# THE RISE OF THE CFO

## A QUANTITATIVE STUDY INVESTIGATING INVESTORS' REACTION TO THE EVOLUTION OF THE CFO OVER TIME

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Abstract

The role of the CFO has evolved substantially over the years. From being a traditional financial and accounting overseer to compromise a wider set of responsibilities, including financial management and strategic decision-making. Despite this, little attention has been dedicated to investors' reaction to CFO turnovers and potential factors that influence those reactions, particularly in the UK where CFOs also appear to be essential for firm success. This thesis investigates investors' reaction to CFO turnovers over time and whether the reactions to CFO turnovers have increased proportionally more compared to those of CEOs turnovers announcements. Using a sample of 737 observations, an event study was conducted to analyse the cumulative abnormal returns at the event of succession announcements. Our findings reveal that the investors' reaction to CFO turnovers have increased over time, indicating that investors view CFOs as increasingly important for the success of the firm. Investors' reaction to CFO turnovers has not increased proportionally more compared to CEO turnover announcements. However, the study shed light on their interdependence and close links. Our primary contribution to empirical literature is the heightened stock market reaction to CFO turnovers which mirrors the evolution of the CFO's role. It also offers valuable insights to the strategic implications for the firm where CFO successions require careful monitoring.



Keywords:

Chief Financial Officer, CFO role, CFO turnover, stock market reaction, CEO turnovers



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# Contents

# 1. Introduction

The question of how much the Chief Financial Officer (from here on CFO) matters to the company, has grown to commence a large part of modern-day research. With the rise of digitalisation, globalisation and rivalry, the way businesses operate has undergone a vast transformation. Traditionally, the CFO overlooked the firm's finances and accounting processes and were rarely attributed recognition for the success of the firm. However, in recent years, the CFO's role has expanded to compromise a wide set of responsibilities. Today, CFOs are corporate watchdogs, expected to respond to demands and expectations on performance, similar to that of the Chief Executive Officer (from here on CEO). One notable change is the increased emphasis on strategic decision-making, which specifically allows CFOs with a board member seat to exert direct influence on the vital processes, and assure financial factors are taken into consideration (Hoitash et al., 2016; Ferris & Sainani, 2021; Bloom et al., 2019; Agarwal et al., 2020; Bloom & Van Reenen, 2017; Boone et al., 2013).

## 1.1. The CFO in the UK

The UK market is home to roughly 3000 publicly traded firms[1], making it one of the largest stock exchanges in the world[2]. However, during the period 2012 to 2020, the number of publicly traded firms decreased by 10%, primarily due to the injurious effect of the Covid-19 pandemic and less favourable market conditions (Statista, 2021). This forced weaker firms out of the market, strengthening the position of the remaining firms, making the market more competitive than before. Several scholars suggest that higher levels of market competition results in greater management quality. When firms struggle to operate amidst innovation pressures, market share competition, talent scarcity and price/quality competition, firms that are better managed, are often associated with increased market share. This is because competitive forces drive the need for managerial effort, improved practices, technical efficiency, and innovation (Bloom et al., 2019; Agarwal et al., 2020; Bloom & Van Reenen, 2017; Boone et al., 2013). This heightened competition can also be mirrored in UK-based firms' superior activity in M&A deals, accounting for 10% of the global M&A deals in 2018, a 24% increase from 2017, compared to the US, who faced a 14% decline during the same time period (Ernst & Young, 2019; Deloitte, 2018). This is just one of many complex areas modern top managers in the UK must navigate, urging CFOs to hold a wider toolbox than before. As businesses are growing in complexity and becoming more globalised, CFOs have been expected to provide insights to opportunities and financial risk that can affect key strategic decisions. Simultaneously, with increased use of technology, CFOs must be able to

[1] Including London Stock Exchange (LSE) and Alternative Investment Market (AIM).

[2] Based on market capitalisation as of September 2021.

streamline financial processes with high emphasis on efficiency. In addition, the importance of the CFO in the UK is reflected in the high level of board representation. Strikingly, in 2018 in the UK, 92% of FTSE 250 companies had CFOs on their board compared to the S&P 500 index (USA) where only 54% of the CFOs held a board seat (Korn Ferry, 2018; Blake et al., 2018). Making the modern CFO a strategic partner proactive in driving growth and profitability.

## 1.2. A Gap in CFO Research

Despite the significant internal impact of the evolution of the CFO's role, particularly in terms of strategic responsibilities within the firm, we found it intriguing that barely any consideration was shed on its external effects, in the form of investors' reactions to CFO turnovers. Namely, how the role of the CFO is perceived from the market's perspective. Especially in the UK where CFOs appear to be indispensable for crucial strategic decisions, essential to the performance of the firm. In terms of the CEO, however, profound interest has been dedicated to the stock market reaction of CEO turnover announcements (e.g., Furtado & Rozeff, 1987; Bonnier & Bruner, 1989; Huson et al., 2004; Gangloff et al., 2016; Quigley et al., 2017). Provocatively there is barely any research on investors' reaction to CFO turnovers. Thereto, there is limited understanding of potential variables' effect on investors' reaction that have influenced CFO turnovers over the last decades. Making this area interesting for closer investigation. In particular, the following two reasons caught our interest; firstly, based on the evolution of the role of the CFO and the proven impact modern CFOs have on firm performance, CFO turnovers should arguably be all but unimportant in the eyes of the investors. Secondly, under the assumption of rising severe competition due to several macro trends, revolutionising how business is done, we found it interesting to assess the development over time.

## 1.3. Research Question

By studying investors' reaction to CFO turnovers, we can gain a better understanding of the changing expectations and demands placed on CFOs, and how the role has transformed. Therefore, the following research question was developed; *How have the UK public company shareholders' reactions to CFO turnover events changed over time?*

To effectively address the empirical and strategic implications the change of the CFO might have, we examine if the evolution of the role has been mirrored in the stock market reaction over time. Moreover, we investigate if investors' reaction to CFO turnover announcements have increased proportionally more compared to the CEO turnover announcements over time. This is based on the underlying assumption that the evolution

of the role of the CFO has undergone a larger transformation over the last decades, than that compared to the role of the CEO[3].

## 1.4. Important Findings & Contributions

Our thesis reveals two important findings. Firstly, our results show that the stock market reaction to CFO turnovers has increased over the course of the research period. It indicates that investors increasingly recognise the CFO's significant impact on firm performance. Meaning, the evolution of the role of the CFO over time can be mirrored in the stock market reaction. Secondly, our thesis provides evidence that the stock market's reaction to CFO turnover announcements has not increased proportionally more than its response to CEO turnover announcements. Rather, it seems that the CEO's significance also has increased, resulting in a greater increase in absolute reactions than that of the CFO. Prominently, this study sheds light on the mutual dependency between the CEO and CFO. The CFO's evolution has become imperative to cope with competitive forces in the market, and crucial for assisting the CEO to drive firm success.

This thesis contributes to the relatively new research area surrounding the CFO. Empirically, this thesis bridges the gap between the extensive research on CEO turnovers by investigating CFO turnovers, providing valuable insights while also highlighting the need for further investigation. The study examines important variables that influence investors' response to CFO turnovers. Strategically, it states that CFO recruitments should be carefully evaluated and considered, since it not only affects the internal strategic environment by ensuring a strong leadership team is in place, but it also affects the external environment since investors increasingly acknowledge the importance of the CFO and their influence on firm performance. Ultimately, this study demonstrates that the CFO matters, both internally and externally.

[3] Not stating that the CFO will have a larger stock market reaction, rather that over time, it has increased more in proportional terms, than that of the CEO.

# 2. Literature Review & Hypothesis Development

The aim of this thesis is to investigate the research question "How have the UK public company shareholders' reactions to CFO turnover events changed over time?". The following chapter outlines the theoretical framework of the study, with the purpose of presenting an overview of the expanding role of the CFO and CEO, as well as stock market reaction to CFO and CEO successions, supported by various influential variables. Signalling theory (Spence, 1973) will be used to describe and analyse the information asymmetry and availability on the market. Fama's (1991) model about efficient capital markets will be applied in order to analyse the impact of value relevant information. The two theories are complemented by previous research on the topic.

## 2.1. The Expanding Role of the CFO

The CFO role has undergone a vast development over the past decades. This section aims to outline the expansion of the role of the CFO by building upon previous research in the area. Thereafter, the evolution of the CFO will be applied to the UK market.

### 2.1.1. The Role of the Modern CFO

Historically, CFOs overlooked and had direct influence on the firm's finances and accounting processes, by managing internal controls and ensuring compliance with accounting regulations (Hoitash et al., 2016; Ferris & Sainani, 2021; Favaro, 2001). CFOs were seldom recognised as being part of the firm's success. Rather they had a reputation for being involved in fraudulently looting company resources and skirting the rules (Zorn, 2004). Today, CFOs are expected to take on additional roles, firstly by monitoring the financial condition, and secondly by acting as a strategic partner to flourish growth and profitability (Mellon et al., 2012; Ernst & Young, 2019). Advancements in technology, such as automation, AI, and data security, have expanded the responsibilities and elevated their importance within the organisation. The CFO's specialised knowledge and unique technical expertise, gives them greater control of the company's financial reports than CEOs do, as acknowledged by several scholars (Mian, 2001; Aier et al., 2005; Geiger & North, 2006). Additionally, the necessity of CEOs becoming acquainted with operational details, has elevated CFOs upwards in business hierarchies. Moreover, increased deployment of shareholders has also impacted the role of the CFO, as shareholders call for more attention (Agle et al., 1999; Akhigbe et al., 1997). As a result of these factors, CFOs have become increasingly crucial to the success of firms, often taking on a more prominent and strategic role (Favaro, 2001; Ferris & Sainani, 2021). This expanding role of the CFO can be mirrored in the rising compensation. In 2014, the median salary increase for CFOs was 13.9%, compared to 6.9% for CEOs (Milton, 2015). Moreover, studies indicate that CFO compensation is becoming more closely tied to total shareholder return, which commonly has been associated with CEOs (Katz, 2001; Cunnigham, 2005).

CFOs' climb in hierarchies has transformed them into corporate watchdogs. Similar to the CEO, they are now expected to respond to demands and expectations on performance as well as pressures on changing corporate strategy (Goranova & Ryan, 2014; Admati & Pfleiderer, 2009; Zorn, 2004). This calls upon CFOs with extensive qualities. With globalisation continuously revolutionising how businesses operate, the opportunity window narrows, necessitating top management to possess a wide toolbox of skills (Mellon et al., 2012; van Niekerk, 2016). The trend of having CFOs with a broader skill set is witnessed in modern CFOs educational background. In 2013, only 18% of the CFO hires were Certified Public Accountants, compared to 34% and 29% in 2012 and 2011 respectively (Hoitash et al., 2016). Therefore, boards nowadays tend to prefer CFOs with higher tenure, auditing experience in combination with leadership skills, and high tolerance for risk, to support the CEO with major corporate decisions (Murphy, 2013; Hoitash et al., 2016).

To summarise, the modern CFOs ought to develop a broader skill set to drive value creation. They are important in managing relations with shareholders and market expectations and their extensive qualities are a result of several macro trends which cause immense competition. The role of the CFO has evolved from the traditional view as an accounting overseer at the firm, to being a strategic advisor to the CEO (Favaro, 2001).

### 2.1.2. The Role of the New CFO in the UK

The UK market is especially interesting for closer investigation. In light of the expanding role of the CFO, a recent nationwide study made on the UK market underlines that 97% of the surveyed CFOs say their role has become more complex due part to international expansion, new technology, and increased demand to collaborate with c-suite[4]. Today they are expected to drive innovation and growth and be the value driver within just about all business areas (Tipalti, 2021).

Over the years, the UK market has become one of the biggest stock exchanges in the world. The market is experiencing intense competition where firms strive to differentiate themselves from others. Firstly, globalisation in the UK has accelerated, becoming an important hub for businesses to operate in (Ernst & Young, 2019; Deloitte, 2018). Another competitive force is digital transformation, which is expected to expand at a compounded annual growth rate (CAGR) of 22.2% between 2022 and 2030 in the UK (Grand View Research, 2021). Thirdly, due to the fierce rivalry among firms, UK-based companies' exhibit superior activity in M&A compared to other countries (Ernst & Young, 2019; Deloitte, 2018). This has called for increased emphasis on strategic decision-making, particularly evident when the CFOs also serve on the company's board. Particularly, in the UK, a majority of the CFOs occupy a board member seat and are recognised as highly influential members of the senior management. To point out, in our

[4] The c-suite refers to a company's top management positions (e.g., CEO, CFO, COO, CTO).

data set 61% of the newly appointed CFOs hold a board member seat in contrast the data used in the study by Mobbs (2018) where only about 11% of the CFOs in the U.S. are members of the board[5]. Significant research has shown that investors are sensitive to changes in the board involvement, both positive and negative stock market reactions are recorded (Bhana, 2016; Rossi & Cebula, 2015; Lin et al., 2003). This among many reasons, makes the UK market a compelling case for closer examination.

## 2.2. Market Information & Investors' Response

Spence (1973) was the first author to investigate the phenomena of how information sent by the signaller is perceived by the receiver. Signalling theory can explain the behaviour behind the actions of two parties with access to different information. In capital markets, the signallers could be inside directors and management at a specific firm, while the receiver is the public investor, and other market actors (Spence, 2002).

In addition to the signalling theory, the Efficient Capital Market Hypothesis (EMH) will be used to analyse how the market perceives the information (Fama, 1991). The EMH states that the stock market price reflects all available information to the market participants at any time (Samuelson, 1965; Fama, 1965; Fama, 1970). Information is thus a signal from firms to investors, which the investors can use to estimate future firm value and performance. According to EMH, stocks always trade at their fair value, making it impossible for investors to outperform the market by selection and timing. The EMH asserts that only new, value-relevant information signalled to investors, affects the firm's market value, if the market is semi-strong efficient (Fama, 1965). The stock market reaction stems from competitive traders that will buy on signals predicting high future values, but which signals have not yet been incorporated into the stock prices. The traders' actions will bid up the price so that it completely reflects the information in the signal and thus, the efficient market is maintained (Fama, 1970; Fama, 1991). However, researchers have found contradicting results, violating the EMH. For example, the market does not interpret and react on financial accounting information (Ou & Penman, 1989), and when investors are able to predict golden opportunities, it allows them to outperform the market by growth stocks or value stocks (Haugen, 1995), or that the market reacts even before information is officially published (Ball & Brown, 2014). Also, psychology theory may account for irrationality and illogic in behaviour, contradicting that EMH holds. Furthermore, it is stated that stock prices are predictable, and that employing these predictable patterns, investors can regularly and purposely outperform the market (Odean, 1998).

Applying this to CFO successions, all new information communicated to the market, such as CFO succession announcements, could be interpreted as value relevant information, and thus affect the stock market price. However, what has to be considered is the

[5] In the sample of the study by Mobbs (2018), nearly 85% of the CFOs in the UK held a board seat.

investors' general reaction to news, and the possibility that the general reaction also has increased over time. Although Schwert (2002) suggests that markets have not grown substantially more volatile in terms of proportional changes, Megaritis et al. (2021) find that increasing macroeconomic uncertainty (such as globalisation and digitalisation) predicts a subsequent rise in volatility. Research also suggests that markets have become more efficient thanks to digitalisation (Wang, 2010).

## 2.3. CFO Succession Events & Investor's Response

To emphasise the lack of research on the evolution of the CFO, no refereed journal articles existed on the subject before the study "*On the choice and replacement of CFOs*" by Mian (2001). Furthermore, while there is an evident shortage of research on CFOs' internal involvement in overall business success, research investigating the external effects, in terms of investors' reaction to CFO turnovers, barely exists. Nonetheless, the few existing studies have explored areas such as the CFO's personal influence on firm reporting quality (Geiger & North, 2006), the link between CFO compensation and financial statement quality (Caglio et al., 2018) and the reasons behind CFO turnovers (Mian, 2001).

A study by Geiger & North (2006), found evidence supporting the CFO's personal impact on firm reporting quality. Firms with a newly recruited CFO reported significantly lower levels of discretionary accruals[6], compared to firms without any CFO turnover. Furthermore, CFOs with similar backgrounds and character as their CEOs tend to receive higher compensation and incentives similar to those of their CEO. Additionally, it is found that a long-term incentive intensity in CFO compensation is followed by a lower level of financial statement quality (Caglio et al., 2018), indicating the CFO's influence on financial statement quality.

In addition, Mian (2001) examined what makes firms replace their CFO and how the choice of a new CFO affects future firm performance. The findings revealed an abnormally high CEO turnover prior to CFO turnover. In other words, CEO and CFO recruitments often occurred in relation to each other. Also, the CEO was often replaced after a period of poor performance, and as a result, so was the CFO. Additionally, CFO dismissals in which the former CFO leaves are linked to a significant decline in stock price (Mian, 2001). Furthermore, research conducted by Brinkhuis & Scholtens (2018) indicated an insignificant abnormal stock market reaction to CFO turnovers in general.

[6] "The component most easily subject to successful managerial manipulation" (Teoh et al., 1998).

## 2.4. Insights from CEO Studies

The little consideration given to the investor response to CFO announcements, makes it arguable for this study to rely on valuable insights of top management and CEO turnovers when presenting empirical data. The following section will describe how the CEO role has evolved over time and present findings from previous CEO studies.

### 2.4.1. The Evolution of the CEO

Similar to the evolution of the CFO, the CEO has undergone changes throughout the past years due to factors changing the business environment. Several studies have investigated how the role has evolved over time. For example, CEOs were not particularly well-known in the 1950s. They were regarded as a normal employee, recruited due to their long experience within the firm, and rarely fired. Their pay was primarily a simple salary and was only marginally higher than that of executives who reported directly to them (Frydman & Saks, 2010). Evidence for the CEO's improvement of managerial quality is shown in a study by Huson et al., (2004), where the absolute improvements in firm performance after a CEO turnover, have grown stronger over time[7]. Further, in a study by Quigley & Hambrick (2015) it was found that the influence of CEOs on U.S. public businesses has grown significantly over the past 60 years. This was shown by the "CEO-effect", which is the proportion of variance in firm performance that can be statistically attributed to CEO characteristics, which increased significantly between the years 1950 and 2009. Similar results were found by Quigley et al. (2017), showing the increase in absolute shareholder reactions to unexpected CEO successions which is consistent with the belief that CEOs have become increasingly more influential in recent decades. In sum, it is shown that the role of the CEO has gained increased influence over time.

### 2.4.2. Stock Market Reactions to CEO Turnovers

The stock market reactions to CEO turnovers are a rising topic within research. Interestingly, the results are found to be both contradicting and inconclusive. On the one hand, several studies find positive stock market reactions in terms of abnormal returns, when studying the event of announcing a new CEO (Furtado & Rozeff, 1987; Huson et al., 2004; Bonnier & Bruner, 1989; Weisbach, 1988; Mian, 2001). On the other hand, another group of researchers find that CEO succession is associated with a negative investor response (Beatty & Zajac, 1987; Mian, 2001; Gangloff et al., 2016; Bonnier & Bruner, 1989; Shen & Canella, 2003; Lee & James, 2007; Zhang & Qu, 2016; Warner et al., 1988; Dedman & Lin, 2002; Hayes & Schaefer, 1999). Lastly, there is also research indicating insignificant abnormal stock market reactions to CEO turnovers (Warner et al., 1988; Denis & Denis, 1995).

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[7] The study is based on two time periods 1) 1983-1994, 2) 1971-1982.

## 2.5. Influential Variables on Stock Market Reactions

Building upon the studies on stock market reactions to CEO turnovers, several studies have attempted to understand several variables' impact on the stock market reaction to CEO and CFO turnover announcements. The results prevail disagreements to what effect these variables actually have. Although these variables are not part of our primary research question, their potential impact on the stock market reactions to CFO turnovers, cannot simply be neglected and will therefore be looked into in parallel throughout the study. Since the previous research is predominantly based on insights from CEO turnovers, this study will attempt to explore how these variables affect the stock market reaction of the CFO turnover announcement. To complement stands of literature this study looks into both personal factors of the CFO (such as prior experience), and firm-specific factors (such as size and riskiness). Specifically, we will look into the variable gender and source of recruitment. Additional variables are thereafter superficially analysed.

### 2.5.1. Gender

Several studies have examined the importance of gender when appointing a successor to top management positions. Based on insights from CEO turnover studies, investors react more negatively to the appointment of a female CEO, compared to the appointment of a male CEO (Lee & James, 2007). Female representation on boards and in top management positions have improved in the UK over the past decade, with female representation of 36.2% in 2020 compared to 12.5% in 2011 (Hampton-Alexander Review, 2021). Despite an increase in the representation of females in managerial positions, female managers are barely at par with their male counterparts (Hanek et al., 2016; Gupta et al., 2020). The poor representation of female board members bolsters a stereotype that women are less capable to assume a role as CEO, but as we see more women in top management positions, these stereotypes should also change (Lee & James, 2007). Likewise, board members are more likely to appoint a successor resembling themselves which commonly has perpetuated the appointment of male successors (Lee & James, 2007; Brinkhuis & Scholtens, 2018).

On the contrary, other studies show no significant abnormal return on the announcement of a female successor compared to a male successor, suggesting that there are no gender differences (Brinkhuis & Scholtens, 2018; Zhang & Qu, 2016). However, replacing a male CEO with a female CEO tends to have lower post-succession performance compared to that of appointing same gender (Zhang & Qu, 2016). Also, the stock market appears to react less negative when the promotion of a female is done internally than externally (Lee & James, 2007).

In terms of gender effects in the area of CFOs, a study by Gupta et al. (2020) finds firms with female CFOs to have a lower likelihood of financial misstatement, compared to male CFOs. Similarly, in a study analysing quality of accruals based on gender of CFOs, it was

found that firms with female CFOs have lower performance-matched absolute discretionary accruals and lower absolute accrual estimation errors (Barua et al., 2010). Furthermore, women in top management positions are more risk-averse and less over-confident compared to men (Croson & Gneezy, 2009). This is especially apparent in smaller firms which generally are more risk-taking and riskier than larger firms and thus are more likely to recruit male executives (Udell & Berger, 1998).

### 2.5.2. Source of Recruitment

The impact of the source of recruitment, implying if the successor is appointed internally or externally, is a highly researched field, but the results are inconclusive. Research suggests that appointing externally in distressed firms tends to enhance benefits as part of breaking a poor performance trend, by bringing in fresh knowledge and new perspectives (Bonnier & Bruner, 1989; Parrino, 1997; Gabarro, 1987; Karaevli, 2007). In addition, externally appointed CEOs have a greater discretion in making strategic choices than internally appointed CEOs (Karaevli, 2007). Consistently, Farrell & Whidbee (2003) and Weisbach (1988) underlines that boards are prone to accept some uncertainty by appointing externally, as they have a greater likelihood of turning bad performance and possessing personal qualities that are advantageous for the firm.

As stated, the board composition plays a significant role in top management recruitment. Boards tend to recruit people who are similar to themselves, in terms of demographics, behaviours and experiences, believing their own qualifications are ideal for the firm's future success (Zajac & Westphal, 1996; Lee & James, 2007; Farrell & Whidbee, 2003). This was especially evident for well-performing firms, where executives believed in sticking to the status quo, keeping the firm's strategy unchanged (Hambrick et al., 1993). Recruiting externally is often a way to bring in someone who is different from the prior CEO and rather resembles the board. Furthermore, firm size does also have an effect on if the firm recruits internally or externally. Smaller firms are more likely to appoint externally, in part due to fewer qualified internal candidates to replace the successor, while bigger firms have more opportunities to choose from (Zajac & Westphal, 1996).

On the contrary, other studies state that internal appointments have favourable effects. Internal appointments are associated with a wealth increase for shareholders and a positive impact on return on assets (Shen & Cannella, 2003; Furtado & Rozeff, 1987). This view coincides with the aspect of internal candidates employing greater knowledge of both the firm and the industry as well as established networks that are beneficial for the firm's success (Lauterbach et al., 1999). Additionally, senior executives may be resistant and sceptical to an external CEO successor (Shen & Cannella, 2003). When the external successor is unaccustomed to the industry, a contributory team is vital to ensure firm success. Therefore, the external successor must prevail with significant firm success to make the appointment worthy since appointing externally is associated with recruitment costs and acquiring firm- and industry-specific knowledge (Furtado & Rozeff, 1987; Warner et al., 1988).

### 2.5.3. Additional Variables

Let us now consider additional variables regarding the recruitment patterns of the CFO. Firstly, there is a growing need for CFOs to possess prior experience in their field. This trend reflects the changing demands of modern businesses, which now require top management to possess a diverse range of skills such as risk management, leadership, and strategic thinking. This shift is also reflected in the educational backgrounds of the modern CFOs (Mellon et al., 2012; van Niekerk, 2016).

Secondly, the fact that CFOs have not always been a natural part of the board (Lyon & Lawson, 2012) is interesting itself, and the underlying reasons of the CFOs increased influence along with its board membership are worth paying attention to. Thirdly, in line with the increased board representation, leaders in top management positions experience a larger probability of dismissal, especially when the firms are performing poorly (Mian, 2001; Karaevli, 2007; Weisbach, 1988). Additionally, it is found that boards have become more active in firing poorly performing CEOs (Kaplan, 2008). Therefore, the firm's current performance seems to affect the recruitment pattern. It suggests that turnover announcements are perceived as good news as they prompt performance improvement when previous management has been inadequate (Huson et al., 2004; Mian, 2001). These findings align with Weisbach (1988) and Bonnier & Bruner (1989), which suggest that while most successions are voluntary, there are also positive stock market reactions when the CEO has been forced to leave their position. Therefore, these variables and their correlations will be given consideration.

Fourthly, it will be looked into what effect a CEO turnover, in close connection to the CFO turnover, can have on the stock market reaction. A body of literature suggests that CFO turnover within 6-12 months is a categorical effect of a forced CEO turnover, due to poor prior performance (such as poor earnings management, decline in institutional shareholding or volatility of stock prices) (Warner et al., 1988; Denis & Denis, 1995; Mian, 2001; Gibbons & Murphy, 1990, Holmstrom, 1999). Mian's (2001) findings revealed an abnormally high CEO turnover prior to CFO turnover, indicating CEO and CFO turnovers often occurred in relation to each other.

## 2.6. Hypothesis Development

To summarise, the CFO's role has evolved over time, and the climb in business hierarchies has prompted increased influence over financial performance, making them a critical part of a business's success. Therefore, this thesis aims to investigate how the shareholders have perceived the evolution of the CFO.

The first hypothesis states that the absolute stock market reactions to CFO succession announcements have increased between the years 2002 and 2020. By testing this hypothesis, one can assess whether the expanding role of the CFO is mirrored in the stock market reactions. If the hypothesis is supported, it will have important implications for

investors, company executives, and researchers alike, as it will highlight the importance of the CFO in driving financial success and the need for careful planning and management of CFO successions.

> **H1:** The absolute stock market reactions to CFO turnover announcements have increased over time.

As noted, research has also shown the increased significance of the CEO, as evidenced by shareholders' reactions to CEO turnovers over time. At the same time, given the CFO's extended requirements on its skill set due to wider responsibilities within corporate strategy, the CFO's contribution to a company's financial success is more critical than ever before. Therefore, there is reason to assume that the role of the CFO has undergone a more significant change during this time period than the CEO, in the eyes of the investors. Thus, the second hypothesis suggests the absolute stock market reactions to CFO succession announcements have increased proportionally more than the absolute stock market reactions to CEO succession announcements between the years 2002 and 2020. If the hypothesis is supported, it will provide valuable insights into the changing roles of key executives and the evolving nature of the investors' reactions to such developments.

> **H2:** The absolute stock market reactions to CFO turnover announcements have increased proportionally more compared to the absolute stock market reactions to CEO turnover announcements over time.

# 3. Methodology

The aim of this study is to answer the research question "*How have the UK public company shareholders' reactions to CFO turnover events changed over time?*". The choice of subject emerged in connection with our delving into signalling theory in the area of corporate governance. We noticed that immense research was dedicated to CEO turnovers whilst barely any attention was given to CFO turnovers. In particular, the research on development of stock market reaction over time was scarce, therefore we saw an opportunity to fill the research gap. To answer the research question, the paper comprises a quantitative method based on an event study, using UK market data to analyse the reaction to CFO succession events. Subsequently, additional tests were made to further test the hypotheses and analyse additional variables' effect surrounding CFO successions.

## 3.1. Sample Selection & Delimitations

The sample was obtained from S&P CapitalIQ. The sample fulfilled all of the following requirements: 1) executive changes that included the CFO, 2) firms publicly listed in the UK, 3) firms from all industries, 4) firms with headquarters in the UK and 5) between the years 2001-2020[8]. Because the title "CFO" was not commonly used in the earliest years of the research period, we expanded our sample to include individuals with titles such as "Finance Director," "Finance Chief," and "Financial Officer." The resulting sample comprised 2,261 observations of CFO turnover between 2001 and 2020. Although the chosen time period reflects several macroeconomic cycles, we still consider it appropriate for examining the research question. The investigated subject of CFO turnovers is especially interesting due to the lack of research in the area. The choice of focusing on the UK was based on research and data suggesting the CFO's importance in senior management. The sample comprised firms traded on the London Stock Exchange and AIM market (Alternative Investment Market) that were active at the time of the succession. No consideration was given to firms that may go bankrupt or face deregistration from the stock exchange at a later point in time. Hence, consideration was compromised to only assess the stock market reaction at the event of the CFO succession. Further information about the turnover was obtained by the press releases published by the concerned company at the time of the event. In order to mitigate irrelevant observations, all observations were manually examined to ensure necessary requirements were met.

[8] The earliest announcements by S&P CapitalIQ can be traced back to 2001. December 31st, 2020 was selected as the latest date of our sample.

We excluded a total of 1,424 observations for various reasons: 45 observations were eliminated due to HQ located outside the UK, 56 involved information that had already been announced and was not unexpected, 290 contained details about other appointments, 48 primarily concerned the CEO, and 169 contained other information that could have an impact on stock market prices, such as dividend and revenue announcements. To isolate the effect of CFO turnover, we removed 350 observations that only focused on the departure of the outgoing CFO without mentioning a successor, as well as 434 observations that solely focused on the appointment of a new CFO where the departure of the previous CFO had already been mentioned earlier. This was done to isolate the signalling effect. Finally, we also excluded 32 observations where an interim CFO was permanently promoted to the CFO position.

**Table 1**. Sample selection.

| Description | Number of observations |
|---|---|
| All CFO turnovers announcements 2001-2020 | 2261 |
| Non-UK based | -45 |
| Announcements already communicated | -56 |
| Announcements including other appointments | -290 |
| Announcements about the CEO | -48 |
| Announcements containing other information | -169 |
| Announcements without successor mentioned | -350 |
| Announcements without outgoing CFO mentioned | -434 |
| Announcements of permanent promotion of interim/acting CFO | -32 |
| **Revised total sample** | **837** |

The procedure resulted in a revised sample of 837 observations between the years 2002 and 2020. Additionally, we have manually confirmed each date of the press releases through sources such as ProQuest and Web-Reports to ensure the dates were correct. Furthermore, the press releases and annual reports were used to explore contributing factors such as personal and firm-specific factors, to the stock market reaction (see 3.4.1). A majority of the companies in the sample appeared only once, therefore no extra attention was given to those companies that repeatedly announced changes of CFO over the time period. The sample consisted of large variations in firm size and riskiness, therefore consideration was given to these effects. An identical procedure was used for the sample selection of CEO turnovers.

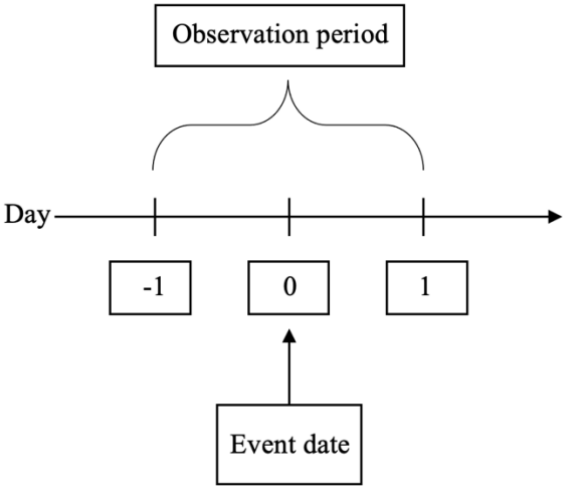
Lastly, from the baseline sample of 837 observations, 100 were excluded during the event study since they could not fulfil one or more of the following criteria:

1) Listed in Compustat data.
2) No trading days within the chosen event window.
3) Classified as the major equity instrument.

The first criterion was necessary since our time resources and sample size did not allow us to collect data from various data sources. The data acquired from Compustat was sufficient to approximate our population. The second criterion was necessary to be able to analyse the stock market reaction at the event date. Lastly, the third criterion was necessary to narrow the analysis and ensure focus was given to the common stock, all other equity instruments (e.g., preferred stocks, convertible bonds, warrants) were excluded. Thus, the event study was based on the sample of 737 observations.

## 3.2. Event Study

**Figure 1**. Event study design.




To test Hypotheses 1 and 2, the Eventus tool from the Wharton Research Data Service (WRDS) was used to conduct an event study (McWilliams & Siegel, 1997). Event studies are used to predict how the market reacts to the release of new information, in this case, the turnover and appointment of a new CFO. The event study method is a widely used tool in finance and accounting research for assessing the financial impact of changes in corporate policy by determining whether a stock price is "abnormal"[9] (McWilliams & Siegel, 1997). There are several important assumptions that have to be considered when conducting event studies. First, it is assumed that the EMH holds. This implies that stock prices reflect all relevant information available to buyers and sellers and that any new financial information will be instantly reflected into stock prices and thus affect firm value (Fama, 1991; MacKinley, 1997). Furthermore, as argued by McWilliams & Siegel (1997), the use of long event windows implies a disbelief in that the effects of events are quickly incorporated into stock prices and could be interpreted as a violation of the assumption of EMH. Therefore, in this study, event windows of (0-0), (0-1), (-1-1) days are used. Second, it has to be considered whether the information has previously been revealed or leaked to the market or not (McWilliams & Siegel, 1997). To prevent such incidents, observations including information which could be perceived as expected information or not surprising news, were excluded, as described in 3.1. Third, the most critical assumption, is that the analysed event effect is isolated from other events that might impact the stock price (McWilliams & Siegel, 1997). This was assured by excluding observations where the press releases contained any other information than the change of the CFO. Important to note is that the authors do not believe that a single

[9] Abnormal return = a return that deviates from the expected return.

observation and their stock market reaction shows the truth regarding the reaction to CFO successions. However, the cumulated reactions could generate an indication of the reaction to CFO successions over time.

### 3.2.1. Event Study Design

The Eventus tool generates a predictive model using external market trading data to estimate the expected return. The expected return is generated from the market model, where $R_{i,t}$ denotes the return on day *t* for the individual stock. $\alpha_i$ is the return from the asset that is not related to the market's return. $\beta_i$ specifies the return from the security explained by the market index's return ($RM_t$) which is the return of the overall UK market. The error term $\varepsilon_i$ is assumed to be zero. The expected return is the estimated return as if the event had not occurred.

$$Market\ model: R_{i,t} = \alpha_i + \beta_i * RM_t + \varepsilon_i \quad (1)$$

The market model is a favourable method to use since it 1) is based on a statistical model to estimate coefficients which decreases the risk of potential biases when using economic models for predetermining coefficients, 2) considers the variations in market return over time since it assumes market returns to be constant (MacKinley, 1997). The market model is also widely used in previous similar studies (Mian, 2001; Dedman & Lin, 2002; Huson et al., 2004; Brinkhuis & Scholtens, 2018).

### 3.2.2. Abnormal Return & Cumulative Abnormal Return

After completing the previous steps, the abnormal returns were calculated by subtracting the expected return from the actual stock return for each day in the chosen event window. In this model, Beta is assumed to be equal to one.

$$Abnormal\ return = AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i * \mathrm{RM}_t) \quad (2)$$

The event window was set to three days between the days -1, 0 to 1, where 0 represents the day of the event, which is in coherence with previous studies (Lee & James, 2007; Quigley et al., 2017). As a final step, cumulative abnormal returns (*CAR*s) were calculated for each of the following event windows: (0–0) day, (0–1) day, (-1-1) day, to examine the event of interest (MacKinlay, 1997). The cumulative abnormal return is positive if incremental future cash flows are expected to increase after the event, and negative if expected to decrease after the event (Konchitchki & O'Leary, 2011). The formula below represents the cumulative abnormal return, where $t_1$ is the first day of the event window and $t_2$ is the last day of the event window.

$$Cumulative\ Abnormal\ Return = CAR_{i\,(t_1,t_2)} = \sum AR_{i,t} \quad (3)$$

Thereafter, the *CAR* variables were converted to their absolute values (|*CAR*|)[10] and the two different *CAR* variables (*CAR* and |*CAR*|, for each event window), were both used as dependent variables in the analyses. This was done based on the intention to not only investigate what drives positive or negative *CAR* values, but mainly to capture the change in the size of the stock market reactions over time. Lastly, to control for outliers in the sample, the *CAR* and the |*CAR*| variables were winsorized at the 1% and 99% levels, which implies that extreme values are given less weight and consequently, the risk of distortion due to outliers decreases (Dixon, 1960).

## 3.3. Testing of Hypotheses

Subsequently, several tests were conducted to test Hypothesis 1 and 2. Consistent with prior studies (Quigley & Hambrick, 2015; Quigley et al., 2017), we initially divided the sample into three groups to analyse patterns over time. However, due to significant differences in the number of observations in each group, which potentially could skew the results, we opted to use only two groups: 1) period 1 (2002-2011), and 2) period 2, (2012-2020).

**Table 2.** Number of observations distributed across the two time periods.

| | Period 1 (2002-2011) | Period 2 (2012-2020) |
|---|---|---|
| Number of observations | | |
| CFO turnover (% of sample) | 191 (26%) | 546 (74%) |
| CEO turnover (% of sample) | 178 (24%) | 558 (76%) |

To test Hypothesis 1 (whether the absolute |*CAR*| has increased over time), the mean and variance of the values were compared. First, a *t*-test[11] was used to compare the mean of both the non-absolute *CAR*, and the absolute |*CAR*| between the two time periods. As a complementary test, we also compared the variances of the non-absolute *CAR* for the two time periods using a variance test[12]. To test Hypothesis 2, (whether the |*CAR*|s of CFO announcements have increased more in proportion compared to the |*CAR*|s of CEO announcements), a similar mean comparison test was used. Thereafter, a Difference-in-Difference (DID) test[13] (Heckman et al., 2016) was used to compare the means of the two time periods and the means of the CFO and CEO groups.

[10] From here absolute *CAR* will be denoted "|*CAR*|" and/or "absolute |*CAR*|" to avoid confusion.
[11] A mean comparison test. The assumption of equal variances is violated; thus, the *t*-test assumes unequal variances (Results from the Levene's test).
[12] sd-test in Stata.
[13] The first author to mention the DID test was Snow (1849).

## 3.4. Multivariate Regression Analysis

To further test our hypotheses and control for additional variables, a multivariate regression analysis was employed. The application of a multivariate regression made it possible to investigate and control for the effect of personal and firm-specific factors that could have an impact on the absolute stock market reaction. By predicting how different variables drive the absolute cumulative abnormal return, we could better understand the behaviour of the market. The regression model and various control variables used are presented below (see 3.4.1). Due to heteroscedasticity in the sample, robust standard errors were used.

### 3.4.1. Variable Construction

The variable construction was done right after the data cleaning by providing functional names to the constructed variables that are intuitive and valuable for our dataset. Relevant control variables based on related literature in the subject were included. Understanding critical factors that could affect the dependent variable Absolute Cumulative Abnormal Return ($|CAR|$) at the announcement of a CFO turnover, was necessary to understand investors' reaction.

Based on related literature, several control variables were created to investigate their effect and correlation to the stock market reaction of CFO turnover announcement (see Table 3). The gender of the ingoing and outgoing CFOs was denoted as *Gender outgoing* and *Gender ingoing*. The *Source of recruitment* was captured, indicating the appointment of either an external or internal successor. An external recruitment was defined as when the successor was appointed without having a connection to the firm, while an internal recruitment was defined as when the successor already held a position within the company. The *Reason for exit* was distinguished as forced or voluntary succession. A succession was referred to as forced if the CFO was fired from the position with immediate effect compared to a voluntary succession. *CFO experience* was defined as whether the appointed CFO had prior experience of CFO/finance director/top management experience. We also investigated whether the new CFO was a *Board member* of the firm. Information about the three latter variables was found in the announcing press release or by complementary search in annual reports and company websites. The variable *CEO turnover* was included to capture if the CEO of the firm had succeeded within one year, prior to or after, the CFO succession. In addition, firm size and leverage were included to control for firm effects. Firm size was categorised based on the natural logarithm of *Total assets*, and *High leverage* was defined by debt-to-equity ratios greater than 2[14].

[14] The riskiness of the firm is evaluated based on the leverage ratio where a leverage ratio > 2 is a risky firm, and < 2 is a less risky firm.

At last, our independent variables were the counter variable *Year*, which defined in what year the succession took place, and the dummy variable *Period* which indicated which time period the observation belonged to. This was made as a complement to the testing of Hypothesis 1, to compare the effect as the years and period continued.

**Table 3.** Variable description and coding.

| Variable | Code |
|---|---|
| Gender outgoing | Dummy, 1 if male, 0 if female |
| Gender ingoing | Dummy, 1 if male, 0 if female |
| Source of recruitment | Dummy, 1 if internal, 0 if external |
| Reason for exit | Dummy, 1 if forced, 0 if voluntary |
| CFO experience | Dummy, 1 if previous experience, 0 if not |
| Board member | Dummy, 1 if on board, 0 if not |
| CEO turnover | Dummy, 1 if CEO turnover, 0 if not |
| Year | Continuing between 1-19, 1 = 2002, 19 = 2020 |
| Period | Dummy, 0 for Period 1, 1 for Period 2 |

### 3.4.2. Regression Model

Two regression models were designed. One focusing on the independent variable *Year*, and one focusing on the independent variable *Period*. In the regression, $\alpha$ is a constant, $\beta_x$ is the coefficient for each independent variable in the regression model and ε is the error term.

Regression model 1:

$$|CAR|\,(t_1, t_2) = \alpha + \beta_1 * \text{Control variables} + \beta_2 * Year + \varepsilon \quad (4)$$

Regression model 2:

$$|CAR|\,(t_1, t_2) = \alpha + \beta_1 * \text{Control variables} + \beta_2 * Period + \varepsilon \quad (5)$$

## 3.5. Data Quality & Robustness

To increase the validity of our data, the robustness of our data and sample was tested. The sample of 737 observations was analysed concerning the underlying assumptions of the conducted tests, by the use of Levene's test, White test, Pearson correlation, Inflation Factor (VIF) test. In addition, a non-parametric Mann-Whitney test was made to complement the parametric tests used for the event study.

### 3.5.1. *T*-test

For the *t*-test used for Hypothesis 1, the underlying assumptions are 1) normality and 2) equal variances. The normal distribution assumption was fulfilled for the non-absolute *CAR* yet not for the absolute |*CAR*| (which distribution formed an inverted J-shaped curve), hence the complementing variance test was conducted. Furthermore, the Central Limit Theorem (CLT) states that the sampling distribution of the estimates will converge toward a normal distribution if the sample is large enough (Pek et al., 2018). In general, a larger total sample is required when the errors depart from normality (Lange et al., 1989; Pek et al., 2018). Therefore, the sample size of this study (737) allows for relaxation of the normality assumption[15]. To test for equal variances, Levene's test (Levene, 1960) was used. The results indicated that the assumption was violated, which made it inappropriate to use the *t*-test assuming equal variances (Brown & Forsythe, 1974)[16]. Thus, the assumption of unequal variances was added to the conducted *t*-tests (Ruxton, 2006). To further support the use of the *t*-test and to validate its results despite the underlying assumption of normality, a non-parametric test (Mann-Whitney) was carried out, which supported the findings from the *t*-test.

### 3.5.2. Regression

For the used regression model with robust standard errors to hold, the following assumptions should be made; 1) linearity: the relationship between the independent variables and dependent variable should be linear, 2) homoscedasticity: the variance of the errors should be constant across all levels of the independent variables, 3) normality: the residuals should be normally distributed, 4) no multicollinearity: the independent variables should not be highly correlated with each other (Lewis et al., 2012).

Firstly, a scatter plot was used to analyse the relationship between the dependent and independent variables. The plot showed a linear pattern, which indicated that the linearity assumption was met (see Appendix 1). Secondly, a test for heteroskedasticity was made by the use of the White test (White, 1980; Breusch & Pagan, 1979; Cook & Weisberg, 1983). Evidence for heteroskedasticity was found in the dependent variable |*CAR*|. Heteroskedasticity can bias the standard errors and confidence intervals of the regression coefficients, which can lead to incorrect conclusions about the statistical significance of the predictors (White, 1980). This was mitigated by conducting the regression with robust standard errors (White, 1980). Thirdly, a scatter plot of the regression residuals (see Appendix 2), showed a slight linear pattern meaning that one or more of the underlying assumptions were violated. Recall the normality assumption was not fulfilled, and this was mitigated by the large sample size as stated above. Fourthly, the assumption about multicollinearity was examined in two steps; 1) Pearson correlation, and 2) VIF-test

[15] A combined sample size of at least 30 is required (Lange et al., 1989).
[16] By assuming unequal variances, the test adjusts for the differences in variance between the two groups which results in more accurate p-values and confidence intervals (Brown & Forsythe, 1974).

(Newbold et al., 2013; Lee & James, 2007). Both tests suggested acceptable low levels of multicollinearity[17]. Lastly, winsorizing was used to control for extreme values and reduce the effect of spurious outliers, which decreases the risk of distorted results (Ghosh & Vogt, 2012, Dixon, 1960).

### 3.5.3. Additional Tests

Additionally, when conducting an event study, a non-parametric test should be utilised in addition to the parametric test to determine significance (Brinkhuis & Scholtens, 2018). MacKinlay (1997) suggests using a sign test as the non-parametric test. Therefore, a Wilcoxon signed rank test (also called Mann-Whitney test (Mann & Whitney, 1947)) was used to establish the significance of the $|CAR|$s. Also, doing a non-parametric test supports our findings for the test where the normality assumptions were not met (Pek et al., 2018).

[17] VIF values below 5, and correlation values below 0.7 were accepted. (Correlation values are presented in Table 5).

# 4. Results

This chapter aims to present the obtained results associated with the primary theme of the study. Namely if the evolution of the role of the CFO can be mirrored in the stock market reaction to CFO turnovers. The results will be presented separately based on each hypothesis. Firstly, by investigating if the absolute stock market reactions to CFO succession announcements have increased over time (Hypothesis 1). Secondly, by examining if the absolute stock market reactions to CFO turnover announcements have increased proportionally more than the absolute stock market reactions to CEO turnover announcements over time (Hypothesis 2). Section 4.1.2 presents the findings of the influential variables' effect on the stock market reaction. The results show increased absolute stock market reactions to CFO turnover announcements over time, although it is not proportionally larger than the absolute stock market reactions to CEO turnover announcements. Therefore, Hypothesis 1 is supported while Hypothesis 2 is rejected based on the findings.

Table 4 complies all variables used in our study. The number of obtained observations per variable and the percentage of the sample based on each period is represented in the table. The table gives valuable insights on how each variables' representation has changed over time. To start with, by studying the development of gender, newly appointed female CFOs have seen an increase of roughly 9 percentage points while appointed males have decreased equally much during the same period. Secondly it has become more common to recruit externally than internally over time, according to our sample. In period 2, 70% of the companies in the sample recruited externally compared to roughly 63% in period 1. The reason for exit, being voluntary or forced, has changed over time. In the first time period, forced turnovers accounted for about 32% of the sample whilst in period 2, forced turnovers only accounted for about 9% of the total sample. Also, the number of appointing CFOs holding a board seat has increased by roughly 23 percentage points from period 1 to period 2. The majority of the board seats are occupied by men. Even though appointed female CFOs have seen an increase over the time period, the female representation on the board has increased by barely 3 percentage points. Thereto, appointed CFOs with prior experience have also increased during the two time periods. Also, we noticed that over time, there was an increased tendency to highlight the appointed CFO's tenure, prior experience and achievements in the press releases surrounding the CFO succession. Moreover, CFO recruitments where the CEO was recruited within one year, have also increased. Lastly, small cap firms are overrepresented in our sample.

**Table 4**: Descriptive statistics of variable distribution over time.

| | Period 1 | | Period 2 | |
|---|---|---|---|---|
| Variable | # of observations | % of sample | # of observations | % of sample |
| 1. Gender outgoing | | | | |
| i) Male | 182 | 95.3 | 497 | 91.0 |
| ii) Female | 9 | 4.7 | 49 | 9.0 |
| 2. Gender ingoing | | | | |
| i) Male | 177 | 92.7 | 458 | 83.9 |
| ii) Female | 14 | 7.3 | 88 | 16.1 |
| 3. Source of recruitment | | | | |
| i) Internal | 71 | 37.2 | 164 | 30.0 |
| ii) External | 120 | 62.8 | 382 | 70.0 |
| 4. Reason for exit | | | | |
| i) Forced | 61 | 31.9 | 50 | 9.2 |
| ii) Voluntary | 130 | 68.1 | 496 | 90.8 |
| 5. Board member | | | | |
| i) All | 83 | 43.5 | 364 | 66.7 |
| ii) Male | 79 | 95.2 | 336 | 92.3 |
| iii) Female | 4 | 4.8 | 28 | 7.7 |
| 6. CFO experience | 129 | 67.5 | 403 | 73.8 |
| 7. CEO turnover | 30 | 15.7 | 126 | 23.1 |
| 9. High leverage | 21 | 10.9 | 30 | 5.5 |
| 10. Firm size[18] | | | | |
| i) Small cap | 125 | 65.0 | 515 | 94.5 |
| ii) Mid cap | 37 | 19.4 | 27 | 5.0 |
| iii) Large cap | 29 | 15.6 | 4 | 0.5 |

N = 737 for all variables

Table 5 presents the descriptive statistics and correlations for the variables utilised in our study. In general, most of the significant correlations are weak, as they are below 0.1. However, some significant correlations are noteworthy, such as the significant positive correlation between the variable *Total assets* and *Reason for exit*, indicating that larger firms also are more likely to force their CFO to leave. Moreover, *Total assets* correlates negatively with the variable *Board member*, implying that larger firms have CFOs as board members less frequently. Likewise, there is a positive correlation between *Board member* and *CFO experience*, suggesting it's more likely that CFOs being on the board, also have previous CFO experience. Lastly, the significant negative correlations between the variables *CEO turnover* and *Gender ingoing* indicates that when the CEO has previously been recruited/will be recruited within one year, it is more likely that the new CFO is a female.

[18] Small cap (£237m-£1,58bn), Mid cap (£1,58bn-£7,9bn), Large cap (>£7,9bn) based on data from LSE.

**Table 5**: Descriptive statistics & Correlation matrix.

| Description | Mean | S.D | 1. | 2. | 3. | 4. | 5 | 6 | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | | | | | | | | | | | | | | | | | |
| 1. \|(0-0) *CAR*\| | 0.025 | 0.0013 | 1.00 | | | | | | | | | | | | | | |
| 2. \|(0-1) *CAR*\| | 0.034 | 0.0016 | 0.83*** | 1.00 | | | | | | | | | | | | | |
| 3. \|(1-1) *CAR*\| | 0.040 | 0.0019 | 0.74*** | 0.88*** | 1.00 | | | | | | | | | | | | |
| 4. (0-0) *CAR* | -0.002 | 0.0015 | 0.00 | 0.00 | -0.01 | 1.00 | | | | | | | | | | | |
| 5. (0-1) *CAR* | -0.002 | 0.0019 | 0.00 | 0.07 | 0.05 | 0.84*** | 1.00 | | | | | | | | | | |
| 6. (1-1) *CAR* | -0.002 | 0.0022 | -0.01 | 0.04 | 0.05 | 0.07*** | 0.90*** | 1.00 | | | | | | | | | |
| 7. Gender (outgoing) | 0.921 | 0.010 | -0.08** | -0.07** | -0.05 | 0.05 | 0.08** | 0.10*** | 1.00 | | | | | | | | |
| 8. Gender (ingoing) | 0.864 | 0.013 | 0.05 | 0.03 | 0.00 | -0.04 | -0.02 | 0.00 | 0.00 | 1.00 | | | | | | | |
| 9. Source of recruitm. | 0.320 | 0.017 | 0.01 | 0.03 | 0.04 | 0.05 | 0.04 | 0.06 | -0.03 | -0.05 | 1.00 | | | | | | |
| 10. Reason for exit | 0.151 | 0.013 | 0.02 | 0.04 | 0.03 | 0.00 | 0.02 | 0.02 | 0.01 | 0.06 | 0.06* | 1.00 | | | | | |
| 11. Board member | 0.605 | 0.018 | 0.05 | 0.01 | 0.03 | 0.05 | 0.06* | 0.04 | 0.03 | -0.02 | -0.06* | -0.12 | 1.00 | | | | |
| 12. CFO experience | 0.722 | 0.016 | 0.07* | 0.02 | 0.02 | -0.01 | 0.00 | 0.01 | 0.03 | -0.02 | -0.03*** | -0.03 | 0.12*** | 1.00 | | | |
| 13. CEO turnover | 0.212 | 0.015 | -0.03 | -0.06* | -0.07* | 0.01 | 0.00 | -0.01 | -0.04 | -0.10** | -0.03 | -0.02 | 0.00 | -0.03 | 1.00 | | |
| 14. High leverage | 0.069 | 0.010 | -0.03 | -0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.02 | 0.02 | 0.03 | -0.02 | 1.00 | |
| 15. Firm size | 5.71 | 0.100 | -0.08** | -0.06 | -0.08** | -0.02 | -0.02 | -0.04 | 0.02 | 0.01 | 0.04 | 0.21*** | -0.12*** | 0.02 | -0.05 | 0.18 | 1.00 |

N = 737 for all variables

*p<0.05, **p < 0.01, ***p < 0.001.

## 4.1. Results from the Event Study

The results for the event study will be split into two sections, based on the two hypotheses. The first section will describe the results from the testing of Hypothesis 1, through the mean comparison and variance comparison test, followed by the regression analysis. Thereafter, the results from the testing of Hypothesis 2 through the Difference-in-Difference (DID) test will be presented.

### 4.1.1. Hypothesis 1 - Investors' Reaction to CFO Successions Over Time

Before testing for Hypothesis 1, we investigated if the mean non-absolute *CAR* (the mean stock market reaction to CFO turnovers) had changed over time. Thus, accounting for both positive and negative stock market reactions. The results showed it had not. Our *t*-tests for each event window displayed insignificant results and revealed no evidence for differences over time. Meaning, the investors have not reacted more positively or negatively over time to the announcement of CFO turnovers.

**Figure 2**. Mean |*CAR*| over time.


Moving forward, Table 6 shows the results from the *t*-test of Hypothesis 1. The hypothesis predicts that the absolute stock market reactions to CFO succession announcements have increased over time. Building upon the argument that the evolution of the CFO can be mirrored in investors' reaction. Thus, the stock market reaction to CFO turnovers, whether positive or negative, has increased from 2002 to 2020. The results indicate that Hypothesis 1 is supported and that the mean absolute |*CAR*| has increased over time. From period 1 to period 2, and for the event window (0-1), the mean absolute |*CAR*| has increased from 2.5% to 3.7%. Similarly, the remaining two event windows (0-0) and (-1-1) have increased from 1.7% to 2.7% and 3.0% to 4.3% respectively. The results of the conducted *t*-tests made evident that the increase over the two time periods, across all event windows, were significant. Figure 2 delineates the increase in absolute |*CAR*| over time. Thus, our results illustrate strong support for Hypothesis 1.

**Table 6.** |*CAR*| mean comparison, unequal variances.

| | Mean \|*CAR*\| (%) | | *t*-test *p*-values (two tail) |
|---|---|---|---|
| Event window | Period 1 (2002-2011) | Period 2 (2012-2020) | Comparing Periods 1 and 2 |
| \|(0-0) *CAR*\| | 1.74 | 2.73 | 0.000*** |
| \|(0-1) *CAR*\| | 2.45 | 3.72 | 0.000*** |
| \|(-1-1) *CAR*\| | 3.03 | 4.32 | 0.000*** |
| N | 191 | 546 | |

*p < 0.05, **p < 0.01, ***p < 0.001.

Although the results are robust, the use of the absolute values breaches the assumption of normal distribution associated with the *t*-test, as discussed in 3.6.1. Therefore, an alternative test to strengthen the results was made by using a variance test (sd-test). It tested if there was a significantly greater *CAR* dispersion in period 2 (see Table 7) compared to period 1. Since the non-absolute *CAR* fulfils the assumption of normality, the sd-test is a valid complementing test of Hypothesis 1. Table 7, shows that the standard deviation in the event window (0-1) increased from 0.038 in period 1 to 0.057 in period 2. The results for the remaining windows (0-0) and (-1-1) are similar. Additionally, all the results were significant. Thus, over the course of the research period, the size of the reactions, positive or negative, but without regard to the actual sign have increased, giving support for Hypothesis 1.

**Table 7.** *CAR* variance comparisons.

| | *CAR* standard deviations | | Variance comparison *p*-values (two tail) |
|---|---|---|---|
| Event window | Period 1 (2002-2011) | Period 2 (2012-2020) | Comparing Periods 1 and 2 |
| (0-0) *CAR* | 0.003 | 0.043 | 0.000*** |
| (0-1) *CAR* | 0.038 | 0.057 | 0.000*** |
| (-1-1) *CAR* | 0.042 | 0.066 | 0.000*** |
| N | 191 | 546 | |

*p < 0.05, **p < 0.01, ***p < 0.001.

### 4.1.2. Regression Analysis of Time-Variables & Other Control Variables

To further find support for Hypothesis 1, we ran a supplementary analysis to determine the effect time has on the dependent variable. Namely, a multivariate linear regression analysis was performed to test what influence the time variables have on the dependent variable |*CAR*|. Two different regression models were designed. Regression model 1 (R1) focused on the independent variable *Year*'s effect. *Year* is created as a counter variable from 1 to 19 representing each year in our sample. Regression model 2 (R2), includes the independent variable *Period*, a dummy variable (0 = period 1, and 1 = period 2). In addition, previous scholars argue for the use of several important variables when evaluating the stock market reactions (see 3.4.1). Such variables are included in the two regression models as control variables.

In Table 8 the regression results are presented. The regression was made for each event window. The dependent variable used is the absolute |*CAR*| for each event window, thus the regression tells us the effect the included variables have on the size of the stock market reaction. To begin with, by analysing the R-squared and adjusted R-squared, it is shown that the model explains only a small fraction of the variation in |*CAR*|. With that in mind, however, the regression shows some significant results worth noticing.

First, both independent variables, namely *Year* and *Period*, exhibit significant positive outcomes. Using the event window (0-1) the *Year* variable causes a positive change in |*CAR*| of 0.20 percentage points. Suggesting the magnitude of the absolute stock market reaction to a CFO succession, increases by 0.20 percentage points each year. As an illustration, transforming this over the course of the whole period, it translates to an increase just below 4%. To further emphasise, the average firm in our sample has a market capitalisation of £2.6 billion, which means that over the course of the 19-years period, the average shift in market value, caused by the succession of a new CFO, increased by approximately £100 million[19]. Similarly, using the same event window, the *Period* variable affects |*CAR*| positively by 1.43 percentage points between the two time periods. Notably, the outcomes of both independent variables are significant at a minimum of the 95% confidence level. This further supports Hypothesis 1.

Second, another finding is the effect of *CEO turnover*. Using the event window (-1-1), the size of |*CAR*| decreases (-1.04 percentage points) if there has been a CEO succession one year before or after the CFO change. This was significant to 95% in the event window (0-1) and (-1-1). This demonstrates a smaller stock market reaction to a CFO turnover if a CEO turnover takes place in close proximity. Third, significant results are also found for the *CFO experience* variable in the event window (0-0). It suggests that investors react to a larger degree (+0.63 percentage points in R2) if the ingoing CFO has previous CFO experience, significant to 99%. Four, significant results, to a 90% level, were found in two of the event windows, for the *Reason for exit*, demonstrating a larger stock market reaction if the former CFO was forced to leave the position (+1.15 percentage points in event window (-1-1)). Lastly, similar results were found for *Gender ingoing*, (+0.67 percentage points) if the ingoing CFO was a male. Suggesting investors react to a larger degree to ingoing male CFOs, compared to female CFOs.

[19] An annual approximate of British Pound (GBP).

**Table 8.** Linear regression predicting |*CAR*|.

| | |*CAR*| (%) | | |*CAR*| (%) | | |*CAR*| (%) | |
|---|---|---|---|---|---|---|
| Event window | (0-0) | | (0-1) | | (-1-1) | |
| Regression Model | 1 | 2 | 1 | 2 | 1 | 2 |
| Variable: | | | | | | |
| Gender (outgoing) | -0.91 | -0.10 | -0.96 | -0.12+ | -0.72 | -0.90 |
| | (0.64) | (0.65) | (0.71) | (0.70) | (0.73) | (0.72) |
| Gender (ingoing) | 0.67+ | 0.62+ | 0.57 | 0.49 | 0.20 | 0.11 |
| | (0.38) | (0.37) | (0.45) | (0.44) | (0.58) | (0.57) |
| Source of recruitment | 0.23 | 0.28 | 0.28 | 0.36 | 0.41 | 0.48 |
| | (0.29) | (0.29) | (0.39) | (0.39) | (0.46) | (0.47) |
| Reason for exit | 0.70 | 0.60 | 0.11+ | 0.95 | 1.15+ | 0.97 |
| | (0.44) | (0.45) | (0.57) | (0.58) | (0.64) | (0.66) |
| Board member | 0.13 | 0.18 | -0.15 | -0.08 | 0.00 | 0.08 |
| (Ingoing CFO) | (0.26) | (0.26) | (0.35) | (0.35) | (0.40) | (0.40) |
| CFO experience | 0.57* | 0.64* | 0.24 | 0.35 | 0.17 | 0.28 |
| (Ingoing CFO) | (0.25) | (0.26) | (0.35) | (0.35) | (0.40) | (0.41) |
| CEO turnover | -0.39 | -0.38 | -0.84* | -0.82* | -1.04* | -1.01* |
| | (0.29) | (0.29) | (0.36) | (0.36) | (0.42) | (0.42) |
| High leverage | -0.23 | -0.26 | -0.05 | -0.11 | 0.48 | 0.43 |
| | (0.45) | (0.45) | (0.66) | (0.65) | (0.75) | (0.76) |
| Total assets (natural log) | -0.03 | -0.05 | 0.04 | -0.00 | -0.06 | -0.11 |
| | (0.04) | (0.04) | (0.06) | (0.06) | (0.74) | (0.07) |
| Year | 0.11** | - | 0.20*** | - | 0.17** | - |
| | (0.03) | - | (0.04) | - | (0.05) | - |
| Period | - | 0.89** | - | 1.53*** | - | 0.12** |
| | - | (0.29) | - | (0.39 | - | (0.43) |
| Constant | 0.59 | 1.87 | 0.45 | 2.65** | 1.90 | 4.07*** |
| | (1.05) | (0.79) | (1.33) | (1.09) | (1.59) | (1.15) |
| R-squared | 0.040 | 0.040 | 0.034 | 0.036 | 0.036 | 0.028 |
| Root MSE | 0.036 | 0.045 | 0.052 | 0.036 | 0.045 | 0.052 |

N = 737 for all variables
+p<0.1, *p<0.05, **p < 0.01, ***p < 0.001.
Robust standard errors in parentheses

In addition, to estimate if investors' reaction has changed over the course of the estimated period, each variable's effect on |*CAR*| over time was analysed through a Difference-in-Difference (DID) regression (see Appendix 3). The sole significant result was regarding

the CFO board membership. The variable *Board member* has thus increased in importance of explaining |*CAR*|. Specifically, at a significant level of 95%, the effect on absolute |*CAR*| is 0.90 percentage points larger if the CFO was on the board in period 2, compared to period 1. No other significant results were found for the remaining variables over time.

### 4.1.3. Hypothesis 2 - Investors' Reactions to CFO vs. CEO Successions Over Time

Before testing for Hypothesis 2, we investigated if the mean absolute |*CAR*| for CEOs had increased over time. Thus, to investigate if the increase, either positive or negative, in the absolute investor reactions to CEO succession announcements, are similar to those of CFO succession announcements.

**Table 9.** CEO: |*CAR*| mean comparison, unequal variances.

| | Mean \|*CAR*\| (%) | | *t*-test *p*-values (two tail) |
|---|---|---|---|
| Event window | Period 1 (2002-2011) | Period 2 (2012-2020) | Comparing Periods 1 and 2 |
| \|(0-0) *CAR*\| | 3.63 | 4.55 | 0.058+ |
| \|(0-1) *CAR*\| | 3.78 | 5.16 | 0.007** |
| \|(-1-1) *CAR*\| | 4.34 | 5.79 | 0.009** |
| N | 178 | 558 | |

+p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.

Table 9 shows the results for the absolute mean comparison for CEO turnovers. Clearly, the results for all event windows show evidence of increased mean absolute |*CAR*| over time. Evidently, the mean |*CAR*|s for CEO turnovers are higher than those values recorded for the CFO turnovers. Also, the increase in absolute mean |*CAR*| over time is higher for all event windows compared to that of the announcements of CFO turnovers. All results were significant on a 90% level or higher.

Hypothesis 2 predicts that the absolute stock market reaction to CFO successions has grown proportionally more than the stock market reaction to CEO successions, over the same time period. By only observing the absolute mean comparisons and its percentage change between period 1 and 2, results indicate the opposite reaction. In fact, investors' reaction to CEO turnovers has increased more, also in proportion, over time compared to the investors' reaction to CFO turnovers.

To properly investigate if support could be found for Hypothesis 2, a Difference-in-Difference (DID) test (Heckman et al., 2016) was conducted. Interpretation of Table 10 suggests Hypothesis 2 is not supported. As an underlying assumption, we assume the

CEO data to be comparable to the one of the CFOs[20]. In a DID test there are three major steps. First, we take the average change in the mean |*CAR*| of the control group (CEOs), between period 1 and 2. Second, we take the average change in mean |*CAR*| in the treatment group (CFOs), between period 1 and 2. Third, we analyse the difference in those differences.

In Table 10, the first row shows the results for |*CAR*| in our treatment group (CFOs), which is significantly lower compared to the control group (CEOs). Specifically, in the (0-0) event window, significant results were observed that investors' reactions to CFO turnovers was 1.3 percentage points smaller than CEO turnover announcements. The second row shows the general average change in absolute stock market reactions over time. In other words, using event window (0-1) and (-1-1) the positive coefficient shows that the absolute stock market reactions for both groups have significantly grown 1.4 percentage points between period 1 and period 2. Lastly, the negative coefficient in the third row reveals, yet not statistically significant, that the absolute stock market reactions to CFO succession have not increased more over time than that of the CEOs.

A graphical representation (see Figure 3) illustrates the relationship between the reactions of CFOs and CEOs for each event window, revealing a steeper increase in the absolute reactions of CEOs. However no significant results were recorded for any of the event windows, suggesting that support for Hypothesis 2 cannot be attained. Hence, there is no support that investors' absolute reaction to CFO turnover announcements has increased proportionally more than the reaction to CEO turnover announcements over time.

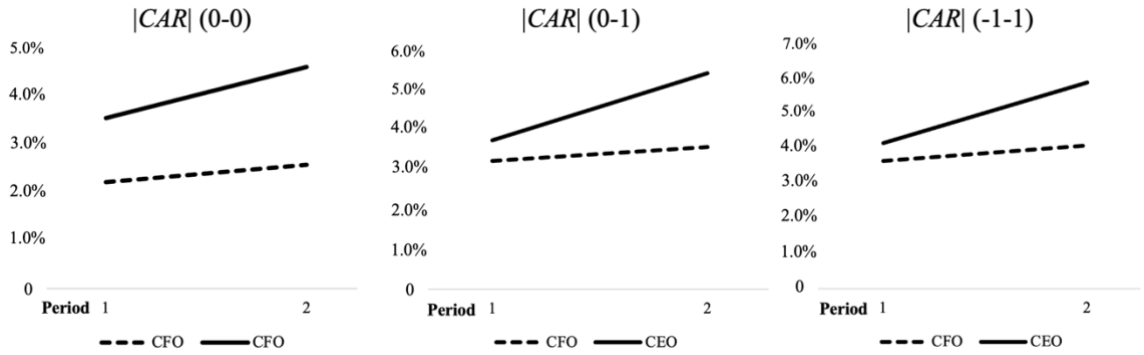
**Table 10.** Difference-in-Difference (DID) – CEO vs. CFO.

| | Coefficient (%) | | | Dif-in-Dif *p*-values | | |
|---|---|---|---|---|---|---|
| Variable | \|*CAR*\| (0-0) | \|*CAR*\| (0-1) | \|*CAR*\| (-1-1) | \|*CAR*\| (0-0) | \|*CAR*\| (0-1) | \|*CAR*\| (-1-1) |
| CFO vs. CEO | -1.3 | -0.5 | -0.5 | 0.018* | 0.384 | 0.434 |
| Period 2 | 0.9 | 1.4 | 1.4 | 0.048* | 0.006** | 0.010* |
| Interaction | -0.6 | -1.1 | -1.1 | 0.37 | 0.102 | 0.159 |
| R-squared | 0.029 | 0.019 | 0.016 | | | |
| Adjusted R-squared | 0.027 | 0.017 | 0.014 | | | |

+p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.

[20] The assumption makes it possible to compare the CEO and CFO groups. This is made due to the lack of CFO research. Another alternative would be to compare the CFO to another top management role, yet the issue of lacking research would still be prevalent. Therefore, the CEO is a suitable comparison.

**Figure 3**. Illustration of mean absolute |*CAR*| increase (CEO vs. CFO).




## 4.2. Additional Analyses

In addition to the aforementioned tests, Table 11 allows for a comparison of the non-absolute *CAR*s across the two time periods. Here, the event window (0-1) is used. The table reveals that the mean of the positive *CAR*s have become more positive, and the negative *CAR*s have become more negative. This supports the greater variance shown in the sd-test (see Table 7). Comparing all cases (positive and negative), the mean has grown to be less negative (from -0.22 to -0.11) which suggests that the positive *CAR*s have grown to a larger degree than the negative *CAR*s over the course of the estimated period.

**Table 11**. Positive versus negative *CAR*s (0-1).

| | Period 1 (2002-2011) | | | Period 2 (2012-2020) | | | All cases | | |
|---|---|---|---|---|---|---|---|---|---|
| Event window | N | % | Mean | N | % | Mean | N | % | Mean |
| Positive *CAR*s | 94 | 49 | 2.26 | 253 | 46 | 3.75 | 347 | 47 | 3.35 |
| Negative *CAR*s | 97 | 51 | -2.62 | 293 | 54 | -3.45 | 390 | 53 | -3.24 |
| All cases | 191 | | -0.22 | 546 | | -0.11 | 737 | | -0.14 |

+p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
Mean *CAR*s are expressed in percentage (%)

## 4.3. Concluding Remarks on Statistical Results

In addition to the robustness tests and analyses already presented and described, the parametric *t*-test, sd-test and regression is complemented by a non-parametric Wilcoxon signed rank test (also called Mann-Whitney test), as suggested by Brinkhuis & Scholtens (2018) and MacKinlay (1997). This was done to determine the significance of the distribution of the |*CAR*| variable between the two time periods. For the event window (0-0) and (0-1). The results in Table 12 showed a difference in the distribution of absolute

|*CAR*| between period 1 and 2, significant at 99% and 95% respectively. The same pattern, yet not significant, was found for the event window (1-1).

**Table 12**. Non-parametric Mann-Whitney test (|*CAR*|).

| | Mann-Whitney *p*-values |
|---|---|
| Event window | Comparing Period 1 and 2 |
| (0-0) | 0.005*** |
| (-0-1) | 0.017** |
| (-1-1) | 0.153 |

*p<0.05, **p < 0.01, ***p < 0.001.
N = 191 for period 1, N = 546 for period 2

# 5. Discussion

This section aims to analyse the results, by connecting the findings with previous research within the area. Strategic implementations and suggestions for future research, as well as the validity and reliability of our results are discussed. Lastly the limitations of the study are presented.

## 5.1. Hypothesis Analysis

This paper delves into investors' reactions to CFO successions based on the underlying assumption of the increased complexity CFO role. Likewise, investors' absolute reaction to CFO successions is compared to the absolute reactions to CEO successions. Various contributory variables are discussed throughout the discussion. The outcomes are analysed separately, corresponding to each hypothesis.

**Table 13.** Overview of hypotheses.

| | | |
|---|---|---|
| **H1** | The absolute stock market reactions to CFO turnover announcements have increased over time. | **Supported** |
| **H2** | The absolute stock market reactions to CFO turnover announcements have increased proportionally more compared to the absolute stock market reactions to CEO turnover announcements over time. | **Not supported** |

### 5.1.1. The Rise of the CFO - Mirrored in Investors' Reactions

Our results must be interpreted in the light of the lack of research within the subject of stock market reaction to CFO turnovers. Since the CFO turnover is arguably all but unimportant, this study has attempted to highlight the importance of recognising CFO turnovers based on the insights gained from CEO turnover research. Specifically, this study has examined how the growth of the role of the CFO internally, has impacted the external reaction of investors' reaction, over time. Using a sample of 737 observations of CFO turnovers between the years 2002 and 2020, and several different evaluation techniques, robust evidence is presented in favour of investors' increased reaction to CFO turnovers over time[21]. Our results provide support for the assertion that information concerning CFO-related organisational changes is meaningful to investors. These results support the notion that investors pay attention and respond to news concerning top

[21] A mean absolute $|CAR|$ increase of 1.27 percentage points (for event window (0-1)).

management changes, either positive or negative (Furtado & Rozeff, 1987; Huson et al., 2004; Bonnier & Bruner, 1989; Weisbach, 1988; Mian, 2001; Beatty & Zajac, 1987; Mian, 2001; Gangloff et al., 2016; and others).

More broadly, our empirical approach provided a robust assessment of the investors' perceptions of the value of the CFO. It suggests that the information is anticipated by the investors and thus, the semi-strong form of EMH holds for Hypothesis 1 (Fama, 1965). In addition to the increased absolute mean of the investors' reactions, the dispersion of *CAR*s have grown over the two time periods. That is, the interval in which the reactions vary was significantly larger in the recent time period. The results support the notion that investors assess changes of CFOs as increasingly impactful, mirroring the increased importance of the CFO acknowledged by various studies (Favaro, 2001; Ferris & Sainani, 2021; Mellon et al., 2012). Thus, CFOs' climb in hierarchies is not only recognised in their percentage salary increase (Milton, 2015), but also in the recognition they receive from investors who have acknowledged their significance within the organisation.

Noteworthy, we considered an alternative explanation of our results. Namely that investors' reactions to news, in general, has risen over time. Over the course of the 19-year period underpinning our sample, digitalisation, globalisation, and rivalry have experienced explosive growth. These are factors making markets more efficient (Wang, 2010), in other words, reacting more correctly and faster to new information. Thus, we anticipated that the shortest event window (0-0) would display the largest proportional increase in mean $|CAR|$, due to markets being faster to react. Our findings, however, disproved this. Instead, we observed the greatest proportional increase in the longest event window. Macro trends during the past two decades may also account for the growing dispersion in *CAR* over time, aligning with Megaritis et al., (2021) suggesting higher volatility in times of macroeconomic uncertainty. At the same time, research also suggests that markets have not grown substantially more volatile in terms of proportional changes over time (Schwert, 2002), which further validates the support and conclusions reached for Hypothesis 1.

Looking into the recruitment pattern of the CFOs, one plausible explanation that enhances investors' reactions to CFO turnover, particularly in the UK, is the high representation of CFOs on the board. According to our sample, 61% of the newly appointed CFOs held a board member seat, which makes them an essential component of the governing body of the company. Comparably, as the role of the CFO has expanded over time, the board representation has increased from 29% (period 1) to 67% (period 2). Also, the degree to which investors value the fact that the new CFO is on the board has grown significantly over time (see Appendix 3). Hence, the increased reaction could owe to a higher importance in the eyes of the investors.

Additionally, competitive forces driven by macro trends have led to a greater need for managerial effort and efficiency, which is reflected in the market. In our sample, newly

appointed CFOs with previous CFO experience had not only increased by 6 percentage points over the two time periods. It was also found that investors react significantly more (+0.63 percentage points) if the ingoing CFO has previous CFO experience, promoting that CFOs nowadays ought to possess a broader skill set to cope with the increased level of competition (Bloom et al., 2019; Agarwal et al., 2020; Bloom & Van Reenen 2017; Boone et al., 2013). This also indicates that the CFOs' own perceived experience of the increased complexity of their role, is understood and reflected by the market in the UK (Mellon et al., 2012; van Niekerk, 2016; Tipalti, 2021). Also, it could be argued that the increased level of required specialisation has led to the emergence of new roles such as the COO[22] and CTO[23], to assist the CEO, and thereby relieving some of their responsibilities. There is also a positive correlation between *CFO experience* and *Board member* which, in combination with these two variables' rise over the course of the research period, validates the expected increase in the importance of the CFO role.

In terms of firm size, the results imply that larger firms are less likely to have their CFO on the board. Besides that, larger firms exhibit a smaller absolute |*CAR*| reaction, possibly due to the higher frequency of top management turnovers in larger firms (Kim et al., 2021). Specifically, in larger firms, news about a new CFO itself is not necessarily less important, rather due to its common occurrences, it is perceived as less surprising, which can have a reduced effect on the stock market reaction. In addition, larger firms may have more complex structures, making it more challenging to have the CFO on the board. In contrast, smaller firms might see a greater value in having their CFOs on the board, as a result of fewer financial resources and higher requirements of oversight and guidance from other financial experts. Acknowledged by previous scholars, boards punish poor management through termination (Kaplan, 2008; Mian, 2001; Karaevli, 2007; Weisbach, 1988). In larger firms where successions are more common, a board seat held by a CFO can cause a potential conflict of interest, particularly if the incumbent CFO is involved in the succession planning. The negative correlation may thus be a strategic decision of larger firms to avoid such a potential conflict.

Moving beyond the absolute values, we find no significant results whether the turnover announcement of the CFO tends on average to be associated with positive or negative stock market reaction. This result is consistent with previous research by Warner et al. (1988), Denis & Denis (1995), Brinkhuis & Scholtens (2018). However, we observed that the mean *CAR* for all observations (positive and negative), has halved between the two time periods (from -0.22 to -0.11, see Table 11.). Indicating that positive observations have become more positive while negative observations have become less negative. This suggests that investors tend to react stronger to positive CFO succession announcements (e.g., which are released in times of good firm performance, or the recruitment of a well-

[22] Chief Operations Officer.
[23] Chief Technology Officer.

known professional) than to negative CFO succession announcements (e.g., in periods of poor performance and/or in combination with other bad news, such as suspended dividends and cost savings). In other words, negative responses are more likely to be linked to contiguous bad news whereas when the firm thrives, news about a new CFO is viewed as an additional positive sign among other positive news. One explanation to this reasoning could be that shareholders are becoming more active in their involvement in the firm (Agle et al., 1999; Akhigbe et al., 1997), and more hesitant to ensure future business success. It could be a sign of investors becoming increasingly forward-looking rather than backward-looking. Since they view the change of management as a necessary procedure to ensure future success rather than as an indication of poor performance (Murphy, 2013; Hoitash et al., 2016). On the other hand, as shown, the number of CFO changes has increased immensely over the past years. Frequent CFO changes may have made shareholders more accustomed with management changes and therefore it is not considered as big a news today as in the past. Hence the reduced negative reaction is a result of common occurrences.

Although our research mainly focuses on the increased magnitude of the absolute reaction to CFO turnovers over time, certain important contributory variables cannot simply be neglected. To begin with, in the aspect of gender, males were overrepresented in our sample and accounted for at least 90% of our sample in both periods. Also, significant results were obtained for the positive effects on the size of $|CAR|$ if the ingoing CFO was a male. Specifically, when the new CFO is a male, stock market reactions appear to amplify by 0.62-0.67 percentage points. This may suggest that male CFOs are perceived as having a greater impact on the firm than their female counterparts. This contradicts recent scholars' results on non-existing gender differences (Brinkhuis & Scholtens, 2018; Zhang & Qu, 2016). The significance of the effect from the gender variable, aligns with our expectations, based on previous research suggesting evidence for the CFO's personal influence on firm reporting quality, especially in terms of gender (Gupta et al., 2020). The larger reactions found for male CFOs was also in line with our expectations based on the dominance of men in the role, even though research indicates that female CFOs have recorded higher reporting quality (Barua, et al., 2010). It is worth noting the dominance of small firms in our sample, as these entities are known to assume greater risk than their larger, established counterparts (Udell & Berger, 1998). Similarly, studies have shown that male CFOs tend to display higher levels of risk tolerance (Croson & Gneezy, 2009). Therefore, it is possible that the pattern of preponderance of male CFOs and small firms in the sample, may be interconnected.

On the contrary, we expected the gender effect on stock market reactions, to have grown either greater or smaller over time. Specifically, on the one hand, based on the increased debate in gender equality and the increased occurrences of both genders in top positions, one could expect the reactions to a specific gender to have decreased over time. On the other hand, one could also expect the gender to play a larger role in how investors perceive

the new CFO. Partially based on the above-mentioned research on positive outcomes of female CFOs, but also the increased awareness around the need to achieve a higher gender equality among top executives, which could invoke larger reactions to one or both of the genders. However, no significant results were found. This implies that the investors' reactions to the CFO gender (male or female), have not changed over time. Hence there is no difference of how investors react to a female CFO in period 1 compared to period 2.

Along the same lines, the development of increased female representation on the boards in the UK have made investors familiar with females in leading positions (Hampton-Alexander Review, 2021). Partially, the increased female representation is also witnessed in our sample, since period 1 had 7% female successors and period 2 had 16% female successors. On the other hand, the increase of female board representatives in our sample have not increased as much as suggested by the Hampton-Alexander Review (2021). Recall that board members tend to favour successors similar to themselves (Lee & James, 2007; Brinkhuis & Scholtens, 2018), the gender trend in our sample benefits male candidates and could explain the greater reaction to male CFO successions. Although the female population in this sample has increased less than the overall market, there is still an increase which will support the trend of more females in top management positions. As female representation becomes less unique, the status quo will promote female recruitments (Lee & James, 2007; Brinkhuis & Scholtens, 2018).

In contrast to previous studies, firm characteristics and recruitment patterns did not reveal any significant results in our study. We had expected to observe a greater reaction to the S*ource of recruitment*, based on existing literature that argues for the positive effect from an external successor who is able to turn distressed firms around and bring in new perspectives (Karaevli, 2007; Farrell & Whidbee, 2003; Weisbach, 1988), and the potential positive effect from an internal successor who has greater knowledge of the firm and the industry (Shen & Cannella, 2003; Furtado & Rozeff, 1987). While Bonnier & Bruner (1989), Parrino (1997) and Gabarro (1987) argue for the significant effects of appointing externally when the firm is associated with poor performance, we see no correlation with recruiting in a certain way when the performance of the firm is bad (see Table 5). An explanation to our insignificant findings could be that the inconclusive findings from previous research are also visible in our results. Namely, since we are studying the absolute $|CAR|$, we do not investigate whether $CAR$ becomes more positive or negative based on the source of recruitment. Hence, it can be argued that even though the source of recruitment evokes significant positive or negative investor responses depending on the firm performance, the effect on absolute $|CAR|$ could still be insignificant. Moreover, although our sample consisted primarily of small-cap firms and external recruitments, which according to Zajac and Westphal (1996) should correlate, we find no significant results indicating that smaller firms are more likely to hire externally. Lastly, we observe a large decrease in forced turnovers between the two

periods, from 31.9% to 9.2%, one possible explanation is that businesses are becoming better at recruiting. Previous research has recorded a positive reaction when the CEO has been forced to leave their position (Weisbach, 1988; Bonnier & Bruner, 1989). We found no support for that notion, neither does it correlate with other variables such as *High leverage*. That could be explained by the lowered frequency of forced turnovers and investors' decreased view of the importance of the variable, also supporting the notion of shareholder being more forward-looking. It also suggests that firms should focus on recruiting the right CFO rather than relying on forced turnovers as a solution to poor performance, which contradicts Mian (2001), Karaevli (2007) and Weisbach (1988).

Overall, the evolution of the CFO can be mirrored in the increased stock market reaction over time. Our results may indicate that certain variables are not as significant for the recruitment of CFOs as they are for the recruitment of CEOs, in the eyes of the investors. However, investors appear not to be neutral to gender, more prone to recruit externally when needed, and to make use of internal competence when available. In addition, the prior experience of the newly recruited CFO appears to be important in the eyes of the investors.

### 5.1.2. CFOs & CEOs - Interdependencies and Evolution Over Time

The second part of our study aimed to investigate if the absolute stock market reaction to CFO turnovers announcements have increased proportionally more than compared to the absolute stock market reaction to CEO turnover announcements over time. The hypothesis was based on the underlying assumption that the evolution of the role of the CFO has undergone a larger transformation than that compared to the role of the CEO. Using a sample of 737 observations of CFO turnover announcements, and 736 observations of CEO turnover announcements during the period 2002 to 2020, no support was found in favour of Hypothesis 2. Consequently, the investors' reaction to CFO successions have not increased proportionally more over time compared to the reactions to CEO successions.

One possible explanation is on the one hand, that investors have not incorporated the bigger development undergone of the role of the CFO. Meaning the market would not be semi strong efficient, hence, not reflecting fully and fairly (Fama, 1965). However, unreasonable in this case since Hypothesis 1 would not hold. On the other hand, another explanation is simply that the evolution of the CEO has been larger and resulted in a bigger change in how investors perceive the role compared to the CFO.

In addition, the mean reaction to CEO turnovers was higher than to CFO turnovers. This was not surprising due to the CEOs immediate impact on corporate strategy and firm performance (e.g., Bertrand & Schoar, 2003). On the other hand, the results also showed a proportionally greater development of the stock market reaction over time, compared to that of CFOs, from which we expected the opposite. Therefore, this suggests that both

roles have expanded over the years, yet the evolution of the CEO has resulted in a larger increase in how investors perceive the importance of the role. An explanation could be that CEO turnover announcements receive more media coverage than CFO successions which can affect the results. Which arguably is reasonable since CEO successions are more impactful as they are associated with a larger effect on the organisation as a whole, e.g., broader strategic shifts or changes in culture. These findings are in line with previous research by Quigley et al. (2017) regarding the growing significance of the CEO role.

Based on our results we see tendencies of CEO and CFO interdependencies. Before conducting the study, we found scarce research assessing how markets react when the CEO and the CFO successions happen in close proximity. By including a variable, *CEO turnover*, measuring if the CEO recruitment takes place near the CFO recruitment, significant results were recorded for their relationship[24] (see Table 5). Namely, investors react less to a CFO succession if a CEO succession takes place in close connection. This proposes that investors are prepared for further management changes once one is announced. This is not surprising since investors might already have priced in their reaction from anticipated CEO turnovers, based on the assumption that semi-strong market hypothesis holds. This entails that as CEOs and CFOs are commonly associated together, investors are not surprised when the CFO resigns in close proximity to the CEO. This supports findings stating that a CFO turnover within 6-12 months is a categorical consequence of a CEO turnover. (Warner et al., 1988; Denis & Denis, 1995; Mian, 2001; Gibbons & Murphy, 1990, Holmstrom, 1999).

Along the same lines, the number of CEO recruitments in period 1 and 2 clearly differs, meaning there is a higher frequency of CEO turnovers in period 2. The same pattern was found for CFOs. Based on insights from CEO research, CEOs are often punished for poor performance, and leave the firm after such periods (Mian, 2001; Karaevli, 2007; Weisbach, 1988). Therefore, we expected to see a larger number of CEO turnovers than CFO turnovers (because the termination of a CEO is expected to occur more frequently). In our sample, however, CFO turnover announcements were equally common. This unexpected finding could be an indication that CFOs also are held accountable for poor performance in line with research by Goranova & Ryan (2014), Admati & Pfleiderer (2009) and Zorn (2004). Suggesting that there is a growing recognition of the CFO in financial management, holding them accountable and compared to higher standards similar to that of the CEO. Also, the close connection between CFO and CEO recruitments seemed to become more apparent during the course of the research period (from 15.7% in period 1 to 23.1% in period 2), suggesting that firms are increasingly aligning top management positions, by making strategic changes to both positions at the same time.

[24] For the event windows (0-1) and (-1-1).

However, in terms of additional findings of this study, no significant results on poor performance (*high leverage*) were concluded (such as the investors reacting to a larger extent when a firm with high leverage changes their CFO), therefore, no statistical conclusions can be drawn if CFOs are equally punished for poor performance. To some extent, one explanation could be that investors only react to the specific press release surrounding the CFO turnover, which seldom expressly highlights poor performance. This would be in line with Ou & Penman (1989) research that investors do not interpret and react on accounting information. Thus, the EMH does not hold, and investors react irrationally as explained by the psychology theory (Odean, 1998).

Probably the most significant underlining of this study is that the CFO's role has become increasingly important and strategic over time. The recognition of the CFO's importance in firm success has gone from rarely being noticed (Zorn, 2004) to, in the eyes of the investors, being closely associated with the CEO. This transformation can be understood by the above-mentioned discussion, highlighting their symbiotic relationship. Nowadays, the CFO is a provider of financial expertise and a strategic partner, which the CEO relies on to ensure business success. In turn, the CEO's strategic direction and operational management are crucial to the CFO's success. Given their growth in mutual dependency, their collaboration is central to drive firm success.

## 5.2. Contribution & Strategic Implementations

This paper contributes to today's research in a number of ways. Beyond a theoretical contribution this study extends the research on signalling theory to incorporate CFO turnover effects. Firstly, probably the most important implication of our results is that the evolution of the role of the CFO can be mirrored in stock market reactions. Specifically, the stock market reactions to CFO succession have grown larger, together with the importance of the role of the CFO over the course of the research period. The actions of investors in the UK highlights that research surrounding CFO turnovers is meaningful and should be given more attention in modern research. Secondly, it bridges research on CFO turnovers by insights from CEO research, what to date, have been disparate bodies of research. Moving forward, research in conjunction with CEO turnover should be given further consideration. Partially based on the great significance in the results found for the strong connection between CEO and CFO succession, and investors' reaction when they occur in close connection to each other. Furthermore, interesting findings were made for the increased reaction to successions of CFOs which have had previous CFO experience, which strengthens the view of the widening of the CFO role, and its requirements.

By empirically validating the impact of CFO evolution on stock market reaction, our results have implications for strategic management. Commonly, the external effects of CFO changes have been given little attention compared to CEO changes. This study has highlighted the strategic importance of CFO succession. Based on the trend of an

increased stock market reaction to CFO turnovers over time, it is put forward here, that the CFO changes should be treated, and above all, managed as a strategic event. Firstly, the study has proven the CFO's evolution into a strategic partner to the CEO, a crucial part of the upper echelons, recognised for their financial expertise. Secondly, building upon their close relationship, the fact that they often exit and enter their position in conjunction, makes investors less surprised of either of the recruitments which creates smaller abnormal reactions. Thirdly, CFOs with prior CFO experience increases investor engagement and is increasingly important for new CFO candidates. Last but not least, CFO succession announcements serve as a signal for investors, upon which they react. Therefore, given the increased importance of the CFO, the choice of a new CFO should be carefully planned and selected, as the corporate planning surrounding CFO changes has strategic implications for the firm.

## 5.3. Limitations & Future Research

This study has provided more research to the area of the role of the CFO and its evolution. The supply of previous research is limited and therefore this study has built parts of the theoretical framework on insights from CEO studies. This is made by the assumption that the evolution of the CEO over the last decades could mirror the patterns of the evolution of the CFO role. By the same assumption, the choice of examined variables are based on previous CEO studies. The authors have critically analysed the potential differences between the CEO and the CFO and to which degree assumptions can be made and findings can be applied. This could however lead to reduced generalizability of our findings. At the same time, this study can inspire further research on the role of the CFO and its increased importance.

### 5.3.1. Limitations of Methodology

The number of observations among the two periods are unevenly distributed which could lead to skewed results (see Table 2). The probability of type I errors may increase when the sample sizes are different, because of wider confidence intervals. In line with the previous, and worth noticing, based on our research question, unequal sample sizes may lead to unequal variances between the two groups. This is of extra concern since one of our tests is based on the unequal variance assumption and another on the variance test. However, by complementing these tests with additional tests, we strengthen the robustness of the results. Thereto, we acknowledge the risk of the results being distorted by human errors due to manual data collection. To reduce this risk, as noted, we have applied several methods to verify the results, although there is no guarantee the sample is free from errors.

Furthermore, this study is based on UK data. Although certain data and patterns are specific for the UK market, the authors consider the findings to be applicable to similar

stock markets. However, country-specific differences have to be considered and is limiting the general applicability of this study. Along the same lines, no consideration has been given to sectoral differences to the benefit of a larger sample. No industries are excluded, and no sorting has been done to control for industrial differences (despite firm size), which ignores the fact that the stock market reactions to managerial successions could differ among industries. In terms of firm size, small cap firms are overrepresented in our sample, which is an influential factor to stock market reactions and thus may impact the results. Therefore, the generalisation towards larger firms is limited.

In terms of the event study design, using the market model as the risk model could generate inadequate data in periods of high volatility. For example, the sample includes data points from the Financial Crisis 2008 where outliers in the data were identified. The risk for misleading data was mitigated through the method of winozorising outliers, as well as measuring the data over a long time period (19-years). One potential negative effect of winozorising outliers is the loss of important information contained in extreme values, leading to less accuracy in understanding of the data. Another could be the overfitting of statistical models, meaning the data in the model fit too closely, potentially, leading to poor performance when the model is applied to new data.

Regarding the independent and control variables, the authors acknowledge the potential risk of overlooking and not controlling or testing for certain significant variables. This risk is shown by the small R-square number, indicating that the variables only explain a fraction of how $|CAR|$ varies. However, the selected variables are commonly used as control variables and have been demonstrated to have an impact on the dependent variable. Also, relying on insights from CEO turnovers due to a lack of research on CFO turnover may be inadequate. We have sought to reduce this risk by e.g., analysing the effect of CEO turnover in conjunction with CFO turnover.

### 5.3.2. Further Limitations & Suggestions for Future Research

The stock market reaction can be influenced by the volume of trading. High trading volume is commonly associated with high market liquidity, meaning when there are more buyers and sellers in the market it's easier to execute trades. Smaller companies are particularly sensitive to this, since an increased trading can owe to larger market movements than those recorded in larger firms who typically have more buyers and sellers and thus, don't as easily affect the stock market price. In our study, we do not control for trading volume. However, we do control for size in the regression analysis, and find no significant effect on $|CAR|$. We do, however, not exclude that it does not have an effect. We therefore encourage future researchers who look into stock market reactions of turnover announcements to simultaneously assess the frequency of trading.

In addition, this study does not control for the particular day that CFO successions are announced. Although not touched upon in this study, we noticed that in the later years of

our sample it became more common to announce top management changes during the weekends (non-trading days). There might be a difference in how the stock market reacts if announced during the weekends. We therefore propose for future research, to perform a similar study and compare reactions from weekdays to weekends (closest trading day that follows). This could have strategic implementations for businesses. In addition, based on our findings, we advocate further research to investigate the effect and development of female CFOs, especially in a sample that approximates the average change of female representation in the market. Furthermore, research suggests that boards tend to recruit people who are similar to themselves. This study did not give any consideration to the constellation of the board. This could have possibly brought more clarity to the poor female recruitments to CFO positions in our sample. We encourage future researchers to perform a similar study and simultaneously look into the board composition.

Lastly, to further support Hypothesis 1 and enhance the robustness of our findings, the general UK stock market reactions could have been compared to the stock market reactions recorded of this study. Specifically, we could have subtracted the overall stock market increase over time from the observed increase in stock market reactions to CFO successions. Although the study has examined and discussed previous research on the general increase or non-increase in stock market reactions over time, an analysis of the net effect would provide additional evidence to confirm our conclusion that the stock market reactions to CFO turnovers have increased over time. We therefore encourage future researchers to look into the subject.

We hope this study will inspire additional research to further improve our understanding of the growth of the role of CFO and its connection to the CEO, as well as other top management roles. Additionally, the close relationship between the CFO and the CEO and their replacement patterns call for further investigation. For example, how and if the CFO often turns into the new CEO, as well as if the CEO's relationship to other top management roles is similar to its relationship to the CFO. Another area for further research is regarding the increased CFO representation of the board of directors. It would be interesting to further investigate the relationship between CFO board representation and financial performance and reporting quality.

# 6. Conclusion

This study demonstrates that the role of the CFO has become increasingly important and has evolved over the past two decades. The aim of this study was to answer the research question "*How have UK public company shareholders' reactions to CFO turnover events changed over time*?". The study was made through the analysis of a sample of 737 CFO turnovers between 2002 and 2020, using several different statistical methods. Revealing that investors' reactions to CFO turnovers have increased over time, meaning, the evolution of the role of the CFO can be mirrored in the stock market reactions. Secondly, our thesis provides evidence that the stock market's reaction to CFO turnover announcements has not increased proportionally more than its response to CEO turnover announcements. Instead, the CEO has also undergone an evolution with a significant increase in stock market reaction over the years. Typically, investors react less to a CFO turnover when a CEO succession takes place in close proximity. These findings underscore the increased prominence of the interconnection between the CFO and CEO roles over time. Overall, this study highlights the increased significance of the CFO's influence on operational and financial performance, which in turn, affects investor perceptions and demonstrates the importance for companies to pay closer attention to CFO successions.

Several variables are demonstrated to have an impact on how investors react to new CFO succession information. Apart from the variable defining time, which is shown to have a large significant effect on absolute $|CAR|$, our findings suggest that stock market reactions are affected by the gender, potential board membership and previous experience of the new CFO, as well as and the reason for exit. For example, the investors' reactions appear to amplify when the new CFO is a male, suggesting that male CFOs are perceived as having a greater impact on the firm than their female counterparts. The growth in significance of the board representation highlights the importance of having a knowledgeable and experienced CFO who effectively can contribute to strategic decision-making to drive the success of the firm.

Furthermore, it was shown that the CFO's previous experiences were highly valued. Specifically, newly appointed CFOs with previous CFO experience had not only increased over the two time periods. It was also found that investors react significantly more if the ingoing CFO had previous CFO experience, which emphasises the need for CFOs to possess a broader skill set and experience to cope with the increased level of competition. However, in contrast to previous studies, our study did not reveal any significant results towards the effect on abnormal returns based on any specific firm characteristics or recruitment patterns.

To conclude, the traditional role of the CFO as a financial and accounting overseer has evolved into a more strategic and integral position within the firm, which is closely

connected to the CEO. Firms and investors should pay close attention to CFO turnover and its potential impact on stock market performance. So, in line with the rise of the CFO, perhaps the saying should be, "behind every successful CEO, there is a great CFO".

# 7. References


Admati, A. R., & Pfleiderer, P. (2009). The Wall Street walk and shareholder activism: Exit as a form of voice. *The Review of Financial Studies, 22*(7), 2645-2685. https://doi.org/10.1093/rfs/hhp037

Agarwal, R., Brown, P. J., Bajada, C., Stevens, P., & Green, R. (2020). The effects of competition on management practices in New Zealand - a study of manufacturing firms. *International Journal of Production Research, 58*(20), 6217-6234. https://doi.org/10.1080/00207543.2019.1672901

Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to CEOs? An investigation of stakeholder attributes and salience, corporate performance, and CEO values. *Academy of Management Journal, 42*(5), 507-525. https://doi.org/10.2307/256973

Aier, J. K., Comprix, J., Gunlock, M. T., & Lee, D. (2005). The financial expertise of CFOs and accounting restatements. *Accounting Horizons, 19*(3), 123-135. https://doi.org/10.2308/acch.2005.19.3.123

Akhigbe, A., Madura, J., & Tucker, A. L. (1997). Long-term valuation effects of shareholder activism. *Applied Financial Economics, 7*(5), 567-573. https://doi.org/10.1080/096031097333439

Ball, R., & Brown, P. R. (2014). Ball and Brown (1968): A Retrospective. *The Accounting Review, 89*(1), 1–26. https://doi.org/10.2308/accr-50604

Barua, A., Davidson, L. F., Rama, D. V., & Thiruvadi, S. (2010). CFO gender and accruals quality. *Accounting Horizons, 24*(1), 25–39. https://doi.org/10.2308/acch.2010.24.1.25

Beatty, R.P., & Zajac, E. J. (1987). CEO change and firm performance in large corporations: Succession effects and manager effects. *Strategic Management Journal, 8*(4), 305–317. https://doi.org/10.1002/smj.4250080402

Bertrand, M., & Schoar, A. (2003). Managing with Style: The Effect of Managers on Firm Policies. The Quarterly Journal of Economics, 118(4), 1169–1208. https://doi.org/10.1162/003355303322552775

Bhana, N. (2016). The stock market reaction to board changes: The South African experience. *Journal of Emerging Market Finance, 15*(3), 269-294. https://doi.org/10.1177/0972652716666459

Blake, F., Calbert, M., Diaz, F., Hewett, W., & Zarcone, D. (2018). *Spencer Stuart board index.* New York, US: Spencer Stuart. Retrieved from: https://www.spencerstuart.com/-/media/2018/october/ssbi2018/2018_us_spencerstuart_board_index_final.pdf

Bloom, N., Brynjolfsson, E., Foster, L., Jarmin, R., Patnaik, M., Saporta-Eksten, I., & Van Reenen, J. (2019). What drives differences in management practices? *The American Economic Review, 109*(5), 1648-1683. https://doi.org/10.1257/aer.20170491

Bloom, N., & Van Reenen, J. (2017). Management as a technology? *SSRN Electronic Journal,* https://doi.org/10.2139/ssrn.2788794

Bonnier, K., & Bruner, R. F. (1989). *An analysis of stock price reaction to management change in distressed firms* Elsevier BV. https://doi.org/10.1016/0165-4101(89)90015-3

Boone, J., van Ours, J., & van der Wiel, H. P. (2013). When is the price cost margin a safe way to measure changes in competition? *De Economist 161*(1), 45-67. https://doi.org/10.1007/s10645-012-9196-7

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica, 47*(5), 1287-1294. https://doi.org/10.2307/1911963

Brinkhuis, E., & Scholtens, B. (2018). Investor response to appointment of female CEOs and CFOs. *The Leadership Quarterly, 29*(3), 423-441. https://doi.org/10.1016/j.leaqua.2017.08.002

Brown, M. B., & Forsythe, A. B. (1974). Robust tests for the equality of variances. *Journal of the American Statistical Association, 69*(346), 364-367. https://doi.org/10.2307/2285659

Caglio, A., Dossi, A., & Van der Stede, W. A. (2018). CFO role and CFO compensation: An empirical analysis of their implications. *Journal of Accounting and Public Policy, 37*(4), 265-281. https://doi.org/10.1016/j.jaccpubpol.2018.07.002

Cook, R. D., & Weisberg, S. (1983). Diagnostics for heteroscedasticity in regression. *Biometrika, 70*(1), 1-10. https://doi.org/10.2307/2335938

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic* Literature, 57, 225–245. https://doi.org/10.1257/jel.47.2.448

Cunningham, C. (2005) "There's Good Reason Why CFO Pay Is Rising." *Financial Executive* 21.10: 6–. https://link.gale.com/apps/doc/A140306522/AONE?u=anon~65bf2998&sid=googleScholar&xid=3ce32260

Dedman, E., & Lin, S. W.-J. (2002). Shareholder wealth effects of CEO departures: evidence from the UK. *Journal of Corporate Finance*, 8(1), 81–104. https://doi.org/10.1016/S0929-1199(01)00027-X

Deloitte. (2018). *US/UK M&A deal monitor.* Retrieved from https://www2.deloitte.com/content/dam/uk/documents/mergers-and-acquisitions/deloitte-uk-us-m-a-activity-2h-2017.pdf

Denis, D. J., & Denis, D. K. (1995). Performance changes following top management dismissals. *The Journal of Finance, 50*(4), 1029-1057. https://doi.org/10.1111/j.1540-6261.1995.tb04049.x

Dixon, W. J. (1960). Simplified estimation from censored normal samples. *The Annals of Mathematical Statistics, 31*(2), 385-391. https://doi.org/10.1214/aoms/1177705900

Ernst & Young. (2019). *Global M&A appetite at 10-year high fueled by portfolio reshaping*. London, UK: Ernst & Young. Retrieved from: https://www.ey.com/en_gl/news/2019/04/global-m-a-appetite-at-10-year-high-fueled-by-portfolio-reshaping

Fama, E. F. (1965). The behavior of stock-market prices. *The Journal of Business (Chicago, Ill.), 38*(1), 34-105. https://doi.org/10.1086/294743

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance (New York), 25*(2), 383. https://doi.org/10.2307/2325486

Fama, E. F. (1991). Efficient capital markets: II. *The Journal of Finance (New York), 46*(5), 1575-1617. https://doi.org/10.1111/j.1540-6261.1991.tb04636.x

Farrell, K. A., & Whidbee, D. A. (2003). Impact of firm performance expectations on CEO turnover and replacement decisions. *Journal of Accounting & Economics, 36*(1), 165–196. https://doi.org/10.1016/j.jacceco.2003.09.001

Favaro, P. (2001). Beyond bean counting*:* The CFO's expanding role. *Strategy & Leadership,* 29(5), 4–8. https://doi.org/10.1108/EUM0000000006063

Ferris, S. P., & Sainani, S. (2021). Do CFOs matter? Evidence from the M&A process. *Journal of Corporate Finance (Amsterdam, Netherlands), 67*, 101856. https://doi.org/10.1016/j.jcorpfin.2020.101856

Frydman, C., & Saks, R. E. (2010). Executive compensation: A new view from a long-term perspective, 1936-2005. *The Review of Financial Studies, 23*(5), 2099-2138. https://doi.org/10.1093/rfs/hhp120

Furtado, E. P. H., & Rozeff, M. S. (1987). The wealth effects of the company initiated management changes. *Journal of Financial Economics, 18*(1), 147-160. https://doi.org/10.1016/0304-405X(87)90065-1

Gabarro, J. (1987). The dynamics of taking charge. *Harvard Business School Press*.

Gangloff, K. A., Connelly, B. L., & Shook, C. L. (2016). Of scapegoats and signals: Investor reactions to CEO succession in the aftermath of wrongdoing. *Journal of Management, 42*(6), 1614-1634. https://doi.org/10.1177/0149206313515521

Geiger, M. A., & North, D. S. (2006). Does hiring a new CFO change things? an investigation of changes in discretionary accruals. *The Accounting Review, 81*(4), 781-809. https://doi.org/10.1521/accr.2006.81.4.781

Ghosh, D. & Vogt. A. (2012). *Outliers: An evaluation of methodologies*. American Statistical Association: San Diego, CA Retrieved from: http://www.asasrms.org/Proceedings/y2012/Files/304068_72402.pdf

Gibbons, R., & Murphy, K. J. (1990). Relative Performance Evaluation for Chief Executive Officers. *Industrial & Labor Relations Review, 43*(3), 30–48. https://doi.org/10.2307/2523570

Goranova, M., & Ryan, L. V. (2014). Shareholder activism. *Journal of Management, 40*(5), 1230-1268. https://doi.org/10.1177/0149206313515519

Grand View Research. (2021). *Digital transformation market size, share & trends analysis report by solution, by service, by deployment, by enterprise size, by end use,*

*by region, and segment forecasts, 2023 - 2030.* Retrieved from https://www.grandviewresearch.com/industry-analysis/uk-digital-transformation-market-report

Gupta, V., Mortal, S., Chakrabarty, B., Guo, X., & Turban, D. B. (2020). CFO gender and financial statement irregularities. *Academy of Management Journal*, 63(3), 802–831. https://doi.org/10.5465/amj.2017.0713

Hambrick, D.C., Geletkanycz, M. A., & Fredrickson, J. W. (1993). Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, 14(6), 401–418. https://doi.org/10.1002/smj.4250140602

Hampton-Alexander Review. (2021). *FTSE women leaders.* (). London, UK: Hampton-Alexander Review. Retrieved from https://ftsewomenleaders.com/wp-content/uploads/2021/02/HA-REPORT-2021_FINAL.pdf

Hanek, K. J., Garcia, S. M., & Tor, A. (2016). Gender and competitive preferences: The role of competition size. *Journal of Applied Psychology, 101*(8), 1122-1133. https://doi.org/10.1037/apl0000112

Haugen. (1995). *The new finance : the case against efficient markets.* Prentice Hall.

Hayes, R. M., & Schaefer, S. (1999). How much are differences in managerial ability worth? *Journal of Accounting & Economics*, 27(2), 125–148. https://doi.org/10.1016/S0165-4101(99)00007-5

Heckman, J., Humphries, J. E., & Veramendi, G. (2016). Dynamic treatment effects. *Journal of Econometrics*, 191(2), 276–292 https://doi.org/10.1016/j.jeconom.2015.12.001

Hoitash, R., Hoitash, U., & Kurt, A. C. (2016). Do accountants make better chief financial officers? *Journal of Accounting & Economics, 61*(2-3), 414-432. https://doi.org/10.1016/j.jacceco.2016.03.002

Holmstrom, B. (1999). Managerial Incentive Problems: A Dynamic Perspective. *The Review of Economic Studies, 66*(1), 169–182. https://doi.org/10.1111/1467-937X.00083

Huson, M. R., Malatesta, P. H., & Parrino, R. (2004). Managerial succession and firm performance. *Journal of Financial Economics, 74*(2), 237-275. https://doi.org/10.1016/j.jfineco.2003.08.002

Kaplan, S. N. (2008). Are U.S. CEOs overpaid? *Academy of Management Perspectives, 22*(2), 5-20. https://doi.org/10.5465/AMP.2008.32739755

Karaevli, A. (2007). Performance consequences of new CEO 'outsiderness': Moderating effects of pre- and post-succession contexts. *Strategic Management Journal, 28*(7), 681-706. https://doi.org/10.1002/smj.589

Katz, D. (2001). 2000 *CFO pay: CFOs versus CEOs. how the compensation of top financial executives stacked up against that of their bosses over the past five years.*

Retrieved from: https://www.cfo.com/human-capital-careers/2001/07/2000-cfo-pay-cfos-versus-ceos/

Kim, Y., Jeong, S. S., Yiu, D. W., & Moon, J. (2021). Frequent CEO Turnover and Firm Performance: The Resilience Effect of Workforce Diversity. *Journal of Business Ethics, 173*(1), 185–203. https://doi.org/10.1007/s10551-020-04534-0

Konchitchki, Y., & O'Leary, D. E. (2011). Event study methodologies in information systems research. *International Journal of Accounting Information Systems, 12*(2), 99-115. https://doi.org/10.1016/j.accinf.2011.01.002

Korn Ferry. (2018). *FTSE all-share directors' pay guide 2017/2018.* (). London, UK: Korn Ferry. Retrieved from https://infokf.kornferry.com/rs/494-VUC-482/images/181113-KF_-_FTSE_Directors_Pay_Guide_-_mail_spread%5B1%5D.pdf

Lange, K. L., Little, R. J. A., & Taylor, J. M. G. (1989). Robust statistical modelling using the t distribution. *Journal of the American Statistical Association, 84*(408), 881. https://doi.org/10.2307/2290063

Lauterbach, Vu, J., & Weisberg, J. (1999). Internal vs. External Successions and Their Effect on Firm Performance. *Human Relations* (New York), 52(12), 1485–1504. https://doi.org/10.1177/001872679905201201

Lee, P. M., & James, E. H. (2007). She'-e-os: Gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal; Strat.Mgmt.J, 28*(3), 227-241. https://doi.org/10.1002/smj.575

Levene, H. (1960). In *Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling*, I. Olkin et al. eds., Stanford University Press, pp. 278-292.

Lewis, P., Saunders, M., & Thornhill, A. (2012). *Research methods for business students.* Edinburgh: Pearson Education Limited.

Lin, S., Pope, P. F., & Young, S. (2003). Stock market reaction to the appointment of outside directors. *Journal of Business Finance & Accounting, 30*(3-4), 351-382. https://doi.org/10.1111/1468-5957.t01-1-00001

Lyon, J., & Lawson, R. (2012). *The changing role of the CFO.* ACCA (the Association of Chartered Certified Accountants). London, UK

MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature, 35*(1), 13-39. https://doi.org/10.4236/me.2015.61002

Mann, H. B & Whitney, D. R. (1947). On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other. *The Annals of Mathematical Statistics*, 18(1), 50–60. https://doi.org/10.1214/AOMS/1177730491

McWilliams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of Management Journal, 40*(3), 626-657. https://doi.org/10.2307/257056

Megaritis, A. Vlastakis, N., & Triantafyllou, A. (2021). Stock market volatility and jumps in times of uncertainty. *Journal of International Money and Finance,* 113, 102355–. https://doi.org/10.1016/j.jimonfin.2021.102355

Mellon, L., Nagel, D. C., Lippert, R., & Slack, N. (2012). *The new CFOs : How financial teams and their leaders can revolutionize modern business*. Kogan Page, Limited.

Mian, S. (2001). On the choice and replacement of chief financial officers. *Journal of Financial Economics*, 60(1), 143–175. https://doi.org/10.1016/S0304-405X(01)00042-3

Milton, E. (2015). *The Expanding Role of the CFO*. Retrieved from https://www.linkedin.com/pulse/expanding-role-cfo-elliott-milton/

Mobbs, S. (2018). Firm CFO board membership and departures. *Journal of Corporate Finance* (Amsterdam, Netherlands), 51, 316–331. https://doi.org/10.1016/j.jcorpfin.2018.06.006

Murphy, M. (2013). Boards look for CFOs with general-management chops. *Wall Street Journal,* Retrieved from: https://www.wsj.com/articles/BL-CFOB-3812

Newbold, P., Carlson, W., & Thorne, B. (2013). *Statistics for business and economics* (8 Global edition. Pearson Education Limited.

Odean, T. (1998). Are Investors Reluctant to Realize Their Losses? *The Journal of Finance* (New York), 53(5), 1775–1798. https://doi.org/10.1111/0022-1082.00072

Ou, J. A. & Penman, S. H. (1989). Financial statement analysis and the prediction of stock returns. *Journal of Accounting & Economics, 11*(4), 295–329. https://doi.org/10.1016/0165-4101(89)90017-7

Parrino. R. (1997). CEO turnover and outside succession A cross-sectional analysis. *Journal of Financial Economics, 46*(2), 165–197. https://doi.org/10.1016/S0304-405X(97)00028-7

Pek, J., Wong, O., & Wong, A. C. M. (2018). How to address non-normality: A taxonomy of approaches, reviewed, and illustrated. *Frontiers in Psychology 9*, 2104. https://doi.org/10.3389/fpsyg.2018.02104

Quigley, T. J., Crossland, C., & Campbell, R. J. (2017). Shareholder perceptions of the changing impact of CEOs: Market reactions to unexpected CEO deaths, 1950-2009. *Strategic Management Journal, 38*(4), 939-949. https://doi.org/10.1002/smj.2504

Quigley, T. J., & Hambrick, D. C. (2015). Has the "CEO effect" increased in recent decades? A new explanation for the great rise in America's attention to corporate leaders. *Strategic Management Journal 36*(6), 821-830. https://doi.org10.1002/smj.2258

Rossi, F., & Cebula, R. J. (2015). Stock market reactions to announcements of the board of directors: Evidence from Italy. *Applied Economics, 47*(20), 2102-2118. https://doi.org/10.1080/00036846.2014.1002902

Ruxton, G. D. (2006). The unequal variance *t*-test is an underused alternative to student's *t*-test and the Mann–Whitney U test. *Behavioral Ecology 17*(4), 688-690. https://doi.org/10.1093/beheco/ark016

Samuelson, P. A. (1965). Rational theory of warrant pricing. *Industrial Management Review, 6*(2), 13. https://doi.org/10.4236/tel.2018.815206

Schwert, W. (2002). Stock volatility in the new millennium: how wacky is Nasdaq? *Journal of Monetary Economics*, 49(1), 3–26. https://doi.org/10.1016/S0304-3932(01)00099-X

Shen, W., & Cannella, A. A. (2003). Will succession planning increase shareholder wealth? Evidence from investor reactions to relay CEO successions. *Strategic Management Journal 24*(2), 191-198. https://doi.org/10.1002/smj.280

Snow, J. (1849). *On the mode of communication of cholera,* London, John Churchill, New Burlington Street, London, 1855. Retrieved from: https://collections.nlm.nih.gov/ext/cholera/PDF/0050707.pdf

Spence, M. (1973). Job market signalling. *The Quarterly Journal of Economics, 87*(3), 355-374. https://doi.org/10.2307/1882010

Spence, M. (2002). Signalling in retrospect and the informational structure of markets. *The American Economic Review, 92*(3), 434-459. https://doi.org/10.1257/00028280260136200

Statista. (2021). *Number of companies on the London stock exchange 2000-2020.* UK: Statista Research Department. Retrieved from: https://www.statista.com/statistics/324547/uk-number-of-companies2000-2020-lse/

Teoh, S.W, Welch, I., & Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics, 50*(1), 63–99. https://doi.org/10.1016/S0304-405X(98)00032-4

Tipalti. (2021). *CFOs drive business value: How strategic leaders transform financial operations.* London, UK. Retrieved from: https://www.cpe.live/wp-content/uploads/2022/08/Tipalti-CFOs-Drive-Business-Value-How-Strategic-CFOs-Transform-Financial-Operations.pdf

Udell, A. N & Berger, G. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, 22(6), 613–673. https://doi.org/10.1016/S0378-4266(98)00038-7

van Niekerk, P. (2016). The Evolving Role of the CFO. *Accountancy SA* , 36-37. Retrieved from https://ez.hhs.se/login?url=https://www.proquest.com/trade-journals/evolving-role-cfo/docview/1764191063/se-2

Wang, Y., Zhang, G., & Yang, R. (2010) "Analysis of Market Efficiency for the Shanghai Stock Market over Time." *Physica A*: Statistical Mechanics and Its Applications 389(8), 1635–1642 https://doi.org/10.1016/j.physa.2009.12.027

Warner, J. B., Watts, R. L., & Wruck, K. H. (1988). Stock prices and top management changes. *Journal of Financial Economics, 20*, 461-492. https://doi.org/10.1016/0304-405X(88)90054-2

Weisbach, M. (1988). Outside directors and CEO turnover. *Journal of Financial Economics*, *20*(C), 431–460. https://doi.org/10.1016/0304-405X(88)90053-0

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817-838. https://doi.org/10.2307/1912934

Zajac, E, J., Westphal, J, D. (1996). Who shall succeed? How CEO/board preferences and power affect the choice of new CEOs. *Academy of Management Journal, 39*(1), 64-90. https://doi.org/10.2307/256633

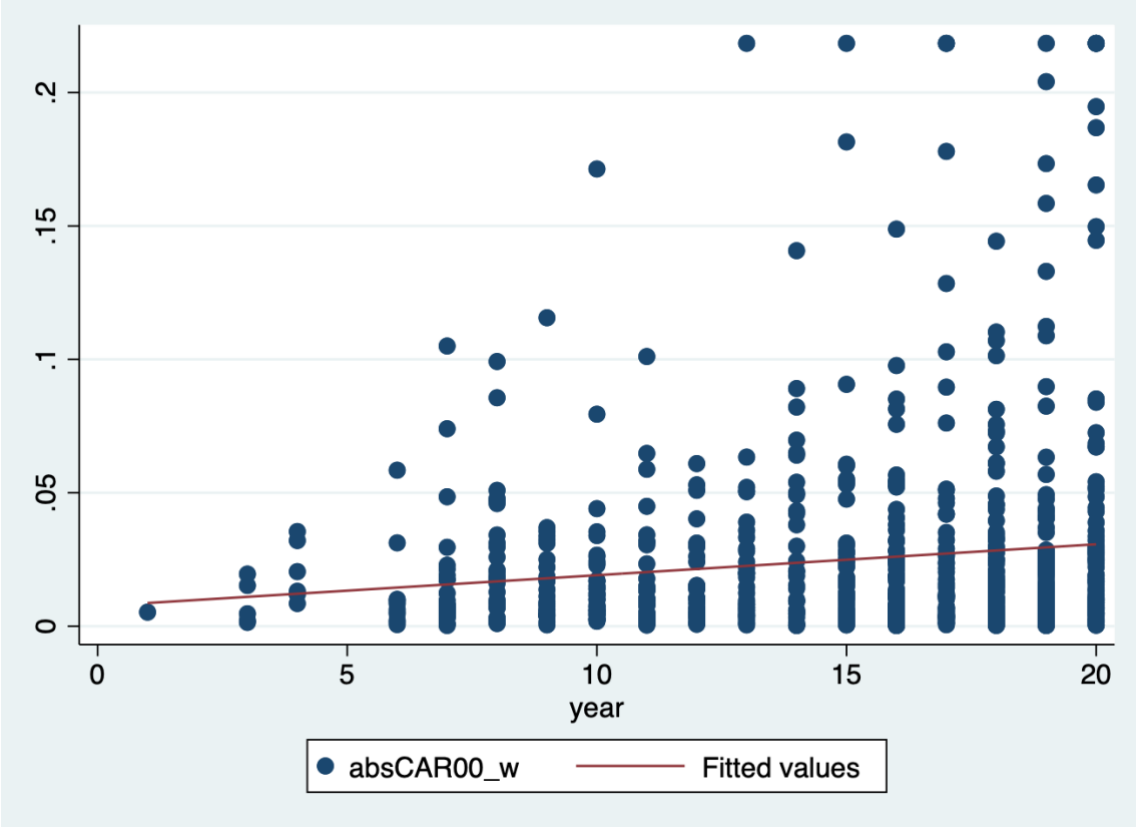
Zhang, Y., & Qu, H. (2016). The impact of CEO succession with gender change on firm performance and successor early departure: Evidence from China's publicly listed companies in 1997–2010. *Academy of Management Journal, 59*(5), 1845-1868. https://doi.org/10.5465/amj.2014.0176

Zorn, D. M. (2004). Here a chief, there a chief: The rise of the CFO in the American firm. *American Sociological Review, 69*(3), 345-364. https://doi.org/10.1177/000312240406900302

# Appendix

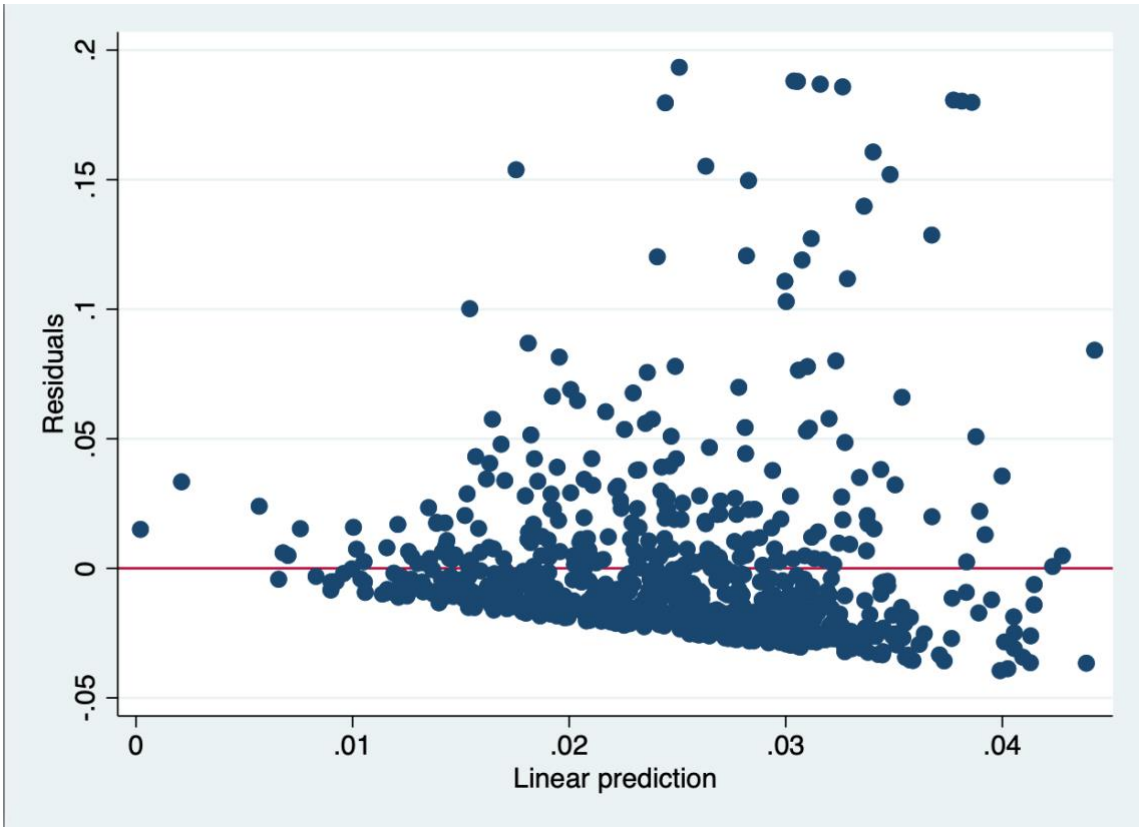
## Appendix 1 - Scatter plot

Two-way scatter plot of the relationship between the dependent variable (|*CAR*| (0-0)) and the independent variable (*year)*



## Appendix 2 - Scatter plot

Scatter plot - Linear prediction of regression residuals (absolute CAR (0-0))



# Appendix 3 – Variables' effect over time

## Difference-in-Difference (DID) test (*Board member*)

**Table 14.** Difference-in-Difference (DID) – Board member

| | Coefficient (%) | | | Dif-in-Dif *p*-values | | |
|---|---|---|---|---|---|---|
| Event window | \|*CAR*\| (0-0) | \|*CAR*\| (0-1) | \|*CAR*\| (-1-1) | \|*CAR*\| (0-0) | \|*CAR*\| (0-1) | \|*CAR*\| (-1-1) |
| Board member | -0.46 | -0.37 | -0.49 | 0.156 | 0.36 | 0.29 |
| Period 2 | 0.49 | 1.13 | 0.89 | 0.158 | 0.02* | 0.09+ |
| Interaction | -0.90 | 0.35 | 0.76 | 0.05* | 0.07+ | 0.06+ |

R-squared = 0.01
Root MSE = 0.05
+p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.01