant results on the interactive variable *Internal woman* (Table 14). Therefore, we cannot state whether investors value *Origin* in combination with *Gender* or not, which contradicts with Lee and James' (2007) findings. A potential explanation to the contradicting results could be the relatively larger sample of female insiders in our study compared to Lee and James' (2007) study (31 vs. 12). In addition to this split it is also interesting to divide this subsample further into anticipated and unanticipated events, since investors are expected to primarily react to unanticipated events. However, when we run these regressions our sample is based on only 6 observations for *unanticipated internal women* CFO appointment announcements and it is too small to draw any robust conclusions from. Therefore, we would need a larger sample in order to elaborate further on this combined hypothesis. As of now, we do not find any evidence that supports that the combination of gender and origin matters to investors.

Table 14. Regression models 8-10

VARIABLES	Model 8	Model 9	Model 10
Gender	-0.00465 (0.00495)	-0.00799 (0.00552)	0.0167 (0.0118)
Origin	-0.00318 (0.00713)	7.85e-05 (0.00772)	-0.00607 (0.0143)
CFO experience	0.00405 (0.00547)	0.00351 (0.00604)	-0.00330 (0.00942)
CFO age	-0.000402 (0.000354)	-0.000660 (0.000408)	0.00102* (0.000587)
Size	0.00165 (0.00137)	0.00313** (0.00155)	-0.00397 (0.00259)
Performance	0.0508** (0.0245)	0.0669** (0.0269)	-0.0178 (0.0250)
Internal woman	0.0151 (0.0125)	0.0197 (0.0141)	-3.70e-05 (0.0230)
Constant	0.000291 (0.0150)	-0.00398 (0.0173)	-0.00787 (0.0290)
Observations	469	375	94
R-squared	0.047	0.082	0.080
Sample:	All observations	Anticipated events	Unanticipated events

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.3 Discussion

In this section we discuss and analyze our results by connecting the findings with previous literature and empirics. We also discuss the validity and reliability of our results in the light of what methodologies we have used. Lastly, we present the limitations of our study.

4.3.1 Evaluation of results

This study investigates investors' reactions to CFO successions and what impact it has on the equity value of firms. The results are discussed in three paragraphs, one for each hypothesis. *Table 15* provides an overview of the hypotheses and results.

Table 15. Overview of hypotheses

H1 CFO turnover announcements contain new valuable information to investors	Not supported
H2 Investors react different to female CFO announcements compared to male CFO announcements	Partially supported
H3 Investors react different to external CFO announcements compared to internal CFO announcements	Not supported

Hypothesis 1

Assuming that the supposition about an (semi-strong) efficient market holds – only new, value relevant information signaled to investors affect the firm's market value (Fama 1995, 1991, 1970; Demsetz, 1983; Jensen, 1978). Consequently, if there are no significant stock price movements as a result of a CFO succession announcement, it would indicate that CFO successions are irrelevant to investors in their valuation of public companies. We find that the overall reaction to CFO successions is insignificant, which is also in line with what Brinkhuis and Scholtens (2018) as well as with what Mian (2001) find. This could be explained by that investors do not react to anticipated CFO succession announcements since investors might already have incorporated that there will be a new CFO. Therefore, we split the full sample into a subsample that only includes unanticipated CFO successions in order to increase the probability to find significant CARs. However, when we exclusively study the unanticipated subsample, we still do not find any significant results on the CARs. Since it is expected that investors only react to new value relevant information, and we know that the unanticipated CFO succession announcements are new information to investors, we instead have to question if the investors deem CFO announcement information to be value relevant.

We and other scholars (e.g. Favaro (2011) and Zorn (2004)) have argued that the CFO role has increased in importance. However, our results indicate that the importance of the CFO role has

not increased enough to affect investor reactions. Despite that several scholars (e.g. Pessarossi & Weill, 2012; Huson et al., 2004; Dedman & Lin 2002) have found significant results on CARs in CEO succession literature, we and other scholars that study the market reaction to CFO successions (Brinkhuis & Scholtens, 2018; Mian, 2001) do not manage to find any significant market reactions. Hence, the distance between the CEO and the CFO might still be too large for investors to pay any attention to CFO successions.

Hypothesis 2

Hypothesis 2 test if gender has a signaling value to investors and if there is any difference in stock market reactions between female and male CFO successions. Similar to *Hypothesis 1*, we do not find any significant results in the full sample. We also test the anticipated subsample, which does not yield any significant results. This is not surprisingly since investors might already have priced in their reaction from anticipated CFO announcements since we assume a (semi-strong) efficient market. However, we find that *Gender* has a positive, significant effect on CARs in the unanticipated subsample, which implies that the market reacts positively to the announcement of a female CFO when the succession is unexpected. This contradicts to previous literature who find that shareholders respond more negatively to the announcement of a female CEO appointment compared to a male CEO appointment (Lee & James, 2007). The negative result found by Lee and James (2007) is explained by that the low representation of women in top management positions have reinforced the stereotype that female leaders are less qualified than male leaders. However, Lee and James (2007) also argue that as the proportion between female and male leaders become more balanced, women in top management positions may no longer be seen as anomalies. When female leaders are no longer seen as anomalies they will instead start to blend into the background with their male counterparts (Fiske & Taylor, 1991) and consequently top management should become more unisexual.

What Lee and James (2007) anticipated corresponds to the findings of Brinkhuis and Scholtens (2018) who do not find any statistically significant difference between female and male CEO/CFO announcements. Hence, this indicates that there has been an increasing number of female CEO and CFO announcements, which is also confirmed in our sample presented in *Table 6*. As suggested by the token status theory, female CFOs should therefore no longer garner the negative reaction that Lee and James (2007) found in their CEO study. In addition to that female top management does not seem to be as rare anymore to affect investors, the

insignificant results presented by Brinkhuis and Scholtens (2018) might be explained by that their study is based on an international sample while Lee and James (2007) base their study on observations from the United States. Brinkhuis and Scholtens (2018) conclude that there is some international heterogeneity regarding the response to female appointment announcements, but they could not find significant results based on any relevant subsamples. Therefore, this study further adds to the international heterogeneity found by Brinkhuis and Scholtens (2018) when we investigate the investor reactions in a country with a top ranking in the Global Gender Gap Index.

At the end of 2018, the ratio between female and male CFOs in Swedish listed companies on Nasdaq Stockholm was far from an equal split between female and male CFOs (~25/75)³ despite its top ranking in the Global Gender Gap Index. This proves that countries with a top ranking in the Global Gender Gap Index are only relatively gender equal. With a minority of female CFOs in a country with a top ranking, our findings indicate that egalitarian investors favor CFO successors that contributes to a more equal distribution between the genders. Hence, our result indicate that female CFOs are preferred by investors in Sweden.

We argue that there are three main explanations for the significant positive market reaction for female CFO announcements. First, the top ranking in the Global Gender Gap Index indicates that Sweden is characterized by an egalitarian culture and that investors' attitudes should therefore favor diversity in top management positions. According to Hofstede (1980), Sweden is described as a country with feminine societies and hence egalitarian investors might interpret the signal of appointing a female CFO as a step towards the desired gender diversity and equality. Second, another explanation to our finding is that investors are expected to react positively to gender diversity as they expect higher profitability and value creation in gender diversified companies as suggested by the study performed by McKinsey (2018). Third, in line with what Ridgeway (2001) argues, women need to be perceived as more competent and display a higher performance level than males in order to reach a top position. Thus, the third explanation to our finding of a positive market reaction when appointing a female CFO is that investors seem to interpret this as a signal of a highly competent successor. To summarize, we find support to that investors interpret the signal of female CFO announcements as positive.

³ Manually collected data from CapitalIQ as of December 2018.

However, since we do not find any significant results in *Hypothesis 1*, our findings indicate that investors react to unexpected female announcements rather than to CFO announcements.

Hypothesis 3

Previous literature shows disperse results in CEO succession literature in the context of origin and therefore Karaevli (2007) aimed to reconcile these inconsistent findings in his study. What Karaevli (2007) concludes is the importance to consider both pre- and post-succession contextual factors when evaluating the performance effects based on the origin of the CEO. Despite that we include several pre- and post-succession contextual factors in our tests, we are still not able to find any significant results. Therefore, a potential explanation to why we do not find any significant results when we investigate the origin is that Swedish investors simply do not seem to care about the origin of the succeeding CFO. Similar to that we do not find any significant results that supports *Hypothesis 1*, we neither find any evidence that supports *Hypothesis 3*. This indicates that investors do not react to CFO announcements nor to if the CFO is externally recruited or internally promoted. Instead, our findings indicate that the egalitarian investors react to gender diversity rather than to CFO characteristics.

4.3.2 Evaluation of methodologies

This section discusses the sensitivity and validity of earlier presented results. An essential parameter to ensure validity in our study is the ability to estimate the dependent variable, the CAR, correctly. Therefore, also the applied methodology to calculate the expected and abnormal return influence the results. There are several different models to estimate the expected return (Mackinlay, 1997). While this study relies on the one factor market model, Fama (1991) concludes that different models to estimate the expected return can create discrepancies in the expected return and change the validity of the results. By including several multifactor models, we could potentially increase the robustness and validity of our results. However, Mackinlay (1997) highlights that performing multifactor models in addition to the market model, does not generate any significant improvement. Hence, the potential marginal gain from including additional models would not motivate the extensive work needed in order to perform these tests.

Instead of adding several multifactor models to increase the validity of our results, we complement our main model with additional estimation- and event windows. This is common practice among several scholars (e.g. Brinkhuis & Scholtens, 2018 and Lee & James, 2007).

Therefore, in addition to our main model with a one-year observation period (estimation window -250; -2) and a three days event window (-1; +1), we also calculate CARs during a five days event window (-2; +2) and an estimation window of (250; -3). Additionally, we also employ a shorter estimation window that begins 160 trading days before the event, similar to Brinkhuis and Scholtens (2018) and Pessarossi and Weill (2012). One estimation window that ends three days prior to the event (-160; -3) with a five days event window (-2; +2) and another estimation window that ends two days prior to the event (-160; -2) with a three days event window (-1; +1)⁴. However, the calculated CARs will always to some extent suffer from a systematic positive bias due to the bid-ask spread (Mackinlay, 1997). This bias could affect the ARs and thus lead to an over rejection of the null hypothesis.

4.3.3 Limitations

Although several sensitivity and robustness test have been performed to support our findings, we cannot be certain that our results are correct, and our study is limited by some issues. There is a risk of type I error (i.e. falsely rejecting a true hypothesis) and type II error (i.e. failure to reject the hypothesis when it is false). Another caveat refers to our sample size. Although the result is based on a larger sample than several similar studies (e.g. Brinkhuis & Scholtens, 2018 and Lee & James, 2007), the sample is still fairly small. Given that an event study aims to capture the true effect of the event, a larger sample would reduce the risk of that noise within the event window would disturb the results (Brinkhuis & Scholtens, 2018).

Another concern refers to how frequently the shares are traded. High frequency implies a liquid market while low frequency implies an illiquid market. In illiquid markets the stock price might be largely affected by few trades. Since our study does not include the number of trades as a control variable, it might result in that CFO changes in companies with less frequently traded stocks guide us in a misleading direction since liquidity is not taken into consideration. In order to mitigate the potential complications related to this, we use the control variable *Size* as a proxy for liquidity and we do not find any significant differences when comparing small and large companies.

⁴ The finding to *Hypothesis 2* is still positive at a 10% significance level in the unanticipated subsample when we apply the estimation window -160; -2 and event days -1; +1. However, *Gender* does not display any significant values when we run the models with the longer event window (-2; +2). Neither one of the additional estimation- and event windows that we test provide evidence that support *Hypotheses 1* or *3*.

An additional limitation to our study is the classification between the subsamples anticipated and unanticipated events. Weisbach (1988) argues that it might be problematic to determine the reason for succession correctly since, in the light of signaling theory by Spence (1973), companies decide what and how information is communicated to investors and consequently what signals they want to send. Hence, CFO succession events might be inconsistently classified between anticipated and unanticipated successions depending on how the turnover is communicated to the market.

Lastly, our sample suffers from some selection skewness due to the nature of the Swedish market. Thus, our sample is biased towards companies in the industrial and information technology sector, which could influence the result.

5. Concluding remarks and suggestions for future research

In contrast to previous literature that has mainly focused on investor reactions to CEO succession events, our focus is instead on investors' reactions to CFO succession events. This study is one of few to investigate market reactions to CFO succession events. It is also the only one that investigates market reactions to CFO succession events from a gender and origin perspective with a sample from a top ranked country in gender equality, namely Sweden (World Economic Forum, 2018). We test our hypotheses using a sample of 469 observations from firms listed on Nasdaq Stockholm in the period 2001-2018. We employ the standard methodology for an event study and run regression models to investigate if and how investors react to CFO succession announcements.

This study assumes semi-strong market efficiency, which implies that investors include all public relevant available information when they price financial assets. Consequently, if the investors deem the new CFO succession announcements to be value relevant, these news should be followed by significant changes in the stock price. Our results indicate that investors do not consider the CFO succession announcements to be important in general terms nor in the context of origin. In other terms, investors do not seem to include CFO succession announcements in their firm valuations. However, investors' reactions to female CFO announcements result in a significant change in stock price, which indicates that the egalitarian attitudes in Sweden are stronger than the interest for the CFO role in itself. What we find is that gender has a positive, significant effect on Cumulative Abnormal Returns (CARs) in the unanticipated subsample, which implies that the market reacts positively to the announcement of a female CFO when the succession announcement is unexpected. Hence, our result indicate that female CFOs are preferred by investors in Sweden.

We aim to explain this positive market reaction with three different aspects. First, Swedish investors have egalitarian attitudes and they favor appointments that contribute to an improved diversified demographic top management structure. Second, investors react positively to gender diversity since it increases the probability of higher profitability and value creation. Third, a female that reaches a top position signals that she is a highly competent successor since she has to break the glass ceiling in order to reach the top.

We do not find any significant market reactions when we test investors' reactions to CFO successions and investors' reactions to the origin of the successor. This indicates that investors do not seem to value CFO succession announcements as relevant information since they do not incorporate this information in their valuations. We explain the lack of reaction from investors by suggesting that the CFO role does not seem to be as important as predicted by earlier scholars. To better understand why investors do not react to CFO succession announcements, an examination of how and if the increased authority and strategic focus for the CFOs affect the investors is suggested as a direction for future research.

Lastly, despite that we do not find any significant results when combining *Gender* and *Origin* we invite to further research within this area to study the subsample of unanticipated events with a larger sample size. With an increasing number of announcements of female CFO appointments, it should enable a larger sample of unexpected female CFO appointments to investigate. Since we find evidence of that investors react to unexpected female CFO appointments, the combination of *Gender* and *Origin* within the subsample of unexpected events could trigger a response from investors. This is left for future scholars to explore.

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Appendix

Abbreviations

Average Abnormal Returns	AARs
Abnormal Return	AR
Abnormal Returns	ARs
Cumulative Average Abnormal Returns	CAARs
Chief Executive Officer	CEO
Chief Financial Officer	CFO
Cumulative Abnormal Returns	CARs
Last Twelve Months	LTM
Net income divided by the opening balance of equity	ROE
Number	N
Ordinary Least Square	OLS
Return On Assets	ROA
Variance Inflation Factor	VIF